

ESSAYS ON THE POLITICAL ECONOMY
OF ECONOMIC AND FINANCIAL DEVELOPMENT

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Thesis Abstract

A new wave of research sees institutions as the key driving force of economic development. Yet many challenging questions on the institutions-development link remain open: For example, exactly which institutions and to what extent matter? What determines institutional structures? What are the major channels through which institutions influence economic development? The first three Chapters of my dissertation shed light on each of these questions.

In the first essay after identifying the timing of recent democratizations I employ a before-after event study approach and study the dynamic “within” effects of democratization on growth. The panel results reveal new evidence of a significantly positive (yet non-linear J-shaped) long-run effect of democracy that sharply contrast the previous mainly cross-sectional work. Furthermore democratization is particularly beneficial, when the conditions required for its emergence and consolidation are favorable (for example when the reforming countries have relatively high levels of human capital).

The second essay uses the constructed dataset of permanent democratic transitions to identify the determinants of recent democratizations distinguishing between features that drive the timing and those that determine the stability of the new political equilibrium. Specifically I examine countries that enter the sample as non-democratic to identify the systematic factors that led certain countries to abandon autocracy permanently. This approach stands in contrast to the (limited) empirical studies that pool all countries (always democratic, transition, and always autocratic) to quantify the correlates of long-run democracy. This methodology thus better addresses issues arising from reverse causality (democracy causing higher levels of human capital and economic development) and sample selection (in the beginning of the sample the richest countries were already democratic). The analysis yields new evidence that contribute to the ongoing academic interest on the deep determinants of pro-development institutions.

The third essay establishes a link between both politics and legal institutions and international capital movements. The evidence thus offers a middle-ground approach on the ongoing debate on whether it is the law or politics the key determinants of financial patterns across the world. Since empirical work in finance has established a causal effect of financial development on growth the documented strong politics and institutions international financial liquidity nexus reveals a channel on how structural policies impact development.

Recent studies have however challenged the institutions-development nexus, arguing that human capital rather than institutions is the deep determinant of long-run economic development. The fourth essay investigates, thus, the role of human capital in growth at the industry (rather than the country) level. The analysis reveals a differential effect of initial human capital on industry growth: First, countries with more and better quality schooling experienced faster output growth in more human-capital-intensive industries (the skilled-biased technology adoption channel). Second, relatively rapid human capital accumulation is also associated with faster growth of more human-capital-intensive manufacturing industries (the neoclassical Ryczynski effect).

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General Thesis Introduction

A new wave of research sees institutions as the key driving force of economic development (Hall and Jones, 1999; Acemoglu, Johnson and Robinson, 2001, 2002, 2005; Rodrik, Subramanian and Trebbi, 2004). Yet many challenging questions on the institutions-development link remain open: For example, exactly which institutions and to what extent matter? What determines institutional structures? What are the major channels through which institutions influence development? The first three essays of my dissertation shed light on each of these questions. The first essay (Chapter 1) employs a novel empirical framework to reassess the effect of democracy on growth. The second essay (Chapter 2) identifies the determinants of recent democratizations and thus offers insights on the determinants of political institutions. The third essay (Chapter 3) establishes a strong link between political and legal institutions and international capital movements, revealing a mechanism of their role in economic development. Recent studies (Glaeser, La Porta, Lopez-de-Silanes, and Shleifer, 2004) have however challenged the robustness and the theoretical grounds of the institutions-development nexus, arguing that it is human capital rather than well-protected property rights and law the deep determinant of development. The fourth essay (Chapter 4) investigates, thus, the role of human capital in the structure of production and industry (rather than country) growth. The country-industry analysis shows clearly how (besides institutions and financial development) human capital contributes to economic growth.

In Chapter 1, titled "*Democratization and Growth*" (which draws on joined work with Gregorios Siourounis) we revisit the relationship between democracy and growth. In spite of a massive theoretical and policy debate on the merits of representative institutions, the empirical growth literature has, so far, failed to detect a systematic and robust direct link. We

discuss the conceptual and econometric limitations of previous studies and propose a novel approach that addresses these problems. First, to minimize measurement error, we identify permanent democratization episodes in the last forty years, relying not only on democracy indicators, but also on numerous historical resources and electoral archives. Second, to address the omitted-variables and unobserved country-heterogeneity problems that plague cross-country growth regressions, we employ a difference-in-difference specification. Instead of utilizing the cross-country data variation, we compare post democratization growth rates with growth during the non-democratic period. Third, we use annual data to quantify potentially non-monotonic transition dynamics. Addressing these drawbacks yields new evidence: (i) A permanent democratization results in a positive and significant increase of real per capita GDP growth of approximately half to one percent. (ii) A J-shaped dynamic pattern emerges, with sizable output costs around the transition, but significantly positive growth gains after democracy's consolidation. (iii) Interestingly, when we correct for the potential endogeneity of democratization (specifying a "treatment" first-stage model), the results imply that democratization is particularly beneficial, when the conditions required for its emergence and consolidation are favorable (i.e. when the estimated probabilities of democratization are high, growth accelerates). In line with this interpretation, the panel evidence reveal that countries with relatively high level of human capital gain the most from the political reforms.

In Chapter 2, titled "*What Drives Democratization?*" (which draws on joined work with Gregorios Siourounis) we reverse the democracy-development link and explore the economic and social factors behind the recent Third Wave of Democratization. Specifically we employ various probabilistic panel models to analyze empirically the endogenous formation of political institutions. We examine countries that enter the sample (in 1960) as non-democratic to identify the systematic factors that led certain countries to abandon autocracy permanently. This approach stands in contrast to the (limited) empirical studies that pool all countries (always democratic, transition, and always autocratic) to quantify the correlates of long-run democracy. This methodology thus better addresses issues arising from reverse causality (democracy causing higher levels of human capital and economic development) and sample

selection (in the beginning of the sample the richest countries were already democratic). It also enables us to distinguish between factors that influence the transition versus the consolidation of democracy. We document that: (i) In contrast to recent studies that challenge the income-freedom nexus (Przeworski *et al.* 2000; Acemoglu, Johnson, Robinson and Yared, 2005a,b), a permanent democratization is more likely to occur in wealthy (but not oil-abundant) countries. (ii) In line with the liberal hypothesis (Friedman, 1962) and recent political economy models (Acemoglu and Robinson, 2005), economic and political liberalizations appear to be re-enforcing. (iii) Democratic transitions are more likely to occur after an economic (banking or currency) crisis or an armed conflict. (iv) Beyond economic factors, religion and fractionalization are key determinants of political systems. These results are strengthened when we exploit the "quasi-natural experiment" of independence that occurred after the fall of communism, to test democratization theories in former Socialist Republics.

Chapter 3, titled "*What Drives International Bank Flows? Politics, Institutions & Other Determinants*", assesses how institutional performance and politics in particular affect financial development. Specifically I study how these factors shape international liquidity, by exploring a rich panel data-set of bilateral cross-border banking activities. The use of panel-data is vital, since cross-country regressions of capital flows (e.g. Wei, 2001; Alfaro *et al.*, 2003, 2004) suffer from similar to the empirical growth studies econometric limitations (like omitted variables, reverse causation). I first show that well-functioning institutions (broadly defined) are important forces behind international bank flows. Specifically, foreign banks appear unwilling to invest in countries with corrupt bureaucracies, a slow judicial process, and a government controlled banking system. Second, besides institutions, politics exert also a first-order impact and major reforms (e.g. democratizations, privatization) are associated with a significant increase of foreign bank flows. The results thus offer a middle-ground approach to the ongoing debate on whether law (La Porta *et al.*, 1998) or politics (Rajan and Zingales, 2003) is the key in explaining financial patterns around the world. Since empirical work in finance has established a strong causal effect of financial development on growth (e.g. Rajan and Zingales, 1998; Levine and Zervos, 1998; Levine *et al.*, 2001; Bekaert, Harvey and Lundblad, 2005) my results of a strong politics and institutions international

financial liquidity nexus reveal a new channel on how structural policies impact economic development.

In Chapter 4, titled "*Human Capital, the Structure of Production and Growth*" (which draws on ongoing work with Antonio Ciccone) we examine how human capital affects growth in an international specialization context (similar to that of Ventura, 1997, 2005 and Romalis, 2004). We build a simple theory that generates two key predictions. Industries with an inherent (technological) need for human capital should experience steadier growth: a) in countries that have rapidly accumulated human capital (the Rybczynski effect); and b) in countries with a relatively high level of human capital (the (skilled-biased) technology adoption channel). Using industry-level data in a large sample of countries we find strong empirical support for both channels. The difference in difference methodological approach (that resembles Rajan and Zingales, 1998) addresses issues of reverse causality, overall catch-all growth effects, institutional quality and other omitted variables that plague cross-section work. It also enables us to offer theoretically-grounded empirics that stand in the middle of the macro growth regressions and the micro (Mincerian) framework. We also address issues of measurement error in schooling statistics and outliers. The country-industry level analysis offers support to both the neoclassical presumption that human capital facilitates growth as an input of production and the directed technical change (Acemoglu (1998, 2003) which builds on Nelson and Phelps (1996) early contribution) argument that human capital enables the adoption of (skilled-biased) technology. Both channels are quantitatively of similar (and if anything larger) magnitude to the Rajan Zingales (1998) finance effect. The results are also robust to the differential industry impact of property rights, financial development, industry growth opportunities and much more.

Appendix A, titled "*The Democratization Dataset*", gives a detailed analysis of the methodology I followed in identifying and timing incidents of permanent democratizations that is used in Chapters 1 and 2. This Appendix is of particular importance, since such a dataset has not been available by neither the economics nor the political science literature. This Appendix also reports a description of the democratic transition. Finally Appendix B gives a detailed data description of the variables employed in each of the four essays.

Chapter 1

Democratization and Growth

1.1 Introduction

Leading politicians and influential academics have recently argued that democratization will bring long-term prosperity into "pariah" and economically poorly performing countries.¹ Others, however, remain sceptical, pointing to the mixed and inconclusive empirical evidence. So, the old debate in political science, sociology and economics, dating back to Plato and Aristotle, on which political regime is socially and economically optimal arises again in international relations, press and academic thinking. This debate is not purely academic and philosophical. It has important policy implications. In the last thirty years, the world has experienced an unprecedented move towards democratic institutions. Influential policy-makers and scholars urge Western authorities to foster democratic movements in totalitarian countries (e.g. *The Economist* article "*Philosophers and Kings*" (June 19th 2003)). So the question is: "*Will democratization bring economic growth?*"

To assess whether a successful democratic transition is associated with faster growth, we first examine numerous resources to identify the countries and the exact timing of permanent democratizations in the period 1960 – 2000. We then employ an event study approach and analyze the evolution of GDP growth before and after such incidents of political moderniza-

¹For example, in a recent article (24-6-2003) in the *New York Times*, former United States Secretary of State Colin L. Powell suggested that the stepping-down of President Mugabe and the re-establishment of democracy in Zimbabwe would quickly bring back prosperity.

tion.² The panel results reveal new evidence that contrast the previous mainly cross-sectional work. First, conditioning on various growth determinants, global shocks and business cycle effects, a permanent democratization is associated with approximately half to one percent increment in real per capita growth. Second, a dynamic J-shaped effect emerges implying sizable transition costs, but significant benefits in the medium and especially the long run. Third, when we control for democratization endogeneity (using "treatment" models), we find an even higher effect, implying that political reforms yield the highest return in countries where democracy is (theoretically) more likely to emerge and stabilize. In line with this interpretation, we further show that the positive impact of reforms is concentrated in countries with (relatively) high levels of human capital. Fourth, the results suggest that even moderate reforms can have sizable positive growth effects. Although our results do not (fully at least) resolve issues of endogeneity and causality, they clearly point out that the "within" correlation of democratization with growth is positive and significant. The event-study approach thus demonstrates that democratization can yield sizable growth gains, especially after the usually costly transition and primarily in countries with high levels of human capital.

Following the development of the empirical growth framework (Barro, 1991, 1997; Barro and Sala-i-Martin, 1995), many authors have augmented a classical growth regression with various subjective measures of political freedom. An overall assessment of this literature suggests that democracy has an economically small and statistically insignificant effect on economic growth (see, for example, the reviews of Przeworski and Limongi, 1993; Sirowi and Inkeles, 1990; Przeworski *et al.*, 2000). A parallel work has, however, established a strong causal link between the quality of institutions and long-run economic performance (Knack and Keefer, 1995; Hall and Jones, 1999; Acemoglu, Johnson and Robinson, 2001). Jointly this evidence, therefore, implies that while institutional enhancement significantly contributes to economic growth, democracy specifically seems to be immaterial. La Porta *et al.* (1999) summarize this somewhat surprising result: "*The relationship between democracy and economic success has been difficult to find in recent data.*"

²The phrase "*political modernization*" is taken from Huntington. We do not make any distinction between different types of autocratic and democratic regimes and thus use non-democracies, autocracies, or dictatorships as rough synonyms.

The empirical work from which this conclusion is drawn has several, well-documented drawbacks. First stands measurement error. Classical measurement error yields an attenuation bias (at least in a univariate framework) and reduces the economic significance of results. This problem is particularly important in studies of democracy, which "*has meant different things to different people at different times and places*" (Dahl, 2000, p.3). There is now a considerable literature in political science that discusses the conceptual problems in defining and measuring democracy (see for a review Bollen and Paxton, 2000). We address this problem in two ways: First, we investigate numerous historical resources, electoral archives and democracy indicators in order to identify as precisely as possible the exact timing and nature of a permanent democratic transition. Second, we avoid ranking countries based on the level of political liberties and classify a regime as a binary outcome. This is not only theoretically grounded (Huntington, 1993; Przeworski *et al.*, 2000), but also significantly reduces subjectivity and year-to-year measurement error. Our results hint that measurement error was a serious drawback of previous efforts that studied the correlations between freedom and growth.

The second shortcoming is the empirical question itself. Previous work does not directly ask whether a successful democratic transition and the consolidation of democratic institutions are associated with higher growth. Rather, the literature utilizes the cross section variation to identify long-run data patterns. Given, however, the nature of the policy question, we want to explore the within country variation to investigate whether growth accelerates, declines or remains stable following the regime change. A related problem arises due to omitted variables. Since a growth regression can only incorporate a limited number of independent variables, it is necessary to employ panel data techniques that control for individual heterogeneity and omitted variables. We therefore add country fixed effects that capture (part of) the unobserved heterogeneity.³ In addition, the differences-in-differences technique employed circumvents many reverse causality concerns that emerge from pooling and comparing countries that are heterogeneous in various dimensions. Acknowledging the

³This is not to say that "fixed-effect" estimates are a panacea. Fixed-effects exacerbate problems arising from measurement error. They do not also solve a problem caused by the omission of relevant time-varying regressors.

difficulties of establishing causation, the main message of our analysis is that the "within" correlation between democracy and growth in countries that abandoned autocratic rule and established representative institutions is positive and significant.

Third, although theory has called for a dynamic analysis, previous work has focused on unified long-run correlations. The descriptive evolution of mean growth around the timing of democratization, given in Figure 1.1, reveals a clear J-shaped pattern. Output growth drops during the democratic transition, but then fluctuates at a higher rate. The graph suggests a "short-run pain", due to high transition costs, followed by "long-run gain" due to higher growth after the consolidation of democracy. A five or ten year average will simply obscure this information. We thus depart from the standard growth regression framework and employ dynamic panel data methodologies with annual frequency observations.⁴ This enables us to quantify both the short and the long-run correlations of political modernization and growth. Friedrich Hayek (1960) eloquently summarized this point: *"It is in its dynamic, rather than in its static, aspects that the value of democracy proves itself. As is true of liberty, the benefits of democracy will show themselves only in the long run, while its more immediate achievements may well be inferior to those of other forms of government."* Our empirical results validate Hayek's intuition, by showing that growth accelerates after a transition period of approximately three to five years.

This Chapter's work is related to a new wave of research that studies the effect of institutions (structural policies) on economic performance (for a recent review, see Acemoglu *et al.* 2005). The results suggest that besides legal norms or property rights protection, the type and quality of political institutions correlates substantially with economic growth in a within context. By analyzing probably the most important institutional change (the transition from an autocratic rule into a democratic political organization), this work is also related to studies on how constitutional rules influence economic policies (e.g. Persson and Tabellini, 2003; Persson, 2003). From a methodological standpoint, the identification of successful democratic transitions and the before-after within approach resembles recent

⁴Previous work has relied on cross section or panel data techniques using 5 or 10 year period averages. See Attanasio *et al.* (2000) for an analytical discussion on the merits of using annual observations rather than n -year averages in growth regressions.

analogous event-studies in macroeconomics. Sachs and Warner (1995) and Wacziarg and Welch (2003) study the within-effect of trade liberalization, while Bekaert, *et al.* (*forthcoming*) the aftermath of financial liberalization policies on growth. Interestingly a gap exists in studying the probably most fundamental "event", a permanent democratic transition. This study aims to fill this gap both by providing a new data set and by comparing growth rates before and after incidents of permanent democratic changes.⁵

This Chapter is structured as follows: Section 1.2 outlines the theory on how political liberalism affects growth and discuss previous empirical work. Section 1.3 presents the identification strategy for both the timing and nature of permanent democratizations. It also provides preliminary evidence on within country growth differences before and after regime change. Section 1.4 describes the econometric framework of the analysis and presents benchmark results. Section 1.5 gives additional evidence and perform various robustness checks. Besides addressing issues of omitted variables, selectivity in identifying democratic transitions, and transition costs, we also control for the endogeneity of democratization itself. We also investigate through which channels the positive impact of reforms mostly operates. Section 1.6 summarizes this Chapter's main findings.

1.2 Theory and previous empirical evidence

Before the empirical analysis, it is useful to go through the recent theoretical arguments on the inter-relations between representative institutions and economic performance. For ana-

⁵In a brief paper released after completing the present study, Rodrik and Wacziarg (2004) also explore the "within" effect of democratic reforms. Their analysis differs, however, significantly from our work both methodologically and in the results. First they do not identify permanent democratic transitions, but rely solely on the Polity coding, which has many conceptual drawbacks (discussed in detail later). Second, they do not measure the intensity of reforms and do not isolate permanent transitions from temporary incidents. Third they do not control for business cycle effects, pre-reform trends and standard growth covariates. Fourth, they do not quantify the dynamic evolution of output growth around the transition. Fifth, we provide a tedious series of robustness checks. We also reach different results. Rodrik and Wacziarg find that democratic transitions do not produce negative growth outcomes. They, too, document some regressions, where democratic reforms exert a significantly positive impact on growth, but this applies only in the short-run. Our dynamic approach and the careful identification of democratic reforms reveals in contrast that in the short-run there are sizable output costs. Yet, our results imply that democratic reforms yield positive growth effects after the volatile years of the transition.

lytical purposes we distinguish between theories that emphasize the negative consequences of democratic institutions on growth ("sceptical" theories) and those that stress positive aspects ("development" theories). These theories are complementary rather than competing. Both the classical old theoretical literature and the new political economy models suggest that multiple equilibria can emerge.

1.2.1 Negative Consequences

"Sceptical" approaches of democracy emphasize the inefficiencies of representative government. Influential scholars such as Plato, Alexis de Tocqueville (1835) and more recently Huntington (1968) feared the malignant effects of increased demands for current consumption. The "public choice" tradition (Buchanan and Tullock, 1962) has focused on the agency conflict between elected politicians and the public. It was also deeply concerned about the possibility of a big state satisfying the demands of the masses. For example a democratic polity can yield inefficient outcomes by enabling various interest groups to compete for political influence. Not only is lobbying wasteful per se, but the generated policies yield a large deadweight loss for society. Besley and Coate (1998) synthesize a vast literature that models the distortions caused by incumbent politicians running excessive deficits to guarantee re-election. The endogenous fiscal policy literature models the interaction between the polity type, income inequality and economic performance. "Median-voter" models in the spirit of Alesina and Rodrik (1994), and Persson and Tabellini (1994), among others, show that high levels of income inequality raise the demand for redistribution. If fiscal policy and taxation are selected endogenously by majority voting, then high inequality will lead to lofty taxation, lower investment and consequently slower growth.⁶ This growth equilibrium, however, does not necessarily apply to non-democracies, since the "median voter" cannot enforce redistribution.⁷ Proponents of the sceptical-conflict approach stress the need for a

⁶In line with this argument, Persson and Tabellini present evidence that the negative impact of income inequality on growth is present only in democratic societies, hinting that electoral institutions enable voters to enforce costly redistributive policies. For empirical studies on the association between inequality and growth see Perotti (1996), Barro (2000), Forbes (2000), and Banerjee and Duflo (2003).

⁷In Acemoglu and Robinson (2000, 2004) redistribution pressures are present in autocracies as well. The ruling elite, thus has to implement social-welfare policies to prevent a revolution.

"strong state with an iron hand that neglects populist demands and enforces developmentalist policies with its insulation from particularistic pressures, particularly those originating from large firms and unions" (Rao, 1984).

The economic success of the East Asian countries, which flourished under non-democratic regimes, offers the most illustrative validation for this theoretical approach. The government in these countries played an active role in the economy, but neglected pressures for redistributive policies and secured foreign investment (Rodrik, 2004). Tavares and Wacziarg (2001) study the channels through which democracy influences growth and find supportive for "public choice" theories evidence. Specifically, they show that democracies are associated with low levels of private investment and high government spending.

1.2.2 Positive effects

"Development" theories of democratic rule stress, in contrast, the aspects of representative institutions that are beneficial to growth . Many positive channels have been put forward: First, redistribution need not play a malignant role. This occurs when taxation revenues are used to subsidize investment on physical or/and human capital. Saint-Paul and Verdier (1993) and Bourgouignon and Verdier (2000), for example, model how redistribution can spur growth through increased public spending in education. Likewise, in Galor and Zeira's (1993) model, redistribution enables beneficiaries to overcome capital market imperfections. Second, democratic institutions can be more efficient, by minimizing transaction costs of sociopolitical organization (Wittman, 1989). Olson (1993) argued that the electoral process solves commitment issues, while Sen (2000) pointed out the superiority of democratic rule in gathering and transmitting new information. Douglass North (1990), summarizes this Coasian approach "...*The institutional structure most favorable to approximate such conditions (efficient markets of the neoclassical model) is a modern democratic society with universal suffrage.*" Third, democratic societies are typically more open, there are less barriers to firm entry and they can therefore faster and more easily utilize productivity innovations (Acemoglu, 2003). Fourth, Olson (1993) claimed that democracy brings prosperity because it

requires the same institutions (such as high quality legal system and the security of property rights), which are necessary for steady growth. Acemoglu, Johnson, Robinson and Yared (2005a, b) build a similar argument claiming that early institutions influenced both economic and political development.

Although, the empirical literature has not revealed a direct unambiguous positive effect of democracy on growth, there exists some evidence supportive to development theories. Probably, the most widely known empirical finding in favour of the democratic process is Amartya Sen's (2000) observation that a famine has never occurred in a democratic society. Rodrik (1999) shows that democracies cope better with adverse economic shocks. Wacziarg (2001) and Tavares and Wacziarg reveal a positive channel of democracy on growth through higher human capital accumulation. Democracies are also associated with lower political instability and smoother government changes (Alesina and Perotti, 1996; Alesina, *et al.*, 1996).

Exploiting our new dataset of democratization episodes in the period 1960 – 2000 and using an event study methodology that explores the "within" country variation, we provide compelling evidence that democratization is associated with sizeable growth gains. This positive impact is present even when we control for indirect channel effects through education, investment or government spending. We thus presume that democratic reforms might operate through alternative non-widely studied channels (e.g. raising productivity, fostering entry of new firms, strengthening other pro-growth institutions). However one can not rule out that democratic institutions may operate through physical or human capital accumulation, since the employed proxies of these concepts are far from perfect. For example proxying human capital with years of schooling (or life expectancy) is clearly far from ideal. In addition most of the typical growth determinates exhibit very little within variation.

1.3 The Democratization Data & Preliminary Evidence

1.3.1 Event Identification Methodology

To precisely identify the countries and exact timing of a permanent democratic transition and minimize measurement error, we relied not only on both previously-used Polity and Freedom House (FH) indices, but also on numerous other historical resources.

First we locate significant changes in political organization according to either the FH or the Polity indicator in the period 1960–2000: 1) When the 21 range Polity measure (ranging from -10 to $+10$, with smaller values indicating a lower level of political freedom) suddenly increases from a negative to a positive value. 2) When the trichotomous FH political status characterization jumps from "not free" to either "partly free" or "free". We also require that both indicators remain at the higher democracy score for at least five years. The stability requirement is essential. All political organization theories focus and model the economic consequences of stabilized, permanent regimes.⁸ We therefore exclude spikes of either of the two democracy indicators, since a careful investigation shows that they represent political instability rather than an actual transition.⁹

Second, we examine numerous political science and historical resources, as well as election databases, to precisely identify the timing and characterize the nature of each transition. By doing so, we minimize the conceptual and measurement problems of the democracy indicators (Munck and Verkuillen, 2002; Bollen and Paxton, 2001). The timing of democratization is either at the first internationally deemed "free and fair" elections or at the adoption of a

⁸Huntington (1993) summarizes eloquently this point "...*Stability is a central dimension in the analysis of any political system.*" Examples of brief (less than three years) spikes in the two democracy indicators that clearly do not represent the establishment of representative institutions, include Nigeria (in the early eighties), Congo (in the early nineties), Burkina Faso (in 1978-1979), and Argentina (in the early seventies).

⁹A sample selection problem might arise if democratic transitions are more likely to be short-lived if growth is weak. Yet this problem is unlikely to plague our estimates, since most democratic transitions that reversed back to autocracy were extremely short-lived (i.e. the country was in a democracy status for only one or two years); so there was not really time for agents to observe economic performance under representative government. Such concerns arise, however, for some countries that switched from non-democratic to representative government for some years and then reversed back. Pakistan, for example became democratic in 1985, but after ten years of representative rule switched back to autocracy in 1999. Other similar examples are Nepal and Guinea-Bissau. Our results are robust to either the inclusion or exclusion of these countries.

new democratic constitution after a prolonged period of autocratic rule.

Third, we distinguish between "full" and "partial" democratization episodes. We designate "full democratization" status to countries where *both* the Polity indicator is greater than +7 and the FH status characterization is "free". All remaining democratization countries are recorded as "partial".¹⁰ For completeness we include in the democratization data-set, countries that became democracies at independence from former Czechoslovakia, U.S.S.R. and Yugoslavia, although in many models we exclude them.

This methodology yields 62 permanent democratization episodes. 38 incidents are classified as "full" and 24 as "partial" democratizations. In addition in 5 countries some democratization has taken place, but the level of political liberties is still very low compared to Western standards ("Borderline Democratization" episodes). For completeness, we will present results both excluding and including these countries. So with a loose interpretation the democratization episodes become 67. Table 1.1 gives the country, the year of the regime change and a brief historical description of the event. The *Democratization Dataset Appendix A* gives a detailed description of the transition. It also reports the direction of the FH and Polity indicators before and after the event. All other data used in the growth regressions (GDP, investment, trade, government consumption, life expectancy) come from World Bank's World Development Indicators (2002 edition), while schooling statistics are retrieved from Barro and Lee (2001). The *Data Appendix B.1* gives detailed variable definitions and provides their sources.

1.3.2 Preliminary findings

Table 1.2 presents a descriptive analysis of growth and its determinants before and after political liberalization episodes. In the first three columns we explore the mean differences in the full sample of sixty-seven democratization countries. In columns (4)-(9) we investigate growth dynamics in "full" and "partial" (including "borderline") democratizations. The

¹⁰Huntington (1993), who favours a binary distinction for political regimes, explicitly acknowledged the need for a distinction between "full" and "partial" political liberalization cases.

table also reports the mean difference and the p -value for the null hypothesis of mean equality before and after the event.

There are some notable discrepancies in mean growth rates before and after the democratic transition, especially in countries that implemented moderate ("partial") reforms. The difference of growth rates after and before the emergence of democracy is non-negligible at 0.8% and statistically significant at the 90% confidence level. This is graphically illustrated in Figure 1b. These countries had close to zero growth rates before the democratic transition, but growth accelerated after the consolidation of representative institutions. The growth pattern of countries that implemented "full" reforms is different. These countries (e.g. Spain, Argentina, South Korea, Brazil) had strong output growth before the transition and after a costly transition period they reversed to their high growth rate equilibrium (Figure 1c). However countries that implemented "full" reforms were much richer with significantly higher levels of human capital than "partial" democratization nations, and hence there are serious endogeneity concerns.¹¹

Interesting patterns emerge in the evolution of variables that typically serve as controls in growth regressions. First, investment and government spending remain stable, in spite of a vast political economy literature that models how redistribution policies lead to an increase in public spending and a drop in private investment. They are in line, however, with recent cross-sectional evidence provided by Mulligan, Gil and Sala-i-Martin (2004) who challenge the fiscal redistribution channel. Second, democratizations are followed by a substantial increase in trade, schooling and health. Establishing causality, however, is not straightforward due to the trending behavior of these variables.

In Figure 1.2 we explore differences in growth volatility. Rodrik (1997, 1999) and Quinn and Woolley (2001), find that democratic societies experience less volatile growth rates. Likewise, the results show that the standard deviation of growth drops significantly from 5.5% to 4.9% after the transition. An F test suggests that we can reject the null hypothesis of standard deviation equality before and after the regime change at the 99% confidence level.

¹¹We further explore the differences between "full" and "partial" democratization countries in Section 1.5.5.

Democratization (among probably other policies) has led to a significant decline in growth volatility in the highly (politically and economically) unstable African and Latin American countries. A substantial decline in growth volatility has also taken place in the high-income countries that democratized. So, although, Spain, Portugal, and Greece experienced growth acceleration during their non-democratic era, democratization has brought some sizable gains in the form of lower output volatility.

1.4 Benchmark Estimation Technique and Results

1.4.1 Econometric Specification

To formally assess how democratization affects growth, we follow Jones (1995), Li (2002) and Bond *et al.* (2004) and consider the following autoregressive distributed lag specification (ADL):

$$\ln(y_{i,t}) - \ln(y_{i,t-1}) \equiv g_{i,t} = A(L)g_{i,t-1} + B(L)X'_{i,t} + \alpha_i + \eta_t + \varepsilon_{i,t} \quad (1.1)$$

where growth in country i in year t is defined as the logarithmic change in real per capita GDP. $A(L)$ and $B(L)$ are polynomials of order p and q in the lag operator (L) with roots outside the unit circle. $X'_{i,t}$ is a vector of growth determinants, such as investment, education, etc. α_i and η_t denote country and year fixed effects that capture unobserved individual country heterogeneity and common global shocks respectively. The above expression can be more conveniently expressed in an error correction form:

$$\bar{g}_{i,t} = A(L)\bar{g}_{i,t-1} + B'(1)\bar{X}'_{i,t} + C(L)\Delta\bar{X}'_{i,t} + \alpha_i + \varepsilon_{i,t} \quad (1.2)$$

To eliminate the time nuisance parameters (η_t), g and X' are now expressed as deviations from period means.¹² $B'(1)$ isolates the long-run effect of covariates on growth. Throughout

¹²Formally, we have $\bar{g}_{i,t} = g_{i,t} - \frac{1}{N} \sum_{i=1}^N g_{.,t}$ and $\bar{X}_{i,t} = X_{i,t} - \frac{1}{N} \sum_{i=1}^N X_{.,t}$. For a similar approach, see Caselli *et al.* (1996), Forbes (2000) and Bond *et al.* (2004). We use data from all available countries, as countries with no democratization incident can be used to more accurately estimate time fixed effects (see also Jones and Olken, 2005).

the empirical analysis, we report estimates with 2, 3 and 4 lags in growth and X' , allowing for rich business cycle dynamics and investigating the sensitivity of our estimates to the exact specification.

1.4.2 The Unconditional Effect of Democratization

Before proceeding to the fully specified model, it is informative to ignore growth dynamics and the effect of other covariates on growth and quantify the unconditional effect of a permanent democratization. We, thus, begin our analysis by estimating the following regression equation:

$$\bar{g}_{i,t} = \alpha_i + \delta Democ_{i,t} + v_{i,t} \quad (1.3)$$

where $Democ_{i,t}$ is a dummy variable that takes on the value one in the year and in all years following a permanent democratization episode. Table 1.3 displays fixed effect estimates that isolate the within country effect of a permanent democratization. For comparability we also report estimates from a simple least squares regression (ignoring the time and country fixed-effects).

The OLS specification yields an economically and statistically zero coefficient. This result is primarily driven by the cross country variation and given the existing literature comes as no surprise. In contrast, however, to previous studies, isolating the within effect of democratization results to a large and statistically significant growth effect. In the full sample of democratized countries, controlling both for individual country and time heterogeneity, the estimated coefficient on the political liberalization dummy is 0.0066, which is statistically significant at any conventional level. This implies that relative to the autocratic period, in a given democratized country, GDP grows faster by 0.662 percent during the democratic years.

Differences-in-differences estimators, however, exacerbate the downward bias in standard errors arising from the presence of positive error autocorrelation. Due to the non-

inclusion of autoregressive terms, autocorrelation can seriously hamper inference. Following the solution proposed by Bertrand *et al.* (2004), we re-estimated all specifications adjusting standard errors based on a generalized White-like formula, allowing for country clustered heteroskedasticity and autocorrelation. Not surprisingly, standard errors increase, yielding higher p -values. Yet the democratization dummy is still at least two standard errors above zero.¹³ The preliminary evidence suggests that, contrary to the documented zero relation between democracy and growth, political modernization does correlate strongly and significantly with the within country evolution of growth.

1.4.3 Democratization in Reforming Countries

Turning now to the conditional "within" effect of permanent democratization, we augment the basic ADL model with the democratization indicator variable. Since most variables typically used in growth regressions appear immaterial or have small in magnitude coefficients in the annual frequency, we report in this section *ADL* specifications including only lagged growth and investment ($\bar{I}_{i,t}$) in the RHS. Our exact specification takes the following form:

$$\bar{g}_{i,t} = \alpha_i + A(3)\bar{g}_{i,t-1} + B'(1)\bar{I}_{i,t} + C(4)\Delta\bar{I}'_{i,t} + \delta Democ_{i,t} + \varepsilon_{i,t} \quad (1.4)$$

The above specification enables us to quantify both the short and long-run effect of democratization.¹⁴ We also control both for common business cycle fluctuations and unobserved country heterogeneity.¹⁵ In the following Section we will present estimates controlling

¹³Using Monte-Carlo simulations, Bertrand *et al.* (2004) show that the clustering solution is appropriate when the panel dimension is around 50. We also implemented an alternative correction method to address the serial correlation problem. We regressed growth on country and year fixed effects, then divided and averaged the residuals into two groups, residuals before and after democratization, and then ran an OLS regression of the residuals on the democratization dummy, which appeared again with a significantly positive coefficient. We also corrected standard errors with the Newey-West method; the point estimates retain their statistical significance.

¹⁴A significantly positive coefficient ($B(1) > 0$) on investment implies that the sum of coefficients in the investment polynomial in equation (1.2) is positive. This suggests that a permanent rise in investment will lead to a proportional increase in the steady-state of the growth rate.

¹⁵We also considered the stationarity properties of the endogenous and exogenous covariates. Specifically, we performed the Im, Pesaran and Shin (2003) unit root test for heterogeneous panels for growth, log level of GDP, investment and differenced investment (and also for the additional control variables, which we consider in the next Section). For growth (the dependent variable) and differenced investment, we can reject

for other covariates.

Table 1.4 reports the results. In column (1) we report OLS estimates mainly for comparability with the other techniques. OLS will most likely yield biased and inconsistent estimates, even in the absence of individual heterogeneity, since investment is most likely endogenous. In column (2) we present IV estimates instrumenting both the contemporaneous level and first differenced investment.¹⁶ The coefficient on contemporaneous investment, which was significant in the OLS becomes now indistinguishable from zero.¹⁷ In the presence of individual country heterogeneity, however, both IV and OLS estimates are biased and inconsistent. Moreover, our aim to identify the dynamic within country effect of a successful democratic transition calls for panel techniques that exploit the time variation.

We thus proceed in columns (3)-(6) to fixed-effect estimates.¹⁸ Although the joint presence of individual effects and the lagged dependent variable yields corrupt estimates, recent Monte Carlo studies show that the bias sharply decays when the time horizon exceeds 20 periods. Judson and Owen (1999) estimate that the bias on the lagged dependent variable is around 1 to 2 percent of the true coefficient value when T is 30 and between 2 and 3 percent when T is 20. More importantly, the bias on the other explanatory variables (and consequently the democratization dummy) is found to be less than one percent. We thus exclude from the specification in column (5) (as well as in many sub-sequent specifications)

the null hypothesis of non-stationarity (with and without trend), at any conventional significance level. For investment we can reject non-stationarity if we rely on the version of the test that does not include a trend. For the log level of GDP the test fails to reject non-stationarity in both versions. Panel cointegration tests (e.g. Pedroni, 1999) between investment share and the log level of GDP indicate that these two variables are cointegrated when we allow for country specific trends. Given the poor reliability of these tests, we prefer to present results from a range of specifications that are theoretically grounded and at the same time do not violate the time series properties of the corresponding processes.

¹⁶Following Bond *et al.* (2004) we use in the set of instruments: $\bar{I}_{i,t-4}$, $\bar{I}_{i,t-5}$, $\ln(\bar{y}_{i,t-4})$, $\ln(\bar{y}_{i,t-5})$, $\bar{g}_{i,t-4}$, $\bar{g}_{i,t-5}$, lag 2 and 3 of inflation rate, trade openness and government consumption. The results are robust to alternative instrument sets, such as excluding government consumption or trade. The over-identification tests do not cast doubt on the validity of the instruments. We also explored the possibility of weak instruments. The first stage R^2 and the t -statistics of the instruments are much larger than those required by the weak instrument literature (Stock, Wright and Yogo, 2002).

¹⁷Jones (1995) finds no significant long-run effect of investment on growth. Attanasio *et al.* (2000) and Barro and Sala-i-Martin (1995) show that the causality runs from growth to investment. Li (2002), in contrast, documents some positive effects of investment on growth in OECD countries. Bond *et al.* (2004) find a significantly positive impact of capital accumulation on growth in a panel of 98 countries.

¹⁸We also estimated "random-effects" models. A Hausman (1978) specification test strongly rejects the no correlation of the country specific terms with the other explanatory variables assumption.

countries, where we have less than 20 time-series observations.¹⁹

The regression diagnostics and the coefficient estimates on the lagged growth and investment variables indicate no major mis-specification. Given the rich dynamics included in the specification, autocorrelation is absent. In addition, the over-identification tests in the IV estimates do not cast doubt on the instruments' validity.

The surprising result is the effect of democratization on growth, which is always positive and significant. According to the specification in column (5), which minimizes the bias arising from the joint presence of lagged dependent variable and the individual effects, a permanent democratic transition has a significantly positive short-run impact on output growth of 0.62 percent. The magnitude of the δ coefficient on $Democ_{i,t}$ is similar in the other fixed-effect estimates in columns (3) and (4), which estimate the model on the full sample of democratization countries and instrument for investment's endogeneity. The long-run effect is in general somewhat larger (0.7 – 0.8 percent), reflecting a certain amount of growth persistence.

A concern is whether the coefficient is picking up the market reforms that former socialist countries and new independent states that emerged after the collapse of the Soviet Union, Yugoslavia, and Czechoslovakia implemented in the nineties. In addition the data quality for these countries before 1990 is problematic. Thus in the model reported in column (6) we exclude these countries. To gain efficiency we now bring in the system all countries with available data, since non-reforming countries (that have been throughout the sample-period either always democratic or always autocratic) can provide additional information on growth dynamics. We continue to exclude countries with less than 20 years of observations. We also replace the time nuisance parameters with a simple linear trend. Finally we exclude investment, since one might be uncomfortable with investment in the RHS of a growth regression (even if instrumented). The estimates suggest a similar and if anything somewhat larger impact of democratization on growth of approximately 0.8 percent.²⁰

¹⁹A similar approach have been followed by the parallel studies of Giavazzi and Tabellini (2004) and Persson (2005).

²⁰We provide additional results with all non-reforming countries as control group and various (regional and/or income-level) trends in subsequent sections.

This effect is not only at odds with the literature on political freedom and growth, but is also economically large. Its interpretation is, however, different than in previous studies. As mentioned above, previous work utilized methods that explored the cross-section variability. To assess whether a permanent democratization is associated with faster growth, we use a different sample, identify a discrete variable for democratization that minimizes measurement error and explore the "within" country variation. The estimates imply that in a given country that abandoned autocratic ruling and consolidated representative institutions, growth accelerated by approximately 0.7 percent faster relative to the absence of the regime change.

1.4.4 Dynamic Effects

Although the ADL specification enables reliable estimations of the long-run correlations between democracy and growth, this association might not be monotonic. To quantify this dynamic effect of democratization, we defined dummy variables for five non-overlapping three-year spaced periods around the transition and a dummy variable for the long-run effect of democratization. We then ran fixed-effects growth regressions on these dummies. Our exact specification reads:

$$\begin{aligned} \bar{g}_{i,t} = & \alpha_i + a_1 \bar{g}_{i,t-1} + a_2 \bar{g}_{i,t-2} + \beta_1 \bar{I}'_{i,t-1} + \beta_2 \bar{I}'_{i,t-2} + \pi \ln(\bar{y}_{i,t-3}) \\ & \delta_1 D_{i,t}^1 + \delta_2 D_{i,t}^2 + \delta_3 D_{i,t}^3 + \delta_4 D_{i,t}^4 + \delta_5 D_{i,t}^5 + \delta_6 D_{i,t}^6 + \nu_{i,t} \end{aligned} \quad (1.5)$$

We also include in the set of explanatory variables the logarithm of income per capita to control for the well-documented conditional convergence effect. We also employ a more parsimonious specification with two lags of growth and investment and use lagged investment to (partly) address simultaneity. Turning to the democratization indicator variables, $D_{i,t}^1 = 1$ in the fifth, fourth and third pre-democratization year, $D_{i,t}^2 = 1$ in the second, first pre-democratization year and at the transition year (T^*); $D_{i,t}^3 = 1$ at the first, second and third

post-democratization years; $D_{i,t}^4 = 1$ at the fourth, fifth and sixth post-democratization year; $D_{i,t}^5 = 1$ at the seventh, eighth, and ninth post democratization year; finally $D_{i,t}^6 = 1$ at the tenth and all subsequent post-democratization year. Each dummy equals zero in all other years than those specified. Thus the base period is the non-democratic years, excluding the transition period (i.e. from $T^* - 5$ backwards).

These results are given in Table 1.5. In column (1) we perform the estimation to the full sample of democratization countries. In columns (2) and (3) we exclude countries that implemented democratic reforms after 1998 (where not enough post democratization observations are available) and drop countries where democratization occurred alongside independence (so we do not consider former Soviet Republics that implemented in the early nineties many reforms). Finally in columns (4) and (5) we exclude all countries where we lack data for more than 20 years to avoid the bias arising from the joint inclusion of country fixed-effects and the lagged dependent variable.

The estimates hint at some negative transition costs. These costs, however, appear small and insignificant, given the indistinguishable from zero coefficient on $D_{i,t}^2$. This is most likely due to the sizeable differences in transition. Some countries, for example moved to representative government with minimal costs, while others democratized in periods of turmoil and thus experienced huge output contraction. The estimates for the other indicator variables are consistent with Figure 1.1. The growth gains associated with a successful democratic transitions become noticeable and significant after $T^* + 3$. The δ coefficients that measure the dynamic effect of reforms increase monotonically as democratic institutions stabilize. In all specifications the coefficients on $D_{i,t}^5$ and $D_{i,t}^6$ are highly significant and large. For example, in the last specification δ_5 is 0.093 implying that (controlling for business-cycle effects and convergence) growth accelerates on average by one percentage point faster in the medium-run (specifically during the seventh, eighth and ninth post-democratization year and compared to the autocratic years before the transition). As implied by the even larger coefficient on $D_{i,t}^6$, democratizations seem to have sizable long-run benefits. In all specifications reported in Table 5, δ_6 implies a growth impact of more than one percentage point after the tenth post-democratization year. The results are further strengthened by

the estimates reported in the last column where we drop investment, ignore countries with less than 20 years of observation, skip former socialist nations, but bring in the system non-reforming countries as "control" group.

1.5 Further Evidence & Sensitivity Analysis

The results given so far stand in contrast to previous studies. A successful democratic transition is associated with considerable (particularly long-term) growth gains. The magnitude of this correlation is not sensitive to the exact dynamic specification or the sample. In this section we provide some additional evidence, checking at the same time for the sensitivity of our estimates. We start by augmenting our basic specification with other regressors suggested by the empirical growth literature. Second, we test for the robustness of our results when we allow for regime switching costs. Third, following recent political economy models, we embrace the possibility that democratization might be a strategic decision related to future growth opportunities and control for its endogeneity. Fourth, we address self-selection concerns arising from our event identification methodology and discuss measurement error issues. Fifth, we investigate through which channels the positive impact of political liberalization comes. We provide a variety of additional robustness checks, also studying growth in countries that moved from democracy to autocracy (adverse transitions).

1.5.1 Additional Growth Determinants

The empirical growth literature has considered numerous variables that explain differences in growth patterns among countries. While controlling for capital accumulation, human capital and public policy differences is vital in cross-sectional studies, it is less so in our annual frequency regressions. Typical growth regressors exhibit small annual within country variability. Consequently, part of their impact is captured by the fixed effects. Furthermore, only a few of these regressors survive extensive sensitivity checks (Sala-i-Martin, 1997; Levine and Renelt, 1992). We need, however, to control for omitted variables bias. By doing so we also place and interpret our results in typical cross-country growth framework.

We employ (for robustness) two conditioning sets. The first one (the "simple" set) is based on an augmented neoclassical model with human capital (see Mankiw, Romer and Weil, 1992), and includes: 1) the initial level of real per capita GDP, 2) average years of schooling (*Schooling*), 3) investment rate (*I*), and 4) population growth (*POP*). We also perform our estimation with a richer set of controls (the "policy" set), which includes in addition to the simple set: 5) trade, defined as imports plus exports as a share of GDP (*Trade*), and 6) government spending as a share of GDP (*CG*). Due to data unavailability on educational attainment for 22 democratization countries, we replace in the "policy" set the schooling variable with the log of life expectancy (*LE*). This enables us to use all countries with a democratization event. The estimates reported in Table 1.6 are based on the following model:

$$\begin{aligned} \bar{g}_{i,t} = & \alpha_i + a_1 \bar{g}_{i,t-1} + a_2 \bar{g}_{i,t-2} + \pi \ln(\bar{y}_{i,t-3}) + \beta_1 \bar{I}_{i,t-1} + \beta_2 \bar{I}_{i,t-2} + \beta_3 \bar{I}_{i,t-3} \\ & \beta_2 \overline{HC}_{i,t-1} + \beta_3 \overline{GC}_{i,t-1} + \beta_4 \overline{POP}_{i,t-1} + \beta_5 \overline{Trade}_{i,t-1} + \delta \overline{Democ}_{i,t} + \varepsilon_{i,t} \quad (1.6) \end{aligned}$$

The above specification also enables us to isolate the long-run effect of a permanent democratization on income level $[\ln(y_{i,t})]$. Examining whether democratization exerts a significantly positive effect on output level is simply a test of $\delta/\pi > 0$.

Most of the control variables we consider are strongly significant and have well behaved coefficients. Yet, given the annual frequency, the coefficients' magnitude is small. Our preferred specifications in columns (5) and (6) imply a speed of convergence of around 3.5 percent. This is somewhat higher than the conventional wisdom of 2 percent, but is more theoretically plausible and in line with recent studies using annual observations.²¹ The coefficient on schooling is positive, (marginally) significant, but small in magnitude. Although not very supportive to human capital models, it is in line with recent studies, showing that educational attainment is far from an ideal proxy for human capital. Life

²¹Hauk and Wacziarg (2004) provide a careful and insightful analysis on the underlying reasons behind the documented differences in estimates among different panel methodologies in growth regressions.

expectancy and trade enter with a significantly positive coefficient. Government consumption enters with a negative coefficient, in line with previous studies, which suggested that it captures inefficiencies caused by lofty taxation and inefficient state activities.

Most importantly, the coefficient on the political liberalization dummy is positive and at least two standard errors above zero in all perturbations. Its size almost doubles when we move from OLS to fixed effects. This illustrates the significant gains from the utilization of the "within" country variation. Conditioning on the rich "policy" set and performing the estimation in either the full sample of sixty-seven democratization countries (column (4)) or in the sample of forty-eight countries, where more than 20 yearly observations are available, yields a significant democratization coefficient of approximately 0.01. Quite interestingly the positive impact of democratic reforms does not seem to come either from human capital accumulation or from increased trade, since the δ coefficient remains stable when we add these controls. This suggests that either these controls do not capture adequately the theoretical concepts of human capital, lofty spending or that besides the standard-documented channels democratization impacts growth through other mechanisms. Unfortunately we can not say much more on the channels of influence of democratic reforms, since most of the variables that capture the theoretical channels that development or public-choice theories stress exhibit very small within variation and are contaminated by measurement error (which is magnified in first or mean difference).

Turning now to the dynamic specification, we estimate the following specification (which is a variant of equations (5) and (6)) allowing the effect of democratization to differ during the transition and controlling for other covariates:

$$\bar{g}_{i,t} = \alpha_i + a_1 \bar{g}_{i,t-1} + a_2 \bar{g}_{i,t-2} + \pi \ln(\bar{y}_{i,t-3}) + \bar{X}'_{i,t-1} B + \sum_{j=1}^6 \delta_j D_{i,t}^j + \varepsilon_{i,t} \quad (1.7)$$

The indicator variables ($D_{i,t}^j$) are defined as in equation (5). Figure 1.3 plots the δ_j coefficients on the democratization dummies, when we condition on the rich "policy" set. The figure suggests a J-shaped growth pattern with output costs around the transition, but with sizable gains after the consolidation of representative institutions. The effect of

democratization becomes statistically significant after the third post-democratization year, where $D_{i,t}^3$ is 0.008 (t -stat.= 2). The democratization effect is magnified after the seventh and especially after the tenth post-democratization years. For example δ_6 is 0.012, suggesting a long-run effect greater than 1.2 percent.²²

1.5.2 Transition Costs

Figures 1.1 and 1.3 reveal the presence of sizable switching costs. Haggard and Kaufman (1995) document that many countries democratized either during a financial crisis or after the end of an armed conflict (for example in Argentina after the Falklands War). If countries democratized in the middle of an economic slowdown, then these countries might experience growth even if they hadn't implemented the reforms. We therefore need to control for the recovery, since this can yield an upward bias to the coefficient on democratization (this is similar to the Ashenfelter's dip argument in the program evaluation literature). Even though in the previous subsection we allowed for different growth dynamics during the reforms, we further address this concern by defining a transition indicator variable ($Trans_{i,t}$) that takes on the value one in five-year period of turmoil and uncertainty around the regime change ($Trans_{i,t} = 1$ if $T^* - 2 \leq t \leq T^* + 2$).²³ The democratization variable ($Post_Democ_{i,t}$) is adjusted accordingly and now takes the value one in the third and all subsequent post-democratization years ($Post_Democ_{i,t} = 1$ if $T^* + 3 \leq t$).

The purpose of this exercise is the following: Lets control for the five (or seven) years around the transition, where there is high instability, uncertainty and other difficult to catch developments and just compare growth well before with well after the transition. This also enables us to control for measurement error on the exact timing of reforms. For example it is not crystal-clear whether for example democratization in Spain took place in 1975 when Franco died, or in 1977 when the first civilian government was established or in 1978 when the new constitution that established parliamentary monarchy came into effect.

²²The estimated coefficient on $D_{i,t}^6$ is in line with the optimistic belief of Peace Nobel Laureate Frederik Willem de Klerk. In a recent article (14 – 9 – 2004) on the *Wall Street Journal*, de Klerk argued that the benefits of democratization should be expected after the elapse of the first post-reform decade.

²³Changing this requirement to three or seven years does not change the results in any significant way.

The results are reported in Table 1.7. We continue to control for other growth determinants and unobserved time heterogeneity. To show that the estimates are not driven by the exact specification, we use a more parsimonious model with only two lags of growth and investment. We perform further sensitivity checks by adding each of the controls one by one. We also exclude in columns (7), (8) and (9) "borderline" democratization countries and countries that democratized after 1998. The coefficients on the control variables are not particularly sensitive to the specification and still enter with well-behaved coefficients, implying no serious model mis-specification. The coefficient on $Trans_{i,t}$ is small and insignificant, reflecting most likely the substantial volatility of growth around the transition period, which produces large standard errors.²⁴ Most importantly in all specifications, regardless of the sample used, the coefficient on $Post_Democ_{i,t}$ is positive and significant. The estimates imply that, controlling for the transition, the consolidation of democratic institutions leads to an almost 1% long-run growth acceleration (relatively to the benchmark autocratic period before the transition).

1.5.3 Endogeneity

Is the decision to democratize exogenous or a consequence of high growth prospects? Both theory (Aristotle; Lipset, 1994) and empirical studies (e.g. Barro, 1999) suggest that democracy is endogenous to income level rather than growth. However, to investigate the sensitivity of our estimates to the potential endogeneity of democratization, we fully specify a limited dependent variable (LDV) model on $Democ_{i,t}$. We then form fitted probability values and insert them in a second stage fixed-effects growth regression (Alesina *et al.*, (1996) employ a similar approach to quantify political instability's impact on growth). To accurately pin down the probabilities of democratization, we estimate the model in all countries that were non-democratic at the beginning of the sample.

For the "treatment" equation we rely on the literature on political institutions' deter-

²⁴Democratic transitions differed substantially across countries. For example, in Latin America countries the democratic transition period was marked by severe recessions. Yet, other countries (e.g. Spain, Portugal) democratized with minimal transition costs, probably at the peak of the business-cycle. Adding a dummy for the transition period is surely a rough way to quantify the costs of transition.

minants (for a review, see Acemoglu and Robinson, 2004). We obtain predicted values for $Democ_{i,t}$ using: 1) Years since independence as a proxy for history's role in the evolution of political development (for the theoretical basis on the use of this variable see Acemoglu, *et al.* 2005); 2) Fractionalization, measured by the probability that two randomly selected individuals belong to different ethnical and religious groups (see Aghion, Alesina and Trebbi, 2004 for a formal model of the effect of polarization on political institutions). 3) Religion, measured by the share of the population that follows Islam and Confucian/Buddhist ideology. 4) Regional dummies to control for the potentially non-random selection of democratizations and spillover effects from adjusting countries. 5) Lagged income level or/and schooling to capture the strong wealth-democracy nexus (e.g. Epsetin *et al.*, 2004; Barro, 1999; Glaeser *et al.* 2004). 6) Oil abundance to estimate the effect of the "natural-resource curse" (e.g. Ross, 1999). 7) Trade openness, to capture feedback effects of economic to political freedom. 8) Finally, in all specifications we include a linear time-trend to control for the trending behavior of the democratization variable and some of the independent variables. We thus estimate the following system with a democratization selection equation (the first-stage) and a classical growth regression (the second-stage):

$$Democ_{i,t} = \begin{cases} 1 & \text{if } G(Z_i^1 + Z_{i,t}^2) + e_{i,t} > 0 \\ 0 & \text{otherwise} \end{cases} \quad (1.8)$$

$$g_{i,t} = a_1 g_{i,t-1} + a_2 g_{i,t-2} + \pi \ln(y_{i,t-3}) + X'_{i,t-1} B + \widehat{Democ}_{i,t} + \alpha_i + \eta_t + \varepsilon_{i,t} \quad (1.9)$$

The time invariant first-stage variables (Z_i^1) enable us to identify the countries that eventually abandoned autocratic rule (compared to countries that have remained throughout the sample period non-democratic), while years since independence, trade openness and lagged income ($Z_{i,t-1}^2$) are mainly correlated with the timing of the event.²⁵

In line with recent studies on the determinants of democratization, all variables of the Z vector enter the first-stage probit model with significant and theoretically-consistent co-

²⁵ Although empirical growth studies have documented that some of the time-invariant (Z_i^1) variables are directly significantly associated with growth (e.g. Alesina *et al.* 2003 on the role of fractionalization on growth), this does not influence our specification, since we add country fixed-effects. Time-invariant controls only help us to distinguish countries that enter our sample as non-democracies, but which eventually abandoned autocratic rule.

efficients. The estimates, for example, imply that democratization is blocked in religiously heterogeneous countries, while political modernization is more likely to emerge and consolidate in countries open to international trade. Moreover, democratization is more likely in rich, but not oil-producing countries. The fit of the probit specifications is good with McFadden's pseudo- R^2 at the range of 0.30 and the ratio of observed to predicted outcomes around 0.80.

Table 1.8 reports the estimates of the growth specification. To further investigate the robustness of our estimates, we present various models, changing both the set of growth determinants in the second-stage (X) and the set of independent variables in the "treatment" regression (Z). We estimate the first-stage model with maximum-likelihood. Although assuming error normality MLE yields consistent and efficient results, it can be sensitive to intractable problems, like autocorrelation and individual effects. We thus experiment (in columns (2) and (5)) with Heckman's (1978) two-step method, which requires less restrictive assumptions, but with a loss of efficiency.

The estimated correlation coefficient (ρ) between the residuals of the "treatment" model and the growth regression is negative at a range of 0.13 – 0.23. Although ρ is not always statistically below zero, this explains why the Heckman correction methods yield larger coefficients on $\widehat{DEMOC}_{i,t}$. For example, the fixed-effects specification reported in column (6), where we condition on the "simple" set and predict democratization using years of independence, the share of Muslims and Confucians in the population, and religious and ethnical heterogeneity suggests that democratizations are associated with a more than two percent increase in GDP growth. ($\delta = 0.0219$). The magnitude of the estimated coefficient on $\widehat{DEMOC}_{i,t}$ in the other specifications is similarly at a range between 1.7% – 2.7%.

Clearly the Heckman correction analysis does not fully resolves the endogeneity and reverse-causality concerns; in addition the point estimates, although in line with our previous pro-democracy evidence, imply unrealistically high effects of reforms. Yet, together with theory and parallel studies that have not detected a significant effect of growth on democratization, it strengthens our confidence that the results are not being driven by se-

lectivity and endogeneity.²⁶ Furthermore, an interesting interpretation of these estimates is that democratization is particularly beneficial, when the theoretical conditions required for its emergence and consolidation are favorable (i.e. when the estimated probabilities of democratization are high, growth accelerates). If this interpretation is valid, then one should not expect democratic reforms to always yield growth gains. Growth accelerates probably not only due to the reforms, but because the conditions are favorable for the development of democratic institutions.

1.5.4 Alternative Democratization Events & Measurement Error

A possible critic is that self-selection of both the democratization countries and the transition year drives our results. Since we identify which country and in which year an autocratic regime is abandoned, one could argue that this is done in such a way that favours our empirical results. Although we consider the identification of political liberalization as a key ingredient of our research, we performed various modifications to our sample based on different definitions of democracy.

Table 1.9 reports our results for alternative democratization samples. First, we re-estimate our basic specification excluding "borderline" and recent (post-1998 or post-1995) democratization events where insufficient observations are available after the regime change. The estimated coefficient in the specification in column (2) implies that democratization has a more than 1% effect on growth.

Second, we identify a democratization relying solely on either of the two widely used political freedom indicators. This changes both the exact timing and the country sample of democratic transitions.²⁷ Specifically, we identify a permanent regime change when the Polity

²⁶We further experiment with numerous other variables in the "treatment" equation (e.g. mortality rates, urbanization, etc.), without detecting any major differences. In most specifications, the fitted democratization values enter the second stage growth regression with a significantly positive coefficient. Although one could clearly produce first stage specifications that yield an insignificant (yet still positive) coefficient for the democratization variable, a successful democratic transition still has a positive impact on economic growth.

²⁷For example, according to the Polity index democratization occurred in Ghana in 1996, while according to the Freedom House it occurred in 1992. According to our methodology, the timing of democratization is in December of 1996, when the first, internationally declared "free and fair" elections took place.

index jumps from a negative to a positive value and when the Freedom House characterization jumps from "Not Free" to either "Free" or "Partially Free" and remains there for five years.²⁸ We also exclude new independent states that emerged after the fall of the Iron Curtain.

These results given in columns (4)-(6) illustrate why our findings differ from previous studies. Following Robert Barro's influential work, the literature so far has examined the democracy-growth link using panel methodologies with five years averages that primarily utilized the cross-country variation. In addition, these studies primarily used the FH ratings as a measure of democracy.²⁹ The almost zero and statistically insignificant coefficient in column (4) is thus in line with previous work. When we explore the "within" country variation in countries that experience a democratic transition, $Democ_{i,t}$ asserts a significant impact on growth. Yet when we bring in the system non-reforming countries as a "control group", exclude the former socialist republics and countries with less than 20 observations, the impact of democratization according to Freedom House becomes zero. In contrast when we employ the Polity ratings then democratization is always positive and significant. This suggests that measurement error is a serious drawback of the previous cross-sectional work.

1.5.5 "Control Groups" and Differential Effects of Political Reforms

The analysis so far has primarily examined growth dynamics in countries that liberalized their political system. This approach has the benefit of examining a homogeneous group of countries; yet, we do not utilize information from the two non-reforming groups. To further investigate the stability of the previous estimates we now focus on the universe of

²⁸A similar threshold is used in the parallel studies of Persson (2005) and Giavazzi and Tabellini (2004). Persson points out that using the median of the polity index as the threshold is the most appropriate, since most reforms are "*in accord with conventional views of political history*". In contrast Rodrik and Wacziarg (2004) employ the Polity transition coding, which requires a jump of greater than 3 points in the 21-range index. Consequently, Rodrik and Wacziarg identify many minor efforts towards democratization or temporary incidents of political instability in autocracies. For example according to this definition Cambodia experienced a democratic transition in 1972, when the Polity index jumped from -9 to -5 . Likewise Chad had a democratic transition in 1994 when the index jumped from -7 to -3 and Iran in 1982 when the index jumped from -10 to -6 .

²⁹Munck and Verkuilen (2002) show that among the available democracy measures the FH measure is the most problematic. They show a systematic bias against: 1) communist regimes, 2) left-wing governments, and 3) countries not open to international trade.

countries. The identifying assumptions are, however, somewhat restrictive: First, we assume that democratizations are not systematically related to other omitted factors that directly affect growth (and are thus imbedded in the error term). Second, and most importantly we assume that the same growth dynamics govern democratization countries with non-reformer nations.³⁰ The results of the following model are given in Table 1.10:

$$g_{i,t} = \alpha_i + a_1 g_{i,t-1} + a_2 g_{i,t-2} + a_3 g_{i,t-3} + \pi \ln(y_{i,t-4}) + \delta Democ_{i,t} + \sum_{k=1}^K \lambda_k t_k + \varepsilon_{i,t} \quad (1.10)$$

where we have replaced the year constants with a k vector of regional and/or income-level trends (t_k).³¹ This enables us to capture any pre-reform existing dynamics and to control for the non-stationarity nature of the democratization dummy.³² This approach also (partly) controls for the over-representation of some regions in the reforming group.³³ Besides new independent states, we also now exclude all former socialist countries (like Albania, Bulgaria, Poland, etc.) as well as all countries with less than 20 observations. The results are reported in columns (1)-(2). The impact of democratization on growth is estimated to be around 0.6 – 07 percent, very much in line with our benchmark estimates.

³⁰Thus we impose that investment, trade, government spending, etc. exert a similar growth effect to all three country categories, always democratic nations (like the United States or Western European nations), always autocratic (like most Sub-Saharan and Asian nations) and the countries that experienced a successful democratization. This assumption, therefore, seems quite restrictive. Mancur Olson (1993), for example, has specifically claimed that democracies differ fundamentally from autocratic countries and thus factors that influence economic development in democratic environments need not have the same effect under non-representative institutions. Therefore we only report parsimonious models with only lagged income terms. We note, however, that the results in Table 10 are robust to the inclusion of standard growth determinants.

³¹Following the World Bank country classification we have seven regions: 1) East Asia and Pacific, 2) Europe and Central Africa, 3) Latin America and Caribbean, 4) South Asia, 5) Sub-Saharan Africa, 6) Middle East and North Africa, and 7) High Income. We also get five income groups: 1) High Income-OECD, 2) High-Income Non-OECD, 3) Higher Middle-Income, 4) Lower Middle Income, 5) Low Income.

³²Note that by construction $Democ_{i,t}$ exhibits a trending behavior, since after a successful transition to democracy countries do not revert back. Even if we hadn't imposed the stability requirement, reversals are very rare, so this problem is not resolved. Thus by adding the trends in the RHS we explicitly control for this concern. Panel-unit root tests in $Democ_{i,t}$ strongly reject the presence of non-stationarity when a linear trend is added.

³³In a previous version of the paper we also added regional dummies, decade constants and even decade-region fixed effects. The results do not depart in any significant way.

Regional Effects

It is worthwhile to examine in which countries political reforms had the largest impact. In addition, in spite of the inclusion of regional and income-level trends, there is still the concern that a particular group of countries drives our results. For example, Latin America countries experienced fast growth after the debt crisis in the early eighties, which coincided with many democratization episodes. A similar concern is whether the results are driven by the three European Union member countries (Spain, Portugal and Greece). These countries received substantial political and economic assistance from the European Union (through the regional and structural funds) after the democratic transition.³⁴

We thus report in columns (3) and (4) estimates of the following dynamic growth regression, which allows the effect of democratization to differ in Latin America and EU countries:

$$\begin{aligned}
 g_{i,t} = & \alpha_i + a_1 g_{i,t-1} + a_2 g_{i,t-2} + a_3 g_{i,t-3} + \pi \ln(y_{i,t-3}) + \sum_{k=1}^K \lambda_k t_k + \\
 & \delta_1 [Democ_{i,t} * Latin_i] + \delta_2 [Democ_{i,t} * Eur_i] + \\
 & \delta_3 [Democ_{i,t} * (1 - Latin_i - Eur_i)] + \varepsilon_{i,t}
 \end{aligned} \tag{1.11}$$

$Latin_i$ takes on the value one if country i is in South America (or in the Caribbean) and zero otherwise. Likewise Eur_i equals one for the three EU15 countries that democratized in the mid-seventies. There are no significant differences between the estimated growth impact of democratization in Latin America and the other (non Latin American and non EU15) reform countries. If anything, controlling for other determinants, the effect of political reforms on growth was somewhat milder in Latin America. Turning now to the three European countries, given the fast growth rates that all these countries experienced during their non-democratic era, growth is not significantly higher (but actually lower) after the

³⁴A similar concern applies to former communist countries and Soviet Republics that recently joined the EU. These countries are, however, excluded from the estimation.

regime change. Most importantly for our analysis, the δ_3 coefficient on the other democratization country groups is still significantly positive and quite robust, implying an effect of approximately 1% additional growth at an annual basis.

To further explore from which group of countries the positive impact of democratic reforms comes from, we also estimated variant models of 1.11 allowing the delta coefficient on the democratization dummy to differ among the seven World Bank regional groups. The results, however, are at best indicative, since there is now a small number of reforming countries in each of the regional groups. Augmenting the model with both the regional and income group specific trends suggests a significant effect of democratization in Sub-Saharan African and Latin America. In addition the coefficient on Asia is positive but insignificant, while democratization in South-East Asian economies had a negative effect.³⁵

"Full" and "Partial" democratizations

It is interesting to compare growth rates between countries that "fully" as opposed to "partially" consolidated democratic governments. The descriptive evidence point out that countries with a partial democratization experienced weak growth before the transition and thus gained the most from the regime change. In columns (5) and (6) we further investigate these differences, estimating equation (9), but allowing the effect of "full" and "partial" reforms to differ.

The results are somewhat contradictory. When we estimate a simple autoregressive model with no convergence term, the estimates suggest that "partial" reforms appear to yield the largest growth gains. This result is in line with Barro's (1996, 1997) non-linear finding that growth accelerates when a country moves from total autocracy to intermediate levels of political freedom, but future progress to a perfect democracy level is associated with slower growth. The estimates in column (6) complement this evidence, but from a

³⁵The coefficients (and p-values) of the model in column 4 of Table 1.10 when augmented with the regional-specific democratization dummies are: Latin America and Caribbean 0.0103 (0.04); East Asian and Pacific -0.016 (0.024); Sub-Saharan Africa 0.0173 (0.01); Europe and Central Asia -0.003 (0.794); South Asia 0.698 (0.32). However, due to the small number of observations these results are quite sensitive to the exact model specification.

"within" standpoint, which we believe is more important from a policy perspective. Yet when we add the lagged income term to control for convergence, then the coefficient on "full", rather on "partial" reforms dominates. Although this is in line with the pro-development evidence given so far, we are sceptical on this interpretation for three additional reasons: First, there are endogeneity concerns, since richer countries implemented large reforms (like Chile, Spain, Portugal), while poorer nations only "partially" liberalized their polity (like Bangladesh, Nicaragua, Zambia). Second, most "partial" reforms occurred in the nineties and consequently we do not have as many post as pre-democratization observations. Third and most importantly given the conceptual challenges in defining democracy, the line of separation between "full" and "partial" democratizations is not always crystal-clear. Yet, together with the descriptive evidence, we believe that these results provide optimism for countries that implement moderate reforms.

"High" and "Low" Human Capital

It is possible that countries with a high level of human capital will manage to benefit more from the political reforms. Formal political economy models suggest that democracy is indeed most likely to yield positive effects in educated societies. Likewise the previous two-stage results in Table 1.9 hint that reforms have the greatest impact in countries, where the theoretically required preconditions for democracy (one of which is education) are present. We thus split the democratization countries to two groups depending on the average years of schooling in the population. We first estimated the median of the schooling variable in all countries (4.24 years) and then allow the δ coefficient on the democratization dummy to differ in the above and below schooling median (these countries are given in the *Data Appendix*). The results are presented in the last two columns of Table 1.10. Countries with high levels of human capital clearly benefit the most from the new political equilibrium. We estimate the impact of political reforms in countries with relatively high level of schooling to be close to 1% and statistically significant at the 99% confidence level. In contrast countries with low levels of human capital do not experience faster growth after the reforms. A Wald test of coefficient equality suggests that the coefficient difference is statistically

significant at standard significance levels. These results demonstrate that democratization will not automatically bring growth. There appears to be a strong complementarity between political liberties and human capital. Thus political liberalizations are expected to have a significantly positive impact on growth only if they take place in countries with high levels of schooling or accompanied with investment in education.

1.5.6 Reversals from Democracy to Non-democracy

A potential shortcoming of our analysis is that we study only regime changes from autocracy to democracy. An obvious critic is that a transition from democracy to autocracy might also yield positive growth, most likely because countries abandon a regime of any type if economic performance is poor. If growth rates accelerate after the transition from democracy to autocracy, then all our previous results are seriously challenged. In this case a transition of any kind is associated with faster growth. Yet during the period of our study, there are very few such (stable) adverse reversals. These are: Gambia, Lebanon, Sierra Leone, Zimbabwe, and Somalia (a brief description of political developments and the evolution of the democracy indicators for these countries is given in the *Democratization Dataset Appendix A*). One could also add in the list Pakistan and Fiji.

In spite of the small sample and data unavailability, we examined in detail the pattern of growth in these countries. Statistical tests of mean and volatility equality in growth rates not only do not contradict, but actually strengthen our previous results and further support development theories. A simple *t*-test of mean equality in growth rates during the democratic and the autocratic years suggests that during the democratic period these countries grew by on average 1.09%, while during autocracy experienced negative growth rates of -2.3% on average. Despite the low number of observations, the almost 3.5% percent difference is not only economically sizable, but also statistically significant at the 95% confidence level. Furthermore, output volatility in the democratic period was almost half that of autocratic years (4.65% and 9.61% respectively). The conclusion is that countries that had stable representative institutions and switched to non-democratic polities experienced not only slower.

but also significantly more volatile growth. This result, which adds to previous evidence of Minier (1998), re-enforces our previous pro-democracy estimates and offers reassurance that our estimates do not pick a change-to-new regime effect.

1.5.7 Additional Robustness Checks

We performed several other permutations of the basic model to check for the stability of the democratization coefficient, which always appears in the range of 0.5 to 1.2 percent. We moved the democratization event window. We conditioned on other typically employed growth regressors, such as inflation, the price level of investment, mortality and fertility rates. We excluded all democratization episodes that occurred after 1990 or 1995, since one could reasonably argue that no adequate post-democratization observations are available. We also estimated Huber estimates that assign lower weights to observations with high residuals (outliers). No significant departures from the results reported so far were present.

In the previous version of this paper we estimated a dynamic growth model only for the autocratic years, obtained forecasted growth rates for each of the subsequent democratic years and then compared the realized growth rates with the projected values. This approach allows for different growth dynamics during the autocratic period. Not only did democratization appear to have a similar positive impact of around 1 percent, but its dynamic evolution was similar to the results given in Table 1.5 and Figure 1.3.

In Tables 1.11 and 1.12 we provide additional regression results, ignoring growth persistence. OLS, which primarily utilizes the between variation give the smaller coefficient estimate, followed by the "random" effects estimates, which utilize both the between and within variation. The striking feature is again the increase in the estimated coefficient for democratization resulting from fixed-effects regressions. The within estimators suggest a 1 percent impact of $Democ_{i,t}$ on growth. We also allow for dynamic effects and report growth regressions with the Arellano and Bond difference and the Arellano-Bover (1995) and the Blundel-Bond (1998) system GMM estimators. These estimation procedures allow for panel heterogeneity and the inclusion of endogenous variables. In spite of the documented draw-

backs of these methods, we report in Tables 1.11 and 1.12 estimates of this and the more efficient, newly developed system GMM technique (Bond, Hoeffler and Temple, 2001). We report estimates of both the one and the more efficient two-step GMM procedure (the latter with corrected standard errors, following Windmeijer (2004)). Although the point estimates are not stable, the effect of democratization on growth was found to be positive and significant in most specifications. The GMM estimates imply a disproportionately large positive annual growth effect of democratization of more than 2 percent. We are, however, skeptical on the interpretation, since the coefficient estimates of the GMM methods are not very stable. Although these methods yield imprecise estimates, the coefficient on democratization is always at a positive range.

1.6 Summary and Conclusion

The relationship between the type of polity and economic performance is probably the oldest and one of the most controversial issues in the social sciences. Although there has been a burgeoning theoretical and empirical research on the relation between political liberalism and economic performance, both the economics and the political science literature lack a comprehensive analysis of the effects of democratization on growth. After identifying recent episodes of permanent democratic transitions, we analyze the dynamic evolution of growth before and after democratization. Our methodology addresses issues arising from time-invariant omitted variables, unobserved country heterogeneity, reverse causality and measurement error, and primarily explores the within country growth variation. Our before-after event study clearly challenges the recently documented insignificant correlation between political freedom and economic growth.

To quantify the effect of a successful democratization, we focus on countries that liberalized their polity during the so-called Third Wave of Democratization. We augment a standard growth regression with an indicator variable for the democratic years. Using annual frequency data and employing various dynamic panel data techniques, we first show that democratization leads to an almost one percent increase in annual real per capita GDP

growth. Second, our analysis reveals that during the transition period growth drops substantially; it stabilizes, however, at a higher rate after the transition. Third, the post-war democratization experience suggests that countries with high-levels of human capital manage to gain the most from the new democratic regime. These results withstand a wide range of sensitivity checks including: alternative ways of identifying democratized countries, the exact timing of the episodes, various control sets, different panel techniques, correcting for the endogeneity of democratization with Heckman-type treatment effect methodologies, allowing for pre-existing trends or common business cycle effects, and more. The pro-democracy evidence is also strengthened by the descriptive analysis of countries that switched from representative institutions to autocracy, which on average experienced slower growth after the adverse regime change.

Our findings have important implications. From a theoretical standpoint, they offer direct support to "development theories" of democratic government that stress the beneficial aspects of representative institutions (i.e. through lower conflict resolution costs, less political instability, and the growth-enhancing aspects of redistribution). From a policy perspective, our results suggest that even moderate reforms can have sizable positive effects. They also suggest an important role for the international community: it should help mitigate the transition costs, which can be substantially high.

The results, however, do not imply that democracy is a panacea. Our methodology and research objective was to quantify an average within country growth effect of democratization. Clearly country-specific deviations from the average exist. Influential scholars (Huntington, 1993) have argued, for example, that democratic norms might not be suitable for all countries. The Heckman correction estimates are in line with this interpretation, since the effect of democratization is high when the conditions for its emergence and stability are favorable (and thus the predicted first-stage probability of a country being democratic is high). Our results clearly point out that the effect of political liberalization is the highest, when reforming countries have high-levels of human capital. Moreover, we want to stress that our analysis examined countries that not only moved to representative government, but also managed to consolidate democratic institutions. It should be clear that short-period

democratic intervals and political instability can decelerate growth. In addition we didn't distinguish between different types of autocracy (e.g. left or right wing dictatorships) and democracy (presidential or parliamentary).³⁶

The identification of democratization episodes in the period 1960 – 2000 and our event-study approach offer a basis for further research in the inter-relation between political freedom and economic development. First, political economy theories model how income inequality influences the democratization process. They also foretell a decline in the level of inequality after the consolidation of representative institutions. It is thus worthwhile to check for their validity and examine how democratization affects the distribution of income within democratized countries. Second, future work is needed to assess the impact of democratization on public policies and the accumulation of physical and human capital. Our descriptive analysis hints that no major differences are evident. Yet clearly more work is needed. Third, together with the fast-growing work on the prerequisites of political institutions, the results offer new basis for further theoretical work clarifying the channels of interrelation between income inequality, wealth, democratization and economic growth. The positive effect, for example, of democratization might be far greater if it is associated with other policy reforms, such as trade or financial openness.³⁷

³⁶In a recent study Persson (2005) shows the income gains following a democratization are high, when the transition leads to a proportional representation (versus a majoritarian) or a parliamentary (versus presidential) system. In the very latest revision of his work, Persson also documents that short-lived democratic transition have a negative impact.

³⁷In a parallel, independent and complementary work, Giavazzi and Tabellini (2004) document significant interactions between economic and political liberalization. Using a methodology similar to ours they show that countries experience substantial growth gains when they first liberalize the economy and then the polity.

Chapter 2

What Drives Democratization?

2.1 Introduction

As shown in Chapter 1 democratic institutions have a significantly positive "within" effect on growth. In addition numerous other studies reveal that the type of political institutions, representative or non-democratic, crucially influence economic development and public policies. There is quite surprisingly very little empirical evidence on the factors that shape the political equilibrium itself. In this Chapter we proceed a step further and ask what determines democratic transitions. This is key in understanding the deep determinants of other institutional structures (like property rights, legal quality, corruption, bureaucratic quality), which correlate highly with democracy (Glaeser *et al.*, 2004). Specifically we identify which economic and social factors are behind the recent unprecedented wave of "*global democratic revolution*" that Samuel Huntington (1993) has coined as the "*Third Wave of Democratization*" (henceforth the 3rd Wave).¹ We analyze the countries that had non-democratic governments at the beginning of the 3rd Wave (1960) and explore *why* some of them moved to representative institutions, while others failed to do so. For example, Spain, Argentina, and South Africa abandoned autocratic rule and consolidated democratic institutions. Other

¹According to Huntington (1993) "*.. the first wave began in America in the early nineteenth century and culminated at the end of World War I with about thirty countries having democratic regimes. Mussolini's march in Rome in 1922 began a reverse wave, and in 1942 there were only twelve democracies left in the world. The Allied Victory in World War II and decolonization started a second movement towards democracy, which, however, pattered by the early 1960's when about thirty-six countries had democratic regimes.... The Third wave began....on Thursday, April 25, 1974 in Lisbon, Portugal.*"

countries, such as those in the Middle East and Africa, however, are still ruled by oppressive regimes. In addition, we identify the factors that influence *when* democratic transitions are more likely to occur. Our contribution is, therefore, to identify and quantify *leading indicators for both democratic transitions and permanent democratizations*.

Where and *when* representative institutions are more likely to emerge and consolidate? This question has so far been largely ignored by economists, which is surprising for many reasons. First, the theoretical work on the political economy of inequality (see Persson and Tabellini (2000) for a thorough review) suggests that the trade-off between efficiency and redistribution is fundamentally influenced by political organization. Second, along with the evidence given in Chapter 1 ample additional studies (e.g. Tavares and Wacziarg (2001); Mulligan, Gil, and Sala-i-Martin (2004); Rodrik (1999); Quinn and Wooley (2001); Persson (2004)) indicate that public policies and growth patterns differ substantially between democratic and non-democratic countries. Third, the strong correlation of democracy with high quality legal institutions, low instability and corruption implies that understanding what drives representative norms may also shed light on which factors shape other types of institutions. Fourth, most theories on the prerequisites for democratization advocate economic conditions as the prevailing factor. Recent theoretical work on the political economy of development (e.g. Acemoglu and Robinson, 2000, 2001, 2005) models how economic factors, such as income level, output growth and natural resource abundance, affect the type of political organization, democracy or autocracy, and consequently economic development. Fifth, from a policy perspective it is key not only to provide recommendations that institution χ or y can be growth enhancing, but also to understand how such an institutional arrangement can be established.

This Chapter provides large-sample evidence that democratization is more likely to occur in affluent and educated societies, thus offering support for the traditional "*modernization hypothesis*" (Aristotle; Lipset, 1959, 1994). It also documents that natural resource abundance, religious fractionalization and reduced exposure to international trade impede the likelihood of democratization. We also identify *in which periods* democratization is more likely to emerge and stabilize. The analysis suggests further that a recession (a currency or

a banking crisis) as well as the ending of an armed conflict strongly increase the likelihood of a democratic transition. In line with the belief of many liberal economists (Friedman, 1962; Hayek, 1960) the results indicate that political modernization is more likely after (or jointly) with economic (trade) reforms. We also clarify some theoretical issues on the inter-relation between income inequality and democratization. Finally, we exploit the "*quasi-natural*" experiment of independence and liberalization that occurred after the Iron Curtain fall to test the main democratization theories. Specifically, we examine those countries that emerged after the collapse of the U.S.S.R., Yugoslavia and Czechoslovakia as well as other formerly centrally planned economies to validate our findings.

This Chapter's work is mostly related to the literature that examines the determinants of political freedom and institutional quality. Barro (1999) reverses the democracy-development nexus and regresses democracy measures on the initial income level and along with various other factors. His panel regressions reveal that wealth and human capital are the key determinants of the long-term level of civil liberties and political rights. Glaeser, La Porta, Lopez-de-Silanes, and Shleifer (2004) show that these results apply more generally and that human capital is thus the key determinant of institutional quality broadly defined. The political science studies (Bollen and Jackman (1985, 1995); Muller (1995); Epstein, Bates, Goldstone, Kristensen, and O' Halloran (2004)) have primarily examined the determinants of long-run changes (not levels as in Barro, 1999) in democracy, emphasizing besides wealth the role of income inequality. These studies have empirically established a strong high income-democracy link. Yet, even this empirical regularity has been recently challenged by Acemoglu, Johnson, Robinson, and Yared (2004, 2005) and Przeworski, Alvarez, Cheibub, and Limongi (2000), who, using different methodologies, document that short-run increases in income do *not* increase the likelihood of democratic transitions.

This Chapter has a different objective and thus departs significantly from these studies. Instead of focusing on either the long-run level or change in democracy, we first identify the nature and exact timing of a permanent democratic change. We then employ inherently probabilistic models using annual frequency data to analyze the impact of both short-term

economic conditions as well as long-term socioeconomic fundamentals on democratization.² We identify the systematic driving forces behind permanent democratizations, distinguishing between socioeconomic factors that influence the *emergence* of democracy and factors favoring its *stabilization*. Thus, we look solely at those countries that were non-democratic before the 3rd Wave began. This allows us to isolate and quantify as precisely as possible the effect of various theoretically proposed measures on the likelihood of democratization. We believe that this approach, which stands in contrast to previous studies, has many advantages:

First, both traditional and recent political economy theories on the determinants of democracy focus on countries with non-representative institutions. Therefore, it is theoretically required to study autocratic countries for such an empirical investigation. Second, pooling all countries together (i.e. those that are always democratic, always autocratic, and those that transition) contaminates estimates by reverse causation. For example, it would not be clear if income level or human capital causes or is the consequence of democratization. This concern is magnified, since the distribution of political regimes at the beginning of the sample was far from random. For example the richest countries in 1960 were all mature democracies.³ Third, from a policy perspective it is most important to understand the mechanisms by which representative norms emerge and stabilize in non-democratic societies. We thus limit our analysis to a sample of over a hundred countries that had an autocratic regime in the late sixties and early seventies. However, we expand the analysis by studying in a systematic way all theories on the determinants of democratization and we do not restrict our attention to a specific hypothesis.

This Chapter is structured as follows: In section 2.2 we discuss the main theories on democracy prerequisites and outline the reduced form hypotheses. In section 2.3 we describe the data and our methodology for identifying the timing of democratic transitions. We then provide some preliminary evidence. In section 2.4 we first present our econometric specification. We then provide estimates on the effect of various economic and social fac-

²For an eloquent reasoning on the probabilistic nature of *all* democratization theories, see the classical analysis of Seymour Martin Lipset (1994) and Samuel Huntington (1993).

³A similar criticism of sample-selection is made by Boix and Stokes (2003). They resolve it using data covering the entire nineteenth and twentieth centuries.

tors in the likelihood of democratic consolidation (conditional that in the beginning of the sample the country was non-democratic). In Section 2.5 we focus on democratic transitions (rather than on democratic consolidation), identifying the factors that influence the timing of democracy's emergence. In Section 2.6 we explore the "*quasi-natural experiment*" of the fall of communism and test our main hypotheses on the sample of new independent states and other former centrally planned countries. This helps us to further alleviate concerns of reverse causation (i.e. a high income level being driven by democracy rather than the other way around). In Section 2.7 we perform several robustness checks. These include alternative methods of identifying and timing permanent democratic transitions, additional controls for the social and economic environment and alternative econometric techniques. In section 2.8 we discuss in detail why and to what extent our results differ from recent and parallel studies. In Section 2.9 we summarize this Chapter's main results.

2.2 Theory: Background and Main Hypotheses

Here, we outline the four main testable hypotheses on the driving forces of democratization. 1) The "*modernization*" hypothesis, recently advocated by Seymour Martin Lipset (1959, 1994) reasons that richer and more industrialized societies are more likely to democratize. 2) "*Social structure*" theories stress the role of culture, religion and the ethno-linguistic composition of society in shaping the political equilibrium. 3) The "*liberal hypothesis*" asserts that economic and political freedom are mutually re-enforcing. 4) "*Endowment*" theories (Acemoglu *et al.*, 2004, 2005) advocate the importance of geography, history and early institutions in driving *both* economic and political development.

2.2.1 "Modernization" Theory

The "modernization" hypothesis asserts that a high income is the single most important prerequisite for both the transition and consolidation of democratic institutions. Przeworski *et al.* (2000) label the first effect as the "*endogenous*" and the later as the "*exogenous theory*". Wealth influences the likelihood of democratization through many channels. First,

industrialized and bourgeoisie societies are typically complex and difficult to govern under a centrally planned administrative system. The ruling class has thus many economic benefits to realize under a liberal political organization and thus will not oppose democratic reforms. The ruling elite can afford some wealth redistribution, which usually takes place after democratization. Second, rich countries can more easily cope with the costly transition from an authoritarian to a democratic regime.⁴ Third, a high level of education may lead the ruling elite to initiate, not oppose, democratization. Lipset (1959) referred to opinion polls from numerous countries on citizen's attitude towards democratic institutions that unambiguously concluded "*...the single most important factor differentiating those giving pro-democracy responses to others has been education.*" Fourth evidence suggest that a high educational level decrease the costs of political participation. Glaeser, Shleifer and Ponzetto (2005) model the trade-off between the weak incentives that a democratic polity offers and its wider support from the citizens. Since education reduces the costs of political participation, it initiates and consolidates democracy.

- *Reduced Form Hypothesis* [H_1]: Other things being equal, democratization is more likely to occur and stabilize in relatively rich and educated societies.

We find considerable support for the "modernization" theory. When we study the likelihood of being a democracy (sum of the probability to transit and the probability to consolidate democratic institutions), given the initial non-democratic condition, the empirical evidence is clear-cut: higher income and human capital levels lead to democratization.

2.2.2 Social Structure Theories: Religion & Fractionalization

Religion

Building on the Weberian idea of economic sociology, many influential scholars (Huntington, 1993; Landes, 1998) have recently argued that religious norms are among the key driving

⁴Lipset (1959) writes "*...there is enough wealth so that it actually does not make a difference if some redistribution takes place.*"

forces for both political and economic development. This approach suggests that democratization requires the simultaneous occurrence of economic and social factors. According to Weber (1930) and Huntington (1993), there are two main channels through which religion influences political and economic development.⁵

First, close links between clergy and state impede both the emergence and the consolidation of democratic norms. This argument fits nicely into a political economy framework: when the clergy enjoys substantial benefits from the State, it is part of the "ruling class". It therefore has a clear incentive to oppose democratization. Huntington argues that traditionally strong ties between religion and State were present in Catholic, Eastern-Orthodox, Muslim and Confucian countries, while in Protestant countries a clear separation of powers between the church and State was constitutionally secured from the beginning. Although the Catholic Church decided to abandon its traditional prejudices and "modernize", the Muslim clergy decided to re-emphasize its focus on tradition and dogma. Huntington, for example, attributes the democratization in Latin America in the early eighties to a spiritual change of the Catholic Church.

Second, democratization is blocked by religions that have a strong hierarchical structure. For example, some dogmas and ideologies are characterized by an unchallenged pyramidal hierarchy. This stands conceptually far from democratic foundations of equality and individuality and can have a contagion effect on political beliefs and attitudes.

A third channel has been recently put forward by Wright (1992), who offers an alternative explanation to Huntington's "*clash of civilization*" argument explaining why democracy has not been spread to the Muslim world. He presents compelling evidence that Western powers did not support pro-democratic Muslim political parties and movements due to prejudice and misunderstanding of their cultural background. The consolidation of democracy in many Islamic regions was impeded, therefore, not by the nature or ideology of the religion per se, but by non-supportive Western politics.

⁵Weber (1930) argued that the Protestant ethos spurred individualism, innovation, and modernization, while other religions, (Islam, Catholicism, and Confucianism) focus on more traditional values, such as family, local community and place of worship. The latter favor a more authoritarian, centrally-oriented political organization.

- *Reduced Form Hypothesis* [H_2^R]: Other things being equal, democratization is less likely to occur and stabilize in countries where close links between clergy and state exist and in societies with strong hierarchical structure. Such ties appear to predominate in Muslim and Confucian societies.

Our empirical evidence agrees with previous studies, which showed a negative association between the democracy level and the proportion of Muslims and Confucians in the total population. However, this negative association weakens significantly (and even becomes insignificant), when we control for natural resource (oil in particular) abundance.

Fragmentation

A society's ethnic and religious composition can also influence the dynamics of democratization. The expected effect, however, is not straightforward. Aristotle, for example, argued that democracy is the optimal political regime for a society with many ethnic groups and social classes, since it is the polity that can best safeguard their liberties.⁶ At the same time, ethno-linguistic and religious diversity can damage the economy and block democratization if it is associated with a polarization of political life (Dahl, 2000). Easterly and Levine (1997) show that ethno-linguistic fragmentation is the major cause behind the devastating economic performance of most (non-democratic) African countries. Ethnic and religious tensions have caused never-ending civil wars, enhanced corruption and destroyed any progress towards democratization.

Aghion, Alesina and Trebbi (2004) formally model the trade-off between delegation of power and "*policy insulation*" (defined as the ex post control of politicians). Their model also yields an ambiguous effect of polarization on insulation.

- *Reduced Form Hypothesis* [H_2^F]: Other things being equal, ethno-linguistic and religious

⁶Huntington (1984) makes a similar point: "...pluralism enhances the probability of developing stable democracy in modern society...A second set of often discussed preconditions of democracy involves the extent to which there is a widely differentiated and articulated social class, regional groups, occupational groups, and ethnic and religious groups."

diversity do not have an unambiguous effect on democratization.

Our empirical results suggest that fractionalization is negatively associated with the likelihood of democratization and thus the negative channel tends to dominate the positive. We also find that religious fragmentation is much more harmful for democratic stabilization than ethnic fragmentation.

2.2.3 The Liberal Hypothesis

Friedman (1962) argued that "*economic freedom is also an indispensable means toward the achievement of political freedom*". Other liberal economists (Hayek, 1960) have similarly viewed economic and political freedom as two mutually self-enforcing powers. Societies that are open to trade are inevitably influenced by foreign ideas and beliefs. Their spirit of representative government and political freedom will naturally be strengthened. David Landes summarizes: "*...if the gains from trade in commodities are substantial, they are small compared to trade in ideas*".

Since no data are available for the degree of economic liberties dating back to the sixties (e.g. level of competition, state intervention in economic affairs, etc.), we use trade openness as a proxy for *laissez-faire*. Trade openness can also proxy for the structure of economic activity and the middle class' role.⁷

- *Reduced Form Hypothesis* [H_3]: Other things being equal, democracy is more likely to occur and consolidate in countries that are open to international trade.

Our empirical evidence provides strong support for the liberal hypothesis. Not only are democratic institutions more likely to consolidate in countries open to international trade, but economic openness exerts a positive impact on the likelihood of democratic transition ("*endogenous*" democratization).

⁷There are numerous historical examples of a strong trade openness-democracy link: for example Athens and Rome in Ancient times, or Great Britain in the late eighteenth century. De Long and Shleifer (1993) provide direct evidence that trade expansion and the consequent emergence of the bourgeoisie have crucially influenced the first wave of democratization in Western Europe.

2.2.4 "Endowment" theories

Endowment theories emphasize the role of geography, the disease environment and "early institutions" in explaining long-run economic development. In a highly influential paper Acemoglu, Johnson, and Robinson (2001) argue and present compelling evidence that the disease environment crucially influenced the type of colonization, which in turn shaped "early institutions" established by European colonizers. Furthermore, due to their persistence, institutions created by European colonizers endured after independence. In parallel work Acemoglu, Johnson, Robinson and Yared (2004, 2005) apply endowment theories in the context of political development.⁸ Their argument is that differences in geography shaped initial institutions and these "early" institutions have resulted in long-lasting repercussions for *both* economic and political development.

- *Reduced Form Hypothesis* [H_4]: Other things being equal, the same "deep endowment" factors that influence economic development (type of colonization, history, geography) also determine the likelihood of democratization and the probability of the consolidation of democracy.

We find supportive evidence to the insight of Acemoglu *et al.* in our (different) sample and verify their main results on the strong-impact of history and endowments on political development. Yet, we can not rule out the positive impact of income and human capital on democratization.

2.3 Democratization Events, Data and Preliminary Evidence

Table 2.1 gives the sample countries. We distinguish between two groups of countries: those that both experienced a democratic transition and succeeded in consolidating democratic rule

⁸Levine, Demirguc-Kunt and Beck (2003) make an analogous application of "endowment theories" to financial development.

("Democratization Countries") and those that remained autocratic throughout the sample period, which serve as our control group ("Always Authoritarian"). Since the stability of a political system, representative or not, is as vital as its liberalism, we focus on incidents of political transition that succeeded in consolidating representative institutions. This approach is in contrast to all previous studies either on levels or changes, which not only pool together all countries (democratic, autocratic and democratization countries), but also consider short-lived, unsuccessful democratic transitions. Yet, all theories of political organization implicitly focus on the determinants and economic aftermath of stabilized regimes. A complete description of our methodology in dating successful democratic transition is provided in the *Democratization Data-Set Appendix A*. Panel *A* of Table 2.1 lists the countries we consider for our benchmark estimates, while Panel *B* lists the former communist states that we treat separately in Section 2.6. In Panel *C*, for completeness, we report the continuously democratic countries that we exclude from the benchmark estimates.

2.3.1 Data and Descriptive Analysis

The modernization hypothesis asserts that democratization is primarily driven by wealth. In Table 2.1 Panel *A*, countries are classified into five categories depending on their income level in 1975 (when the first democratization event occurred in our sample). There is a clear positive association between the *initial* income level and *future* democratization. Almost all of the relatively richest countries in 1975 have managed to consolidate democratic institutions. Eight of the ten countries with GDP per capita greater than 6,000 US dollars have managed to reach an almost perfect democracy score by 2000. In contrast, only four of the twenty-one countries with per capita GDP less than a thousand USD managed to democratize and reach an almost perfect level of representative institutions.⁹

⁹The "modernization hypothesis" is further strengthened by the fact that in 1975 the 18 richest countries (those with a GDP p.c. greater than 12,000 US dollars) were already run by democratic governments (although this correlation does not necessarily imply causality). These countries are (GDP per capita in 1975 in parenthesis): Italy (12,523); Japan (13,164); United Kingdom (13,165); Austria (13,283); Norway (13,914); Finland (13,925); France (13,988); Belgium (14,055); Iceland (14,253); Netherlands (14,783); New Zealand (15,185); Australia (15,638); Luxembourg (16,263); Sweden (16,454); Denmark (16,606); Canada (16,636); United States (18,041.28); Switzerland (20,403).

Human capital appears to be also a crucial factor influencing the prospects of democratization. In Panel *B* of Table 2.2 we similarly classify countries into five categories depending on average years of schooling in the period 1970 – 1975. Schooling statistics are retrieved from Barro and Lee (2001) and, although have less coverage than GDP, they enable us to investigate some countries where income data is non existent (like Afghanistan and Myanmar). Panel *B* is a mirror picture of the GDP classification. For example, in the top schooling category only Singapore has remained autocratic, while ten out of twelve countries in this category (approximately 83%) have moved to an (almost) perfect protection level of political rights (*Full Democratization*).

The "modernization", "social structure", "liberal" and "endowment" theories emphasize different key driving forces for democratization. In Table 2.3 we quantify these differences at the beginning of the 3rd wave (all values correspond to 1975). Means and standard errors for the group of countries that have remained always autocratic (column (1)) and the group of countries that democratized (column (2)) are reported in parenthesis. Furthermore, we split the democratization group into countries that implemented significant reforms ("*Full Democratization*" - column (3)) and countries that democratized before the nineties ("*Early Democratization*" - column (4)).

[H_1]: Not only did countries that eventually democratize have significantly higher income and educational levels in 1975, but differences are amplified when we compare "*Always Authoritarian*" with "*Full Democratization*" or "*Early Democratization*" countries. This hints at the fact that income level and human capital not only affect the likelihood of democratization, but also how *fast* and *deep* the reforms will be.

[H_2]: Pronounced differences are also present in religion and fragmentation. Data on religion shares and on fractionalization are retrieved from Alesina, Devleeschauwer, Easterly, Kurlat, and Wacziarg (2003). Countries with high religious fragmentation suffer from lower quality of democratic norms. The probability that two randomly selected individuals do *not* belong to the same ethnicity was 55.6 percent for the "*Always Authoritarian*" group, while only 45.7% for countries with a democratization event. The differences are even greater

when we compare countries that either democratized before the nineties or succeeded in "fully" liberalizing the polity. Panel *C* of Table 2.2 provides a visual representation. For example only eleven out of twenty-six (42%) countries where religious heterogeneity exceeds 0.65 abandoned permanently autocratic government. Moreover, of those eleven countries, only five have reached an almost perfect level in civil liberties and political rights protection.

[H_3]: Turning to the liberal hypothesis the descriptive evidence reveals mixed conclusions. As suggested by the 0–1 trade openness index, which measures the liberalism of trade policy (taken from Welch and Wacziarg (2003), who extend and upgrade the original Sachs and Warner (1995) index), countries that democratized had a more liberal trade regime. However, the trade share (sum of exports plus imports relative to GDP), if anything was higher in the "*Always Autocratic*" relatively to the "*Democratization*" group.

[H_4]: The preliminary analysis also favors "endowment" theories. Years since independence (normalized to 0 – 1) is 0.411 for the group of democratization, while only 0.157 for "*Always Autocratic*" countries. So older, more mature countries appear to have a higher likelihood to democratize. Yet, the mean differences on settler mortality are not very supportive to Acemoglu *et al.* (2004) idea. Colonizers faced, on average, higher (not lower) mortality rates in those countries that eventually democratized compared to those that did not.

2.4 Model Specification and Results on the Likelihood of Democratic Consolidation

2.4.1 Empirical Specification

Overall, although we have used initial values in the descriptive analysis, these preliminary do not establish causality. To estimate conditional effects we rely on a binary response panel model of the form, considered in Chapter 1 in the first-stage treatment model. We rewrite

equation (1.9) for convenience as:

$$Democ_{i,t} = \begin{cases} 1 & \text{if } G(a + x_{i,t}\beta_1 + z_i\beta_2) + \varepsilon_{i,t} > 0 \\ 0 & \text{otherwise} \end{cases} \quad (2.1)$$

where x and z are vectors of time-varying and time-invariant covariates respectively that predict democratization. The response democratization variable equals one in countries (i) that democratized in the year (t) and all subsequent years following a permanent democratic transition. This approach enables us to quantify the effect of the various regressors on the likelihood of democratic consolidation, conditional that in the beginning of the sample (in 1960) the sample countries were non-democratically governed.¹⁰ For our benchmark estimates we assume that $G(\cdot)$ is the normal c.d.f.; estimation of the pooled probit model is performed with maximum likelihood. Since probit estimates crucially rely on error normality, we will also present logit estimates, which assume logistically distributed residuals. To show that our results are not driven by the exact methodology, we will present estimates with various other techniques, like ordered probit and logit, a linear probability model and a nonlinear instrumental variables methodology.

Given the non-linear structure of the probit model, coefficients cannot be directly interpreted. Thus in all tables we report marginal effects, estimated as $g(\cdot)\beta$, where g is the standard normal density evaluated at the mean of the independent variables $\bar{x}_{i,t}$ and \bar{z}_i . When using binary response models with panel data it is important to compute variance matrix estimators that are robust to within-group correlation. We thus report below the marginal effects p -values for the null hypothesis that $\hat{\beta}_k = 0$ based on standard errors adjusted for heteroskedasticity and autocorrelation clustering at the country level, allowing observations to be dependent within clusters.¹¹

¹⁰In the next Section, we repeat our estimates when the response variable equals one only in the transition year. This enables us to isolate the effect of x 's and z 's on the likelihood of democratic transitions.

¹¹For more details on the need to allow for clustering see Wooldridge (2002). We also repeated all estimates without correcting for heteroskedasticity at all and without correcting for clustering. In all estimated models standard errors were significantly lower, yielding therefore more significant estimates. To control for positive residual autocorrelation we also estimated models with five and seven lags of the independent variables and then tested the joint significance of the estimated coefficients. The economic significance of the results presented is virtually unchanged.

To assess the goodness of fit of the empirical models in every table we report two measures. First, the observed and the predicted probability of a permanent democratization at the mean of the regressors. Second, Mc Fadden pseudo- R^2 , which is calculated as $1 - \mathcal{L}_{ur}/\mathcal{L}_o$, where \mathcal{L}_{ur} is the log-likelihood function for the estimated model and \mathcal{L}_o is the log-likelihood function in the model with only an intercept.

2.4.2 Results

Income and Education

Table 2.4 presents our benchmark probit estimates testing the "modernization" theory. In column (1) we estimate a simple pooled probit model using all possible countries and all available data. The democratization (dependent) variable equals one in the year of the democratic transition and all subsequent years in countries that permanently abandoned autocratic government. It equals zero during the autocratic years of the "*Democratization countries*" and in all years of the "*Always Authoritarian*" nations. In column (2) $Democ_{i,t}$ equals one in the transition and all subsequent years for countries that experienced a "*Full Democratization*". In column (3) we also include in the group of democratization countries the five "*borderline*" countries. In columns (4)-(10) and throughout the main analysis we exclude from the estimation new independent states that emerged from Czechoslovakia, U.S.S.R. and Yugoslavia for two reasons: First, insufficient data is available for these countries before independence; second, this independence wave offers a useful "*quasi-natural experiment*" to test theories of democratization. We investigate in detail in Section 2.7.1 the reasons why some countries that emerged from the fall of communism in Eastern Europe and Central Asia became democratic, while others are still ruled despotically.

In all specifications, income exerts a significantly positive effect on the likelihood of being a democracy. Columns (1)-(4), for example, report the estimated marginal effect when only income level is included as a predictor of the democracy probability. In columns (5) and (6), we use secondary schooling and literacy rates as human capital proxies. The Lipset hypothesis as well as the recent evidence given by Glaeser *et al.* (2004) is validated, since

education significantly increases the likelihood of democratization.¹²

A drawback of the previous estimates is that GDP and schooling are highly persistent and exhibit non-stationary behavior. According to the results shown in the first four columns, if GDP continues to increase, then the probability of democratization will approach one (although due to the diminishing marginal effects imbedded in the non-linear estimation, it will never reach it). Although a strong proponent of the "modernization" theory could reasonably argue that this might indeed be the case, we need to control for potential "spurious regression". Thus in columns (6)-(8), (as well as in many of the subsequent specifications) we add a linear time trend (or alternatively we add time fixed effects). The estimated marginal effect on income and human capital decays; yet the coefficients retain both their sign and statistical significance.

The industrial revolution and the sub-sequent urbanization have been regarded as major driving forces behind European democratization in the eighteenth and nineteenth centuries. To assess its impact on the 3rd Wave, we include in the set of explanatory variables the urbanization rate. The estimated marginal effect (in column (7)), although positive, is small in magnitude and statistically insignificant, suggesting that urbanization has not played such a key role. In recent years, the historically strong urbanization-democracy nexus has softened, since many non-developed non-democratic countries in Africa and the Middle East have experienced a huge internal wave of city migration.¹³ In column (8) we add in the set of explanatory variables the natural logarithm of radios per 1,000 habitants to proxy for the level of industrialization (as suggested by Lipset, 1959).¹⁴ In spite of a high correlation with radios per capita ($\rho = 0.60$), the marginal effect of GDP has retained its significance.

¹²In the previous version of the paper, we employed health variables as alternative human capital proxies. The results are quantitatively alike and available upon request. The correlation between schooling and the health variables (fertility, life expectancy at birth, and infant mortality), is above $|0.70|$. We present some estimates with fertility rates in Table 2.10.

¹³For example, the non-democratic Arabic Kingdoms of the Persian Gulf have urbanization rates above 90%; Bahrain, for example, which gets a minimum score for political rights protection (according to both the Polity and the FH measures), had an urbanization rate of 92.3% in 2000. Likewise urbanization rates are very high in Saharan African countries. Libya, for example, had an urbanization rate of 87.8%.

¹⁴Estimating models with only urbanization and radios plus a time-trend enables us to study more countries. The marginal effects resulting from these estimations are higher than the ones reported here, strengthening H_1 .

In column (9) we use an alternative, non-explosive income indicator, the ratio of domestic GDP per capita relative to the United States (taken from the Penn World Tables). The positive and highly significant marginal effect further strengthens H_1 by showing that democratization is more likely to emerge and stabilize in *relatively* richer societies.

The estimates raise a reverse causality concern. For example "*development*" theories of democracy (see Section 1.2) argue that the presence of democratic institutions leads to a higher level of economic development [see Figure 2.1]. This problem, however, is alleviated by our methodological approach, since our sample consists of countries that were initially (in the sixties and early seventies) non-democratic and excludes old mature democracies (e.g. the U.S., Canada, and most Western countries). Since, however, reverse causality might still blight our results, we estimated all specifications with the initial values of the main independent variables. In column (10) we use the 1975 levels of GDP, schooling, urbanization and industrialization.¹⁵ H_1 still holds: richer societies (in 1975) managed to abandon autocratic ruling and establish representative institutions. In spite of the high correlation between income and education, schooling also enters with a positive and significant coefficient stressing the education mechanism emphasized by the "modernization theory" (e.g. Glaeser, Ponzetto and Shleifer, 2005).

Social Structure: Religion, "natural resource curse", and fractionalization

To quantify the effect of religion on democratization, we add in the first column of Table 2.5 the share of Muslims and Confucian-Buddhists in the total population. As previous studies have shown, democratization is less likely to emerge and stabilize in Muslim and Confucian countries. The estimated marginal effect is, however, not very large. It implies that a 20 percentage point increase in the share of the population following Islam in a non-democratically ruled nation (approximately from Cameroon where the share is 22% to the Ivory Coast which has a share of 39%) is associated with a 3% decline in the probability

¹⁵Using the 1960 or the 1970 values yields almost identical estimates. We report estimates based on 1975 values, since the first democratization episode occurred in this year and because our country samples increases.

that this country will permanently switch to a democratic regime.¹⁶ We also experiment with the share of Catholics in the population (and also with a Catholic indicator variable) since theoretically Catholicism was a hierarchical dogma not very supportive to liberal ideas (see Section 2.2.2). Yet the estimated coefficient was indistinguishable from zero in both cases. This formally illustrates Huntington's point that during the Third Wave the role of the Vatican was (if not supportive) clearly not-blocking the democratic movements.

Many argue, however, that the real impediment to democratization in the Middle East or Africa is not religion, but the oil-rich soil.¹⁷ Natural resources enable the ruling class to finance an expensive policy-state and buy necessary (foreign and/or domestic) support. Acemoglu, Robinson and Verdier (2003) build a model that formalizes this intuition and provides an illustrative description of Mobutu's and Trujillo's "kleptocratic" practices in the Congo and Dominican Republic respectively.¹⁸ In column (2) and in many subsequent Tables, we include in the set of explanatory variables an indicator variable for oil-producing countries.¹⁹ The oil-dummy marginal effect suggests that democratization is less likely to emerge and stabilize in a country with an oil-rich soil by approximately 5%, relative to a similar country that does not suffer from the "*natural resource curse*" (at approximately the mean value of the other controls). Notice that the negative effect of the Muslim share sharply decreases and in many subsequent specifications becomes insignificant. This suggests that an oil-rich soil rather than religion hinders democratization (Ross, 1999, 2001).

In columns (3) to (6), we investigate the effect of religious and ethnic fragmentation. Other things being equal, the probability of a country switching to democracy sharply decreases in the level of religious and ethnic heterogeneity. Interestingly, religious rather than

¹⁶Although Ivory Coast and Cameroon have similar per capita GDP in 2000, this is just an approximation, since the marginal effects are calculated at the mean of the other covariates. In a previous versions we used dummy variables for whether a country's dominant religion was Islam or Confucianism to find very similar results.

¹⁷See for example the recent article in the New York Times by Eviatar (2003)"

¹⁸In their model the ruler can use natural resources to divide the masses and block revolution. To orchestrate a revolution the various social groups need to co-operate and resolve the collective action problem. The dictator can bribe one of the groups (or a popular individual) and keep his office. Huntington (1993) argues similarly: "...oil revenues strengthen the autocratic-oriented bureaucracy and consequently hinder democratization forces that aim to overthrow the structure of the previous regime."

¹⁹We also experimented with an OPEC member country dummy and with a mix of the two sources. The results are similar.

ethnic fragmentation is much more important. The marginal effect of religious fragmentation is always significant at the one percent level and is at least three-to-five times greater than the (not always significant) marginal effect of ethnic heterogeneity. This finding is not only in line with, but also advances the cross-sectional evidence reported by Aghion, Alesina and Trebbi (2004), who show a strong negative correlation between polarization and various measures of policy insulation (like constraints on the executive, autocracy, etc.). Our analysis suggests that religious rather than ethnic (or linguistic) fractionalization is the major impediment to democratization.

Economic Liberalism

We now turn to the liberal hypothesis using two proxies of economic openness. First, in columns (7) and (9) we add to the RHS a trade openness dummy, which equals one if country i in year t has a liberal trade regime and zero otherwise. The estimated marginal effect implies that a country open to international trade enjoys a 4% to 4.5% higher probability of being a democracy relative to a closed-economy. Hence, our findings imply that economic freedom has a positive impact on political freedom. Although at this stage we can not say much about causality, the results however, clearly illustrate that the positive correlation between international trade and democratization extends beyond the historical development of Western Europe in the eighteenth and nineteenth centuries.²⁰

Second, in columns (8) and (10) we use imports plus exports to GDP as an alternative proxy of economic openness. In contrast to the previous evidence, we find that nominal trade volume is not positively correlated with democratization. This can be attributed to the high

²⁰Using instrumental variables techniques, Lopez-Cordova and Meissner (2004) claim that there is a causal effect of trade on the long-run level of democracy. They employ Frankel and Romer's (1999) "natural" trade openness to instrument trade to GDP, which in turn is entered in a specification with the democracy level as the dependent variable. Using data covering more than 100 years, they show a strong causal effect of trade on democracy. In this direction we also estimated an IV probit model, instrumenting trade openness with geography and legal-origin variables (specifically: distance from the equator, a landlocked dummy, a measure of the share of population living in the tropics, and a British origin dummy). The estimates imply an even larger positive and statistically significant effect of trade openness on democratization: When we include in the set of explanatory variables the (instrumented) trade openness, the logarithm of GDP and a linear trend, the marginal effect of trade openness is 0.641 (p -value : 0.00) and the marginal effect of $\ln(GDP)$ 0.0301 (p -value : 0.05). In line with these results are IV probit estimates reported in Table 2.15.

trade to GDP ratios of the East Asian and some oil-exporting (non-democratic) countries. This result appears also in line with the ongoing study of Rigobon and Rodrik (2004), who, using an identification-through-heteroskedasticity method, find a negative correlation between the long-run level of democracy and trade share.

Endowments & History

To investigate the effect of geography on democratization we add in the first column of Table 2.6 latitude from the equator. In columns (2) and (3) we add the share of the population that speaks a major European language and condition on religion and oil abundance (taken from Dollar and Kraay (2003)).²¹ Both variables enter with significant coefficients, suggesting that these factors influence political as well as economic development. Note also once we control for geography, institutions and oil-production, the Muslim share is not a significant impediment to democratization.

In columns (4) and (5), we investigate whether the quality of the legal system or the identity of the colonizer influenced the likelihood of democratization. La Porta *et al.* (1998) show that the common-law system offers superior property rights protection, while Lipset (1959) claimed that British colonies were more open and already had some representative institutions, even before independence. The indicator variable for common-law countries, however, enters with an insignificant coefficient. Although this might seem contradictory to Barro (1999) or Przeworski *et al.* (2000), it is not surprising. Most economically and politically successful former British colonies, like the United States, Canada and Australia, were already democracies before the beginning of the 3rd Wave. So, although the British heritage or/and the common law might have influenced the First and Second Wave, it has not been a key factor in the recent democratization episodes.²²

²¹We note, however, that the European heritage measure is far from being ideal. The literature on the determinants of long-run economic development (Hall and Jones, 1999; Dollar and Kraay, 2003) has used this variable as an "instrument" of social infrastructure (institutional quality, which incorporates democracy), which in turn causes long-run income levels.

²²Examples of countries with a British legal system that are throughout the sample-period non-democratic include the Persian Gulf countries, Zimbabwe, Liberia, and many other African nations.

In columns (6) and (7), we assess the effect of the type of colonization and early institutions proxied by settler mortality on the likelihood of democratization. In line with the descriptive statistics, there seems to be no systematic effect of early institutions (at least when proxied with this measure) on the likelihood of a stable permanent democratization. So this finding looks contradictory to the parallel work of Acemoglu, Johnson, Robinson and Yared (2005), who document that this variable is a significant determinant of democratic level. Yet a more careful analysis of the data hints that the intuitive theory of Acemoglu et al.(2005) is not rejected. This is because the settler mortality database includes some influential outliers. For example, settler mortality rates in Mali and Nigeria, countries that experienced a successful (although late and partial) democratic transition, were 2940 and 2004 respectively, while in most other democratization countries mortality rates were around 100. Thus in column (8) we exclude Mali and Nigeria. The coefficient on settler mortality enters now with a negative sign and is in most specifications significant. So we can conclude that the type of colonization, proxied by settler mortality did play a role in the process of institutional development. The importance of history and the intuitive argument of Acemoglu *et al.* (2005) is clearly illustrated in columns (9) and (10), when we augment the specification with the normalized years-since-independence measure. The estimates now clearly imply that democratization is more likely to emerge and consolidate in older countries. This applies also when we control for religion, income and the trending behavior of this and the GDP measure.²³

Result's summary regarding democracy's consolidation

The specification reported in column (10) of Table 2.6. as well as the analogous model presented in column (9) of Table 2.5. are our preferred models. In these specifications we control for all the variables that the four main theories advocate as significant determinants of democracy, while at the same time we control for common trends or time effects. Summarizing,

²³The predictions of "endowment" theories might not be clearly isolated from the modernization hypothesis and the theoretical mechanism associated with it. As shown by Glaeser *et al.* (2004) the type of colonization, besides influencing early institutions (as shown by Acemoglu *et al.*, 2001; 2002; 2005), also affected the human capital level of the former-colonies. Thus settler mortality might be capturing the effect of human capital that colonizers brought with them rather than their institutions.

the evidence offer clear support to the "modernization" hypothesis. In spite of the high correlation between latitude, settler mortality, and years-since-independence with wealth, income retains its significantly positive impact on the likelihood of democratization. H_1 is thus difficult to challenge, even when one controls for variables that are strongly correlated with income and human capital. Second, the widespread belief that certain religious dogmas block democracy's emergence and its consolidation is clearly challenged. When we control for the natural-resource curse adding an indicator for oil and natural gas producing countries, then the share of Muslims in the population turns insignificant. Third, religious (and not ethnical) fractionalization appears to clock the stabilization of representative institutions. Fourth, democracy is most likely to emerge and consolidate in countries that are open to international trade. Yet an increased volume in international trade (as proxied by the share of exports and imports to GDP) is not correlated with democratization. Finally, our evidence do offer some support (in a different sample and with a different methodology) to Acemoglu *et al.* (2005) idea that history is an important determinant of long-run political development (since the normalized years since-independence measure enter with a significantly positive marginal effect in all our model permutations). Yet we do not find unambiguously robust evidence linking settler mortality during colonization to democratization during the Third Wave.

2.5 Democratic Transitions

We start this Section by assessing how the variables suggested by the four main theories predict the likelihood of transition. We then examine the role of some additional factors in explaining when successful democratic transitions are more likely to occur. To isolate the probability of transition we modify eq. (2.1) and the dependent variable now takes the value one only in the year of a democratic transition and remains zero during the non-democratic period (Anemiya, 1985).

2.5.1 Main Theories

Table 2.7, columns (1) and (2) report the marginal effect of income and education on the probability that an autocratic country will become a democracy. An increase in income by 1,000\$ (approximately 6.9 log points) is associated with a 6% ($0.009 * 6.9 \simeq 0.062$) increase in the probability. The marginal effect of income is substantially smaller for explaining democratic transitions relative to the probability of consolidating representative institutions. Moreover, the estimated coefficient on income or education in a couple specifications becomes insignificant. This implies that the effect of income is primarily safeguarding political rights once they are established. Yet, since in most models income is still entering with a positive and a significant coefficient, its role also in generating the transition is not zero. In addition examining the impact of income and education on the transition probability in a sample of just forty or fifty years is far from ideal. For example, if one thinks about the association between income level and democracy over a longer period then it is difficult to dismiss the link. Boix and Stokes (2003) move in this direction using data covering the last two centuries and find strong evidence for both the "*endogenous*" and the "*exogenous*" variants of the modernization theory. Similarly, Acemoglu, *et al.* (2005), find supportive evidence when they examine data going back to the fifteenth century.

Estimates testing the validity of social structure theories are reported in columns (3)-(5). The magnitude of the estimated marginal effects on the Muslim and Confucian share has decayed, as has the effect of oil abundance. Among the fractionalization and the religious variables proposed by social structure theories advocates, only religious fragmentation exerts a robust significantly negative impact on the likelihood of a country to successfully transit from autocracy to representative government. In contrast the effect of ethnic heterogeneity is much smaller and in most specifications insignificant.

In columns (6)-(10) we assess the impact of all main theoretical hypotheses on the likelihood of a successful democratic transition. Three main findings emerge: First, history, proxied by years-since-independence is the most robust and statistically significant factor positively associated with the likelihood of democratic transition. This holds even when we

control for the trending behavior (column 6) or other covariates. Second, once we control for historical factors and income, the effect of religion in explaining democratic transitions becomes insignificant. Third, the effect of income and education decay drastically, although in most specifications it remains positive and significant.

2.5.2 Additional Factors Influencing the Transition

Trade Liberalization

In the previous section, we found compelling evidence that democratization is more likely to emerge and stabilize in countries open to international trade. The direction of causality between trade liberalization and political freedom, however, remains an open question. In columns (1)-(3) of Table 2.8 we assess the impact of trade openness on the likelihood of transition. This helps us to be more specific in the direction of causality. In line with the previous results, we find that while trade openness is positively and significantly associated with the likelihood of transition (column (1)), trade share (measured as the sum of exports and imports to GDP) is not (column (2)). Although these estimates by construction address issues of endogeneity and reverse causality, it is interesting to investigate the association between trade and political liberalization. In column (3) we add a dummy variable that equals one if a trade liberalization has occurred at the current year or during the three previous years and zero otherwise. The estimated marginal effect is significantly positive implying that if economic reforms have been recently implemented then the likelihood of a successful democratic transition increases by 5.5% (and holding the other variables in the mean). This finding is in line with the parallel study by Giavazzi and Tabellini (2004), who document a strong interaction between political and economic reforms. Giavazzi and Tabellini argue that causality is more likely to run from political to economic liberalizations, rather than vice versa, although they cannot rule out feedback effects in both directions. Our results thus strengthen the reverse effect.²⁴

²⁴Countries that experienced trade a liberalization in the same year or during the three pre-democratization years are (first value indicates trade liberalization year, second number indicates the timing of the successful democratic transition): Albania (1992, 1992); Benin (1990, 1991); Cape Verde (1991, 1991); Czech Republic (1991, 1993); Hungary (1990, 1990); Nepal (1991, 1991); Poland (1990, 1990); South Africa (1991, 1994);

Crisis

A crisis can initiate actions to change the government. In columns (4)-(7) of Table 2.8 we investigate the impact of GDP growth and crisis on the likelihood of a successful democratic transition. As indicated by the significantly negative marginal effect on GDP growth in column (4), recessions increase the likelihood of democratization. In column (5) we use instead of growth a dummy variable that takes on the value one if a currency crisis has occurred in the current year or during the past three. The crisis chronology is retrieved from Kraay (2003) and includes both incidents of large devaluations and unsuccessful currency attacks (associated with large foreign reserve depletion and/or an interest rate spike). The estimated marginal effect suggests that a currency crisis increases the likelihood of transition from an authoritarian to a democratic polity by 2%.²⁵ In column (6), we further investigate the impact of crises by augmenting the model with an indicator variable which equals one if a systematic banking crisis (as defined by Caprio and Klingebiel (2003)) is in place. The estimates are similar, since a banking crisis is associated with a significantly higher likelihood (approximately 3%) of a democratic transition.²⁶

Not only do these results validate the anecdotal perception and the case-specific evidence (e.g. Haggard and Kaufman, 1995) linking a crisis with the timing of a democratic transition, but they also provide an explanation as to why the "*endogenous modernization theory*" might not find short-term empirical support. Although income growth can make a society

Tanzania (1995, 1995); Slovenia (1991, 1992); Slovak Republic (1991, 1993). Countries that democratized and were already open to international trade are (first date indicates trade liberalization, second date indicates democratization): Chile (1976, 1990); Spain (open at the beginning of the sample, 1978); Ghana (1985, 1996); Greece (open at the beginning of the sample, 1975); Guatemala (1988, 1996); Guyana (1988, 1992); Croatia (1993, 2000); Indonesia (1970, 1999); Jordan (1965, 1993); Korea, Rep. (1968, 1988); Mexico (1986, 1997); Mali (1988, 1992); Portugal (open at the beginning of the sample, 1976); Paraguay (1989, 1993); El Salvador (1989, 1994); Thailand (open at the beginning of the sample, 1992).

²⁵Countries that democratized after a currency crisis are (first date indicates crisis year, second date indicates the timing of the permanent democratic transition): Argentina (1981, 1983); Bolivia (1981, 1982); Dominican Republic (1976, 1978); Mexico (1994, 1997); Peru (1977, 1980); Spain (1977, 1978); Indonesia (1997, 1999); Philippines (1986, 1987); Portugal (1975, 1976); Thailand (1990 & 1992, 1992).

²⁶Countries that democratized in a year when a systematic banking crisis was in place are: Albania (1992); Bangladesh (1991); Spain (1978); Indonesia (1999); Mexico (1997); Mozambique (1994); Nicaragua (1990); Philippines (1987); Turkey (1983); Tanzania (1995). In addition, many former Soviet Republics and two of the five "borderline" democratization countries, Niger (1999) and the Central African Republic (1993), moved towards representative rule, when a banking crisis was in place.

more ready to adopt representative institutions, through the channels advocated by H_1 , prolonged and sustained growth can also give legitimacy to a non-elected government. The typical example in our sample is the East Asian countries, in which fast growth delayed the democratization process. Acemoglu and Robinson (2001) formally model how the stability of authoritarian regimes crucially depends on their performance. Since non-elected governments do not have formal legitimacy, a solid economic performance is needed to substitute for this gap. They also show that it might not be wise for a society to stop the growth path, due to the sizable transition costs associated with changing political institutions. It can, however, be optimal to democratize during a recession, when society is already incurring part of the transition costs.

War Ending

Historically an international war has also been destabilizing for autocracies. This is not only because growth drops significantly, but for at least two additional reasons. First, the masses can more easily resolve the collective action problem (Olson, 1965) after an armed conflict: A crucial assumption of political economy models is that the two (or more) classes (the "rich" and the "poor") do not face coordination problems. Resolving the collective action problem, however, is not straightforward in reality. An admired hero-leader is likely to emerge out of the war, who can inspire the people and lead the revolutionary attempt. A war can also provide the necessary military equipment for the revolting parties. Second, is military dissatisfaction: Huntington (1991) bluntly argues "... *The military are the ultimate support of regimes. If they withdraw their support...the regime falls*". If the war is lost and military officials are dissatisfied, they might withdraw their support from the regime. And as Lake (1992) documents, the probability of losing a war is two times higher for dictatorships than for democracies.

There are numerous instances of democratization occurring after the unsuccessful end of an armed conflict, both in the post-war period and before. In our sample, for example, the long-lived military regime in Argentina collapsed after the defeat by the British in the

Falklands. Similarly, a crucial factor behind the collapse of the Portuguese junta was its defeat in the colonial war. To quantify this in columns (8) to (10) we add a dummy variable that takes on the value of one if an armed conflict ended in the current or during the last three years.²⁷ We find strong empirical evidence that the likelihood of democratization sharply increases after the end of a war. Even after controlling for a banking and currency crisis or trade liberalization that may coincide with the end of an armed conflict (like in Argentina), its estimated effect is still highly significant. Other things being equal, the end of an armed conflict in an authoritarian nation raises the likelihood of a permanent democratic transition by 2.0% to 2.5%.

2.6 Democratization in Former Centrally-Planned Republics and Countries

In the early nineties, an “independence wave” gave birth to 22 newly established states from the former Czechoslovakia, U.S.S.R. and Yugoslavia. In almost half of these countries (such as Czech Republic, Ukraine, Latvia, and Russia), independence was associated with political liberalization. Many, however, did not succeed in moving away from totalitarian regimes (such as Armenia, Azerbaijan and Moldova). In addition, the fall of the Iron Curtain had an impact not only in the new independent states, but also in the other countries aligned with the Soviet Union during the Cold War. This “*quasi-natural*” experiment enables us to test the main democratization theories and verify our previous evidence. These countries were similar in some aspects (like institutions, geography, economic structure), but differed in many other dimensions that democratization theories stress (such as religion, fractionalization, human capital and income level). Since the typical data sources (World Bank and the Penn World Tables) do not report reliable data before the transition for these countries, we rely on de Melo, Denizer, Gelb and Tener (2001), who, using primary sources have constructed a dataset

²⁷Data on armed conflict are retrieved from the Armed Conflict Dataset (2003), maintained by the International Peace Research Institute at the University of Oslo (PRIO). In the previous version of the paper we used the widely employed Correlates of War (COW) database, the State Failure Task Force dataset and the on-line source www.onwar.com. The results do not change in any significant way. For the merits of the PRIO database versus other sources, see Sambanis (2002) and Miguel, Satyanath and Sergenti (2004).

of initial conditions on thirty transition economies. In Table 2.9, we estimate cross-country probit models, investigating the validity of the main hypotheses in 20 of 22 newly established states (since no data is available for Serbia and Montenegro and Bosnia), while in Table 2.10 we explore the expanded set of 30 formerly centrally planned economies (which besides the 22 new countries includes Albania, Bulgaria, China, Hungary, Mongolia, Poland, Romania and Vietnam).

In column (1) for example of Table 2.9 we predict democratization using the PPP adjusted per capita GDP in 1989. The results support H_1 , since the countries that democratized alongside independence were significantly richer even before independence than these nations that have remained autocratic. Since data on schooling is not available for most of these countries, in column (2) we use fertility rates as an alternative human capital proxy. In line with H_1 and the strong negative correlation between fertility and education levels (and income) the estimated marginal effect is significantly negative. Similar results when we focus on the expanded sample of transition countries (in the first columns of Table 2.10).

When we control for religion (in column (3) of both Tables) the coefficient on income becomes insignificant (although it remains positive), while the share of Muslims in the population appears to be the key factor in explaining the different political path of the former Republics. A similar finding emerges from the estimates reported in Table 2.10. We are, however, sceptical of this interpretation for two reasons: First, the sample size is quite small and the correlation between the Muslim share and income in this group of countries is high. ($\rho = -0.62$) Therefore, the estimates are contaminated by multi-collinearity. Second, the negative coefficient on religion does not necessarily imply that democracy is not suitable for Muslim nations. For example Kazakhstan and Turkmenistan, where the share of Muslim in the population is 47.02% and 86.91% respectively, have oil-centered economies. According to the "*natural resource curse*" argument, oil and not religion hinders democracy. The blocking to political reforms impact of natural resources is clearly illustrated by the estimates reported in columns (5) and (6), when we augment the model with an indicator variable for "*rich*" natural resources countries and for "*moderate*" natural resources nations. According to the estimates in column (6), the probability of democratization in Moldova (a non oil-rich

country) relative to Azerbaijan (an oil-abundant country) is higher by approximately 45% [GDP p.c. of both countries is similar and approximately at the mean of all sample countries]. The data is not very supportive to fractionalization theories, since both ethnic and religious fragmentation indicators enter with insignificant coefficients. Yet in line with the previous estimates, religious (rather than ethnic) fractionalization appears to play a somewhat significant effect in blocking the democratization process (the estimated marginal effect is always negative and in most specifications significant).

The democratization experience of these countries strongly supports the liberal hypothesis. All countries that democratized at the same time also opened their economy to foreign investors. In contrast, all nondemocracies (for which we have data) have closed economies. This strong inter-relation is exactly what Friedman and Hayek so forcefully argued about; yet establishing causality is impossible due to the perfect correlation of market economy and political reforms. To further assess the role of trade openness in columns (8) and (9) we add to the set of independent variables the natural logarithm of the geography-predicted trade proposed by Frankel and Romer (1999). This measure is derived by bilateral trade "gravity" equations and measures how favorable geographical conditions are to international trade. Although it does not measure actual trade, the estimates imply that democratization appeared to be much more likely in countries where opportunities for international trade were greater.

We further augment the model with a measure of years under central planning to investigate the role of institutions and history on democratization. Due to institutional persistence we would expect, according to H_4 that countries with more years under communism would have a lower likelihood to switch to representative rule. The result supports this expectation and the Acemoglu *et al.* (2004a) intuition. According to the marginal effect given in column (7) of Table 2.10 the probability of democratization in Moldova (which had an experience of central planning of 51 years in 1989) relative to Azerbaijan (which was under communism for 71 years) is higher by approximately 35% ($0.018 * (70 - 51) = 0.342$). Most importantly GDP, "early institutions" and religious (rather than ethnic) fragmentation is still enter the specification with stable marginal effects. In column (10) we assess the effect

of income growth before the transition, augmenting the specification with the mean growth in the period 1985 – 1989 period. In line with our previous results, growth appears to be negatively associated with the likelihood of democratization.²⁸

2.7 Sensitivity Analysis

In this Section, we perform several sensitivity checks. First we investigate the effect of income inequality on democratization. Second, we address concerns regarding our methodology in identifying and dating democratization events. Third, we employ a trichotomous distinction of political regimes and repeat our estimation using an ordered analysis.

2.7.1 Inequality: Theory and Empirics

A potential omitted variable from the previous estimates is inequality. The inter-relationship between income inequality and democracy is one of the most widely theoretically studied issues in political economy. Since, however, previous empirical studies have not fully addressed the theoretical channels, before we investigate the stability of our estimates on the inclusion of inequality in the RHS, we clarify some important issues on this link.

- **Inequality => Democracy:** Both traditional and new political economy theories suggest that the likelihood and the timing of democratization is causally determined by income inequality. However, the association is not straightforward and many channels have been suggested. First, the traditional political science assertion is that *high* inequality increases the likelihood of democratization by spurring opposition. Second, and in contrast to this positive association, Boix and Garricano (2001) model why democratization is more likely to emerge and consolidate when inequality is *low*.²⁹

²⁸For example the Central Asian republics and China were growing much faster than the European nations, which experienced severe recessions during the last years of communism. Although one could produce specifications, where growth was insignificant, this results is clearly in line with previous estimates.

²⁹Barrington Moore (1966) famously claimed that "*no bourgeoisie, no democracy*". The role of the middle-class in promoting democracy was first noticed by Aristotle and was emphasized by Marxist economists.

Their argument is that a mean-centered income distribution implies that the redistributive impact of democracy diminishes and the conflict between "*the rich*" and "*the poor*" is mitigated. Consequently the ruling elite does not oppose reforms. A third middle-ground between the two previous arguments is formalized by Acemoglu and Robinson (2001, 2005). In their game-theoretic setup, extreme inequality does not necessarily lead to a democratization, since highly unequal income distribution implies not only that "*the poor*" have much to gain, but also that "*the rich*" have much to lose if democracy consolidates; "*the rich*" therefore have a greater incentive to oppose democratization.³⁰ This theory suggests that the likelihood of democratization is an increasing, but not monotonic function of inequality. These opposing effects led even the great Aristotle to suggest that the effect of inequality on democracy is ambiguous.³¹

- **Democracy => Inequality:** Although theoretical ambiguity on inequality's effect on democratization, "*median-voter*" models make a clear prediction of a negative causal impact of representative institutions on inequality. If taxation and public policies are endogenously selected by voting and the crucial "*median-voter*" is a member of "*the poor*" then she will vote for redistributive policies, which in turn will mitigate inequality.

Figure 2.1 provides a graphical illustration of this theoretical point. Formal political economy models suggest that the likelihood of democratization can be a decreasing or an increasing function (not necessarily monotonic) of inequality. Yet, after the consolidation of democratic rule, inequality is expected to fall (controlling for other channels). Pooling democratic, non-democratic and transition countries therefore obscures which is the cause and which is the consequence and does not enable the identification of the two opposing

³⁰Their models yield multiple-equilibria. First, if inequality is high, "*the poor*" can force the ruling class (by revolution or consensus) to extend the franchise (early democratizations in the nineteenth century in the United Kingdom and the Western European countries). Second, even if inequality is high, the masses might not be able to resolve the "*collective action*" problem and organize a revolution. The ruling class can use, for example, national resources to buy political support and keep their power (as in many African countries). Third, if inequality is relatively low and the economy performs well, "*the poor*" have no incentive to revolt and democratization is delayed (East Asian countries).

³¹Aristotle writes: "*Where one set of people possesses a great deal and the other nothing, the result is either extreme democracy or unmixed oligarchy or a tyranny due to the excesses of the two.*" A similar argument has been recently made by Dahl (2000).

effects. Note that both effects are theoretically grounded and historically present. Therefore, the mixed and inconclusive evidence of both the economics and the political science studies should come at no surprise.³²

In Table 2.11 we quantify the effect of inequality on the likelihood of democratization. In columns (1)-(7) we examine the impact of inequality on the probability of being a democracy (transition plus consolidation), given that a country was non-democratically ruled at the beginning of the sample; in the last three columns we isolate the effect of inequality on the transition probability. To measure inequality we exploit the recently updated income distribution data constructed by the World Bank and use the (unadjusted) Gini coefficient.³³ We are not able to detect a systematic link between inequality and democratization. The estimated marginal effect is insignificant, not stable, and even changes sign. This applies both when we study the democratic transition and when we study the transition plus the consolidation.

In columns (6), (7) and (10) we include in the democratization group only those countries that experienced a *full* consolidation of representative institutions. All *partial* democratization nations are now assumed to have never experienced a transition and are treated similarly to the "*Always Autocratic*" group. When we apply a *strict* definition of stable democratization, we find some (weak) evidence supporting the traditional political science assertion. The estimated marginal effect is now positive, implying that a higher income inequality (high Gini) increases the likelihood of both the transition and the consolidation of democracy. The

³²For example, Barro (1999) has documented a (marginally significant) negative effect of inequality on the long-term level of political freedom. Similarly, Muller (1995) studied the determinants of the long-run (1965 – 1990) cross-country change in democracy and concluded that "*...income inequality has a robust negative impact on democratization*". Even Bollen and Jackman (1995), who question the significance of Muller's estimates, report negative, yet insignificant, inequality coefficients.

Another feature that magnifies this identification problem is data quality. More inequality data are available from developed and always democratic nations (like the US, Canada, Western Europe, etc.). Therefore the regression estimates using all observations are driven by those countries that were consistently democratic through the post-war era. So if inequality was falling in developed countries (due to the democratic redistribution mechanism, for example) then the negative effect estimated in the previous studies is not surprising.

³³We also estimated models with the adjusted Gini coefficient (adjusting made on the basis of the source). The results are qualitatively alike. Since the Gini data have many gaps we follow Barro (1999) and interpolate using the last available value. We also estimated models with a five or even a ten year moving average, without any major differences.

evidence also hints at the fact that democratization is blocked at extreme inequality levels (as in Acemoglu and Robinson (2001)). However, this non-linear effect is difficult to identify. Thus, although we can produce specifications (like in column (6)) where both terms appear with the theoretically predicted sign, we note that this result is not particularly robust.³⁴ Most importantly for our analysis the main evidence regarding the four main hypotheses are quite robust.

2.7.2 Alternative Democratization Chronology

One could argue that self-selection of the democratization events drives our results. Although we consider the exact identification and timing of permanent democratization a key ingredient of our research, we re-estimated our model relying solely on the two most widely used democracy indicators (Polity and FH). We identify a permanent regime change when the Polity index jumps from a negative to a positive value and when the FH characterization jumps from "*Not Free*" to either "*Free*" or "*Partially Free*". To avoid capturing political instability, we require that both indices remain at the new value for at least five years. This re-estimation changes the exact timing of transition and increases the democratization sub-sample.

In Table 2.12, columns (1) to (5) we test the main theories in explaining the likelihood of being a democracy (transition plus consolidation). Most of the estimates have retained both their statistical and, most importantly, their economic significance. Democratization is more likely to occur in wealthy, but not oil-rich, countries. In addition history proxied by years since independence is a significant factor explaining successful democratizations. Moreover the marginal effect of the share of Muslims in the population is insignificant in columns (1)-(3), while the indicator variable for oil producing nations is negative and always

³⁴A major impediment in testing political economy theories on democracy and inequality is the low quality data on income distribution. In the previous version of the Chapter, using a sub-set of the inequality data, we found some considerable support for both the Acemoglu and Robinson and the classical political science assertion that greater inequality increases the likelihood of democratization. Yet, utilizing new and richer data attenuated this effect. Another feature of the income distribution data that makes the quantification of the Acemoglu and Robinson (2001) model non-linear prediction so difficult to test is the fact that we miss inequality data for many non-democratic governments, where anecdotal evidence suggest that inequality is very high (e.g. Sub-Saharan Africa).

significant.

Columns (6) to (10) report estimates only for the transition probabilities. As before (Tables 2.7 and 2.8) the effect of income is much smaller and often insignificant. Our previous findings on the destabilizing effect of crisis to autocracies are verified. A recession (proxied by a drop in GDP growth) or a currency crisis has a significant and robust effect in explaining the timing of transition. Controlling for religion, fragmentation and income, the estimated marginal effect suggest that a currency crisis increases the likelihood to switch into democracy by almost 3%.

2.7.3 Ordered Analysis

The level of political and civil liberties in a given country can be measured in many ways. One could still be uncomfortable with either our event identification or with the Polity or FH indicators. Although our methodology on identifying permanent democratic transitions addresses issues arising from measurement error, one could argue that the binary distinction is inappropriate. For example switching from a totalitarian regime to a perfect level of democratic institution, as in Spain or in Greece, is not comparable to Nigeria's (1999) path. Furthermore one might not be comfortable with the stability requirement we have imposed in our analysis so far. To address these issues, we follow the Freedom House distinction and estimate an ordered probit regression distinguishing between three types of democracy: Non-politically free societies, partially free and totally free. We do the same using the Polity IV index (which ranges from -10 to $+10$) by splitting it evenly into three parts. We also relax the estimation assumption of normally distributed errors and also report logit estimates.

Ordered probit and logit estimates are reported in Table 2.13. The results not only do not challenge, but actually strengthen the "modernization theory".³⁵ The natural logarithm of GDP is the single most important driving force behind political modernization. Democratization is less likely to occur in oil exporting nations. The oil dummy enters in all models

³⁵This is line with the parallel work of Epstein *et al.* (2004), who show that in a trichotomous classification the positive effect of income and human capital on democracy is strengthened.

with a statistically negative coefficient. In contrast the marginal effects of Muslim is never significant, further supporting the view that its their oil-rich soil rather than their religious traditions the major impediment of democratization in Africa and Middle East countries. Finally in line with H_3 and H_4 , democratization is likely to occur and stabilize in more mature countries open to international trade.

2.8 Previous Work and our Results

Before we conclude, it is important to explain *why* and *to what extent* our results differ from previous and contemporaneous studies. In doing so, we also investigate the robustness of our results on alternative econometric techniques.

2.8.1 Dynamic Analysis

Recent studies in political science have examined the driving forces of democracy employing Amemiya (1985) dynamic probit model. Przeworski *et al.* (2000), Garricano and Boix (2001) and Boix and Stokes (2003) model democratization as follows:

$$Democ_{i,t} = \Phi \{a + \gamma'x_{i,t} + \delta'(Democ_{i,t-1} * x_{i,t})\} \quad (2.2)$$

The dependent variable equals one if political liberties and civil rights protection is above a threshold and zero otherwise. The set of independent variables includes both time-varying and country-invariant variables. Estimation is performed in all sample countries ("*Always Autocratic*", "*Always Democratic*" and "*Democratization*") in the post war data. The merit of this Markov-switching specification is that it enables the identification of x 's impact on both the transition probability (which is captured by the δ vector) and the probability of consolidation (captured by the γ vector). Our results can be interpreted in this framework as well, since in the first part of our empirical analysis we estimated the sum of γ and δ , while in Section 2.5 we estimated the transition probabilities (δ).

The main limitations in this approach are the non-random selection of countries in the beginning of the sample (the richest countries were all democracies) and reverse causation. For example, clearly part of income's or education's large effect on the consolidation of democracy is driven by the group of countries that were democracies throughout the post-Second World War era. In addition, this approach does not distinguish between permanent versus temporary changes and consequently the estimates on the transition probabilities (especially) can be very sensitive to noise and unsuccessful transitions.³⁶

In Table 2.14 we report estimates of four dynamic probit specifications, estimated only in those countries that were non-democratic in the early sixties. Columns (1a), (2a), (3a) and (4a) report the probabilities of transition (δ), while columns (1b), (2b), (3b) and (4b) give the estimates of γ . The probability that a country experienced successful transition plus consolidation, given that in the beginning of the sample period it was non-democratic is given by the sum of the γ and the δ coefficients in each model. The main results presented so far are unchanged. The modernization theory is supported in both the "exogenous" and to a lesser extent the "endogenous" version. In line with Przeworski *et al.* (2000) income mainly stabilizes rather than fosters successful transitions. The estimates also clearly illustrate the different effects of income level and growth. In all models growth has a negative impact on the likelihood of transition, validating the previous evidence on the strong association between recessions (and crises) and transitions.

2.8.2 Linear Models

Older studies have relied on much less elaborate techniques, estimating either cross-country regression models on levels of democracy or long-run changes (e.g. Bollen and Jackman (1995); Muller (1995)). In the most complete study Robert Barro (1999) investigates the effect of income, inequality, religion and various other covariates on democracy employing

³⁶ Assume, for example, that in a very poor nation the democratization dummy jumps many times. Assume furthermore that the "modernization theory" holds and that all spikes are just temporary. In contrast in a relatively rich nation (e.g. Spain) the democracy variable jumps only once, but this is permanent (because H_1 holds). The first point is that those jumps are more likely to capture instability (noise) rather than a serious attempt to democratize. The second is that the coefficients will not capture the theoretically predicted effects. Transitions are going to be more likely in poor (not in rich) countries!

panel-data techniques with five-year averages. Barro's model takes the following form:

$$Democ_{i,t} = a + \beta_1 Democ_{i,t-1} + \beta_2 Democ_{i,t-1} + \gamma'_1 x_{i,t} + \gamma'_2 z_i + \nu_{i,t} \quad (2.3)$$

This approach utilizes information both from the cross-section and the time dimension. It also enables the estimation of both the short and long-run effects of x 's and z 's on the level of political freedom ($Democ$) in country i in the five-year period t . As Barro acknowledges, however, estimates are primarily driven by the "between" (rather than the "within") country variation. Moreover, in spite of using lagged values of x 's as instruments for their contemporaneous value, this approach does not fully address issues of reverse causation. Finally, by construction this approach identifies the correlates (causal or not is not clear) of long-run levels of democracy and one can not isolate the impact of the independent variables on the transition and consolidation of representative institutions.

The starting point of Acemoglu *et al.* (2004, 2005) is that both the non-linear (2) and linear (3) model may suffer from unobserved country-heterogeneity and omitted variable bias. As a solution to the previous limitations, they propose adding in (3) country fixed effects and also year-fixed effects to control for common global shocks. They thus estimate variants of the following model:

$$Democ_{i,t} = a_i + \eta_t + \beta_1 Democ_{i,t-1} + \beta_2 Democ_{i,t-1} + \gamma'_1 x_{i,t} + \gamma'_2 z_i + \nu_{i,t} \quad (2.4)$$

They show that income and education becomes insignificant when one adds country intercepts to control for country heterogeneity. In this direction, in Table XV columns (1)-(5) we estimate linear probability models in countries that enter our sample with a non democratically contested government. When we add the country dummies in column (2) income becomes insignificant. The alternative variable proposed by H_1 , years of schooling is significant, but with the "wrong" sign. The results are thus in accord with Acemoglu *et al.* (2005); But does this imply that income does not causes democracy? Not exactly. The estimates only imply that income growth does not lead to democratization. Yet this is exactly what our

results show. GDP growth exerts a negative impact on democratic transitions and currency and banking crisis *positively* influence the likelihood of a democratic transition. Note also that this is not just an empirical coincidence, since there are solid theoretical reasons (Acemoglu and Robinson, 2001) for a strong negative relationship between economic performance and growth in non-democracies. Acemoglu *et al.* (2005) acknowledge this point and then show when they augment the model with time-invariant historical variables (settler mortality and historical controls) income becomes insignificant. Although we have found considerable support for their argument that endowments and initial institutions have influenced political development, we are not able to rule out the effect of income on democratization. In columns (4) and (5) we augment the linear probability model with many variables proposed by "endowment" theories [H_4]. In spite of the very high correlation between some of these measures with income, the coefficient on the logarithm of GDP has retained its statistical significance, although its effect has decayed by a third.³⁷

2.8.3 Non-linear IV models

Although our methodology by construction aims to address reverse causation and endogeneity, one could remain dubious about the interpretation of our results. In ongoing work, for example, Lopez-Cordova and Meissner (2004) employ an instrumental variables approach to circumvent the endogeneity and assess the effect of trade on democracy. In columns (6)-(10) of Table 2.15 we employ Newey's (1987) technique and report instrumental variables probit models, instrumenting GDP with legal origin dummies and years since independence (in column (6)), latitude, European heritage and a linear time-trend (in columns (7) and (8)). In

³⁷The linear probability model especially when estimated in the universe of countries has some additional drawbacks. First the estimated probabilities can exceed the 0 – 1 interval. This concern is major, especially when there are many observations with zeros and ones (as it is the case in democratization). Second by adding country fixed-effects, the estimation does not utilize both "Always Autocratic" and "Always Democratic" countries. This is because in these countries there is no variation in the dependent variable. (The same applies if one uses a level approach, since in many countries both the Polity and the Freedom House indicators do not vary). Third, due to the limited "within" variation of the dependent variable, the consistency of the estimates comes with a sizable efficiency loss. Fourth, stands measurement error. Numerous studies, for example, show that the Barro-Lee schooling statistics suffer from measurement error. Since differencing magnifies the noise to signal ratio the insignificant coefficient of education on democracy, reported by Acemoglu *et al.* does not necessarily cancel the modernization theory.

columns (9) and (10) both income level and trade openness are treated as endogenous. The instrument set includes: latitude, landlocked, years-since-independence, legal origin, and European heritage. We employ various instrumenting sets, since it is almost impossible to meet the exclusion restriction that the exogenous instrument's effect on democratization only goes through income (or trade). For example, according to H_4 the age of a nation exerts an independent effect on political development. The same argument applies for European heritage and to almost every variable conceivable. Thus, although the IV estimates strengthen the main hypotheses, we interpret them solely as supportive to the previous estimates.

To summarize the first main difference between our work and previous studies is that we test democratization theories on a sample of initially non-democratic countries. This is theoretically required to investigate the systematic factors that determine *why* and *when* some countries opt out of autocracy. This enables us to precisely identify the causal effect of the theoretically proposed variables on democratization and avoid capturing reverse effects from democratic institutions to income, human capital, inequality, etc. [Figure 2.1] The second departure from the existing approach is that we investigate permanent regime changes. Since theory models the economic causes and consequences of stable political regimes, this approach is therefore more appropriate, since we avoid measuring instability, coups, etc. Thirdly, we do not limit our analysis to a particular hypothesis, as most papers have done so far (an exception is Barro, 1999; and Przeworski *et al.*, 2000). Ratherwise, try to investigate the various theories during the period with the greatest advancement of representative institutions. So in one aspect our analysis is narrower than studies utilizing long-horizon data (like Acemoglu *et al.*, 2005 and Boix and Stokes, 2003), but more specific, since we test all democratization theories during the Third Wave. Fourthly, we exploit the recent "*quasi-natural*" experiment of the fall of communism to test the predictions of the main democratization theories.

2.9 Summary and Conclusion

Twenty years ago, Samuel Huntington (1984) expressed scepticism and pessimism regarding future democratic progress. In spite of the democratizations of the seventies and early eighties, the globalization of political liberalism was far from secure. Both the First and the Second Wave of Democratization were followed by reversals towards totalitarianism. Improvements in civil liberties and consolidation of democratic rule, should not, therefore, be taken for granted.

In this paper we examined the countries that entered the post-war era with non-representative institutions and identified the factors that led some of them to permanently abandon autocracy. We also exploit the fall of communism and the transition of many centrally planned economies to test the main democratization theories. We present two sets of results: First we examine which factors influence the likelihood of being a successful democracy, conditioning that in the beginning of the sample the country was non-democratically ruled. Second we isolate the transition probability and examine which economic and social factors help explain when successful democratic transitions are more likely to occur.

When we examine the impact of various economic and social factors on the likelihood of both transitioning and consolidating representative institutions, our empirical evidence suggests that economic development and trade openness were the key driving forces of recent democratization events. In addition, the evidence shows that an abundance of natural resource and not religion is the major impediment of democracy in many parts of the world. In addition we find that religious (rather than ethnic or linguistic) fragmentation can crucially hinder the democratization process. We also find some support for recently-proposed "endowment theories" of democratization that point out that history and early conditions (institutions or human capital) play an important role in future political development. These factors helped reinforce democratic powers and prevented a reverse movement towards autocratic rule. We also identified the factors that influence the timing of the democratic transition. Democratizations typically follow severe banking or currency crises, which tend to be quite destabilizing for autocratic regimes. Transitions are also more likely to occur after the end of an inter-

national war or jointly with economic (trade) reforms. We also document that income level exerts a much smaller effect in generating democratic transitions. It appears this that the main effect of income in democratization is through safeguarding civil liberties and political rights once they are established. These results appear robust to various perturbations of the basic econometric model. We controlled for the social environment, along with alternative democratization identification methods. The results also hold for a trichotomous division of political systems, distinguishing between perfectly democratic, partially democratic and totally autocratic regimes.

Although we study almost all democratization events of the post-war era, including the liberalization that occurred after the fall of communism in the early nineties, our results simply point out where and when democratization is more likely to emerge and consolidate. Income level, education, trade openness, religion, and initial conditions shape the probabilities for democratic transition. They do not, however, determine the transition nor the consolidation of democratic governance. We believe that no single factor can fully explain the development of democratic institutions in all countries. Democratization in each region and country has always been from a combination of economic, social and political causes. Country-specific characteristics can either amplify or cancel the effect of the driving factors identified. For example, political leadership and cooperation have crucially contributed to the consolidation of democratic institutions in many countries. Assistance from the international community was also an important factor in stabilizing representative government in many countries, since in many cases Western powers appeared unwilling to support pro-democratic movements.

We focused on the systematic component of the recent democratizations and quantified, in a probabilistic framework the effect, of various theoretically proposed factors on the emergence and stabilization of representative government. A successful permanent democratic transition requires at least two distinct events. First, the removal of an autocratic regime and the emergence of democratic forces and second the consolidation of representative institutions. In our research we tried to identify and isolate which factor affects these two requirements. More theoretical and empirical research is needed to clarify which features

drive each of these channels. Finally, additional research is required to show how non-democratic countries can move to a representative government at minimal transition costs (avoiding for example a civil war or a financial crisis) and how newly-established democracies can cope with adverse and destabilizing economic shocks.

Chapter 3

Institutions, Politics and International Financial Flows

3.1 Introduction

Cross-border capital flows have skyrocketed in the last decades. Such capital movements have been regarded as both an anathema and a panacea to many countries structural problems (Obstfeld, 1998). There is, however, little empirical work on what drives international liquidity. Even less work exists on the role of institutions and politics in explaining cross-border capital movements. This is most likely due to the absence of well-developed theory and data problems regarding both capital flows and institutions. The present study uses newly compiled institutional quality and political risk indicators, merges them with one of the more complete datasets of bilateral capital flows (BIS Locational Banking Statistics) and provides a systematic investigation of how various types of institutional arrangements impact cross-border bank flows.

This Chapter's contribution is twofold: First, it adds to the fast-growing literature on the determinants of international capital movements (e.g. Wei, 2000; Portes and Rey, *forthcoming*; Wei and Gelos, *forthcoming*), by studying the driving forces of international banking flows. Most importantly, it provides the first comprehensive empirical study of how the overall institutional and political environment influences the volume of international financial transactions. Recent studies on cross-border capital movements have concentrated on

quantifying informational rather than institutional frictions. The results, however, indicate that institutions and political factors are also key factors of international investors' investment decisions.¹ In addition the present work tries to distinguish which exactly types of institutional arrangements are of foremost importance to foreign investors. This chapter's evidence advance our knowledge on the institutions-capital flows nexus by providing both fixed-effect and instrumental variable estimates revealing a robust link between both political risk and specific institutions (namely legal system quality, corruption and government control of the banking sector) and international liquidity. Second, it adds to the institutions (law) and finance literature (La Porta *et al.*, 1998). This research project has, however, studied almost exclusively the impact of legal characteristics in explaining *domestic* financial patterns, like IPO's, the breadth of equity and bond markets, etc. (La Porta *et al.*, 1997).² In contrast, the current study provides new evidence on a significant impact of politics, legal institutions and corporate governance practices in explaining differences in *international* finance.

In the present study I use quarterly observations on gross bilateral international financial transactions (flows) from banks located in nineteen mature economies to both the banking and the non-banking (public and private) sector in fifty-one (developed, emerging and low income) countries from the mid-eighties until 2002. Employing both various panel and instrumental variables cross-sectional methodologies, the estimates show that geography, politics and institutions are key determinants of international banking activities. The "gravity" equation (which models asset flows as function of the distance between the two countries and their "size") that is highly successful in empirical trade studies appears to be a powerful benchmark for analyzing cross-border bank flows as well.³ The power of the "gravity" spec-

¹Institutions and politics is also absent from the distinct literature that examines US banks' international extension of credit (e.g. Goldberg and Johnson, 1990; Dahl and Shrieves, 1999).

²Exceptions are Rossi and Volpin (*forthcoming*) and Esty (*forthcoming*) who assess the impact of legal factors in explaining cross-border mergers and international syndicated loan facilities, respectively.

³Buch (2003) studies the determinants of cross-border bank holdings. She likewise documents that the gravity model is a good benchmark for gross asset holdings. Yet following previous studies in FDI, equity and debt flows her focus is on informational rather than institutional frictions. In addition her study examines stocks (not flows) in a much smaller panel, while the present study exploits flow data in a high-frequency panel covering almost twenty years. Buch also studies primarily the cross-section data variation since regulation and information asymmetries exhibit very small "*within*" country variation, while the current study documents a significant and robust "*within*" country correlation between bank flows and institutional quality.

ification sharply increases, however, when augmented with a (time-varying) measure of the overall quality of the institutional and political environment (ICRG political risk rating). Not only is the political risk measure highly significant, but the empirical model can explain more than half of gross bilateral bank flows variability, even at the noisy quarterly frequency. The economic magnitude of the results is strong. Controlling for unobserved country characteristics and exploiting the "*within*" country variation, the estimates suggest that a five percent political risk decline in the capital recipient country is associated with an almost two percent rise in bilateral bank lending volume. Other panel methodologies produce even larger effects.

Since it is not crystal-clear which type of institutional or political features this composite institutional indicator exactly captures, I try to "*unbundle*" (Acemoglu and Johnson, *forthcoming*) institutions by quantifying the effect of specific institutional characteristics on international banking activities. This is key, since it is vital for policy recommendations to know exactly which institutional structure attracts foreign capital. Following studies on other types of capital and trade flows as well as recent contributions on the law and finance literature I focus on the following institutional characteristics (besides political risk):

- (i) Corruption, which has attracted huge attention in studies of foreign direct investment and recent policy debates.
- (ii) Legal system quality measures that proxy for the quality of contracting institutions.
- (iii) Corporate governance indicators that quantify the agency costs on the banking sector.

The analysis reveals new regularities: First, a corrupt bureaucracy acts like a tax and discourages foreign banking investment. Second, banks appear unwilling to invest in countries with inefficient legal systems, most likely because agency costs are amplified. Quantitatively, a 10 percent improvement in the time to complete a simple legal case in the recipient country is followed by an approximate 3 percent rise in the volume of bilateral bank flows. Third, corporate governance practices are also quite important, and government ownership of the banking sector strongly hampers foreign bank investment.

There is, however, an ongoing debate on whether law (La Porta *et al.*, 1998) or politics (Rajan and Zingales, 2003) is the key driving force of financial development. To assess if foreign banks' key consideration when making their capital allocation decisions is political stability or institutional performance, I also estimate specifications including both the political risk and the specific institutional proxies simultaneously. The results suggest that *both* politics and institutions are both key determinants of international capital transactions having thus somewhat independent effects.

Not only do these results survive a series of sensitivity checks, but they most likely represent more than a simple correlation. First employing time-varying measures of institutional quality (political stability) in a fixed-effects econometric model that covers almost twenty years, gives more confidence that the point estimates are not driven by an omitted (or difficult to measure) time-invariant factor (e.g. social capital). In line with this interpretation, major policy reforms that enhance institutional quality (like democratizations, privatization policies, power decentralization) are followed by a significant increase in international liquidity. Second, (cross-sectional) instrumental variable estimates further minimize concerns arising from measurement error or reverse causation. Third, a concern with empirical studies assessing the impact of institutional quality on financial (or economic) development is whether the estimates are mainly driven by the huge differences between industrial and under-developed nations. The present study advances the institutions (law, corruption, government ownership of banks)-financial depth link by showing that the positive and significant correlation between institutional quality and international liquidity applies to both within the group of developed and within the group of middle income nations.

This new evidence on a strong link between institutions and politics and international bank flows link is significant in a number of dimensions. First, the bank flow dataset employed includes not only international inter-bank activities, but also debt, equity and direct investment flows. The results have thus a broader interpretation and call for more research on the role of institutions in other types of capital flows.

Second, understanding the determinants of financial intermediaries' liquidity in a glob-

alized world can enhance our knowledge about the mechanisms of financial and economic development. Recent work has shown that the banking sector's liquidity has a causal effect on economic growth (see Levine, 2004, for a review). Since foreign lending is required especially by capital-scarce countries to finance domestic investment, it is of great importance to understand what drives foreign bank capital.

Third, capital flows have been at the core of the so-called (original) Washington consensus debate and "*the recent recognition that market-oriented policies may be inadequate without more serious institutional transformation*" (Rodrik, *forthcoming*). In spite of evidence linking capital flows to sizable increases in domestic investment and growth (Bosworth and Collins, 1999; Razin, 2002), their role in generating recent financial crises has cast doubt on the benefits of capital account liberalization. The "crisis leading indicators" studies have revealed a strong connection between the volume of capital (and specifically bank) flows and recent crises.⁴ Van Rijckeghem and Weder (2003), for example, demonstrate that contagion spreads primarily through banking centers. Understanding what drives international banking activities can therefore shed light on one of the hottest debates in international economics.

Fourth, analyzing gross international transactions may reveal information about aggregate holdings and net flows. The literature on the "*home bias puzzle*" (see Lewis, 1999) has examined numerous potential explanations. These include transportation costs in the goods market (Obstfeld and Rogoff, 2000), along with information and other frictions in asset trading (Martin and Rey, *forthcoming*). Although the importance of institutions, especially the law and corruption, has also been considered, not much work has been conducted quantifying the importance of institutional quality and political stability in resolving this question. A related puzzle is why capital does not flow from rich to poor countries (Lucas, 1990). Shleifer and Wolfenzon (2002) model how agency costs stemming from inefficient corporate governance and law enforcement mechanisms impede foreign capital flowing to capital-scarce countries. This paper's results suggest that not only do poor countries receive

⁴See, for example, Frankel and Rose (1996) and Aghion, Bacchetta and Banerjee (2001) for empirics and theory linking capital (bank in particular) flows to the likelihood of financial crises.

substantially less net inward investment, but they participate less in the international capital market. My results thus not only directly validate Shleifer and Wolfenzon, but also reveal additional institutional and political risk characteristics that explain a big part of this low participation.

Fifth, the results have direct policy implications. Political reforms, such as privatization or democratization (which are associated with a decline in "political risk"), significantly increase the liquidity of domestic financial intermediaries, fostering local investment.

The rest of this Chapter is structured as follows: In the next section I briefly review previous related work and discuss the channels through which institutions and politics affect international financial flows. Section 3.3 describes the empirical methodology and the data. It also provides a preliminary analysis of the panel descriptives. Section 3.4 presents the main regression results: It first examines the effect of institutional quality, broadly defined, in explaining gross international bank flows. Second, it quantifies the impact of specific institutional characteristics (legal system quality, corruption, and government ownership of banks). Section 3.5 gives some further evidence. Section 3.6 presents sensitivity checks, addressing concerns arising from omitted variables, endogeneity, measurement error and data quality. In the conclusion I summarize, offering directions for future research.

3.2 Related literature & why institutions matter

3.2.1 Previous empirical work

This paper relates and adds new evidence to two distinguishable areas of research: First is the literature on the determinants of cross-border capital movements. Studies by Portes and Rey (*forthcoming*) on equity, Mody, Razin, and Sadka (2003) on FDI, and Buch (2003) on bank holdings show that the "gravity" model successfully simulates not only goods, but also asset trade. Following theory on asymmetric information and agency costs, the empirical literature has, however, concentrated almost exclusively on geography's role and other proxies of information costs in explaining asset trade. Although such information costs

could be correlated or magnified with poorly performing institutions, research has to a large extent ignored the role institutional and political characteristics play in international capital movements. A notable exception is Shang-Jin Wei's work. Wei (2000) shows that corruption exerts a distortionary role to FDI. Likewise, Wei and Gelos (*forthcoming*) show that emerging market equity funds invest systematically less in less transparent countries. Since the dataset employed contains not only inter-bank loans, but also substantial amounts of FDI and equity flows, the results hint that a key missing input of previous capital flow studies were politics and other institutional characteristics (legal system quality, government control of financial intermediaries, corporate governance). The evidence given in this paper further advances this literature's main findings in a number of directions: (i) (Country-pair) Fixed-effect estimates that isolate the within country variation in international banking activities during the last twenty years clearly reveal a robust positive correlation between improvements in institutional quality and an increase in international lending. (ii) Instrumental variable cross-sectional estimates further strengthen a the potential a causal mechanism and address issues or measurement error and reverse causation.⁵

Second is the institutions and finance literature. Starting with the seminal work of La Porta *et al.* (1997, 1998, 1999), numerous studies have established a strong causal effect of the quality of legal system on financial development. Well-defined and protected investors' rights appear to be a prerequisite for liquid capital markets (La Porta *et al.* 1997), merger and acquisition activity (Rossi and Volpin, *forthcoming*), and large project finance deals (Esty and Megginson, *forthcoming*). In a parallel study Qian and Strahan (2004) show that the legal system also explains the design-structure of international bank contracts. Recently, however, alternative to legal system factors have been considered. Stulz and Williamson (2003), for example, show that cultural characteristics (religion, societal composition, language) perform better than legal quality proxies in explaining financial patterns across the world, while Guiso, Sapienza and Zingales (2004a, b) stress the role of social capital and

⁵While Wei (2000), Gelos and Wei (*forthcoming*) and Portes and Rey (*forthcoming*) do present some fixed-effect models the time-span of their data is much smaller than that of the present study. In addition none of these studies presents instrumental variable estimates to address issues of (possibly systematic) measurement error (because for example the agencies producing these indicators follow rather than precede the investment decision of international investors) or reverse causation.

trust. Rajan and Zingales (2003), in contrast, emphasize the role of politics (protectionism, lobbying) in financial development. Not only are my results in accord with these insights, but they also reveal a *synthetic* approach. The panel regressions imply that *both* legal system quality and politics are key driving forces of the volume of international bank flows. Culture plays also an important role, since countries with common historical, colonial, or religious ties engage much more in bilateral banking activities.

3.2.2 Why institutions matter for gross cross-border bank transaction flows: Channels and theory

Political risk and institutional quality strongly affect foreign investors (banks in the present study) behavior. But where does this effect come from? First, low quality institutions are associated with poor economic performance. Previous studies have documented a negative effect of corruption, inadequate property rights, and investor protection on both GDP growth (e.g. Knack and Keefer, 1995; Mauro, 1995) and volatility (Acemoglu *et al.*, 2003). Likewise, Bai and Wei (2000) present evidence that weak institutions lower government's ability to collect taxes and consequently lead to inefficient macro policies (such as protectionist measures and high inflation).

Second, political instability and corruption can cancel any benefits of international banks arising from higher expected returns. Erb, Harvey and Viskanta (1996a,b) and Perotti and van Oijen (2001) have shown that political instability (reflected in the same composite political risk measure as the one this paper employs) is followed by lower stock returns. Johnson *et al.* (2000) show that corporate governance measures perform better than standard macro variables in explaining the currency and stock market plunge during the East Asian crisis.

Third, poor institutional performance can amplify asset trade frictions. Du and Wei (2004) and Bhattacharya and Daouk (2003) show that high levels of corruption are correlated with higher insider trading activities. In contrast, a high quality legal system minimizes monitoring costs. Corporate transparency and advanced accounting standards mitigate in-

formation costs, while bureaucratic and legal efficiency alleviates agency costs by settling disputes arising from contract incompleteness. Large agency costs make the *effective* production technology less efficient and as a result foreign investors are unwilling to lend to countries marked by a poorly functioning legal system. Therefore international banks might be unwilling to bear these costs in spite of some potential gains from higher returns and increased portfolio diversification opportunities.

Yet little theory exists directly linking foreign investment with political stability and institutional quality. Even less work exists modelling the role of institutions and politics for international banking specifically. Models of international asset trade have analyzed legal system inefficiencies, corruption, or low transparency in the broad context of "*transaction*" costs.⁶ Recent theoretical advances by Martin and Rey (*forthcoming*) and Razin *et al.* (2003) build information asymmetries in asset trading models, but again institutions and politics are absent. The most closely related theoretical work to the present study comes from the corporate finance literature. Shleifer and Wolfenzon (2002) build an agency model in which an entrepreneur has a profitable project and seeks external finance. The entrepreneur maximizes her personal wealth, which is a function of the fraction of the project she decides to maintain, the project's profitability, and the amount she is able to divert. Diversion in turn depends on the efficacy of the legal system; looting becomes costly with well-defined and protected investor's rights. Both domestic and foreign investors, *ex ante*, anticipate the probability of diversion and are thus unwilling to invest in low quality legal environment countries. Consequently, capital does not flow from capital-abundant countries to countries with low levels of investor protection. The present study's results demonstrate a strong causal effect of legal system effectiveness indicators on the volume of cross-border lending activities. The results also indicate that what it really matters for international banks is the actual, *de facto*, quality of the legal system rather how well the securities legislation or the commercial code protects investors.

⁶See, for example, Obstfeld and Rogoff (2000) and the associated discussion, particularly Charles Engel's (2000) comments.

3.3 Methodology, Data and Preliminary Evidence

3.3.1 Gravity Specification

To quantify the effect of institutions and political conditions on cross-border bank flows, I rely on the "gravity" model. An empirical gravity equation for financial flows arises naturally from international macro models (e.g. Obstfeld and Rogoff, 2000; Lane and Milesi-Ferretti, 2003). Distance captures either transaction costs in the goods market or asymmetric information in the asset market. Following Martin and Rey's representative agent model of asset flows, "size" is proxied by (the logarithms of) real per capita GDP and population.⁷ I augment the "gravity" equation with composite institutional quality proxies, specific institutional indicators, along with geographical and cultural variables. The exact specification for my analysis takes the following form:

$$\begin{aligned} \ln(F_{i,j,t}) = & \beta_1 \ln(Y_{i,t}) + \beta_2 \ln(Y_{j,t}) + \beta_3 \ln(POP_{i,t}) + \beta_4 \ln(POP_{j,t}) + \\ & \beta_5 \ln(AREA_i) + \beta_6 \ln(AREA_j) + \beta_7 \ln(DIST_{i,j}) + \beta_8 TIE_{i,j} + \\ & \gamma INST_{j,t-1} + \Phi_1 OTHER_{i,t} + \Phi_2 OTHER_{j,t} + a_t + \varepsilon_{i,j,t} \end{aligned} \quad (3.1)$$

where i and j indicate the "source" and "recipient" country respectively and t denotes time (quarter). The variables are defined as:

- $\ln(F_{i,j,t})$ is the natural logarithm of gross asset flows from banks located in country i ("source" country) to all sectors (banking and non-banking) in country j ("recipient" country) in quarter t .

⁷In contrast to Obstfeld and Rogoff, who build a model that generates substantial amounts of home bias by introducing transaction costs *solely* in the goods market, Martin and Rey add frictions in the asset market. In their set-up, demand for country A 's assets is separated between domestic and external. External demand from country B for assets in A is inversely related to (asset) transaction costs, like financial intermediaries' fees, hedging expenses, and monitoring costs. Demand from country B for assets in A are a function of the size of country A capital markets, since a larger market implies better diversification opportunities.

- Y is real GDP.
- POP is total population.
- $\ln(DIST_{i,j})$ is the logarithm of the distance between the two countries.
- $TIE_{i,j}$ is a dummy variable that takes on the value one when i and j have common colonial ties or speak the same language.
- $AREA$ denotes land area in square kilometers.
- $INST_{j,t-1}$ denotes the time-varying ICRG composite institutional indicator (political risk) for the recipient country (j) in the previous quarter $t - 1$.⁸
- $OTHER$ includes various other (time invariant and time varying) controls at the source (i) and recipient country (j).
- The specification also includes time fixed-effects (a_t) to capture unobserved time heterogeneity and the upward trend in the volume of cross border activities.
- β, γ , and ϕ are vectors of parameters to be estimated, while $\varepsilon_{i,j,t}$ is a Gaussian white noise error term.

This specification (3.1) resembles previous studies on other forms of international bilateral capital movements.⁹

3.3.2 Data

My dataset consists of quarterly observations, starting from the first quarter of 1984 until the end of 2002. The data can be separated into three categories: i) the cross-border bank

⁸Using the contemporaneous value does not alter the results. The lagged value is used to (partly) address simultaneity. In the robustness section, I formally address the issue of endogeneity employing IV estimators.

⁹I also estimated a model with multiplicative gravity terms (e.g. Rose and Spiegel, 2002; Rose, 2004). Another econometric approach is to standardize bank flows by recipient country GDP. Yet the econometric literature on the gravity model and bilateral flows suggest to use (1) rather than this standardization (which is recommended in studies of non-bilateral flows). The results are quantitatively very similar.

flow data ($F_{i,j,t}$), *ii*) institutional performance measures, $INST_{j,t-1}$ (composite and specific), and *iii*) data on other controls.

Bank Flow Data

Data on bank flows is taken from the Bank of International Settlement's (BIS) International Locational Banking Statistics (IBS). The BIS IBS database reports aggregate assets (and liability) holdings of banks, located in 36 jurisdictions ("the *reporting area*") in almost 100 countries ("the *vis-à-vis countries*"). However, due to the hub nature of international banking activities, the data covers almost all international bank lending.¹⁰ The data are originally collected by domestic Monetary Authorities and cover the international exposure of almost all (99% or 100%) of domestic banking institutions, including both private and state controlled banks. Due to insufficient coverage for many "*host*" countries and 17 (mainly developing and "off-shore" centres) "*source*" countries the present study analyzes flows from 19 to 51 (at maximum) countries. The "*source*" nations are financially developed, while "*vis-a-vis*" nations include both OECD and developing (and some underdeveloped) states. Data includes banks' on-balance sheet exposure. It captures cross-border loans and deposits, debt securities, and other assets. Specifically, the dataset includes standard inter-bank lending activities, such as deposits, loans, bank-to-bank credit lines and trade-related credit. The data also "*covers portfolio and direct investment flows*" (BIS, 2003a), like holdings of securities, participations (i.e. permanent holdings of financial interest in other undertakings) in non-resident entities and direct investment in subsidiaries. So these data do reflect the investment decision of big international banks (to lend to other financial institutions or other foreign entities) and are not contaminated by individual investor's cash-flow transactions. Flows are estimated by the BIS as the exchange rate adjusted changes in total assets (and liabilities). A concern with previous versions of the BIS data was how to construct flows from the stock data. Simply taking first differences could be very misleading, since a devaluation either at

¹⁰The BIS reports that countries are asked to contribute only "*...when their cross-border banking business becomes substantial*" (p.5. BIS 2003b). The country data (which are collected by domestic Central Banks and Monetary Authorities) cover the international exposure of almost all (99% or 100%) of domestic banking institutions, including both private and state controlled banks.

the "source" or at the "recipient" country might cause a sharp increase or decrease in total assets, even if no capital movements have taken place. Since reporting countries report the currency in which the assets and liabilities are denominated, the BIS has constructed an estimate of the flows, the dependent variable ($F_{i,j,t}$). Flows are converted in real terms using the US consumer price index. The Data Appendix B.3 provides a detailed analysis of the Locational Banking Statistics data-base and gives precise variable definitions.

Institutional Quality Indicators

I use as institutional environment's proxy, the composite indicator constructed by Political Risk Services (PRS), namely the International Country Risk Guide (ICRG) "political risk" rating.¹¹ In contrast to most institutional measures that are purely cross-sectional or exhibit limited time-variability, the political risk rating (*INST*) exhibits substantial "within" variation.¹² This enables me to address the key policy question: Controlling for unobserved country heterogeneity and time-invariant omitted variables, is an institutional improvement associated with an increased volume of international capital movements? In addition it is reported at a monthly basis and can be directly merged with the BIS quarterly data. *INST* is a composite index of political, legal, social, and bureaucratic institutions. It is based on PRS staff subjective assessment of various institutional arrangements and ranges from zero to one hundred (with lower values suggesting poorly performing institutions). Although this measure (and various of its subcomponents) have long been used by the empirical macro literature (e.g. Hall and Jones, 1999; Knack and Keefer, 1995), only recently has it been

¹¹PRs is a risk rating corporation. Although measurement error might be present, it is exactly the type of data that institutional investors, like banks, use. In Section 3.6, I address measurement error employing IV techniques.

¹²The high "within" country variations has recently been emphasized by Glaeser, La Porta, Lopez-de-Silanes and Shleifer (2004). Their critique to the institutions and long-run economic development studies (e.g. Acemoglu, Johnson and Robinson, 2001; Acemoglu and Johnson, *forthcoming*) is that (due to this high variation) the political risk indicator (and its sub-components) does not capture permanent institutional characteristics. While this is clearly a fundamental point when examining the impact of institutional quality on long-run economic development, in this paper's context this high variation is particularly desirable. This is because it enables me to identify the response of international investor's on institutional changes that might either be permanent or short-lived (the possibility that reforms and institutional changes might be reversed is in fact a key risk factor that foreign investors bear).

employed by studies analyzing international investment patterns.¹³ Alfaro, *et al.* (2003) use this index to assess institutions' impact on net inward investment, while Gelos and Wei (*forthcoming*) employ it to explain the portfolio allocation choice of emerging market funds.

Yet it is not crystal-clear what such a composite rating captures. Perotti and Van Oijen (2001), for example, show a strong correlation between the political risk rating and privatization policies, while Alfaro *et al.* with democracy. To solve the institutions vs. politics question, which has attracted recently a considerable debate, I will present results with both the political risk rating and with more specific measures of institutional quality.¹⁴ For the latter, I exploit recently compiled datasets on legal and bureaucratic quality. I proxy the quality of laws and corporate governance practices with the widely-used anti-director's rights index (La Porta *et al.*, 1998). For legal system performance I rely on two measures compiled by Djankov *et al.* (2003): A 0 – 10 contract enforceability index and the time it takes to evict a tenant for non-payment.

Other data

Common language, ethno-linguistic, and geographical variables included in the gravity model originally come from the CIA Factbook and have been retrieved from Rose (2004). GDP, population and other macro variables are taken from the IMF's International Financial Statistics. To control for macroeconomic and financial sector developments, I also utilize the other two risk ratings produced by ICRG, the "economic" and "financial" risk measures. The *Data Appendix B.3* provides the sources and definitions of all variables employed.

¹³Hall and Jones decompose the ICRG index and use only the scores on *i*) law and order, *ii*) bureaucratic quality, *iii*) corruption, *iv*) risk of expropriation, and *v*) government repudiation of contracts. The index I use is broader since it includes religious tensions, war, ethnic conflict, etc. For more details see the Data Appendix.

¹⁴See Acemoglu and Johnson (*forthcoming*) for an effort to "unbundle" institutions and empirically quantify the impact of specific institutional characteristics on economic development. For such analysis, one would ideally like to use the various sub-indicators of the political-risk indicator. However, PRS does not report the sub-components of these ratings at a quarterly frequency. Thus I rely on other variables that are not the actual sub-components of the political risk rating, but capture the same institutional characteristics. By doing so, I (partly) address the potential measurement error of the political risk rating.

3.3.3 Preliminary Evidence

Table 3.1 presents descriptive statistics, while Table 3.2 provides the correlation matrix of the variables employed in the regression analysis. Cross-country institutional performance differs enormously. For example, Canada, Chile, and the United Kingdom get (a score of) 5 in the (0 – 6 scale) anti-director's rights index, while Belgium gets a 0, and Germany and Italy a disappointing 1. The variability of the *de facto* legal quality indicators (contract enforceability and eviction time) is even higher. For example in ten sample-countries it takes more than a year to enforce one of the simplest legal cases, tenant eviction for non-payment.¹⁵ Likewise, the zero to ten contract enforceability index, which is based on the rigidity and formality of the legal system ranges from 4.29 in Indonesia and Peru to almost 9 in Switzerland.

The composite institutional index ranges from 33 (in the Philippines in 1991) to 97 (in Switzerland and the Netherlands in various periods). The "*within*" country variation, which is particularly desirable in a panel context, is also substantial: The Philippines, for example, begin in 1984 with a low score of 38. After Marcos regime collapse, however, the Philippines experience a notable institutional-political improvement. This is reflected to the political risk measure, which increased to 76 (end of 1997) and then fell to 65 (at the end of 2002). The political risk rating is, in turn, highly correlated with corruption and contract enforceability (0.70), although these variables are taken from alternative sources (not PRS) and enter with just a 4% loading.

The correlation structure suggests a notable association between the composite institutional index and bank flows. The ICRG "*political risk*" index is substantially correlated with flows both in assets and liabilities (correlations of 0.31 and 0.34 respectively). Figure 3.1 plots the cross country scatter of aggregate bank flows against the mean composite institutions index and illustrates a clear positive association. A similar relationship between gross banking flows and corruption and legal system quality is illustrated in Figures 3.2 and 3.3

¹⁵These countries are: Argentina, Japan, Italy, Poland, Austria, Bulgaria, Colombia, Israel, Norway, and Hungary.

respectively.

3.4 Benchmark Results

I begin by estimating the gravity model (3.1) using plain OLS (pooling cross-section and time-series). I then show that the results are robust to alternative panel methodologies that correct for unobserved individual characteristics and residual autocorrelation. Since one of the benefits of the large time span of the data is the ability to control for country unobservable characteristics, in many subsequent Tables I will thus focus on fixed-effect within estimates (although to demonstrate the robustness of the results I will also present estimates based on alternative panel-data techniques). Throughout the regression analysis, t statistics based on standard errors adjusted for clustered panel-wise (country pairs) heteroskedasticity are reported.¹⁶ First, I concentrate on the time-varying composite institutions index (ICRG "political risk" indicator). Second, I quantify the effect of particular institutional arrangements on cross-border bank lending.¹⁷

3.4.1 Political Risk-Composite Institutional Indicator

Pooled OLS

Table 3.3 presents the benchmark OLS estimates. The "gravity" model works well in several dimensions. First, the model fits the data quite well. One can explain more than forty percent of the overall variability in gross bilateral bank flows just with standard gravity factors (namely distance, ethno-linguistic ties, land area, population and per capita GDP). This is lower than in goods' trade studies (where the R^2 is around 0.65), but quite high for (typically

¹⁶Correcting for clustered at the country-pair heteroskedasticity and autocorrelation yields large standard errors (compared to either standard Huber-White or Newey-West standard errors). Thus the reported t -statistics are the most conservative. Clustering standard errors either at the "recipient" or "source" country yields smaller standard errors and hence even larger t -statistics (for a similar approach on clustering by country-pair, see Rose (2004)).

¹⁷Regression diagnostics indicate no serious mis-specification problems. Box-Cox tests suggest that the usually applied in gravity models logarithmic transformation is quite reasonable ($\lambda = .028$). Although the bank flow data exhibit some inertia, there are also no evidence of non-stationarity. Panel unit-root tests strongly reject the null of hypothesis of non-stationarity.

noisy) quarterly data. Second, in all perturbations the "gravity" terms consistently enter with stable and well-behaved coefficients. Distance, for example, has a coefficient ranging from -0.6 to -0.8 , close to previous estimates in asset flow studies. Although it might be puzzling to interpret a negative effect of distance on asset trade, since transaction fees are typically small, distance seems to proxy well for information asymmetries and other non-standard costs.¹⁸ Having linguistic, historical or colonial ties increases bilateral bank flows considerably, suggesting that culture and trust have a role in financial patterns. The coefficients on the "size" measures are positive and significant. Richer and financially developed nations engage more in cross-border lending activities as do larger (in population terms) countries.¹⁹ In spite of the neoclassical prediction, capital is directed towards relatively wealthy countries. Martin and Rey attribute this result to increased diversification opportunities in richer nations, while Gertler and Rogoff (1990) argue that capital market imperfections are mitigated in affluent countries, since wealth can serve as collateral.

Columns (2), (3) and (4) add the composite institutional index (ICRG political risk) to the gravity equation. The coefficient on $Inst_{j,t-1}$ is at least three standard errors above zero. Further, the model's fit has substantially increased (the R^2 has jumped from 0.45 to above 0.50). In columns (3) and (4) I control for macroeconomic developments both in the "source" (i) and the "destination" (j) country. Numerous studies (Calvo, Leiderman, Reinhart 1993, 1994; Frankel and Roubini, 2001) have documented a significant negative effect of global interest rates on "North to South" capital flows. Consistent with this result, the coefficient on the lending rate ($Rate_{i,t}$) in the "source" country is significantly negative. This implies that high interest rate periods are associated with lower levels of bank lending activities not

¹⁸Buch, Kleinert, and Toubal (2004) provide a thorough review of both the theoretical foundations and recent empirical results on the impact of distance on bilateral trade and asset flows. Portes and Rey show that when other factors that more directly capture information costs (telephone traffic, foreign newspapers sales) enter an equity flows gravity specification, the coefficient of distance decreases substantially (although it is still negative and significant). Distance might also be capturing (part of) the effect of trade on capital flows. Aviat and Coeurdacier (2004) present cross-sectional evidence that distance's significance in asset trade studies is partly driven by a strong correlation between asset and trade flows. Their regressions reveal that when bank holdings and trade are simultaneously estimated the effect of distance in the bank holdings regression shrinks.

¹⁹The only standard gravity variable that does not enter positively and significantly (as it does in trade studies) is a common border dummy, which takes on the value one when the two countries are adjacent. This comes at no surprise though, since we expect adjacency to be much more important in goods trade.

only to developing but also to industrial countries. In column (4) I add inflation ($Inf_{j,t}$) to control for economic conditions in j . The coefficient on inflation is negative, but statistically insignificant. Although in many of the subsequent specifications $Inf_{j,t}$ enters with a significantly negative coefficient, its magnitude is extremely small.²⁰ Other macroeconomic controls, such as GDP growth appear insignificant.²¹ Note that the coefficient on the composite institutions index has remained stable and is still significantly positive. In columns (5) and (6) I use the natural logarithm of $Inst_{j,t-1}$ to directly interpret the coefficient as an elasticity.²² The specification also includes regional and income level dummies to capture unobserved "recipient" country heterogeneity. Not only has the γ coefficient retained its statistical significance, but its magnitude is economically large. Its scale implies that conditional on geography and economic development (captured both by per capita GDP and the income dummies) a one percent increase (decrease) in institutional efficiency is followed by a rise (decline) of approximately 2 percent in the level of international banking activities.

Alternative Estimators

Table 3.4 presents estimates based on alternative panel methodologies. Column (1) reports the "between" estimator. Although this method removes the time series dimension (by using mean values), it is useful to identify which countries receive on average the bulk of international bank capital. The estimated coefficient implies an even larger institutional effect on international bank lending (elasticity $\cong 4$). The R^2 has also jumped to 0.77. This finding is in line with the recent cross-sectional results of Alfaro *et al.*, who show that institutional quality can explain why capital does not move towards poor nations.

²⁰The results are similar if one substitutes inflation with the lending rate in the capital recipient country. The coefficient on lending rate in j is in most specification negative and significant. However, its size and magnitude is very small. The results are also very alike when one uses the interest rate spread between the two countries.

²¹Frankel and Roubini (2001) describe this peculiar finding as follows: "*... (research) came to a surprising conclusion: the most important identifiable factors behind the flows were US interest rates and other macroeconomic variables external to the emerging market countries. Capital was heading South because low rates of return were on offer in the North. This was a surprising conclusion because the more common belief at the time was that domestic factors within the emerging market countries were responsible, particularly pro-market policy reforms.*"

²²The results are not sensitive to this transformation. In the following Tables I will present estimates employing both the original value of $Inst$ or its natural log.

My estimates suggest that countries with poorly performing institutions not only receive substantially less net foreign inflows, but also engage much less in cross-border lending and borrowing activities.

An important policy question is whether foreign investors actually "reward" structural policies that improve the institutional environment through increased investment. The fixed-effects "*within*" estimates directly answer this enquiry. The model reported in column (2) includes a vector of 850 constants that control for any country-pair unobserved time-invariant characteristics. The estimates, however, should be interpreted cautiously, since this estimation ignores time invariant factors, such as distance and ethno-linguistic ties, while we know *ex ante* that these factors are important determinants of cross-border lending. The coefficient on the composite institutional index has decayed but is still positive and highly significant. The estimated elasticity suggests that if a country implements structural policies that improve the institutional and political environment, bilateral bank flows are expected to increase by approximately 3.6% at a quarterly basis. Such improvements are not rare in my sample. Argentina, for example, experienced a substantial decline in political risk after the fall of the military dictatorship and the end of the Falklands War in 1984 (ICRG political risk jumped from 50 to 55). An even greater improvement occurred in Indonesia in 1991, reflecting the radical political power decentralization (political risk jumped from 44 in the first quarter of 1990 to 58 in the first quarter of 1991). Democratizations are also associated with significant declines in political risk: Examples include South Africa after the 1994 elections that ended the "apartheid" or Chile in 1990 when Augusto Pinochet was removed from power.

Another approach, which fully utilizes the panel information, would be to estimate a "*random-effects*" model. This approach introduces country-pair fixed-effects, while allowing for time invariant regressors. Random-effect estimates are typically more efficient, since they use information both "*between*" and "*within*" panels. Their consistency, however, crucially relies on individual effects not being correlated with the disturbances.²³ Random-effect es-

²³Unfortunately, in this case, a Hausman specification test is not particularly helpful. Many time-invariant factors are significant and one cannot distinguish whether the observed fixed-effects correlation with the error term of the within estimator is due to factors omitted in the within estimation (distance, ethnolinguistic

imates are reported in column (3). The statistical and economic significance of the RHS variables has remained stable. The coefficient on the political risk is still positive and significantly different from zero at any conventional level.

Columns (4) and (5) report estimates of a "*quasi-fixed effects*" model. The specification in column (4) includes a vector of "source" country dummies that control time-invariant characteristics in the lending countries that are difficult to observe, like differences in reporting, accounting or the exact definition of financial institutions' cross-border transactions. Adding "source" country fixed effects also controls for the disproportionately large impact that certain countries have in the international banking system.²⁴ In column (5) a vector of "host" country dummies is included to control for unobserved heterogeneity in the recipient countries. The specification given in column (6) includes both a vector of "source" and a vector of "recipient" country fixed-effects. The elasticity of institutions in the double-fixed effects model is significant at the 95 confidence level and similar in magnitude to the fixed-effects model (column 2). This suggests that controlling for unobserved time-invariant characteristics both of the capital recipient and the capital investing country, an institutional enhancement is associated with a significant increase in bilateral banking activities.

An important econometric consideration concerns the structure of the error term. Since flows are estimated by the BIS as the exchange rate adjusted change in total assets, first-differencing might lead to an autocorrelated error term, which would in turn corrupt inference. Columns (7) and (8) give the Prais-Winsten and random effect GLS estimates, respectively, that correct for first-order residual correlation.²⁵ Although autocorrelated disturbances are not present if we pool all data together, persistence might occur in specific country-pairs. Feasible GLS estimates that allow for arbitrary panel-specific autocorrelation (and heteroskedasticity) are given in the last column. The point estimates are similar to

ties, etc.), but included in the random-effects or other truly unobserved factors. Moreover, our sample is not randomly drawn from a larger population and "random-effect" estimation might not be theoretically appropriate (Baltagi (2001) and Wooldridge (2002)).

²⁴Wei (2000) provides a more analytical discussion on the merits of the "*quasi-fixed-effects*" model in gravity models of asset trade.

²⁵A formal test of autocorrelation (Wooldridge, 2002) rejects the presence of serially correlated disturbances at any standard confidence level.

OLS, suggesting that autocorrelation is not corrupting inference.

3.4.2 Specific Institutional Characteristics

A drawback of the previous estimates is that it is not always clear exactly which institutions or policies are associated with higher levels of financial development and cross-border lending. In this section I thus "unbundle" the political risk index using specific institutional measures. Moreover to disentangle the role of legal institutions and politics, I present specifications where the political risk rating and the specific institutional measures are jointly entered in the specification.²⁶ In the rest of the paper I will present results based on various panel techniques, adding either "source" or "recipient" country fixed-effects or both. The coefficient's statistical significance and magnitude is not particularly sensitive to the exact specification.

Corruption

Theory on FDI has stressed the malignant role of corruption (Shleifer and Vishny, 1994) and transparency (Mody, Razin, and Sadka, 2003) in attracting foreign capital. While there is some empirical evidence supportive to these models linking corruption to FDI (e.g. Wei, 2000), its impact on other types of capital flows has not been examined.

In Table 3.5 I augment the baseline gravity model with the TI corruption index (lower numbers in the index correspond to higher corruption). The coefficient estimates show a strong and robust negative effect of corruption on international banking activities. The point estimate in column (1) implies that if Peru, which scores 4.7 (in a 0 – 10 scale), tackles

²⁶The specific institutional indicators are purely cross-sectional. Institutional persistence, however, suggests that this is not a serious drawback. One could argue that estimation and inference in a panel context is, however, problematic. A solution is to estimate cross-section regressions either on mean values or at specific years. Such estimates yield an even larger impact of institutional performance on international banking activities. Another problem arises, because ideally in the specifications that include both the composite institutions-politics ICRG rating and specific institutional measures (like corruption or legal system quality) one would want to exclude from the composite measure the part that the specific index measures. Due to data unavailability on the specific sub-components of the political risk rating at the quarterly basis, however, this is not feasible and if anything avoiding making this correction should bias the results against finding a systematic relationship.

corruption up to the level of Costa Rica (8.3), then bilateral bank flow transactions will increase by almost 1.5% $[(8.33 - 4.70) * 0.4144 = 1.504]$ at a quarterly basis. Corruption retains both its statistical and economic significance, even when the "political" or "economic" risk measures are included in the specification (columns (2) and (3) respectively). This result contradicts Wei and Wu (2001), who document either an insignificant or even positive effect of corruption on international bank lending activities. The present study, however, differs in many dimensions from the Wei and Wu (2001) study: First, their results are based on cross-sectional regressions, with data averaged for the 1994 – 1996 period, while the present study utilizes data for 18 years. Second, their sample covers substantially fewer lending countries (*i*). Third they study inter-bank loans using another BIS dataset, while the Locational Banking Statistics, I exploit, include also equity and FDI flows. Fourth, and most importantly, their analysis concentrates on how corruption affects the composition of capital flows, not how it impacts bilateral bank lending. My results are, however, in line with their model on corruption's effect on capital flows.

Legal System

To proxy for the quality of the laws in place I introduce the anti-director's rights index into the gravity model (*Anti_direct_j*). The estimated coefficient reported in columns (4)-(7) of Table 3.5 is, however, small and in most specifications insignificant. This accords with Portes and Rey who find this crude measure of investor protection to have no systematic impact on gross equity flows.²⁷

International investors do not care so much about how well laws, acts and commercial codes are designed. Rather, they focus on rights actual protection and enforcement. Likewise, theory concentrates on how fast and to what extent legal rights are safeguarded by the judicial system (Djankov *et al.*, 2003). As a proxy for the *de facto* efficacy of the legal system, I use a

²⁷I also experiment with La Porta *et al.* creditor's rights protection index. This variable might seem a priori more suitable, since international banks are most likely senior creditors. Like the anti-director's index the 0 – 4 creditor's rights index enters with an insignificant coefficient. This further re-enforces the point that actual court enforcement of creditors and shareholders rights is the determining factor rather than what the country commercial law dictates.

measure of contract enforceability, which is based on legal system's formality and speed. This variable ($Contract_j$) always enters the specification with a significantly positive coefficient. Even conditioning on the overall institutional quality and political stability (in column (5)), $Contract_j$ has a large economic effect: the point estimate suggests that if Portugal, (which has the lowest level of legal protection in the European Union, scoring 4.54), modernizes its judicial system to Belgium's level (which scores 8.40), the volume of cross-border banking activities will increase by more than 1% on a quarterly basis $[(8.40 - 4.54) * 0.298 = 1.15]$. In the last column I employ the time it takes to evict a tenant for non-payment ($Legal_time_j$) as an alternative measure of legal efficiency. The estimated coefficient implies that if the judicial process in Chile, where it takes approximately 240 days to evict a tenant for non-payment, becomes as fast as in Brazil, where it takes 120 days, the volume of cross-border banking activities is expected to increase by almost 14% $[(240 - 120) / 240] * 0.275 \simeq 0.1375$.²⁸

Jointly, the coefficient estimates suggest that modifying and upgrading anachronistic laws is a necessary yet not sufficient condition to attract foreign (bank) capital. A fast-proceeding judicial process and high quality law enforcement are far more important. Finally, legal system quality indicators retain their significance, even conditioning on corruption and overall economic environment (column (7)), hinting that these two institutional structures play an independent role.

Government Ownership of Banks

A somewhat neglected characteristic of financial systems is state control of the banking system. La Porta, Lopez-de-Silanes and Shleifer (2002) document that not only is government ownership of banks pervasive around the globe, but it is also associated with low levels of financial development and weak growth rates. They distinguish between "development" theories that stress the beneficial aspects of government ownership and the "public-choice"

²⁸I also employed other legal quality measures. Specifically: *i*) a 0 to 7 legal formalism index, *ii*) the time it takes to collect a bounced check, and *iii*) the time it takes to start up a new business. Djankov *et al.* show that these variables are good proxies for the operational performance of the legal system and bureaucratic quality. All these variables are strongly correlated with each other and the results are quantitatively very alike.

tradition that emphasizes the negative consequences of state's active involvement in the credit market. In her study on the lending practices of Italian banks, Sapienza (2004) offers an intuitive explanation for the pro public-choice evidence given by La Porta *et al.* (2002): Italian state owned banks charge substantially lower interest rates than privately-run banks and lend substantially more in areas where the government has a large clientele. Likewise, Dinc (*forthcoming*) shows that political motivations rather than profit-maximization drives the lending practices of state-owned banks in many developing countries. Government ownership, however, need not have a negative effect for foreign investors. It can actually minimize credit risk, since governments often safeguard their banks' debt. If this "*development*" prediction holds, then one would expect, other things being equal, higher international lending to countries with high levels of state ownership of the banking sector.

To quantify the effect of government control, I augment the baseline specification with a variable representing the share of the top 10 banks in a given country owned by the government of that country (Gov_Own_j). This cross-sectional variable is taken from La Porta *et al.* (2002) and corresponds approximately to the middle of the panel (approx. around 1995). Figure 3.4 plots the mean of the logarithm of cross-border bank flows against Gov_Own_j . The clear negative association goes against the "*development*" conjecture.

The regression results in Table 3.6 are not only in line, but also advance the recent pro "*public-choice*" findings: Foreign banks realize that state-controlled financial institutions promote political rather than profit maximizing objectives; consequently government ownership of banks impedes rather than spurs international lending. This suggests that the agency costs associated with state control by far surpass the benefits gained from implicit or explicit guarantees. The point estimates imply that controlling for the macroeconomic environment, increasing the government's share in the banking system by one percent decreases the level of cross-border bank lending by more than 1.6%.

Previous studies have shown that state ownership is strongly correlated with a poorly performing banking system. To isolate the effect of state ownership, I directly control for the operational performance of the banking system, employing a measure of bank soundness

(*Bank_Sound_j*) and an estimate of banks' overhead costs (*Overhead_j*). Moreover, to assess how the banking system's structure affects inter-bank activities, in columns (4)–(6) I use inter-bank (instead of aggregate) flows as the dependent variable. The health and operational performance of the banking system in the recipient country is a crucial factor driving gross inter-bank international capital flows. International banks invest substantially less in countries with low bank ratings and high operating costs. After controlling for the institutional environment and the health of the banking system, state ownership is still associated with substantially lower levels of international inter-bank lending.

These results offer an intuitive explanation for financial intermediaries' illiquidity in relatively poor countries: government control of the banking system discourages both domestic capital accumulation and foreign lending. Numerous studies point out that a banking system's liquidity has a causal effect on economic growth. The evidence, therefore, suggests that privatizing and liberalizing the banking system will drive foreign bank capital and relax banking system liquidity constraints, fostering in turn growth and investment.

3.5 Further Evidence

3.5.1 Developed vs. Developing Countries - EU membership

A major concern regarding most empirical analyses on institutions is whether the estimated effect is driven by the substantial variability between rich and developing (or underdeveloped) countries. Institutions are strongly correlated with other, difficult to observe, economic (or financial) factors that distinguish industrial from underdeveloped countries. Although the "fixed" and "quasi-fixed" effect estimates address this point, heterogeneity is still a concern. I thus reestimate the basic econometric model distinguishing between high and medium income countries. This also enables me to assess the effect of the ongoing European integration in cross-border banking activities.

Columns (1)–(6) in Table 3.7 give estimates for the effect of institutional performance in

high income countries (as classified by the World Bank) only.²⁹ The (pooled cross-section time series) model has retained its explanatory power ($R^2 > 0.50$) and all "gravity" variables (distance, ethno-linguistic ties, per capita GDP, land area, and population) enter with robust coefficients. The coefficients on the political risk rating and the more specific institutional indicators appear not particularly sensitive and remain significant at the 1% confidence level. The most conservative estimate (column (4), where we also control for specific institutional characteristics) for the political risk coefficient, for example, implies that a one percent institutional improvement is followed by an almost two percentage increase in the volume of international bank flow. These results are further strengthened by the fixed-effect estimates presented in columns (5) and (6). Even when we perform the estimation solely on the relatively homogeneous sample of high-income countries and at the same time control for unobserved country heterogeneity, the coefficient on the composite institutional quality indicator remains positive and significant.

Columns (2) to (4) include two dummies for European Union (EU) membership: the first takes a value of one when one of the two counterparts is an EU member (*EU_one*); the second equals one when both countries are EU members (*EU_both*).³⁰ The EU Single Market and the subsequent Financial Service Action Plan aimed to remove both direct and indirect barriers in cross-border movements of capital by harmonizing banking law and financial services' regulation. Moreover, the single currency has eliminated exchange rate risk. The results suggest that EU membership has led to a substantial expansion of banking activities across member countries. Although the coefficient on the *EU_one* dummy is statistically indistinguishable from zero, joint EU membership has a large effect. The estimates imply that cross border bank flows between member states by approximately 30% ($\exp(0.27) - 1 = 0.31$).³¹ This result suggests that substantial integration has taken place not only in

²⁹I also distinguished between developed and developing countries using OECD membership. The results are almost identical if one uses current OECD member countries, or the pre-1995 OECD members or the G-7 or the G-10 countries. Another approach is to pool all countries together but allow the institutional and political risk measures to differ between rich and middle income countries. Yet this approach assumes similar dynamics in the other control variables. The results, however, are very similar.

³⁰See for a similar approach Glick and Rose (2002) and Rose (2004), who quantify the impact of trade agreements on the volume of bilateral trade flows.

³¹Inserting EU member dummies in the full sample of countries yields larger coefficients. I report the most conservative estimates, since I want to avoid EU membership capturing a "high income" countries effect.

equity and debt markets, but in the banking sector as well (Baele *et al.*, 2004). Banking integration has taken the form of increased cross-border lending and borrowing rather than through mergers and acquisitions, as in the United States. This result has direct policy implications, since recent studies show that the U.S. banking sector integration has not only been associated with substantial growth gains (Jayaratne and Strahan, 1996), but also led to business cycle synchronization across states (Morgan, Rime, and Strahan, 2004).

As shown by the pooled OLS and country-pair fixed-effect estimates presented in columns (7) and (8) institutional quality is a significant determinant of cross-border lending in middle and low income countries as well.

3.5.2 Political, Economic and Financial Risk

Table 3.2 shows a strong correlation between the "political risk" measure and the other two ICRG risk ratings: the "economic" and "financial" risk indicators. One could suspect that the previously estimated coefficients actually capture "economic" and/or "financial" risk rather than institutional and/or political conditions. Erb, Harvey and Viskanta (1996a,b), for example, find the "economic" risk to be the key factor with "political" risk being the least informative in predicting future equity and bond returns.

To identify which risk is of most importance for foreign banks when making their international capital allocation decisions, in Table 3.8 I estimate gravity models augmented with each of the three risk ratings. Since cross-border bank flows exhibit some inertia, I estimate dynamic pooled models adding in the set of explanatory (four) lags of the dependent variable to capture the persistence. In the last row of the Table I thus report the long-run multiplier of each of the risk factors (estimated as the short-run coefficient divide by one minus the algebraic sum of the autoregressive terms). The results are not sensitive to this permutation. The long-run coefficient on political risk is very similar to the one reported in the benchmark estimates (see column (3)-Table 3.3, for example, where the coefficient on $Inst_{j,t-1}$ is 0.0581). The models reported in columns (1)-(3) hint that political and economic risk are somewhat more important than financial risk in explaining cross-border banking activities. Although

all risk characteristics are significant drivers of foreign (bank) capital, the augmented with political risk specification has the best explanatory power (in terms of overall adjusted R^2).

These estimates do not, however, directly address whether institutional or overall economic (or even financial sector) improvements are followed by increased cross-border lending. To address this policy question and also control for unobserved country heterogeneity, I proceed in columns (4)-(6) to dynamic fixed-effect estimates. Although the joint presence of individual effects and the lagged dependent variable terms yields corrupt estimates, recent Monte Carlo studies show that the bias sharply decays when the time horizon exceeds 30 periods. Judson and Owen (1999) estimate that the bias on the lagged dependent variable is around 1 to 2 percent of the true coefficient value when T is 30. More importantly, the bias on the other explanatory variables (and consequently the risk factors and the other gravity terms) is found to be less than one percent. Since the time dimension for most country-pairs exceeds 60, I report fixed-effect dynamic estimates, noting however that similar results were obtained with other dynamic panel fixed-effect techniques (Arellano and Bond, 1991; system GMM technique developed by Arellano and Bover and Blundel and Bond, 1998)³²

The fixed effect estimates strengthen the previous strong and robust institutions-foreign lending nexus. Among the three risk characteristics only "political risk" enters with a significantly positive coefficient (see for a similar finding, Gelos and Wei, *forthcoming*). This clearly suggests that (even temporary) reforms reflected in the ICRG political risk variables foster foreign investment. The insignificant "within" estimates of economic and financial risk also suggest that in spite of the strong association of these indicators with political risk, institutional improvement and political stability are the key requirements for foreign banks in their lending decisions.³³

Economic risk enters the OLS specifications that primarily utilize the cross-country vari-

³²For a similar approach see Bond *et al.* (2004).

³³I also estimated specifications including the economic and the political risk (and also financial risk) simultaneously. Although multicollinearity seriously plagues these estimates, the coefficient on the political risk indicator in j is always positive and has the largest of the three risk ratings magnitude. The results are quite similar if instead of country-pair fixed effects, I add a vector of recipient country and a vector of source country constants. The results are quantitatively similar when I estimate the model with inter-bank flows as the dependent variable or experiment with other lag lengths (These results are not reported for brevity).

ation with a significantly positive coefficient, while in the "within" estimates the coefficient becomes indistinguishable from zero. Although this might seem contradictory, in a mean-variance model framework the effect of economic risk not straightforward to sign. High risk is associated with both increased volatility and with higher expected returns. So it depends on the model's parameters which effect dominates. The inconclusive results of Table 3.8 are in line with such an interpretation.³⁴

3.5.3 Liability Flows

In Table 3.9 the basic specification is re-estimated with the logarithm of liability flows from i to j as the dependent variable. Interestingly the model performs well for liability flows.

The results imply that institutions and/or political risk both at the "source" and the "recipient" countries (columns (5) and (6)) are important drivers not only of international investment, but also borrowing flows. This results is robust to the inclusion of "source" or/and "recipient" country fixed effects. Since international borrowing is less risky than investing, such that low-quality institutions need not necessarily be such an important factor for the borrower, this result is puzzling. It can be rationalized, however, as follows: First, due to the hub structure of the international banking system, financially developed countries (mainly Germany, the United States, Japan, and the United Kingdom) are simultaneously both the big lenders and borrowers. Second, foreign liabilities of country i , held by residents in j , can serve as collateral for country j borrowing, thus increasing bilateral lending by reducing the riskiness of foreign investment. This finding extends previous results of Moshirian and Van der Laan (1998) and Buch (2003), who examined the international lending behavior of US, UK and German banks. It is also consistent with Ruffin and Rassek (1986), who model and show the complementary nature of the investment and financing decisions of large US multinational corporations. My results, which cover a much wider sample of countries

³⁴When I restrict estimation in the EU15 subsample, the coefficient on economic risk becomes negative and significant [when the model in column (2) is estimated only on intra-EU flows the estimated elasticity of economic risk is -2.204 ($t = 3.15$).] This implies that EU banks invested more in the relatively riskier countries to realize benefits arising from higher expected returns (foreign institutional investors heavily invested in government securities and equities in the countries of the South just before the adoption of the Euro).

and years, suggest that foreign assets and liabilities are mutually dependent. Institutional performance and political developments can therefore explain both international lending and borrowing.

3.6 Sensitivity Analysis

In this section I provide some robustness checks, checking for: *i*) potential omitted variables bias, *ii*) the BIS data quality and how the results are affected with alternative estimation techniques, *iii*) endogeneity and measurement error in a cross-sectional framework and *iv*) the stability of the model in various samples.

3.6.1 Additional Controls

Low levels of human capital reduce the return of foreign capital. Since human capital is highly correlated both with wealth and well-functioning institutions, the previous estimates might be capturing part of education's effect. In addition, Alsan *et al.* (2004) have recently shown that health is an important determinant of FDI, arguing that life expectancy captures labor productivity more adequately than education. Table 3.10 presents various specifications adding secondary schooling and/or (the log of) life expectancy. The coefficients for both human capital proxies are positive and highly significant. Consistent with a neoclassical production function, more educated societies engage more in international banking activities and have consequently more liquid financial intermediaries. Neither, however, the effect of the aggregate institutions-political risk index nor that of the specific institutional measures has lost its significance. The estimates thus suggest that wealth, human capital, politics and legal institutions *all* contribute explaining the low volume of international capital flows in poor countries.

The exchange rate (ER) regime can also play an important role for foreign investors. Many countries have adopted fixed exchange rate regimes to signal their commitment to sound monetary policy and attract foreign capital. I thus exploit the recent Rogoff and

Reinhart (2004) exchange rate regime classification and add in the RHS measures of ER rigidity. The "fine" classification ($ER_regime1_{j,t}$) ranges from 1 to 15, while the "coarse" classification ($ER_regime2_{j,t}$) from 0 to 6. For both measures higher levels suggest more liberal exchange rate policies. The estimated coefficients are both at least two standard errors below zero, implying that foreign banks prefer investing in countries with fixed exchange rate regimes. The estimates retain their significance even in the "*within*" specification (column (6)), suggesting that if a country moves towards a less flexible exchange rate arrangement it will receive more foreign bank capital. Even though fixed exchange rate regimes are associated with sharp devaluations, it seems that foreign banks prefer bearing this risk rather than that arising from non credible monetary policy and high exchange rate volatility.

3.6.2 Data Limitations & Alternative Econometric Techniques

Not all countries receive foreign bank credit in all quarters. Specifically, the BIS dataset includes many zeros, especially in transactions towards emerging and non-developed countries. Since a log transformation has been applied these observations have not been considered until now. Careful data examination reveals that these zeros represent non reporting gaps rather than actual zero flows. Still, I re-estimated all previous specifications replacing zeros with a value of one, yielding a log value of zero. Table 3.11 reproduces estimates after this transformation. Column (1) reports OLS estimates. Since the data has now many zero observations, columns (2)–(5) give Tobit estimates. Due to the excess zero observations, the overall model fit has worsened. The sign and statistical significance of all coefficients has, however, remained unchanged. Corruption is still negatively associated with capital inflows, as is state ownership of the banking system. Likewise, a high quality, efficient and fast legal system is particularly attractive to foreign banks.

Santos and Tenreyro (2004) have recently emphasized that in the presence of heteroskedastic residuals, applying a logarithmic transformation can be highly misleading. This is because the expected value of the logarithm of a random-variable depends both on the mean and on higher moments of the distribution. This transformation, however, not only affects the

efficiency of the estimator, but also its consistency. Santos and Tenreyro show that this problem has important implications for traditional estimates of the standard gravity terms (namely distance, size and ethnolinguistic ties) in log-linearized gravity equations in trade. Starting from the following general form:

$$y_{i,t} = F_{i,j,t} = \exp(x_{i,j,t}\beta) + \eta_{i,j,t} \quad (3.2)$$

Santos and Tenreyro propose to use the Poisson pseudo-maximum likelihood estimator (with heteroskedasticity adjusted standard errors). This method performs very well to their simulations of the "gravity" model, which further indicate that OLS and Tobit can be severely biased. The first order conditions of the PPML takes the following form:

$$\sum_{k=1}^K [y_{i,j,t} - \exp(x_{i,j,t}\beta)] x_{i,t} = 0 \quad (3.3)$$

This estimator has the additional benefit of also taking into account the zero observations of the trade and in our case the bank flow data.³⁵ It is thus quite natural to ask how our estimates of the institutions-augmented gravity model of financial flows is affected when estimated with PPML. The results are given in columns (5)-(7) of Table 3.11. The coefficients on the "size" proxies have decayed substantially. The log of GDP of the "source" country has even lost its statistical significance, while the coefficient on distance has dropped in absolute value by almost a half. This is very close to the Santos Tenreyro evidence on the gravity terms decaying significantly in international trade flow models. Most importantly for the focus of the current study, however, the estimated elasticity on the composite institutions (political risk) indicator is even larger jumping from around 2 – 2.5 to 3.8. The coefficient on $INST_{j,t-1}$ retains both its economic and its statistical significance, even when we add a full set of source and recipient country fixed-effects, to control for any (time) invariant

³⁵Santos Silva and Tenreyro (2004) show that applying non-linear least squares (NLS) not only does not resolve, but may actually accentuate the issues arising from heteroskedasticity. The reason is because NLS assigns larger weight to noisier observations. Santos Silva and Tenreyro show the Poisson PML model is also preferable to the alternative gamma PML, which assigns lower weight to observations with a large conditional mean in estimating the gravity model of international trade. This is because observations from relatively poor countries, which are mostly likely plagued by measurement error will get more weight.

unobserved heterogeneity. In the last column I augment the model with both the time-varying political risk measure and all the specific institutional characteristics. The PPML estimates further validate the results given so far on a joint politics institutions link for the investment behavior of foreign banks.

3.6.3 Endogeneity and Measurement Error - Cross Sectional Estimates

Institutional quality indicators are plagued by measurement error. This problem is particularly severe in the political risk rating, since it is impossible to summarize in a single variable all dimensions of the institutional and political environment. In addition the use of this measure is far from ideal, since it measures policy outcomes, rather than (relatively long-lasting) institutional characteristics (see on this point, Glaeser *et al.*, 2004).³⁶ As stated before this is not a serious drawback, since we are interested in quantifying how foreign investor's respond to policy or institutional changes. Whether such changes will prove to be long-lasting or not is clearly a sizable part of the risk they face when making their investment decision. In any case, classical measurement error, however, yields an attenuation bias, suggesting that results so far have been conservative. A more important concern is, thus, reverse causality, which, if present, will produce inflated coefficients. An increased volume of foreign capital may itself lead to institutional improvement. Domestic firms may, for example, adopt stricter accounting standards and apply more transparent corporate governance practices. The government may remove capital account restrictions and privatize state enterprises. Even if no (classical) reverse causality is present, over-stated coefficients can arise if the researchers at PRS assign higher ratings to countries that receive more inward investment (in order for example to saviour their clients).

These problems, however, can be addressed with suitable instruments. Recent impor-

³⁶Glaeser *et al.* (2004) point out that the ICRG index do not measure the quality of domestic institutional characteristics, but just reflect the policy choices of the "*ruling class*" to protect or not private property rights. Most importantly since these measures are strongly correlated with GDP, Glaeser *et al.* reasonably argue that they reflect "*ex post outcomes,, rather than political constraints per se*". Since in all specifications we include recipient country GDP in the set of explanatory variables, this concern in our context is not as severe as in studies that GDP is the dependent variable.

tant contributions in the literature on the determinants of institutional quality and its role in economic development provide some useful guidance. Table 3.12 reports cross-sectional estimates of the gravity models in the first quarter of 2000. The need to move to cross-sectional estimates is required, since the "instruments" suggested in the literature are purely cross-sectional. I also control for human capital using life expectancy and the exchange rate regime that have been found to important correlates of cross-border bank flows. In column (1) I instrument the political risk index with measures of linguistic, ethnical and religious fragmentation (column (5)).³⁷ Aghion, Alesina and Trebbi (2004) argue that fractionalization is a key determinant of political institutions and also show that ethnic and religious polarization is negatively associated with the quality of political institutions (proxied by the constraints on the executive, political freedom, democracy scores, etc.). Clearly the societal structure is as exogenous as one could reasonably hope for to international banking activities. In addition the Sargan-Hansen test of over-identifying restrictions does not cast doubt on the instruments validity (p -value 0.184). Further the first stage diagnostics indicate no problem of weak instruments. The R^2 of the excluded instruments in the first stage equation is greater than the 0.25 – 0.30 threshold indicated by the weak instrument literature (e.g. Staiger and Stock, 1997). The coefficient on *Inst* retains its statistical significance. Its magnitude is also very close to the benchmark estimates in Table 3.3, where the gravity model was estimated over a twenty year period.

Due to its secrecy and illegality, corruption is likewise difficult to compute. The TI measure I use is a blend of various perception-based measures. Although this minimizes systematic bias, it introduces noise, which attenuates the coefficient.³⁸ Thus, in column (2) I follow Mauro (1995) and instrument corruption with measures of fractionalization. The instrumented corruption measure enters the gravity model with a statistically significant and relatively stable coefficient, verifying our previous estimates.

³⁷I also experimented with the Acemoglu *et al.* (2001) settler mortality rate and latitude from the equator (used by Hall and Jones, 1999) as an instrument for *Inst*. The results are quite robust. I decided not to report IV estimates with the settler mortality measure, since my sample consists mainly of developed countries, where this variable is unavailable.

³⁸The corruption measure can not capture whether the bribery can guarantee that the business is going to proceed or not (the "*industrial organization*", Shleifer and Vishny (1994)). Wei (2000) gives an eloquent discussion of the conceptual and measurement issues surrounding the corruption indicators.

In columns (3) and (4), I focus on the three indicators that measure the de-jure and the de-facto efficiency of the legal system. Following the influential work of La Porta *et al.*, who argued that legal origin has crucially affected the evolution and quality of the legal system, I use legal origin dummies to instrument for anti-director's rights and contract enforceability respectively. The coefficient on the *de facto* legal quality measure ($Contract_j$) is statistically significant and robust suggesting that our previous estimates were neither driven by reverse causality nor by systematic measurement error. In addition the estimate is almost identical to the previously reported panel estimates.³⁹ In line with the previous results the coefficient on $Anti_direct_j$ is only marginally significant, validating that actual contract enforcement rather is the key consideration of foreign banks. In the last column I examine the role of government control of the banking system, again using legal origin to instrument Gov_Own_j (La Porta, Lopez-de-Silaens and Shleifer, 2002) verifying that foreign banking institutions appear unwilling to invest in countries that the state controls the banking system.

3.6.4 Sample

Table 3.13 provides additional robustness checks. I perturb the model in various ways to check the results' stability in different samples. Each panel reports three gravity specifications: (i) with the political risk rating ($Inst_{j,t-1}$) only, (ii) with the specific institutional measures only, and (iii) with both the time-varying political risk rating and the specific cross-country institutional indicators. In Panel A, I have excluded bank flows from the United States to check whether the results are driven by the fundamental role of the U.S. in the international financial system. Likewise Panel B reports estimates excluding all capital flow observations involving U.S., Japan or Germany (G3). In Panel C, I ignore all intra-G7 transactions. In Panels D and E I vary the sample period, splitting the sample into two equally-spaced parts. This twist is interesting since many economies have only recently lifted capital account restrictions. In addition the volume of cross-border capital flows has drastically increased in the late nineties. In Panel F, I exclude from the specification the

³⁹A possibility of course that can not be ruled out is that the upward bias arising from reverse causality exactly cancels the attenuation effect.

time nuisance parameters (a_t).

The coefficients on both the political risk-composite institutional rating and the specific institutional variables are not particularly sensitive neither to the sample nor the exact specification. "Political risk", for example, enters in all model permutations with a coefficient close to 0.05 and at least two standard deviations above zero. When the "political risk" enters jointly with the specific institutional variables, its coefficient decays, but retains both its statistical and economic significance. Of the four specific institutional variables, government ownership of banks and contract enforceability appear to be the most important. Both have coefficients that are statistically different than zero in all permutations. Moreover the range of the estimated coefficients for $Contract_j$ and Gov_Own_j is relatively narrow implying that a poorly performing and mis-functioning legal system as well as a state-owned banking system strongly impede foreign capital. Corruption and low *de jure* investor's protection also influence foreign banks, but to lesser extent.

3.7 Summary and Conclusion

Few doubt that institutions to a smaller or greater extent influence financial (and economic) development. An open challenge for empirical research is to quantify which type and through which channels institutions impact economic activity and financial patterns. This paper studies the determinants of gross international bank flows in a large panel of countries and years. Besides identifying the driving forces of international banking, this paper provides the first comprehensive analysis of the role of politics and institutions on cross-border capital movements.

The results are clear-cut with direct policy implications. First, conditioning on "gravity" factors ("size" and distance), countries with high-quality institutions and low political risk engage more in asset trade. Second, foreign banks prefer to allocate credit to uncorrupted countries with well-functioning legal systems. Government ownership of banks amplifies agency costs and is associated with lower levels of international bank lending. Third, finan-

cial securities' and banking law harmonization policies that European countries have implemented together with minimizing of exchange rate risk, have spurred cross-border bank lending activities within the European Union. The results also reveal that foreign banks are especially concerned with political, rather than other risk (economic or/and financial) factors.

These results are robust to a variety of sensitivity checks including: Controlling for omitted variables; addressing problems of the BIS dataset; dealing with measurement error and the potential endogeneity of the institutional ratings; checking the empirical model's stability to different country samples and time-horizons, controlling for "economic" or "financial" risk, and more. The results are also robust to alternative estimation techniques (Poisson PML) that address some recently identified problems of "gravity equations" (Santos and Tenreyro, 2004). Most importantly, the panel regressions yield significant coefficients on *both* the political risk rating and the specific institutional indicators, even when these variables are jointly entered in the specification, offering thus a middle-ground to the ongoing debate on whether the law or politics is the key driving force of financial development. The panel evidence thus suggest that political stability, actual (*de facto*) legal system quality and state involvement in the banking sector are not only key determinants in the investment strategy of international banks, but play somewhat independent roles.

The dataset on bilateral banking activities covers a sizable amount of the overall volume of gross international capital movements, and includes not only inter-bank loans, but also significant amounts of portfolio and direct investment flows. Consequently the empirical results have a more general interpretation.

First from a theoretical standpoint the evidence supports Shleifer and Wolfenzon's (2002) model that stresses the importance of an efficient legal system for financial development. The results also offer a plausible explanation to the Lucas (1990) famous inquiry on "*why capital doesn't flow from rich to poor nations*" and the associated "*home-bias puzzle*". Part of the answer is in poor nations' political instability, corruption, inefficient government policies and low-quality law.

Second, from a policy perspective the evidence implies that improving inefficient bureaucracies, tackling corruption, and enhancing legal system competence are crucial for attracting foreign bank capital. The "fixed-effect" estimates that control for time-invariant omitted variables and exploit the "*within*" country variation also suggest that political liberalizations, privatization and other structural policies (which are followed by a decline in political risk), can enhance domestic liquidity by attracting substantially more foreign capital. This applies to both developing and industrialized countries.

Third, the results call for additional research. New empirical work has to assess how politics and institutions affect other types of capital flows and asset holdings. Theory on international capital movements and portfolio allocation needs to model explicitly the mechanisms through which institutions influence investors' decisions. Although it is unlikely that institutions alone can explain the large equity home-bias and the low levels of international diversification, institutional performance and politics should be a necessary ingredient for any serious theoretical and empirical effort to analyze cross-border capital movements.

Chapter 4

Human Capital, the Structure of Production and Growth

4.1 Introduction

Following Barro (1991) and Mankiw, Romer, and Weil (1992), there has been an upsurge of empirical research on the effects of human capital on economic growth. The main issues analyzed are whether higher levels of education or greater improvements in education are associated with faster growth. Overall, the cross-country evidence is mixed on both counts (notwithstanding the emphasis of human capital in new growth theories and recent neoclassical growth theories).¹ This could be because of difficulties when specifying cross-country growth regressions (Temple, 1999; Durlauf, Johnson, and Temple, 2005). For example, the limited number of countries forces researchers to use parsimonious specifications to avoid the degrees of freedom problem. Another reason could be attenuation bias due to mismeasured schooling data (Krueger and Lindahl, 2001; Cohen and Soto, 2001; de la Fuente and Domenech, 2001, 2005). Such attenuation bias could be magnified by multicollinearity, often

¹The empirical studies of Romer (1990a), Barro (1991), and Benhabib and Spiegel (1994) find a significantly positive effect of schooling levels on output growth, while Krueger and Lindahl (2001) and Cohen and Soto (2001) find no link. Temple (1999), Cohen and Soto (2001), and de la Fuente and Domenech (2001) find a significantly positive correlation between improvements in education and growth, while Benhabib and Spiegel (1994), Barro and Sala-i-Martin (1995), Caselli, Esquivel, and Lefort (1996), and Pritchett (1997) find no effect of schooling improvements on growth. Examples of endogenous growth theories emphasizing human capital are Lucas (1988) and Romer (1990b). Mankiw, Romer, and Weil (1992) incorporate human capital into a neoclassical growth model.

present in cross-country growth regressions, as high-growth countries tend to have higher rates of human capital accumulation, deeper financial markets, stronger property rights protection, higher savings and investment rates etc. (Mankiw, 1995; Rajan and Zingales, 1998). Mixed results could also be due to schooling data missing substantial cross-country differences in educational quality (Hanushek and Kimko, 2000; Barro, 2001). In any case, a significantly positive correlation between schooling and output growth does not imply that schooling affects growth. Instead, both schooling and output growth could be driven by an omitted variable, total-factor-productivity growth for example (Bils and Klenow, 2000).

One way to progress in our understanding of the effects of education levels and improvements on growth is to focus on the theoretical channels through which such effects could work. A primary channel is the role of high human capital levels in facilitating technology adoption (e.g. Nelson and Phelps, 1966; Barro, 1991; Benhabib and Spiegel, 2002; Acemoglu, 2003a; Caselli and Coleman, 2005). There is a consensus that new technologies becoming available since the 1970's tended to be skilled-labor augmenting (e.g. Autor, Katz, and Krueger, 1998; Berman, Bound, and Machin, 1998; Berman and Machin, 2000; Caselli and Coleman, 2002). The defining characteristic of skilled-labor augmenting technologies is that they increase the efficiency in production of skilled relative to unskilled workers. Skilled-labor augmenting technologies therefore result in faster total-factor-productivity growth in skill-intensive industries (e.g. Kahn and Lim, 1998). Countries adopting new technologies relatively quickly should therefore experience a shift in production and exports towards schooling-intensive industries. If high levels of human capital facilitate technology adoption, such shifts should be faster in economies with higher human capital levels. We therefore test whether countries with higher education levels experienced faster production growth in more compared to less schooling-intensive industries in the 1980's.

We also examine whether countries with greater improvements in education during the 1970's and 1980's experienced faster output growth in schooling-intensive industries in the 1980's. Such accumulation effects are emphasized by neoclassical theories. For example, Ventura (1997, 2005) shows in a neoclassical growth model with international specialization in production that relatively rapid capital accumulation should translate into faster output

growth in capital-intensive industries. Focusing on human capital in a multi-sector model combining neoclassical elements and features of new trade theory, Romalis (2004) demonstrates that relatively rapid human capital accumulation should be accompanied by faster output and export growth in human-capital-intensive industries.

We investigate such human capital level and accumulation effects using data for 37 manufacturing industries in around 40 countries. Our empirical analysis builds on the framework and database of Rajan and Zingales (1998) as extended by subsequent contributions to the finance and industry growth literature (e.g. Claessens and Laeven, 2003; Fisman and Love, 2003, 2004). We follow this literature in using U.S. data to obtain the industry-characteristics necessary for the empirical analysis. In particular, we use detailed 1980 U.S. Census data to calculate human-capital-intensity indicators reflecting cross-industry differences in the use of schooled labor. These indicators allow us to test whether greater education levels and improvements were associated with faster growth in schooling-intensive industries in the 1980's.

Our data yields statistically robust and economically significant support for the human capital level effect. To get a sense of the economic magnitude, consider the annual output growth differential between an industry with a schooling intensity at the 75th percentile (Chemicals) and an industry at the 25th percentile (Pottery). When we measure the level of human capital using schooling quality indicators, our estimates imply that this growth differential is around 1.3% – 2.1% higher in a country with schooling quality at the 75th percentile (e.g. Malaysia) compared to a country with schooling quality at the 25th percentile (e.g. Philippines). (The average growth rate of value added in our sample is 3.4% and the median growth rate is 2.9%.) When we proxy human capital levels using average years of schooling, the implied annual Chemicals-Pottery growth differential is 1.1% – 1.8% greater in countries with average schooling in 1980 at the 75th percentile (8 years) than countries with average schooling at the 25th percentile (3.5 years). In line with the cross-country growth literature (Hanushek and Kimko, 2000; Barro, 2001), schooling quantity levels often become only marginally significant (or even insignificant) when labor force quality is accounted for. Hence, our cross-country cross-industry results add to recent micro and macro evidence

highlighting the importance of educational quality for growth (Hanushek, 2004).

We also find statistically robust and economically significant support for the human capital accumulation effect. For example, our estimates imply that the annual Chemicals-Pottery growth differential is 1% – 1.2% greater in countries with improvements in average schooling over the 1970-1990 period at the 75th percentile (2.3 years; e.g. Philippines) than countries with increases at the 25th percentile (1.1 years; e.g. Sri Lanka).

While economies open to international trade can specialize in production, specialization is impossible in closed economies. We therefore examine the effect of high human capital levels and rapid human capital accumulation on growth in human-capital-intensive industries separately in countries with low and countries with high tariffs. In countries with low tariffs, we find positive and highly significant effects of education levels and improvements on output growth in schooling-intensive industries. In countries with high tariffs, we usually find such effects to be statistically insignificant. Protectionist trade policies therefore appear to break the link between country-level human capital and specialization in human-capital-intensive industries.

Our estimates of the impact of human capital on growth in human-capital-intensive industries control for country-specific and industry-specific effects. Industry effects capture movements in international prices and technological innovation at the industry level. Country effects account for difficult to observe factors related to, for example, institutions, social norms, or economic policy that affect total-factor-productivity (TFP) growth in all manufacturing industries. As shown by Bils and Klenow (2000), the incentive to invest in schooling is greater in countries with faster TFP growth. As a result, much of the positive cross-country correlation between schooling and growth can be explained by differences in TFP growth. It is therefore important to control for such differences when estimating the effect of improvements in education at the country level on growth in schooling-intensive industries.

Our empirical analysis jointly considers the growth effects of human capital and those of financial markets and property rights protection emphasized in the literature. This allows us to check the robustness of industry growth effects of financial development and property

rights protection to controls for human capital (and vice versa). We find that financial development and property rights protection continue to have disproportionate growth effects in industries that depend on finance (Rajan and Zingales, 1998) and use intangible assets intensively (Claessens and Laeven, 2003) respectively, even when human capital is taken into account. The magnitude of such effects drops by 15-40% however. In contrast, industry growth effects of financial development working through inter-industry resource reallocation and dependence on trade credit (Fisman and Love, 2003, 2004) remain nearly unchanged.

The international specialization implication of the human capital-technology adoption connection that we test is: higher human capital \rightarrow faster (skilled-labor augmenting) technology adoption \rightarrow faster output growth in schooling-intensive industries. Faster growth in human-capital-intensive industries should coincide with the reallocation of production factors. To test for such factor-reallocation effects, we add industry-level employment statistics to the finance and industry growth database. We find significant and robust support for employment shifting more rapidly to more schooling-intensive industries in countries with higher levels of education. The employment growth data also supports the hypothesis that countries with greater improvements in education see a reallocation of factors to human-capital-intensive industries.

The remainder of the Chapter is structured as follows. Section 4.2 presents a model that illustrates how human capital levels and accumulation affect growth in more compared to less human-capital-intensive industries. Section 4.3 explains the sources and main features of the data used in this Chapter. Section 4.4 presents the main empirical results. Section 4.5 presents additional evidence. In Section 4.6 we perform sensitivity checks. Section 4.7 concludes, summarizing this Chapter's results..

4.2 Theoretical Framework

We first illustrate the link between human capital, technical change, and industry output growth in a two-factor, two-industry Heckscher-Ohlin model where countries may differ in

factor-specific technology (several ideas embodied in the model follow Ventura, 1997, 2005). Then we extend the model to many industries following Romalis (2004).

The simplest model is one with a continuum of open economies indexed by $c \in C$ that can produce in two industries indexed by s . Output $X_{s,c,t}$ in industry s and country c at time t is produced according to the constant-returns-to-scale function:

$$X_{s,c,t} = E_{s,t}(A_{c,t}^L L_{s,c,t})^{1-s}(A_{c,t}^M M_{s,c,t})^s \quad (4.1)$$

where $L_{s,c,t}$ and $M_{s,c,t}$ stand for industry- s employment of less and more educated workers respectively; $A_{c,t}^L$ and $A_{c,t}^M$ denote country-specific efficiencies of the two types of workers; and $E_{s,t}$ captures industry-specific technical change. This formulation implies that a high- s industry uses schooling more intensively than a low- s industry. We simplify further by assuming that factor intensities in the two industries are extreme in that $s = 0, 1$.² We take the aggregate supply of more and less educated labor to be perfectly inelastic and assume all markets to be perfectly competitive.

The simplest way to introduce technology adoption is to follow Nelson and Phelps (1966) and assume that efficiency growth $\hat{A}_{c,t}^f$ of workers of type $f = L, M$ (hats indicate growth rates) is proportional to the gap between the level of technology in the country $A_{c,t}^f$ and the frontier level of technology in the world $A_t^{f,W}$ (W indicates the world frontier)

$$\hat{A}_{c,t}^f = \phi_c^f \left(\frac{A_t^{f,W} - A_{c,t}^f}{A_{c,t}^f} \right) \quad (4.2)$$

where ϕ_c^f is the rate at which country c closes the gap with the technology frontier. The only difference with the Nelson-Phelps formulation is that we distinguish between technologies augmenting the efficiency of less educated workers and more educated workers, as in the

²This assumption ensures that countries with identical factor efficiencies will have identical factor prices (conditional factor price equalization). As long as there is conditional factor price equalization, it is straightforward to derive the results below without extreme factor intensities (e.g. Ventura 1997, 2005).

literature on skill-biased/directed technical change (e.g. Acemoglu, 1998, 2003a; Acemoglu and Zilibotti, 2001; Caselli and Coleman, 2002, 2005).³

Skilled-labor augmenting technical progress is defined as an increase in the efficiency of more relative to less educated workers, $A_{c,t}^M/A_{c,t}^L \equiv B_{c,t}$. To capture the acceleration of skilled-labor augmenting technical progress at the world frontier, we assume that world efficiency levels grow at some constant rate until time T when the efficiency of more educated workers starts growing at a faster rate.⁴ The rate of skilled-labor augmenting technical progress during the transition to the new technological steady-state, $\Delta b \equiv \ln B_{c,t} - \ln B_{c,T}$, will be greater in countries with faster adjustment rates ϕ^M . If higher levels of human capital increase this rate of adjustment, skilled-labor augmenting technical progress during the transition will be faster in countries with higher initial levels of human capital,

$$\Delta b = \ln \left(\frac{A_{c,t}^M}{A_{c,T}^M} \right) - \ln \left(\frac{A_{c,t}^L}{A_{c,T}^L} \right) = f(h_{c,T}) \quad (4.3)$$

where T continues to denote the time when skilled-labor augmenting progress at the world frontier accelerates, $\ln \left(\frac{A_{c,t}^M}{A_{c,T}^M} \right)$ and $\ln \left(\frac{A_{c,t}^L}{A_{c,T}^L} \right)$ are the growth of the efficiency of more and less educated workers during the transition respectively, $h = \ln H = \ln(M/L)$ is the log-level of human capital H , and $f(h)$ is increasing in h .⁵

The model is set up to make determining the *international production structure* immediate. Denoting the international relative price of the industry-1 good as P_t and value added in the two industries as $Y_{0,c,t} = X_{0,c,t}$ and $Y_{1,c,t} = P_t X_{1,c,t}$ respectively, yields $y_{s,c,t} = a_{c,t}^L + l_{c,t} + e_{0,t} + (h_{c,t} + b_{c,t} + p_t)s$ where lower-case variables denote logs of upper-case variables. The implications for growth at the country-industry level can be derived by taking the difference between log value added y at time t and at time T (the time skilled-labor

³Acemoglu (2003b) discusses the relationship between the Nelson and Phelps model and the literature on directed technical change.

⁴We take this acceleration to be exogenous. See Acemoglu (1998, 2002) and Acemoglu and Zilibotti (2001) for models that endogenize the rate of directed technical change at the technology frontier.

⁵Many of the new technologies becoming available since the 1970's were embodied in computers. Caselli and Coleman (2001) find that computer imports 1970-1990 were greater in countries with higher levels of human capital, *which is consistent with high human capital levels facilitating technology adoption*.

augmenting progress at the world frontier accelerates). Replacing skilled-labor augmenting technical progress during the transition (Δb) using (2) then yields:

$$\Delta y_{s,c,t} = y_{s,c,t} - y_{s,c,T} = \lambda_c + \mu_s + f(h_{c,T})s + \Delta h_{c,t}s \quad \text{for } s = 0, 1. \quad (4.4)$$

Country-specific growth effects (λ_c) capture labor-force growth and total-factor-productivity growth in both sectors, while industry-specific growth effects (μ_s) capture relative price changes and industry-specific technical change. The key implication of (4.4) is that if a better-educated workforce facilitates technology adoption, growth in the schooling-intensive industry is faster in countries with higher initial education levels (the human capital level effect). Moreover, growth in the schooling-intensive industry should be relatively stronger in countries experiencing faster improvements in education (the human capital accumulation or Rybczynski effect).⁶

Although not straightforward, it is possible to extend the link between human capital at the country level and growth in human-capital-intensive industries in (3) to the multi-industry case adopting Romalis' framework (2004). Romalis integrates the Dornbusch, Fischer, and Samuelson (1980) Heckscher-Ohlin model with many industries and Krugman's (1980) trade model with monopolistic competition and transport costs. He shows that this yields cogent theoretical foundations for international cross-industry comparisons. One of Romalis' main theoretical results is that the effect of country-level growth in the supply of skills, $\Delta Skill_c$, on industry output growth, $\Delta y_{s,c,t}$, is increasing in the industry skill intensity s . Formally, he derives the following empirical model:

$$\Delta y_{s,c,t} = \lambda_c + s + \theta \Delta Skill_c s \quad \text{for } 0 \leq s \leq 1. \quad (4.5)$$

where $\theta > 0$ captures what Romalis refers to as the quasi-Rybczynski effect and λ_c is a country-level growth effect. A straightforward way to incorporate technical change in

⁶The extreme factor intensities imply that the coefficient on the change in human capital (the strength of the Rybczynski effect) is unity. If factor intensities were not extreme, the Rybczynski effect would be strictly greater than unity (e.g. Ventura, 1997).

Romalis' model is by measuring the supply of skills in efficiency units. Growth in the supply of skills may in this case stem from growth in the relative supply of more educated workers, Δh , or growth in the relative efficiency of more educated workers, Δb : $\Delta Skill_c = \Delta h_c + \Delta b_c$. Substituting in (4.5) and using (4.2), yields the following generalization of (4.4):

$$\Delta y_{s,c,t} = \lambda_c + \mu_s + \theta f(h_{c,T})s + \theta \Delta h_{c,t}s \quad \text{for } 0 \leq s \leq 1. \quad (4.6)$$

4.3 Data

Data on real growth in value added during the 1980's at the country-industry level ($GROWTH_{s,c}$) are taken from the finance and industry growth literature (e.g. Rajan and Zingales, 1998; Claessens and Laeven, 2003; Fisman and Love, 2003, 2004) and have originally been put together by Rajan and Zingales (henceforth RZ) using the United Nations General Industrial Statistics Database. The data refers to 37 industries in 44 countries.⁷ We match this data with country-industry employment growth during the 1980's ($EMPGR_{s,c}$) using the latest update of the UNIDO industrial statistics database.⁸

The finance and growth literature is also the source of the industry-level data needed to account for the effects of financial development and property rights protection on growth. RZ argue that financial development should matter most for finance-dependent industries. To test this hypothesis they develop an industry-level measure of external-finance dependence ($EXTFIN$) using COMPUSTAT financial statement data for U.S. corporations in the 1980's. In subsequent work, Fisman and Love (2003, 2004) argue that the effects of financial development on industry growth may partly work through trade credit or through deeper financial markets facilitating the rapid reallocation of resources to industries with good growth prospects. Their tests of these hypotheses rely on industry-level measures of dependence on trade credit ($TRADEINT$) and growth opportunities ($OPPORT$) that are

⁷The Data Appendix lists the countries in the sample. The country-industry data is reported at the 3 and 4-digit industry level.

⁸Employment growth refers to the 1981-1990 period (while the output growth data refers to the 1980-1989 period), because the *UNIDO* database does not contain much employment data before 1980.

also based on U.S. data. Claessens and Laeven (2003) (henceforth CL) investigate to what extent the literature on finance and industry growth captures the role of property rights protection for growth in industries with a large share of intangibles assets (*INTANG*), again measured using U.S. data.

Our industry-level measures of human capital intensity are based on U.S. data as well. The main reason is the detail and quality of U.S. industry statistics. Another reason is that U.S. labor markets are less regulated than those of other high-income countries for which some industry data are available (Djankov et al., 2004). Observed differences in human capital intensities across industries are therefore likely to better reflect underlying technological characteristics of industries. Moreover, as we examine the role of human capital for industry growth jointly with that of finance and property rights, it is natural to maintain the same benchmark country for industry-level measures as the finance and growth literature. Using U.S. data to proxy for differences in human capital intensities across industries in all other countries does have drawbacks. Most importantly, it could lead us to reject our hypotheses linking country-level human capital to growth in human-capital-intensive industries not because they are false but because U.S. data does not yield good proxies for cross-industry differences in human capital intensities in other countries. Note that what matters for avoiding such false negatives is that differences in the human capital intensity across U.S. industries reflect inter-industry differences in human capital intensities in other countries. It is not necessary for industries to use human capital with the same intensity in different countries.

The data source for our industry-level measure of human capital intensity is the 1980 Integrated Public Use Microdata Series, which contains individual-level data on hours worked by 4-digit industry classifications and years of education. This allows us to calculate average years of employee schooling (*HCINT*) for all industries in the RZ sample.⁹ Table 4.1 reports the schooling intensity for all industries. The two most schooling-intensive industries

⁹We also calculate the share of employees with at least 12 years of education (necessary for completing secondary school) and at least 16 years of education (necessary for completing college), *HCINT(SEC)* and *HCINT(COLL)* respectively. Table II, Panel A shows that the correlations with average schooling are above 0.92.

are Drugs and Computing and the two least schooling-intensive are Leather and Apparel.¹⁰ Table 4.2, Panel A gives the correlation between *HCINT* and the industry-level rankings used in studies on finance and industry growth. A strong positive correlation exists between schooling intensity and RZ finance dependence. Hence, a-priori, controlling for *HCINT* may be important to precisely quantify the differential growth effect of finance on finance-dependent industries.

Average years of schooling at the country level (*SCH*) is taken from the latest update of the Barro and Lee (2001) database (henceforth BL). For completeness and to address issues related to measurement error we also employ the recently compiled schooling dataset of Cohen and Soto (2001) (henceforth CS). Starting with Hanushek and Kimko (2000), recent work (e.g. Barro, 2001; Bosworth and Collins, 2003) has shown that indicators of labor-force quality based on internationally administered, comparable tests in mathematics and sciences often perform better than schooling years or enrolment rates in explaining cross-country growth differences. We therefore use the Hanushek and Kimko labor-force quality indicators (*LFQUAL*) extended and updated by Bosworth and Collins (2003) as an alternative proxy of human capital levels. The correlation between schooling quantity measures and schooling quality is positive but far from perfect (0.65).

Country-level financial development measured as private credit over GDP (*PRIV*) and the country-level indicator of property rights protection (*PROP*) are taken from RZ and CL respectively. The correlation between education levels and financial development is significantly positive. (See Table 4.2, Panel B for the correlation between the main country-level variables.) This reinforces the point made earlier that, a-priori, controlling for human capital may be important to precisely quantify the role of finance for industry growth. Other country-level variables come from standard sources. The Data Appendix provides detailed definitions and sources for all variables.

¹⁰The share of non-production workers (*NONPROD*) has often been used to measure industry human capital intensity (e.g. Romalis, 2004). Table II, Panel A shows that the correlation between *NONPROD* and our *schooling-based measures of human capital intensity* is quite high.

4.4 Main Results

We start by examining whether countries with higher levels of human capital experienced faster growth in more compared to less human-capital-intensive industries in the 1980's. Then we turn to the hypothesis that growth in human-capital-intensive industries was positively related to human capital accumulation. We conclude this section by examining the two hypotheses jointly.

4.4.1 Human Capital Level and Industry Growth

We start by testing for the effect of human capital levels on growth in human-capital-intensive industries using the following estimating equation:

$$\Delta y_{s,c,1990-1980} = \lambda_c + \mu_s + \delta (h_{c,1980} * HCINT_s) + OtherControls \quad (4.7)$$

where *HCINT* captures the human capital intensity of industries. *h* captures the human capital of countries. λ and μ are vectors of country and industry-specific growth effects respectively (that capture the effects of all variables determining growth at the country and industry level). *OtherControls* stands for interactions between industry and country-characteristics used to capture the differential industry growth effects of finance and property rights protection in the literature. It also includes the share of industry *s* in manufacturing value added of country *c* at the beginning of the sample ($FRACT_{s,c}$), which RZ and subsequent contributions to the finance and industry growth literature use to account for initial conditions. There is a human capital level effect on growth in human-capital-intensive industries if $\delta > 0$.

The results are reported in Table 4.3. t-statistics adjusted for heteroskedasticity are reported in parentheses and italics below the point estimates. In column (1)-(4) human capital levels are proxied by BL average years of schooling (*SCH*) in 1980. The estimate of δ in column (1) is 0.0034 and highly statistically significant. This coefficient implies an annual growth differential of 1.77% between the industry at the 75th percentile (Chemicals) and the

25th percentile (Pottery) of human capital intensity in a country with average schooling years at the 75th percentile (8 years) compared to a country with average schooling at the 25th percentile (3.5 years). This implied growth differential is tabulated for all specifications in the bottom row of the Table. The education level effect is somewhat larger in magnitude than the (analogously calculated) unconditional effect of financial development on growth in finance-dependent industries documented by RZ (0.9%-1.3%). It is also somewhat larger than CL's unconditional effect of property rights protection on growth in industries that use intangible capital intensively (1%-1.4%).

In columns (2)-(4) we estimate the effect of high levels of schooling on growth in schooling-intensive industries controlling for the role of financial development and property rights protection for growth in finance-dependent and intangible-asset-intensive industries respectively. A-priori, it is important to account for these factors both from a conceptual perspective (they capture different theories) and from an empirical perspective (they are highly correlated with education levels as shown previously). The positive impact of human capital levels on growth in human-capital-intensive industries is robust to the inclusion of the RZ finance interaction ($PRIV_c * EXTFIN_s$) in column (2) or the inclusion of the CL property rights interaction ($PROP_c * INTANG_s$) in column (3). When we control for both the finance and the property rights interactions in column (4), however, the human capital level effect drops by a third and becomes (marginally) insignificant.

To investigate the link between the effect of education levels on industry growth and industry schooling intensity without imposing linearity of the marginal effect (as in 4.7), we implement the following two-step approach. In the first step we estimate (4.7) allowing for a different effect of education levels on growth in each industry. In particular, we replace $\delta h_c * HCINT_s$ with $\sum_i \delta_i h_c * I[i = s]$ where δ_i is the marginal effect in industry i and $I[i = s]$ is an indicator variable that is unity when i equals s and zero otherwise. In the second step we plot estimated (industry-specific) marginal growth effects against industry schooling intensity. The positive correlation between the two is evident in Figure 4.1a (where we estimate marginal effects without controlling for the differential industry growth effects of financial development and property rights protection) and in Figure 4.1b (where finance

and property rights are accounted for). Higher education levels are therefore relatively more important for the growth of industries that employ schooling more intensively. The correlation is, however, considerably weaker when we control for the effects of financial development and property rights protection on industry growth.

In columns (5)-(8), we explore the role of schooling quality for growth in schooling-intensive industries. Columns (5) and (6) show that the schooling quality interaction with industry human capital intensity ($LFQUAL_c * HCINT_s$) enters positively and significantly at the 1% confidence level, whether or not the differential industry growth effect of finance and property rights is accounted for. Hence, countries with a high quality labor force experienced relatively faster growth in human-capital-intensive industries. According to the estimate of the effect of schooling quality in column (6), the annual output-growth differential between an industry with a human capital intensity at the 75th percentile (e.g. Chemicals) and an industry with a human capital intensity at the 25th percentile (e.g. Pottery) is around 2% higher in a country with educational quality at the 75th percentile (e.g. Malaysia) than a country with educational quality at the 25th percentile (e.g. Philippines). Columns (7) and (8) show that the schooling quantity interaction becomes insignificant when human capital quality is taken into account. Our cross-country cross-industry growth analysis therefore confirms the micro and cross-country evidence on the importance of human capital quality (Hanushek, 2004).

To examine the link between the marginal effect of human capital quality on industry growth and industry human capital intensity without imposing linearity of the marginal effect, we return to the two-step approach used previously. In the first step we estimate the effect of schooling quality on industry output growth allowing for different marginal effects in each industry. In the second step we plot the estimated (industry-specific) marginal effects against the industry human capital intensity. The positive correlation between the two is evident in Figure 4.2a (where we estimate marginal effects without controlling for the differential industry growth effect of financial development and property rights protection) and Figure 4.2b (where finance and property rights are accounted for). Hence, the quality of human capital at the country level matters more for growth in industries that use human

capital intensively.

4.4.2 Human Capital Accumulation and Industry Growth

To examine the effect of human capital accumulation on growth in human-capital-intensive industries we first estimate

$$\Delta y_{s,c,t} = \lambda_c + \mu_s + \sum_i \theta_i \Delta h_{c,1970-1990} * I[i = s] + OtherControls \quad (4.8)$$

where θ_i is the marginal effect in industry i and $I[i = s]$ takes the value one when i equals s and zero otherwise. $\Delta h_{c,1970-1990}$ stands for the increase in average years of schooling at the country level between 1970 and 1990.¹¹ This estimating equation yields the effect of human capital accumulation on industry growth for each industry (θ_i).¹² These effects can then be compared to the human capital intensity of industries to examine whether there is a relationship.

In Figure 4.3a, we plot each industry's human capital intensity (*HCINT*) against our estimates of the effect of improvements in country-level schooling on output growth in that industry. The estimates of θ do not control for the differential role of financial development and property rights protection on finance-dependent and intangible-capital-intensive industries respectively. Figure 4.3b repeats the exercise using estimates of θ that do account for such differential finance and property rights. Both figures show a clear positive correlation between the effect of human capital accumulation on output growth in an industry and that industry's human capital intensity. Hence, we find support for Romalis' (2004) (quasi-)Rybczynski effect. For example, relatively rapid human capital accumulation had

¹¹We use schooling improvements over the 1970-1990 period because of the evidence indicating that measurement error increases as shorter time-intervals are considered (e.g. Krueger and Lindahl, 2001). We present results for the 1980-1990 period when examining the robustness of our results.

¹²For two papers estimating such unconstrained industry growth effects for up to 7 production factors see Harrigan (1997) and Harrigan and Zakrajšeki (2000). Using data on 7 manufacturing industries in 10 OECD countries, Harrigan finds a significant role for industry-level technology differences, but weaker evidence for factor supply effects, especially in dynamic specifications. Harrigan and Zakrajšeki show that changes in factor supplies are a determinant of changes in the production structure using data on 12 manufacturing industries in 28 countries.

a large positive growth effect in schooling-intensive industries like Computing (ISIC=3825) and Professional Goods (ISIC=385) and a much smaller impact in low *HCINT* industries like Footwear (ISIC=324) and Wood Products (ISIC=311).

To test the link between human capital accumulation at the country level and growth in more human-capital-intensive industries more systematically we estimate:

$$\Delta y_{s,c,t} = \lambda_c + \mu_s + \theta (\Delta h_{s,1970-1990} * HCINT_s) + OtherControls \quad (4.9)$$

where the quasi-Rybczynski prediction is that $\theta > 0$.

Table 4.4 reports the results for different sets of controls. The positive and highly statistically significant estimate of θ in columns (1)-(4) indicates that schooling-intensive industries grew faster in countries with greater improvements in education. Moreover, the effect is economically sizable. Consider comparing a country with an improvement in average schooling over the 1970-1990 period at the 75th percentile (2.3 years; e.g. Philippines) with a country at the 25th percentile (1.1 years; e.g. Sri Lanka). According to the estimates controlling for the effects of financial development and property rights protection on industry growth in column (4), the associated gap in growth rates between the industry at the 75th percentile (Chemicals) and the 25th percentile (Pottery) of schooling intensity is 1.11% annually (see the bottom row for the differential growth rate for all specifications).

Columns (5) and (6) examine the robustness of the human capital accumulation effect to controlling for the differential industry growth effect of physical capital accumulation. To do so, we add an interaction between the RZ industry investment intensity (*INVINT*), defined as the ratio of capital expenditures to property plant and equipment of U.S. industries in the 1980's, and the country-level increase in the physical capital intensity between 1970 and 1990.¹³ In column (5), this interaction enters positively and statistically significantly. In column (6), however, the investment interaction is rendered statistically insignificant by the

¹³We calculate the capital stock of countries using Penn World Table data and following the perpetual inventory method as implemented by Hall and Jones (1999) and Caselli (2005). The dates are chosen to make the treatment of physical capital symmetric to that of schooling.

RZ financial development and the CL property rights protection interactions. Most importantly, the results in columns (5) and (6) show that the effect of human capital accumulation on growth in human-capital-intensive industries remains statistically significant at the 1% level and of the same magnitude as in previous specifications. This result is robust to using other measures of physical capital intensity at the industry level.¹⁴ Table 4.4 therefore supports the view that human capital accumulation is an important determinant of growth in human-capital-intensive industries.

4.4.3 Joint Human Capital Accumulation and Level Effects

In Table 4.5, we present the results when estimating the human capital level effect and the human capital accumulation effect jointly. In column (1) and (2), we measure human capital levels using average years of schooling. The results are in line with our previous findings. Growth in schooling-intensive industries is increasing in both education levels and education improvements.¹⁵ The point estimates are similar than those obtained in our previous analysis (and of higher statistical significance). For example, controlling for finance and property rights, the industry at the 75th percentile of human capital intensity is predicted to grow by 1.22% faster annually than the industry at the 25th percentile in a country with schooling improvements at the 75th percentile compared to a country at the 25th percentile. The analogously calculated growth differential for the schooling level effect is 1.27%.

In columns (3) and (4), we repeat the analysis using schooling quality (*LFQUAL*) instead of average schooling years to measure human capital levels. The schooling quality and the schooling improvement interactions with industry human capital intensity are both positive and statistically significant. And point estimates are again similar to those obtained previously.

These results on the effect of human capital on changes in the pattern of specialization

¹⁴In particular, we have tried three additional measures obtained from the latest update of the NBER-CES manufacturing database (Bartelsman and Gray, 1996). Capital stock over value added, capital stock over employment, and one minus the labor share in value added.

¹⁵As improvements in schooling refer to the 1970-1990 period, initial years of schooling is measured in 1970.

in production fit nicely with those of Romalis (2004) on changes in the pattern of trade. Romalis shows that countries with greater improvements in education and countries with a better-educated workforce saw disproportionately rapid growth of their U.S. exports in human-capital-intensive industries over the 1972-1998 period. Together with our findings, this indicates that greater education levels and improvements led to both faster output and faster export growth in schooling-intensive industries.¹⁶

In columns (5) and (6), we reexamine whether growth in human-capital-intensive industries is more closely related to years of schooling or schooling quality. The results confirm our previous finding that years of schooling becomes statistically insignificant when combined with schooling quality.

In columns (7) and (8), we examine the robustness of the human capital accumulation effect to controls for the role of physical capital for industry growth. In particular, we add two interactions to capture possible differential effects of high physical capital intensity and rapid physical capital accumulation on growth in investment-intensive industries. The first interaction, between the RZ industry investment intensity (*INVINT*) and the country-level increase in the physical capital intensity between 1970 and 1990, captures growth effects of physical capital accumulation on investment-intensive industries. The second interaction, between the RZ investment intensity and the country-level physical capital intensity in 1970, accounts for possible industry growth effects of high initial levels of capital per worker. Both interactions are statistically insignificant. The human capital accumulation and the human capital level effects retain their statistical and economic significance. This is the case whether human capital levels are measured using schooling quantity in column (7) or schooling quality in column (8).¹⁷

Accounting for the role of country-level human capital reduces the industry growth effects

¹⁶Romalis also finds that countries with higher levels of human capital have disproportionately greater exports to the U.S. in industries that use human capital more intensively. This verifies the so-called quasi-Heckscher-Ohlin prediction of his theoretical model. Fitzgerald and Hallack (2004) find evidence for Romalis' quasi-Heckscher-Ohlin prediction using production data for 21 OECD countries in 1988.

¹⁷These results are robust to using the three alternative measures of physical capital intensity at the industry level discussed previously.

of both financial development and property rights protection. For example, the estimate of the RZ finance interaction in Table 4.5 implies an annual growth difference between an industry close to the 75th percentile of external-finance dependence (Shipbuilding) and one close to the 25th percentile (Beverages) that is 0.85% higher in a country with financial development close to the 75th percentile (Republic of Korea) compared to one close to the 25th percentile (Egypt). This effect is approximately 60 – 65% of that reported by RZ and CL. Analogous calculations yield that the industry growth differential implied by our estimates of the CL property rights interaction is approximately 75 – 85% of that reported by CL.

4.5 Further Evidence-Sensitivity Analysis

We start by taking into account additional channels through which financial development impacts industry growth. Then we examine the role of human capital using industry-level employment growth as an indicator of changes in the pattern of specialization. We conclude by analyzing the effect of country-level human capital on growth in human-capital-intensive industries separately among economies with low and economies with high tariffs.

4.5.1 Financial Development, Human Capital and Industry Growth

In their recent contributions to the finance and growth literature, Fisman and Love (2003, 2004; FL henceforth) identify additional channels through which financial development affects growth. FL (2003) show that in countries with underdeveloped financial markets, industries with easier access to trade credit grow relatively faster.¹⁸ To check how trade credit affects our estimates of the human capital level and accumulation effect we include an interaction between country-level financial development (*PRIV*) and industry-level trade-credit affinity (*TRADEINT*) as an additional control in our regressions. Industry trade-credit affinity is taken from FL and is the ratio of accounts payable to total assets calculated using

¹⁸Theoretical work suggest that this is because trade credit and external finance are substitutes (e.g. Petersen and Rajan, 1997).

U.S. firm-level data for the 1980's. The results are reported in Table 4.6, columns (1) and (2). The financial development-trade credit interaction enters with a negative and statistically significant coefficient. The magnitude of the effect is very close to that documented by FL. The effect of education levels and improvements on growth in more schooling-intensive industries remains statistically significant and of a similar magnitude as in previous specifications. This is the case whether education levels are measured using years of schooling in column (2) or schooling quality in column (2).

FL (2004) show that effects of financial development on industry growth partly works through deeper financial markets facilitating the rapid reallocation of resources to industries with good growth prospects. To check the robustness of our findings to this additional financial development channel, we add an interaction between country-level financial development and industry growth opportunities (*OPPORT*) to our regressions. The growth opportunities variable is taken from FL and is constructed using U.S. data on industry-level sales growth. Columns (3) and (4) show that financial development has a significant positive effect on the growth of industries with relatively good prospects. The magnitude of this effect is very close to the estimates of FL. Most importantly given our focus, the effect of human capital levels and accumulation on growth in more human-capital-intensive industries remain positive, statistically significant, and of a similar magnitudes as in previous specifications. Columns (5) and (6) jointly account for the trade-credit and the growth-opportunities channel of financial development on industry growth. The human capital level and accumulation effect on growth in human-capital-intensive industries continues to be highly significant and of a similar magnitude as in previous specifications.

4.5.2 Human Capital and Industry Employment Growth

We now examine whether faster output growth in human-capital-intensive industries due to human capital level and accumulation effects coincides with the reallocation of employment. To do so we repeat our previous empirical analysis using employment growth ($EMPGR_{s,c}$) instead of output growth as the dependent variable. There is another reason for examining

whether higher education levels were associated with faster employment growth in schooling-intensive industries. As shown by Lindahl and Krueger (2001), a positive effect of education levels on subsequent output growth could be due to a world-wide increase in the individual return to schooling (whatever its cause). Our results linking education levels to output growth in schooling-intensive industries could therefore be partly driven by rising individual returns to education. It is therefore important to check our results using employment as a measure of changes in international specialization.

The main result of the country-industry employment growth regressions in Table 4.7 is that both education levels and improvements have positive, highly statistically significant effects on growth in schooling-intensive industries. This is the case whether we measure education levels using years of schooling in columns (1)-(4) or quality in columns (5)-(8). To get a sense of the economic magnitude of the effect of human capital levels on employment growth in human-capital-intensive industries, consider the annual employment growth differential between an industry with a schooling intensity at the 75th percentile (Chemicals) and an industry at the 25th percentile (Pottery). When we measure human capital levels using average years of schooling, our estimates imply that this growth differential is around 1.7% higher in a country with schooling quality at the 75th percentile (e.g. Japan) compared to a country with schooling quality at the 25th percentile (e.g. Portugal). When we measure human capital levels of countries using schooling quality indicators, the implied annual Chemicals-Pottery growth differential is 2% greater in countries with schooling quality at the 75th percentile (e.g. Malaysia) than countries with schooling quality at the 25th percentile (e.g. Philippines).¹⁹ In contrast with the output growth results, years of schooling and schooling quality are now both significantly positively related to growth in more schooling-intensive industries when included jointly in our regressions (results not in the Table).

Given the concern about noise in the UNIDO output growth data (Rajan and Zingales, 1998; Fisman and Love, 2004), it is worth pointing out that the country-industry employment

¹⁹The finance effects are usually weaker than in previous tables. This is not surprising as the finance-industry growth connection works through investment and capital deepening.

growth data has fewer observations that seem implausible a priori. For example, employment growth at the 1st and 99th percentile are -10% and $+16\%$ respectively. The same percentiles correspond to values of -30% and $+27\%$ in the case of output growth, without counting observations exceeding $\pm 100\%$ excluded in the RZ dataset. Also, the standard deviation of output growth rates is twice that of employment growth rates.²⁰ Less noisy data could therefore be the reason why the employment growth regressions in Table 4.7 have a higher adjusted R^2 (around 43%) than the output growth regressions (around 26%, see Table 4.6 for example).

4.5.3 Openness

While economies open to international trade can specialize in production, specialization is impossible in closed economies. We therefore examine whether human capital affects output growth in human-capital-intensive industries differently in economies with low and in economies with high tariffs. For robustness, we use both of the two tariff databases available for the 1980's: the World Bank dataset, which reports unweighted average tariff rates, and the Sachs and Warner (1995) dataset, which reports import-weighted tariff rates.

In Table 4.8, Panel A, we split economies into those with average tariffs below and above the median. Splitting the data this way results in the same number of low and high tariff countries. Median tariffs are, however, lower than the tariff thresholds generally used to define a country as a closed economy. For example, while the median Sachs and Warner tariff is 11%, Sachs and Warner classify countries as closed if tariff rates exceed 40%. (The median World Bank tariff is 15%.) In Panel B, we therefore split economies into those with tariffs above and below 40%.

In economies with low tariffs, we find the human capital accumulation effect to be statistically significant at the 1% level in all specifications. In contrast, this effect is highly

²⁰Following Fisman and Love (2004), we also examine the sensitivity of our results to outliers by dropping the top and bottom one percent of output growth observations and using Huber's technique. In both cases the coefficients on both the human capital level interaction and the human capital accumulation interactions remained significant at the 1% confidence level.

insignificant in economies with tariffs above 40%. In economies with tariffs above the median, the human capital accumulation effects is insignificant at the 5% level in 3 of 4 cases. Regarding the human capital level effect, consider first the case where we use schooling quality to proxy of human capital levels. In this case, the human capital level effect is highly statistically significant in economies with low tariffs. The effect becomes insignificant in countries with high tariffs however. Using average schooling years to proxy initial human capital levels yields a similar pattern. In economies with low tariffs, the human capital level effect is statistically significant at the 10% level in 3 of 4 cases (the weaker human capital level effect using average schooling mirrors previous findings). In economies with high tariffs, this effect is always highly insignificant. Hence, the empirical evidence clearly points to higher human capital levels and faster human capital accumulation being associated with increased specialization in human-capital-intensive industries in open economies. This is not the case in high tariff economies however. We find similar results when we use employment growth to measure changes in the pattern of specialization (results not in the Table).

4.6 Sensitivity Analysis

We now perform additional sensitivity checks. We start out by examining the role of measurement error in schooling statistics. Then we present estimates using an alternative specification for the link between human capital and schooling. We conclude by putting our output and employment growth results through further sensitivity analysis.

4.6.1 Measurement Error in Schooling Statistics

Recent research has pointed to measurement error in the education data as a reason why some contributions to the empirical cross-country growth literature may not have found a link between education improvements and growth (e.g. Krueger and Lindahl, 2001). Cohen and Soto (2001) therefore construct an alternative to the Barro and Lee (2001) schooling

dataset for a large panel of countries.²¹ We now check whether our findings are sensitive to using the CS data. In addition, we check the robustness of our results to using improvements in education between 1980 and 1990 as an explanatory variable.

In Table 4.9, column (1), we report estimates using the same schooling data as in our previous analysis (the BL data) but measuring schooling improvements over the 1980-1990 period instead of the 1970-1990 period (accordingly we use years of schooling in 1980 as a measure of initial human capital). Both the human capital level effect and the human capital accumulation effect remain positive and highly statistically significant. In column (2), we report the results of estimating the same specification with the CS data. The human capital level and accumulation effect continue to be positive and highly significant. In column (3), we follow the instrumental-variables strategy of Krueger and Lindahl (2001) to deal with measurement error in schooling. Krueger and Lindahl propose using one mismeasured schooling series as an instrument for another mismeasured series. They show that this approach eliminates attenuation bias when the measurement error of the two series is orthogonal. In column (3), we therefore use the CS schooling data as an instrument for the BL schooling data. As a result, the effects of education levels and improvements on growth in schooling-intensive industries are somewhat larger than in previous specifications. Our results using employment growth at the industry level as a measure of changes in specialization are also robust to using the CS data (results not in the Table).

4.6.2 Alternative Specifications

In the cross-country growth literature there is no consensus on how aggregate schooling measures should enter empirical analysis. In empirical labor economics it has been found that a log-linear (Mincerian) earnings-schooling relationship performs well (see Card, 1999, for a review). Several recent macro-econometric studies have therefore adopted a log-linear model of the aggregate output-schooling relationship (e.g. Heckman and Klenow, 1998; Krueger and

²¹The main differences between the CS and the BL dataset are that CS use more census observations; that they use a different approach to extrapolate missing data; and that they modify a priori implausible values in the BL dataset.

Lindahl, 2001).²² Other macro studies, however, use a log-log specification (e.g. Mankiw, Romer, and Weil, 1992; de la Fuente and Domenech, 2001). In Table 4.9, columns (4)-(6), we reestimate the previous three columns using log schooling as a measure of human capital and the change in log schooling as a measure of human capital accumulation. It can be seen that these specifications also yield support for the human capital level and accumulation effect. We find the similar results when we use the log schooling specifications to explain employment growth across industries with different human capital intensities (not reported in the Table).

4.6.3 Further Sensitivity Checks

In Table 4.10 we undertake a series of further sensitivity checks, using both industry output growth (in Panel A) and employment growth (Panel B) to measure changes in the pattern of specialization.

In Panel A, columns (1) and (2), we add an interaction between industry human capital intensity and the initial log level of GDP per worker (Y) to our regressions. In interpreting the results it should be kept in mind that aggregate productivity depends on schooling quantity and quality as well as on human capital related to on-the-job learning and training and to health (Kartini Shastry and Weil, 2003). Aggregate productivity could therefore be a better proxy for the human capital of a country than our measures of schooling. For example, Manuelli and Seshadri (2005), who develop and simulate a theoretical framework linking productivity and human capital, find a closer relationship between properly measured aggregate human capital and productivity than between average schooling years and productivity. Because productivity is a proxy for human capital, the interaction between industry human capital intensity and aggregate productivity ($Y_c * HCINT_s$) could absorb the human capital level effect. The results in column (1) confirm this. The interaction between initial years of schooling and industry human capital intensity enters with a statistically insignificant coefficient, while the productivity interaction with industry human capital is significant. In

²²Our regressions so far assumed that h is linear in SCH and $LFQUAL$, which implies that Δh is proportional to ΔSCH when the time period is short enough to make changes in schooling quality negligible.

column (2) human capital levels are proxied by schooling quality. Now the human capital level effect only drops by a third relative to the same specification without the productivity interaction (in column (6) of Table 4.6). As the estimate also becomes somewhat less precise when the interaction between industry human capital intensity and productivity is added, the effect turns just insignificant at the 10% level.

In columns (3)-(6), we provide evidence that the interaction between aggregate productivity and industry human capital intensity in columns (1) and (2) captures the link between productivity and human capital. Mankiw, Romer, and Weil (1992) and Klenow and Rodriguez-Clare (1997) show that the physical capital-output ratio isolates the role of investment for long-run productivity from that of total factor productivity (TFP) and human capital. Hence, physical capital-output ratios allow us to examine whether productivity is high because of physical capital investment rather than high TFP or human capital. In columns (3) and (4), we therefore include a log physical capital-output ratio interaction with industry human capital ($(K/Y)_c * HCINT_s$) instead of $Y_c * HCINT_s$. In column (3) human capital levels are proxied by average years of schooling. The interaction between years of schooling and industry schooling intensity continues to be statistically insignificant. However, while $Y_c * HCINT_s$ was highly significant in the same specification in column (1), $(K/Y)_c * HCINT_s$ is now only marginally significant. Most importantly, when human capital levels are measured using schooling quality in column (4), the $(K/Y)_c * HCINT_s$ turns insignificant, while the schooling quality interaction with industry schooling intensity is significant at the 5% level. It is therefore aggregate productivity differences due to TFP or human capital, not physical capital investment, that lead to the prominence of the productivity interaction in columns (1) and (2).

Starting with Hall and Jones (1999) and Acemoglu, Johnson, and Robinson (2001), recent work has shown that one of the key factors determining TFP and output per worker is property rights protection. In columns (5) and (6), we therefore add an interaction between property rights and industry human capital intensity ($PROP_c * HCINT_s$) to our regressions. This allows us to check whether it is the link between property rights protection, TFP, and productivity that drives the significance of the interaction between aggregate productivity

and industry human capital intensity in columns (1) and (2). When we proxy human capital with average schooling years in column (5), both the property rights and the human capital interaction with industry human capital intensity are insignificant.²³ However, when human capital levels are measured using schooling quality in column (6), the human capital level effect is significant at the 1% confidence level, while $PROP_c * HCINT_s$ remains insignificant.

Columns (1)-(6) confirm the significance of the human accumulation effect. In addition, estimates is very stable and similar to that reported in earlier tables. The human capital accumulation effect could, however, be capturing that countries experiencing faster aggregate growth demand more human-capital-intensive goods. It could also be that rapid productivity growth always leads to shifts to human-capital-intensive industries because rapidly growing countries are "modernizers". In columns (7) and (8), we therefore add an interaction between aggregate productivity growth and industry human capital intensity ($GROWTH_c * HCINT_s$). It can be seen that the human capital accumulation effect remain highly significant. Hence, there is no evidence that the human capital accumulation effect captures a link between rapid productivity growth and shifts towards human-capital-intensive industries.

Panel B of Table 4.10 reports specifications that are analogous to Panel A, but use employment growth as the dependent variable. It is worthwhile noting at the outset that the employment growth regressions continue to display a better fit (with an adjusted R^2 around 44%) than the output growth regressions (with an adjusted R^2 around 26%). In columns (1) and (2), we add the interaction between aggregate productivity and industry human capital intensity. It can be seen that, in contrast to Panel A, the human capital level effect now remains statistically significant. This is the case whether human capital levels are measured as average schooling years in column (1) or schooling quality in column (2). In

²³Average years of schooling is the country-level variable most strongly correlated with property rights protection in our dataset. This is not surprising as good property rights protection increases the incentives for (human) capital accumulation (Hall and Jones, 1999; Acemoglu, Johnson, and Robinson, 2001) and high human capital levels lead to institutional improvements (Glaeser *et al.*, 2004). Note that both property rights protection and human capital levels are significant when interacted with industry intangible capital intensity and human capital intensity respectively (Table 4.5, column (2)). This is an example of how focusing on possible theoretical channels can help in advancing our understanding of the growth effects of highly correlated country characteristics (Rajan and Zingales, 1998).

columns (3) and (4), we add an interaction between the initial physical capital-output ratio and industry human capital intensity. The human capital level effect remains statistically significant in this case also, no matter which of the two human capital measures we employ. The same holds in columns (5) and (6), where we add the interaction between property rights protection and industry human capital intensity. All columns confirm the significance of the human accumulation effect. Moreover, as shown in columns (7) and (8), this effects continues to be robust to the inclusion of an interaction between aggregate productivity growth and industry human capital intensity. The results in Table 4.10 therefore confirm the positive link between higher human capital levels and more rapid human capital accumulation and growth in human-capital-intensive industries

4.7 Summary and Conclusion

One way to progress in our understanding of the effects of education on growth is to focus on the theoretical channels through which such effects could work. A primary channel is that high education levels facilitate technology adoption. If this were the case, countries with more human capital should have adopted more rapidly the skilled-labor augmenting technologies becoming available since the 1970's. This should have lead to countries with higher education levels experiencing faster growth in more compared to less schooling-intensive industries in the 1980's. We also examine whether greater improvements in education were associated with faster growth in schooling-intensive industries. Our empirical analysis considers such effects of human capital jointly with the differential industry growth effects of financial markets and property rights protection emphasized in the literature. This allows us to check the robustness of the effect of human capital on growth in human-capital-intensive industries to controls for financial development and property rights protection, and vice versa.

We find that output and employment growth in schooling-intensive industries during the 1980's was significantly faster in economies with higher education levels and greater education improvements. Reexamining the two channels linking education and growth separately for economies with low and economies with high tariffs yields significant effects of

education levels and improvements in economies that are open to international trade. In closed economies, links between education and growth weaken and usually turn statistically insignificant.

Conclusions and Future Research

The objective of my dissertation was to investigate the role of structural policies (institutions) in various aspects of economic and financial development. From this standpoint this thesis fits in a recent academic revival that tries to understand how and to what extent political, legal and social institutions affect well-being. Establishing causation and providing a realistic quantification of the role of policies on economic development, growth, finance or public policies requires the resolution of many challenging econometric (and conceptual) limitations. I believe that each of the four Thesis Chapters offer directions for future research.

Chapter 1 studied the direct "within" effects of a permanent democratic transitions. The results contrast sharply the previous studies that relied almost exclusively in the cross-country variation. It would be thus interesting to apply this before-after event-study approach to investigate the response of public policies and income inequality following the consolidation of representative institutions. Political economy models predict that redistribution pressures will raise after the consolidation of democratic institutions, raising taxation and government spending, slowing investment and eventually lowering inequality. Highly influential work by Alesina and Rodrik (1994) and Persson and Tabellini (1994) as well as subsequent work by Wacziarg and Tavares (2001) provide robust evidence for such a mechanism in the cross-section. Yet preliminary results in a within framework suggest that no major changes in public policies take place following the establishment of representative redistribution institutions. In addition, inequality if anything increases rather falls.

Chapter 2 identified the factors that shape the political equilibrium distinguishing be-

tween those that influence the stabilization and those that determine the likelihood of transition. It will be of great interest to identify other types of major institutional changes (like massive privatization policies or legal reforms) and investigate empirically which social and economic factors are behind these re-engineering policies.

Chapter 3 revealed a mechanism (channel of influence) of political as well as other types of institutions in economic development. Specifically I studied the role of politics, legal norms, corruption and other factors in explaining international (banking mainly) liquidity. It will be interesting to integrate politics and specific institutions' role in a general equilibrium model of international financial flows, probably through the agency approach taken by Shleifer and Wolfenzon (2001).

Combining the insights given in Chapters 3 and 4 I have already started working on the role of institutions, policies and human capital in explaining foreign direct investment (FDI) at the industry (rather than the country) level. The starting point of this work (coauthored with Antonio Ciccone) is that human capital (as shown in Chapter 4 and Romalis, 2004), institutional quality (as shown by Claessens and Laeven, 2003) and financial development (as shown by Rajan and Zingales (1998) and Fisman and Love (2004)) have a differential effect on industry growth. Some industries (like drugs and pharmaceuticals) rely much more heavily in skilled workers or in good property rights protection, while other sectors (like textiles) do not. Extrapolating these results, it is of great interest to investigate whether these factors (institution, finance, and human capital) exert also a differential industry effect on FDI flows. Many nations, for example, with relatively low levels of human capital, corrupted bureaucracies and inefficient legal institutions (e.g. China, Bangladesh, or recently Vietnam) receive sizable amount of foreign capital. One could therefore argue that these factors are irrelevant and consequently reforms will not necessarily bring much-needed foreign capital. Yet domestic institutions and education is very unlikely to have a real zero effect. A more careful examination of recent capital movements suggest that capital flows to countries with low levels of human or institutional quality are directed towards sectors that do not depend on the factors (like in textile, apparel, leather, etc.). In contrast countries with good property rights protection and skilled labor receive FDI and portfolio investment mostly in human

and institutions dependent sectors (like drugs, pharmaceuticals, etc.). This work tries to investigate this hypothesis employing a rich country-industry FDI dataset (from the United Nations).

Appendix A

The Democratization Data-Set

A.1 Methodology

This Appendix describes in detail the methodology in identifying and timing permanent democratic transitions. It also provides a brief description of the democratic transition. We start by analyzing the evolution of the two most widely used democracy measures: the Polity democracy index and the Freedom House (FH) political rights and civil rights indicators.

The Center for International Development and Conflict Management at the University of Maryland produces various quantitative measures of political characterizations in its Polity project (edition IV). We focus on the composite democracy index (Polity 2). The index ranges from -10 , indicating the full absence of representative institutions and civil rights to $+10$ indicating the perfect protection of political freedom. The index is constructed by subtracting a 0 to 10 autocracy measure (AUTOC) from a similar 0 to 10 institutionalized democracy (DEMOC) indicator. The Polity index reflects the degree of competitiveness in political participation, the openness in the selection of the executive and legislative branch, and the constitutional constraints on the executive. It also incorporates subjective information on the absence of checks and balances to executive powers, the degree of restrictions in electoral participation, and to which extent the political participation is regulated.

The Non-Governmental Organization Freedom of the World in its Freedom House product

reports a score of political rights and civil liberties. Both measures range from 1 to 7 with lower values indicating a higher level of protection. Data are reported on an annual basis, starting in 1972 and cover almost all independent states. FH also designates to each country a trichotomous polity status characterization of either "free" (F), "partly free" (PF), or "not free" (NF). Countries whose combined average score of political rights and civil liberties is less than 2.5 are assigned "free", while those with a greater than 5.5 score are designated as "not free"; countries with an average score of between 2.5 and 5.5 are designated "partly free".

First we identified a sudden and permanent jump (fall in the FH measures) of either indicator. Since we are interested in identifying the nature and the timing of a permanent regime change, we recorded an event change when: 1) the Polity index jumped from a negative to a positive value and remained positive for at least five years, 2) the FH status jumped from "NF" to "PF" or "F" and remained at the improved democracy status for at least five years (changing this requirement to seven, six, four or three years does not alter the main results). In South Korea, for example, "free and fair elections" were held on December 1987. The new democratic constitution that established a multi-party representation, however, came into effect the following year. We therefore use 1988 as the democratization year for South Korea. In most cases the two indicators yielded similar results with minor changes in the exact timing. For example, in Guyana the Polity indicator jumped from -6 to +7 in 1992 (when the first free post-independence elections were held), while the FH characterization jumped to "F" in 1993. For those countries that democratized after 1998 and are included in our sample, we validated that they fulfill the stability requirement beyond the year 2000 (e.g. Djibouti democratized in 1999 according to both indicators. Until 2003 neither of the two ratings has fallen back to "autocratic" status).

Second, we delved into numerous historical and political science resources. This was done to fully address the documented conceptual and measurement problems of the democracy variables and to precisely identify the nature of each event. Our main resources were: 1) the detailed Freedom House and Polity Project country reports, 2) the Country Studies/Area Handbook Series of the Federal Research Division of the United States Library of Congress,

3) the Central Intelligence Agency (CIA) World Factbook, 4) the U.S. Department of State "Background Country Notes" and 5) the various country releases of the non-governmental organization "Human Rights Watch". We identify a democratization episode at the timing of the first internationally deemed "free and fair" elections after a prolonged period of autocratic rule. Data on elections were taken from 1) Adam Carr's Election archive and "Elections around the World" online data-set. and 2) Election Results Archive, collected by the Center on Democratic Performance at Binghamton University.

The criterion for dating a successful democratic transition is either at the timing of "free and fair" elections or at the adoption of a democratic constitution after a prolonged period of autocratic rule. In most cases these two events coincide; When they do not, we use the latter date. In South Korea, for example, internationally deemed "free and fair elections" were held on December 1987. The new democratic constitution that established a multi-party representation, however, came into effect the following year. We therefore use 1988 as the democratization year for South Korea.

Although this method of identifying the date of a stable regime change is consistent with the score of the Polity and the FH indicators for almost all countries, in some countries democratic transition was followed by political turmoil and struggles. Since we want to control for the transition, we allow for the stability of democratic institutions. We therefore identify permanent democratization episodes when there is a de facto transfer of power to a democratically elected government. In Bolivia, for example, the military did not initially recognize the outcome of the free elections of 1980. Yet, they were forced to hand over power to the democratically elected President in 1982. So, 1982 marks the transition to democracy (in line with our methodological approach both the Polity and the FH indicators jumped in 1982). In Guatemala, likewise, although the first "free and fair" elections after the military junta occurred in 1986, several coups and civil conflicts followed until 1996, when a U.N. supported accord was signed with leftist guerillas and new elections were conducted. In the example of Guatemala we therefore use 1996 as our event date (the Polity indicator jumped in 1983 whereas the FH indicator jumped in 1996).

In some countries, however, one of the two sources does not report a democracy score. The Polity database, for example, excludes countries with a population less than half a million (excluding mainly some small Caribbean nations), while the FH indicators start in 1972-1973 period. In these cases we relied on either of the two indexes and to country specific sources. An open question is furthermore how to treat the newly established countries that followed the collapse of the Soviet Union, Yugoslavia and Czechoslovakia. Since all three of these former countries were classified as nondemocracies, we include in the democratization sample those nations that not only became independent, but also managed to consolidate representative government. Consequently the Baltic republics, for example, as classified as countries experiencing a democratization event. The results are robust to the exclusion of the countries, where democratization occurred alongside independence (e.g. Estonia, Latvia, Slovak Republic, etc.). A related problem was how to handle some African countries, which during the first post-independence years (in the early sixties) had democratic constitutions, but immediately (by mid-sixties) reversed to non-democratic status (Benin, for example, was classified as democracy during the 1960-1962, but after the 1963 military coup that ousted President Hubert Maga turned to autocratic status; other similar examples include Congo, Kenya, Lesotho, Nigeria, Uganda, etc.). We decided to follow a strict definition of democracy and considered these small intervals as non-successful democratic reforms.

Third, since not all democratizations yielded the same level of political freedom, we distinguished between "full" and "partial" democratizations. A "full" democratization event is identified when a country experienced a democratic transition that led to an almost perfect protection level of political rights and civil liberties. To classify a country as having experienced a "full" democratization, we require both a FH status designation of "free" and a Polity score greater than +7. Examples of "full" democratization include Spain after Franco's death, Argentina's democratization after the Falkland's War, or Chile after the stepping-down of Pinochet. In "partial democratization" incidents, in contrast, although representative institutions have been established and free and fair elections have taken place, the level of political liberties and civil rights has not reached an almost perfect score. In "partial democratization" episodes, the two democracy measures have, consequently, not reached a

maximum score. Examples of partial democratizations include Nigeria, Russia, and many African countries that have recently moved towards representative institutions. We further identify 5 borderline cases of "partial democratization" episodes, namely Iran (1997), Jordan (1993), Niger (1999), Pakistan (1988), and the Central African Republic (1993), where one could reasonably argue that in spite of some democratic progress, political participation and civil freedoms are still at a very low level. Since, however, both our methodology, the the FH and the Polity index, indicate that considerable progress towards representative government has occurred, we do include them in our dataset. We also note that one could also add to the borderline cases Guinea-Bissau. Yet although some reforms took place in 1994, there was recently a significant reversal to autocracy.

We also identify the timing and the event depending solely on the Polity and Freedom House indicators. By doing so, we also drop all countries that emerged from the collapse of Czechoslovakia U.S.S.R. and Yugoslavia. These 22 countries are: Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina , Croatia, Czech Republic, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, FYROM, Moldova, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

We identify a Polity permanent regime change when the Polity index jumps from a negative to a positive value and remains there for five years. When there are consecutive jumps in two or three years, we use the later year. For example in Philippines the Polity index jumps from -6 to $+1$ in 1986 and further to $+8$ in 1987. So we use 1987 as the democratization year for the Philippines. In most episodes there are only minor differences with our chronology mainly in the exact timing of the event. For example in Albania democratization according to our methodology occurred in March 1992 at the time of the General assembly elections, while according to the Polity index democratization occurred in 1990, when the communist system collapsed. Likewise in Chile the Polity index jumped in 1989, while we use the 1990 Presidential election as the timing of transition. Since the Polity index is not reported for some small nations, so Cape Verde, Grenada, São Tome and Principe, and Suriname are excluded, while Guinea-Bissau (1994) is included in the democratization countries sample. For robustness we also considered a smaller threshold of democratic transitions, of -3 . Ac-

according to this less strict definition: Angola (1992), Algeria (1995), Guinea (1995), Kenya (1997) and Chad (1996) are included in the reforming group. In addition for Guatemala now the date of transition is 1986, for Thailand in 1978 and for Tanzania in 2000.

We identify a FH permanent regime change when the Freedom House characterization jumps from "Not Free" to either "Free" or "Partially Free". When there are consecutive jumps from NF to PF and then to F (like in Argentina, Romania, and Benin), we use the latter date. There are still some minor discrepancies with our (or with the Polity index) methodology at the exact timing. For example according to both our and to the Polity classification democratization occurred in Argentina in 1983, while according to the FH democratization took place in 1984. Yet the FH classification has some noteworthy differences with our methodology. When we use the Freedom House database Cyprus (1981) and Guinea Bissau (1991) are now included in the democratization sample. In addition according to FH no democratization has taken place in: Bangladesh, Iran, Madagascar, Nicaragua, Paraguay, Senegal, Turkey, Zambia or even Indonesia and Lesotho. Other noticeable differences are the timing of democratization in Nepal (in 1979), in Guatemala (in 1984), in Ghana (in 1992), and in Mexico (in 2000).

Panel *A* of this Appendix gives a detailed chronology of the democratic transition in countries that experienced a "full" democratization. Panel *B* gives the chronology of "partial democratization", while Panel *C* gives that of "borderline" democratization events. In Panel *D*, we report the incidents of "adverse" reversals, i.e. transition from a stable democracy to autocracy. Below each episode we report (in italics): First the evolution of the 21-scale Polity index. Second, the change of the FH regime classification. Third the regime characterization of Przeworski, Alvarez, Cheibub, and Limongi (2000), which, however, does not cover the nineties (1950-1990 period). There are two non-democratic regimes, "bureaucracies", defined as "institutionalized regimes that promulgated laws" and "autocracies", defined as "regimes without any proclaimed rules"; the democratic regimes are further classified as "parliamentary", "presidential" or "mixed" (Przeworski *et al.*, pp. 48-49). Fourth we document Persson's (2005) characterization of regime transition in the 1962-1998 period. Although Persson's event identification employs the Polity index, using a similar to

ours cutoff value, his chronology contains information on the form of democratic government (whether the democratic transition established a presidential or a parliamentary system) and the form of the electoral system (majoritarian or proportional). In Panel *E* we report for completeness the non-reforming countries, "permanent democracies" and "permanent stable autocracies". Finally we present analytical country graphs with the evolution of growth in each of the transition countries.

A.2 Event Chronology

Panel A – "Full" Democratization Episodes

- (1) **Argentina (1983):** Since Peron era, Argentina was ruled by the military with very short-lived democratic governments. After Britain defeated Argentina in the Falklands War (in June 1982), there was significant opposition to the militants, who had been ruling since the sixties. Democratization occurred fast. On October 30, 1983 democratic elections brought Raul Alfonsin and the Radical Civic Union Party to power. Alfonsin won the subsequent 1985 elections. *Polity: -8 to +8 (1983). Freedom House: NF to PF (1981); PF to F (1983); Przeworski et al.: 1983 from "autocracy" to "presidentialism"; Persson: 1983 Presidential-Proportional.*
- (2) **Benin (1991):** Almost immediately after independence (in 1960), Benin was ruled by the military. In 1963 consecutive coups sponsored by the military chiefs ousted President Hubert Maga. After years of military dictatorship, a new democratic constitution, which institutionalized multi-party democracy, was drafted and approved by a National Conference in December 1990. After losing the 1991 elections, the long-ruling President Mathieu Kerekou handed power over to Nicephore Soglo. Kerekou, however, managed to get re-elected in the 1996 and 2001 elections, which international observers deemed free although not completely fair. *Polity: -7 to 0 (1990); 0 to +6 (1991). Freedom House: NF to PF (1990); PF to F (1991). Przeworski et al.: N/A. Persson: 1991 Presidential-Proportional.*
- (3) **Bolivia (1982):** After its independence from Spain in 1825 the armed forces were responsible for more than 180 coups. Elections were held in 1978, 1979 and 1980, but were marked by fraud and were conducted under chaotic conditions. On September 17, 1982, after a strike that brought the country just a step before civil war, the military decided to step down and reconvene the 1980 Congress. In October, Hernan Siles Zuazo became the first democratic President after more than two decades. *Polity: -7 to +8 (1982). Freedom House: NF to F (1982). Przeworski et al.: 1982 from "autocracy"*

and "bureaucracy" to "presidentialism". Persson: 1982 *Presidential-Proportional*.

- (4) **Brazil (1985):** After a referendum in 1963, in which after a prolonged period of political instability Brazil became a presidential republic, the army took power after a successful coup in 1964. Since then Brazil was ruled by the military for two decades until 1985, when an Electoral College elected Tancredo de Almeida Neves President. Political tensions that had peaked in 1984 continued. Stability and democratic rule were restored after the November 1985 internationally deemed fair and free mayoral elections. *Polity: -3 to +7 (1985)*. *Freedom House: PF to F (1985)*. *Przeworski et al.: 1979 from "autocracy" and "bureaucracy" status to "presidentialism"*. Persson: 1985 *Presidential-Proportional*.
- (5) **Bulgaria (1990):** Todor Zhivkov, who ruled from 1954, was forced to resign in 1989. The first free post-communism assembly elections were held in June 1990 and brought the Bulgarian Socialist Party into power with a narrow margin. A new democratic constitution was adapted in July of 1991. New Assembly elections took place in November 1991 and the first direct Presidential elections brought Zhelyu Zhelev into power in 1992. *Polity: -7 to +8 (1990)*. *Freedom House: NF to PF (1990); PF to F (1991)*. *Przeworski et al.: 1990 from "bureaucracy" to "parliamentarian"*. Persson: 1990 *Parliamentary-Proportional*.
- (6) **Cape Verde (1991):** After its independence from Portugal in 1975, Cape Verde was ruled by a one-party communist regime. The first free and fair elections took place in January 1991. Opposition leader António Mascarenhas Monteiro became the first democratically elected president. A democratic constitution was voted in the same year and came into effect in September of 1992. *Polity: N/A*. *Freedom House: NF to PF (1990); NF to F (1991)*. *Przeworski et al.: "bureaucracy" status until 1990*. Persson: *N/A*.
- (7) **Chile (1990):** After a relatively stable period of democratic rule with changes between left and right leaning governments, a military coup led by General Augusto Pinochet assassinated the elected socialist President Salvador Allende in September, 1973. The

military ruled until the first free Presidential elections, held in March 1990. However, the militants continued to block political reforms, especially before the 1994 Presidential elections. *Polity*: -6 to -1 (1988); -1 to +8 (1989). *Freedom House*: PF to F (1990). *Przeworski et al.*: 1990 from "autocracy" to "presidentialism". *Persson*: 1989 *Presidential-Majoritarian*.

(8) **Croatia (2000)**: After its separation and independence from Yugoslavia in 1990, Franjo Tudjman ruled Croatia. His highly authoritarian rule was helped by the Bosnian war. Tudjman died in 1999, after which legislative and presidential elections were held in January and February of 2000. *Polity*: -5 to +1 (1999); +1 to +7 (2000). *Freedom House*: PF to F (2000). *Przeworski et al.*: N/A. *Persson*: N/A.

(9) **Czech Republic (1993)**: The Czech Republic declared independence on January 1, 1993 marking thus the end of communist rule. The communist regime collapsed in November 1997 after violent demonstrations. A national unity government was formed in the then united Czechoslovakia. The first democratic constitution was approved in December 1992 and came into effect alongside independence. *Polity*: N/A. *Freedom House*: N/A. *Przeworski et al.*: 1990 from "bureaucracy" status to "presidentialism", but for the then unified Czechoslovakia. *Persson*: N/A.

(10) **Dominican Republic (1978)**: After a prolonged history of autocratic rule, democratization commenced with the elections held on May 16, 1978. With the assistance of the military, the incumbent ruler Balaguer tried to manipulate the results. Riots and the decisive military intervention of the United States made him step back. Two weeks after the elections, Silvestre Antonio Guzman became the first democratically elected president. *Polity*: -3 to +6 (1978). *Freedom House*: PF to F (1978). *Przeworski et al.*: 1966 from "autocracy" and "bureaucracy" to "presidentialism". *Persson*: 1978 *Presidential-Proportional*.

(11) **Ecuador (1979)**: For most of the post-independence years, Ecuador was ruled despotically either by a small landholding oligarchy or by the military. The 1960 elections were followed by tensions and the army seized power in a 1963 coup. From 1972 to 1978

there was a direct military regime under Rodriguez Lara. A referendum held in January of 1978 approved a new democratic constitution. Presidential elections followed in July 1978 and in April 1979. *Polity: -5 to +9 (1979)*. *Freedom House: PF to F (1979)*. *Przeworski et al.: 1979 from "autocracy" to "presidentialism"*. *Persson: 1979 Presidential-Proportional*.

- (12) **El Salvador (1994):** In spite of the return to civilian government after the 1984 elections, the militants' role remained significant and numerous coups and ethnic warfare continued. Electoral reforms were initiated in the early nineties. A long-lasting devastating twelve year that left more than 80,000 dead and half a million people displaced, ended in 1992. The 1994 and the subsequent 1999 elections that brought the center-right ARENA party into power were not challenged by the guerillas and were declared free and impartial by international observers. *Polity: -6 to +6 (1978-1984)*. *Freedom House: PF to F (1996)*. *Przeworski et al.: 1984 from "bureaucracy" to "presidentialism"*. *Persson: 1982 Presidential-Proportional*.
- (13) **Estonia (1991):** Independence was declared in September 1991 and ended communist rule. The ratification of the old democratic constitution of 1938 was approved in a referendum in June 1992. Joint presidential and legislative elections took place on September 20 1992. *Polity: N/A*. *Freedom House: N/A*. *Przeworski et al. : throughout the 1960-1990 period in "bureaucracy" status, under Soviet Union*. *Persson: N/A*.
- (14) **Greece (1975):** After the crisis and the Turkish invasion of Cyprus (1974) the military dictatorship, that had ruled since 1967, collapsed. Following the 1974 referendum that rejected the monarchy, a new democratic constitution was approved by the newly-elected parliament on June 19, 1975. *Polity: -7 to +1 (1974); +1 to +8 (1975)*. *Freedom House: NF to F (1974)*. *Przeworski et al.: 1974 from "autocracy" to "parliamentarian"*. *Persson: 1974 Parliamentary-Proportional*.
- (15) **Grenada (1984):** After gaining independence from Britain in 1974, Grenada was ruled by a one-party communist regime. Marxist hardliners assassinated Maurice Bishop and seized power on October 19 1983. Just six days later US forces invaded the

country and deposed the Marxist military council. In December 1984 a general election re-established democratic government. *Polity: N/A. Freedom House: NF to FP (83); PF to F (84). Przeworski et al.: 1984 from "autocracy" to "parliamentarian". Persson: N/A.*

(16) **Guyana (1992):** After independence in 1966, Guyana was ruled despotically by Forbes Burnham and his People's National Congress (PNC) party. In the first free and fair elections that were held on October 5 1992 the PNC lost to the center-left People's Progressive Opposition Party. *Polity: -7 to +6 (1992). Freedom House: PF to F (1993). Przeworski et al.: "bureaucracy" status until 1990. Persson: 1992 Presidential-Proportional.*

(17) **Honduras (1982):** Honduras has had a long history of oppressive rule, political instability and civil war. A new constitution came into effect on January 11 1982. President Roberto Suazo Cordoba took office after the internationally deemed fair and free elections that were held on November 29 1981. Political tensions with neighboring Nicaragua continued until the early nineties. *Polity: -1 to +6 (1979-1982). Freedom House: PF to F (1982). Przeworski et al.: 1982 from "autocracy" status to "presidentialism". Persson: 1980 Presidential-Proportional.*

(18) **Hungary (1990):** The transition from communism to Western type democratic rule started in 1987 with massive demonstrations. The Hungarian Socialist Workers' Party was forced to dissolve itself in October 1989. The first post-communist free and fair parliamentary elections were held in May 1990. The socialists were defeated and the centre-right coalition led by Prime Minister Jozsef Antall resumed government. *Polity: -7 to +10 (1987-1990). Freedom House: PF to F (1990). Przeworski et al.: 1990 from "bureaucracy" status to "presidentialism". Persson: 1989 Parliamentary-Majoritarian.*

(19) **Korea, Republic of (1988):** After many years of military government and autocratic rule, internationally declared fair and free elections were held on December 16 1987. A new democratic constitution came into effect on February 25 1988. *Polity: -5 to -1*

(1987); -1 to +6 (1988). *Freedom House: PF to F (1988)*. *Przeworski et al.: 1988 from "bureaucracy" status to "presidentialism"*. *Persson: 1987 Presidential-Proportional*.

(20) **Latvia (1991)**: 1991 marked the end of communist rule. The amendment of the 1922 constitution occurred alongside independence in August 1991. Since then Latvia has enjoyed a drastic enhancement of political institutions. Parliamentary elections were held on June 5-6 of 1993. *Polity: N/A*. *Freedom House: N/A*. *Przeworski et al. : throughout the 1960-1990 period in "bureaucracy" status, under Soviet Union*. *Persson: N/A*.

(21) **Lithuania (1991)**: Lithuania declared independence in 1991 marking the end of communist rule and the restoration of representative institutions. Parliamentary elections were held in October-November 1992 and Algirdas Mykolas Brazauskas secured a landslide victory in the February 15 1993 Presidential Elections. All Russian troops had withdrawn by September 1993. *Polity: N/A*. *Freedom House: N/A*. *Przeworski et al. : throughout the 1960-1990 period in "bureaucracy" status, under Soviet Union*. *Persson: N/A*.

(22) **Malawi (1994)**: The self-declared President for Life, Hastings Banda, ruled Malawi from 1961 until 1994, when he was 96. The first joint parliamentary and presidential elections, since Malawi's independence, were held on May 17, 1994 and a democratic constitution came into effect on May 18 1994. Bakili Muluzi became the first democratically elected President. *Polity: -8 to +7 (1994)*. *Freedom House: NF to F (1994)*. *Przeworski et al.: from 1964 in "bureaucracy" status until 1990*. *Persson: 1994 Presidential-Majoritarian*.

(23) **Mali (1992)**: Mali had a long history of coups and military regimes. After fierce opposition and riots, a new democratic constitution established a multi-party political system and paved the way for the subsequent legislative elections, which were held on March 8 1992. Presidential elections brought to power Alpha Oumar Konare, who was re-elected in the 1997 presidential ballot. *Polity: -7 to 0 (1991); 0 to +7 (1992)*. *Freedom House: NF to PF (91); PF to F (92)*. *Przeworski et al.: throughout the*

1960-1990 period in "bureaucracy" or "autocracy" status. Persson: 1992 Presidential-Majoritarian.

- (24) **Mexico (1997):** The Institutional Revolutionary Party (PRI) had managed to control the parliament and the presidency since 1929 under a (theoretically) free electoral system! Since 1998 and especially after 1994 (joint Legislative and Presidential) elections started becoming increasingly fair and free. For the first time, the PRI lost the absolute power in the Lower House in the legislative elections, which were held on July 6 1997. The PRI's candidate also lost in the 2000 Presidential elections, which brought opposition candidate Vicente Fox to power. *Polity: -3 to 0 (1988); 0 to +4 (1994); +4 to +6 (1997). Freedom House: PF to F (2000). Przeworski et al.: throughout the 1960-1990 period in "bureaucracy" status. Persson: 1994 Presidential-Proportional.*
- (25) **Mongolia (1992):** Mongolia had been ruled by a communist regime since 1939. In 1991, the communist leader Jambyn Batmonh agreed to the formation of a new multi-party political system. The Constitution of the Republic of Mongolia came into effect on January 13, 1992. The democratic opposition parties defeated the communists in the Presidential elections held on June 13, 1993. *Polity: -7 to +2 (1990); +2 to +9 (1992). Freedom House: NF to PF (1990); PF to F (1991). Przeworski et al.: throughout the 1960-1990 period in "bureaucracy" status. Persson: 1990 Presidential-Majoritarian.*
- (26) **Panama (1994):** Panama was ruled despotically and the influence of the military was substantial. During the fifties and until 1967 relatively stable democratic rule was in place. In 1968 after being just ten days in office the army ousted the democratically elected President Arnulfo Arias Madrid. The role of the military was formally diminished with the 1989 Constitutional amendments. However, General Manuel Noriega claimed victory in the 1989 elections. After the US invasion, Panama's Electoral Tribunal invalidated the Noriega regime's annulment of the 1989 election and confirmed the victory of President Guillermo David Endara Galimany. The joint presidential and legislative elections of May 8 1994 marked the ending of a politically unstable period of coups and military intervention. Ernesto Pérez Balladares became the first demo-

cratically elected President of Panama after a prolonged period of non-representative government. *Polity*: -8 to +8 (1989); +8 to +9 (1994). *Freedom House*: PF to F (94). *Przeworski et al.*: from 1968 until 1990 in "bureaucracy" or "autocracy" status. *Persson*: 1989 Presidential-Proportional.

(27) **Peru (1980)**: The role of the military has been substantial, ruling Peru, most recently during the 1968-1980 period. In the fifties and early sixties relatively stable democratic government was in place, although there were numerous cases of direct military involvement. The internationally deemed "fair and free" Presidential and Legislative elections on May 18 1980 marked the ending of autocratic rule. Democratic institutions did not fully consolidate, due to the economic collapse in the eighties and the increased role of drug-trafficking cartels. In the same year the Maoist Shining Path rebellion group launched a civil war that killed more than 30,000 civilians. The influence of the Shining Path has, however, shrunk during the last decade. *Polity*: -7 to +7 (1977-1980). *Freedom House*: PF to F (1980). *Przeworski et al.*: 1980 from "autocracy" to "presidentialism". *Persson*: 1979 Presidential-Proportional (with a brief exit to non-democracy in 1992).

(28) **Philippines (1987)**: In 1965 Ferdinand Emmanuel Edralin Marcos is elected President through competitive elections. Yet after the end of his term and especially after the 1972 insurrections he became dictator and declared martial law. Massive riots and demonstrations ousted his long dictatorship in 1986. The Presidential elections of February 1986 were marked by fraud, violence and manipulation and were denounced by international observers. Initially Marcos and opposition leader Corazon Aquino were both inaugurated as Presidents. Huge opposition from internal protests and the international community forced Marcos to flee the country. The new democratic Constitution came into effect on February 11 1987 and the legislative elections of May 11 1987 marked the full restoration of democratic institutions. *Polity*: -6 to +1 (1986); +1 to +8 (1987). *Freedom House*: PF to F (1987). *Przeworski et al.*: from "bureaucracy" status to "presidentialism". *Persson*: 1986 Presidential-Majoritarian.

- (29) **Poland (1990):** After opposition communist leadership was forced into roundtable talks with opposition movements in order to restore democratic rule. Free and fair local elections were held in May 1990 and a new democratic constitution was adopted in October. The Presidential elections of November-December 1990, which brought the Solidarity movement and its leader Lech Walesa into power, marked the ending of the communist era and the restoration of representative government. *Polity: -6 to +5 (1989); +5 to +8 (1991). Freedom House: PF to F (1990). Przeworski et al.: 1989-1990 from "bureaucracy" to "mixed". Persson: 1989 Parliamentary-Majoritarian.*
- (30) **Portugal (1976):** Since 1926 Portugal was ruled by the military. A bloodless coup overthrew dictator Marcello Catano and democratization transition proceeded fast. An elected constitutional assembly approved a new democratic constitution on April 25 1975. Legislative elections took place on the same date. The 1982 Constitutional amendment abolished the role of the military in politics. *Polity: -9 to +9 (1973-1976). Freedom House: NF to F (1973-1976). Przeworski et al.: 1976 from "bureaucracy" to "mixed". Persson: 1975 Parliamentary-Proportional.*
- (31) **Romania (1990):** Violence followed the collapse of communism and more than 1,500 people died in street fighting, while demonstrating against dictator Nicolae Ceausescu, who was soon executed. Former communist party official Ion Iliescu formed a provisional government and won the May 20 1990 elections by an 85% landslide majority. Amid allegations of fraud, Iliescu also won the 1992 and 2000 elections. The new democratic constitution was approved in a referendum in December 1991. *Polity: -8 to +5 (1989-1990); +5 to +8 (1996). Freedom House: NF to PF (1991); PF to F (1996). Przeworski et al.: throughout the 1960-1990 period in "bureaucracy" status. Persson: 1990 Parliamentary-Proportional.*
- (32) **Sao Tome and Principe (1991):** Upon independence in 1975, a socialist-oriented one-party authoritarian government ruled this small country. The old 1975 constitution was amended and came into effect in September 1990. Legislative and Presidential elections took place in January and March 1991. Since then the country has fully

restored representative government. *Polity: N/A. Freedom House: NF to F (1989-1991). Przeworski et al.: N/A. Persson: N/A.*

(33) Slovak Republic (1993): The Slovak Republic declared or gained its independence on January 1 1993 thus marking the end of communist rule. The communist regime ultimately collapsed in November 1989 after violent demonstrations (the “Velvet Revolution”). A national unity government was formed in the then united Czechoslovakia. The first democratic constitution was approved in September 1992 and came into effect alongside independence. Elections were also held in September and the new government resumed office in the beginning of 1993. *Polity: N/A. Freedom House: N/A. Przeworski et al.: 1990 from "bureaucracy" status to "presidentialism", but for the then unified Czechoslovakia. Persson: N/A.*

(34) Slovenia (1992): Slovenia declared its independence from Yugoslavia on June 25 1991 and adopted its first post-communist Constitution in December 1991. The National assembly and Presidential elections of 1992 marked the full consolidation of democratic rule. *Polity: N/A. Freedom House: N/A. Przeworski et al.: N/A. Persson: N/A.*

(35) South Africa (1994): Democratization began with the liberal policies of Frederik de Klerk who came into power in September 1989 and who freed Nelson Mandela in 1990 from a 27 year-long imprisonment. The elections held on April 26–29 1994 that brought Nelson Mandela and his African National Congress into power marked the official ending of the apartheid regime that had ruled since 1948 and the full restoration of representative government. *Polity: +4 to +9 (1989-1994). Freedom House: PF to F (1994). Przeworski et al.: throughout the 1960-1990 period in "bureaucracy" status. Persson: N/A.*

(36) Spain (1978): The forty year long dictatorship of General Franco ended with Franco’s death in 1975. The first civilian government was established in 1977. The new democratic constitution that established a parliamentary monarchy came into effect in December 1978 and since then Spain has enjoyed very stable democratic rule. *Polity: -7 to +9 (1974-1978). Freedom House: NF to PF (1974); PF to F (1977). Przeworski*

et al.: 1977 from "autocracy" to "parliamentarian". Persson: 1976 Parliamentary-Proportional.

(37) Thailand (1992): The role of the military used to be crucial in the political life of Thailand. However, after huge protests and opposition, which left more than 50 people dead, the military dictatorship was forced to step-down in 1992. The legislative elections held on September 13, 1992 were deemed as fair and free and were not challenged by the military. Subsequent elections in 1995 and 1999 further strengthened democratic rule. *Polity: -7 to +2 (1978), then constant +2 with some deterioration in late eighties, -1 to +9 (1992). Freedom House: PF with no characterization change, but with improvement both in civil liberties and political rights (1992); PF to F (1998). Przeworski et al.: 1983 from "autocracy" and "bureaucracy" status to "parliamentarian". Persson: 1992 Parliamentary-Majoritarian.*

(38) Uruguay (1985): Relatively democratic government ruled Uruguay since the early fifties. The economic crisis and the warfare with the Tupamaros guerrillas led to increasing dissatisfaction and empowerment of the military, which formally ruled from 1973 when the Constitution was suspended. Democratization began with the 1984 Presidential elections; however, candidates needed official military approval. The army returned power to the democratically elected President Julio Maria Sanguinetti in March 1985. *Polity: -7 to +9 (1985). Freedom House: PF to F (1985). Przeworski et al.: 1985 from "autocracy" to "presidentialism". Persson: 1985 Presidential-Proportional.*

Panel B – "Partial" Democratization Episodes

(39) Albania (1992): An opposition newspaper began publishing in January 1991. In April 1991, the first multi-party elections since the 20's were held. Political turmoil was still present, with many Albanians crossing the Adriatic Sea to Italy or crossing the border into Greece. New elections in May 1992 brought the Albanian Democratic Party into power under the leadership of Sali Berisha. He became the first democratically

elected president, although many political parties were not allowed to participate in the elections. The collapse of several pyramid investment schemes in 1997 and tensions in neighboring Kosovo seriously impeded further democratization. *Polity: -9 to +1 (1990); +1 to +5 (1992)*. *Freedom House: NF to PF (1991)*. *Przeworski et al.: N/A*. *Persson: 1990 Parliamentary-Majoritarian (with a brief exit to non-democracy in 1996)*.

(40) **Bangladesh (1991)**: Two consecutive military coups in 1975 and 1982 followed the 1971 independence. The democratic transition began in 1990 when after huge demonstrations, General Ershad was forced to resign. Internationally declared “Free and fair” elections were held for the first time since independence in 1991. However, all subsequent elections have been marked by boycotts, political tension, riots and accusations of widespread fraud. *Polity: -5 to +6 (91)*. *Freedom House: PF to F (1991); F to PF (1993)*. *Przeworski et al.: 1986 from "autocracy" and "bureaucracy" status to "presidentialism"*. *Persson: 1991 Parliamentary-Majoritarian*.

(41) **Comoros (1990)**: Since their independence in 1975, the Comoros were ruled by an autocratic regime. Coups and instability were the norm until 1990, when Supreme Court Justice Mohamed Djohar won a six-year tenure and became the first democratically elected President. The return to democracy was secured with a French invasion in 1995 that impeded the success of a military coup. However, the consolidation of democratic rule was delayed by a short-lived new coup in 1999. *Polity: -7 to +4 (1990)*. *Freedom House: NF to PF (1990)*. *Przeworski et al.: throughout the 1975-1990 period in "autocracy" or "bureaucracy" status*. *Persson: 1990 Parliamentary-Majoritarian (with a brief exit to non-democracy in 1995)*.

(42) **Djibouti (1999)**: From its independence in 1977, Djibouti was ruled by a one-party regime under the strict leadership of Hassan Aptidon. The first post-independence elections in 1992 were marked by serious allegations of fraud, manipulation, violence, etc. Aptidon decided to abandon power and not seek re-election in 1999. The internationally deemed free and fair elections kept Aptidon’s party in power under the leadership

of his nephew, Ismael Omar Guelleh. However, political tensions are apparent and civil rights are yet to be fully enjoyed. *Polity: -6 to +2 (1999)*. *Freedom House: NF to F (1999)*. *Przeworski et al.: throughout the 1977-1990 period in "bureaucracy" status*. *Persson: N/A*.

(43) Ethiopia (1995): The brutal dictatorship of the Soviet-oriented Colonel Mengistu ended in May 1991. After a prolonged transitional period, the national-unity government initiated substantial democratic reforms. A new constitution was approved in 1994 and the multi-party legislative elections held in May 1995 mark the permanent return to civilian government. However, political tensions are still present and the executive recruitment is highly non-competitive. *Polity: -8 to +1 (1990-1994)*. *Freedom House: NF to PF (1995)*. *Przeworski et al.: throughout the 1960-1990 period in "autocracy" or "bureaucracy" status*. *Persson: 1993 Parliamentary-Majoritarian*.

(44) Ghana (1996): A new democratic constitution was adopted in January 1993. The consequent elections that kept Lieutenant Jerry John Rawlings in power were, however, marked by fraud and not deemed free and fair by international agencies. Political tension and violence continued and confrontations about land ownership in February 1994 led to the death of more than a thousand people and to the massive migration of 100,000 refugees. The parliamentary and presidential elections of December 1996 were declared free and fair by international observers, although Rawlings managed to secure another victory. The subsequent 2000 elections were held in a much better atmosphere. *Polity: -7 to +2 (1990-1996)*. *Freedom House: NF to PF (1992); PF to F (2000)*. *Przeworski et al.: throughout the 1960-1990 period in "autocracy" or "bureaucracy" status with short-live (maximum two year) intervals of "parliamentarian"*. *Persson: 1996 Presidential-Majoritarian*.

(45) Guatemala (1996): Military rule and coups marked political life in post-war Guatemala. Free and fair elections were held on May 30 1985. Democracy did not consolidate, however, until the UN sponsored Peace agreement of December 1996 ended a devastating civil war that had lasted more than thirty years, led to the death of more than 100,000

people and created some one million refugees. The peace accord demobilized the left-oriented guerillas and at the same time drastically shrank the role of the militants. *Polity: -7 to +3 (1983-1986); +3 to +8 (1996). Freedom House: PF (No change). Przeworski et al.: throughout the 1960-1990 period in "autocracy" or "bureaucracy" status with short-live (maximum two year) intervals of "parliamentarian". Persson: 1986 Presidential-Proportional.*

- (46) **Haiti (1994):** Since its independence, autocratic rule and political instability have plagued Haiti. After many unfair elections and several coups, a decisive intervention by US President Clinton led the militants to abandon power (in 1994). The electoral result of the 1990's election was recognized, and Jean-Bertrand Aristide was restored to the presidency. Aristide also won the 2000 elections, which were marked by accusations of fraud. *Polity: -7 to +7 (1994). Freedom House: NF to F (1994). Przeworski et al.: throughout the 1960-1990 period in "autocracy" or "bureaucracy" status. Persson: 1994 Presidential-Majoritarian.*
- (47) **Indonesia (1999):** The severe recession that followed the East Asian financial crisis led to the overthrow of President Suharto's regime in May 1998. The first multi-party elections after 44 years of autocratic rule were held on June 7, 1999. On August 30, a UN backed and supervised ballot on independence was held in East Timor. *Polity: -5 to + 7 (1999). Freedom House: NF to PF (1998). Przeworski et al.: throughout the 1960-1990 period in "autocracy" or "bureaucracy" status. Persson: 1994 N/A.*
- (48) **Lesotho (1993):** After its independence in 1966, Lesotho experienced severe political instability, coups, and military regimes. The militants handed power over to a democratically elected government in 1993. However, the March 27 1993 elections, which were deemed by international observers as "free and fair", did not end ethnic and political tensions. Troops from neighboring South Africa and Botswana were needed in 1998 to quell a military-backed revolutionary attempt. *Polity: -7 to +7 (1993). Freedom House: PF no change, but improvement. Przeworski et al.: throughout the 1960-1990 period in "autocracy" or "bureaucracy" status. Persson: 1993 Parliamentary-*

Majoritarian.

- (49) **Macedonia, FYR (1991):** Independence was declared in 1991. A new constitution came into effect on November 20 1991. A natural-unity government led the first years of transition. However, border tensions with Kosovo and Albania have impeded further democratization. *Polity: N/A. Freedom House: N/A. Przeworski et al.: N/A. Persson: N/A.*
- (50) **Madagascar (1993):** Although Madagascar became independent in 1960, a military junta has ruled the world's fourth-largest island since 1972. Under huge pressure, Admiral Ratsiraka was forced to initiate reforms. A new democratic constitution was adopted in a referendum in August 1992. The Presidential elections that were held on March 27 1993 brought the opposition leader, Albert Zafy into power and marked the ending of the Ratsiraka era. *Polity: -6 to +2 (1991); +2 to +9 (1992). Freedom House: PF no change, but improvement. Przeworski et al. : throughout the 1960-1990 period in "autocracy" or "bureaucracy" status. Persson: 1991 Presidential-Proportional.*
- (51) **Mozambique (1994):** Since its independence from the Portuguese in 1975, the country was despotically ruled by a one-party system. The constitution of 1990 liberalized the political system and legalized all parties. A fifteen year-long civil war ended in October 1992. In the first ever free and fair joint parliamentary and presidential elections, which were held on October 27-29 1994, Joaquim Chissano was elected to the Presidency by a wide margin. *Polity: -6 to +6 (1994). Freedom House: NF to PF (1994). Przeworski et al. : throughout the 1975-1990 period in "bureaucracy" status. Persson: 1994 Presidential-Proportional.*
- (52) **Nepal (1991):** After a brief experiment with democracy in the early sixties, the country was ruled by a one-party despotic regime since 1962. King Birenda was forced to establish a constitutional monarchy and a multi-party system in November 1990. Internationally declared free and fair elections were held on May 12 1991. Huge political tensions still exist. For example, in 2001 the Crown Prince assassinated ten members of his own royal family and then committed suicide. *Polity: -2 to +5 (1990).*

Freedom House: PF no change, but improvement (1990). Przeworski et al. : throughout the 1960-1990 period in "autocracy" or "bureaucracy" status. Persson: 1990 Parliamentary-Majoritarian.

(53) **Nicaragua (1990):** After the end of the Somoza dictatorship, the left-oriented Santinistas movement seized power in 1979. A civil-war between the Santinistas and the US backed Contras guerillas began. In 1987 the Santinistas conceded a democratic constitution. After gaining their independence from Spain in 1938, the first post-independence elections were held on February 25 1990 and Violenta Chamorro easily defeated the Santinistas leader and the then President Daniel Ortega. *Polity: -1 to +6 (1990). Freedom House: PF no change, but improvement (1990). Przeworski et al. : 1984 from "autocracy" or "bureaucracy" status to "presidentialism". Persson: 1990 Presidential-Proportional.*

(54) **Nigeria (1999):** The military had been the key player in Nigeria's post-independence history (in 1960). After the unexpected death of General Abacha in June 1998, who had led military rule since 1993, his successor General Abubakar initiated democratization and allowed for elections. After at least fifteen consecutive yeas of military rule, the first democratically elected government came into office on May 29 1999. In spite of some irregularities in the Presidential elections on February 27, international observers have not contested the election of General Olusegun Obasanjo. However, political tensions continue and democracy has not yet been fully consolidated. *Polity: -6 to -1 (1998); -1 to +4 (1999). Freedom House: NF to PF (1998). Przeworski et al. : throughout the 1960-1990 period "autocracy" with brief breaks of "presidentialism" (1960-1965, 1979-1982). Persson: during the 1979-1984 a Presidential-Proportional democracy.*

(55) **Paraguay (1993):** The recovery to civilian rule started in 1989 with the overthrow of dictator Alfredo Stroessner, who had reigned for 35-years. A new democratic constitution was approved in June 1992. Juan Carlos Wasmosy became the first democratically elected President of Paraguay after the joint presidential and legislative elections of

May 9 1993. However, the role of the military has not fully been abolished and unsuccessful coups and corruption have marked political life. *Polity: -8 to +2 (1989); +2 to +7 (1992). Freedom House: NF to PF (1989). Przeworski et al. : throughout the 1950-1990 period in "bureaucracy" status. Persson: 1989 Presidential-Proportional.*

(56) Russia (1993): Independence from the disintegrated USSR was declared in August 1991. Democratization, however, was gradual and during the first-post communist years there was a gridlock in government. For example, the communist-controlled Duma placed severe constraints on the newly elected (1991) President Yeltsin for instituting reforms. The Duma elections were held on December 12, 1993 and the adoption of the first post-communist constitution marked the transition to democratic rule. *Polity: -7 to +4 (1988-1993). Freedom House: N/A. Przeworski et al. : throughout the 1960-1990 period in "bureaucracy" status, under Soviet Union. Persson: N/A.*

(57) Senegal (2000): Since its independence in 1960, Leopold's Sedar Senghor ruled Senegal in a clearly non-democratic manner until 1980. Although Senegal managed to avoid the brutality and paranoia of other African dictatorships, a socialist one-party state ruled until 2000, when opposition leader Abdoulaye Wade came into power. Although democratization was initiated in the early nineties by Senghor's successor, Abdou Diouf, only the latest Presidential elections, held in February and March 2000, were deemed as fair and free by international observers. *Polity: -1 to +8. Freedom House: PF no change. Przeworski et al. : throughout the 1960-1990 period in "bureaucracy" status. Persson: N/A.*

(58) Suriname (1991): From its independence in 1975, Suriname was ruled by a democratically-elected government. A military coup in 1980, however, marks the beginning of a long decade of autocratic rule. After mounting pressure from the international community the militants were forced to abandon power. The elections of May 25 1991 mark the date of democratic transition. However, political tension has not fully calmed, at least not up until 2000. *Polity: N/A. Freedom House: PF no change, but improvement (1991). Przeworski et al. : highly unstable polity characterization. Persson: N/A.*

- (59) **Tanzania (1995):** After its independence and the quick overthrow of the sultan, Tanzania was ruled by a one-party rule led by President Nyerere. After the 1992 constitutional amendment, elections held in 1995 ended the 33 year rule of the Chama Cha Mapinduzi party and Benjamin Mkapa became the first democratically elected president. These elections were deemed as fair and impartial by international observers. Yet, the death of Nyerere in 1999 was followed by political tensions and the consolidation of democratic rule still faces huge setbacks. *Polity: -7 to -1 (1995); -1 to +2 (2000). Freedom House: NF to PF (1995); Further improvement in the following years. Przeworski et al. : throughout the 1960-1990 period in "bureaucracy" status. Persson: N/A.*
- (60) **Turkey (1983):** The role of the military has been highly influential in Turkey, which has experienced three coups since the 1960's. The latest period of military dictatorship occurred in the late seventies. A new constitution came into effect in November 1982 and secured democratic and secular rule. Legislative elections followed a year later on November 6 1983. However, civil rights and political freedoms are far from being free, while the influence of the military is still significant. *Polity: -5 to +7 (1983). Freedom House: PF no change. Przeworski et al. : from 1961 until 1979 in "parliamentarian" status; from 1979-1983 in "autocracy" status and then to "parliamentarian" again. Persson: 1983 Parliamentary-Proportional.*
- (61) **Ukraine (1991):** Independence from USSR was declared in August 1991. Fair and free elections brought Leonid Kravchuk to power, who became the first democratically elected ruler of the Ukraine. Presidential and legislative elections held on July 10 and November 20 1994 respectively, further strengthened democratic rule. Civil rights and political freedoms have not been fully secured, however, and several NGO's accuse the government of misconduct and abuses. *Polity: N/A. Freedom House: N/A. Przeworski et al. : throughout the 1960-1990 period in "bureaucracy" status, under Soviet Union. Persson: N/A.*
- (62) **Zambia (1991):** Since its independence, Zambia was ruled by a one-party regime.

The dictator Kenneth Kaunda himself initiated democratization and allowed for elections and a new constitution. The Constitution of the Republic of Zambia came into effect on August 2 1991. Kaunda was defeated in the joint Presidential and legislative elections held on October 31 1991, but accepted the outcome. Democratic institutions have, however, not fully consolidated. *Polity: -9 to +6 (1991). Freedom House: PF no change, but improvement (1991). Przeworski et al. : throughout the 1964-1990 period in "bureaucracy" status. Persson: 1991 Presidential-Majoritarian.*

Panel C – "Borderline" Democratization Episodes

(63) Central African Republic (1993): The first multi-party elections were held in October 1993, after decades of brutal dictatorship initiated under Colonel Jean-Bedel Bokassa, a self-declared emperor of Africa. General Kolingba initiated democratization in the early nineties. In spite of the continued political instability, international observers deemed the 1996 Presidential elections "fair and free". However, significant political tensions exist and democratic institutions have not been fully consolidated. For example, a failed coup in May 2001 led to hundreds of deaths. *Polity: -6 to +6 (1993). Freedom House: NF to PF (1991). Przeworski et al. : throughout the 1960-1990 period in "bureaucracy" or "autocracy" status. Persson: 1993 Presidential-Majoritarian.*

(64) Iran, Islamic Republic of (1997): A smooth democratic transition followed the war with Iraq from 1980 to 1988 and the death of Ayatollah Khomeini in June 1989. In 1989 Ali Akbar Hashemi-Rafsanjani was elected president by an overwhelming majority. He was re-elected on June 1993. The first multi-candidate elections held in May 1997 brought the moderate Seyyed Mohammad Khatami to power who afterwards initiated substantial political reforms. Khatami was re-elected in June 2001. However, basic political rights and civil liberties have still not been fully granted. *Polity: -6 to +3. Freedom House: NF (no change). Przeworski et al. : throughout the 1960-1990 period in "bureaucracy" or "autocracy" status. Persson: 1993 Presidential-Majoritarian.*

- (65) **Jordan (1993):** Under huge pressure driven by the drop of oil prices and the subsequent decline in oil revenues, King Hussein ended martial law in 1989 and legalized political parties in 1992. Elections were held in 1993. Although political participation has been encouraged, it is far from being competitive. For example, in the 1997 elections only three parties participated. Moreover the electoral laws strongly favor pro-Hashemite monarchial regions. *Polity: -9 to -2 (1989-1992). Freedom House: NF to PF (1989). Przeworski et al. : throughout the 1960-1990 period in "bureaucracy" or "autocracy" status. Persson: N/A.*
- (66) **Niger (1999):** Niger held its first post independence elections in 1993. Democratization was strengthened with the 1995 peace accord that ended the five-year insurgency with the Tuareg tribe in the north of the country. However, coups in 1996 and 1999 blocked further democratization. The transition to civilian rule was restored from October to December 1999 with the two-round presidential and legislative elections. Although the elections were declared free and fair by international observers, Niger is still struggling to consolidate democratic rule. *Polity: -6 to +4 (1999). Freedom House: NF to PF (1999). Przeworski et al. : throughout the 1960-1990 period in "bureaucracy" or "autocracy" status. Persson: for the 1991-1996 period under Presidential-Majoritarian.*
- (67) **Pakistan (1988):** After the death of the military dictator General Zia in 1988, there was a restoration of the 1985 democratic constitution. Legislative elections were held on November 16, 1988. Free and fair elections followed in 1990, 1993 and 1997, but corruption and political tensions remained high. The military coup of October 12 1999 led to the downturn of democratic rule. Chief executive and President General Musharraf was confirmed President in a 2002 referendum. *Polity: -4 to +8 (1988); +8 to -6 (1999) Freedom House: NF to PF (1985); PF to NF (1999). Przeworski et al. : 1988 from "bureaucracy" or "autocracy" status to "parliamentarian". Persson: 1988 Presidential-Majoritarian.*

Panel D – Reverse Episodes from Relatively Stable Democracy to Autoc-

racy

- (1) **Gambia (1994):** Since its independence, Gambia enjoyed a stable presidential democratic life. Independence movement leader Dawda Kairaba Jawara was elected President in five consecutive free and fair elections. The relatively stable representative government is first challenged by a failed coup in the early eighties. In July 1994 the Armed Forces deposed Jawara from power in a successful coup and suspended the 1970 Constitution. Subsequent elections were deemed not fair and free (in 1996 and 1997) or with serious shortcomings (in 2001 and 2002). *Polity: +8 to -7 (1994); Freedom House: F to NF (1994). Przeworski et al. : 1988 from "bureaucracy" or "autocracy" status to "parliamentarian". Przeworski et al. : throughout the 1966-1990 period in "bureaucracy" status. Persson: 1994 exit to non-democracy status from Presidential-Majoritarian.*
- (2) **Lebanon (1975):** Since independence (in 1943) Lebanon was ruled democratically and was relatively prosperous and politically stable. In 1975 a civil war erupted between the Muslim and Christian militias. At the same time Syrian and Israeli troops occupied Lebanese territories and the government collapsed. The 1992 elections were boycotted by Maronite Christians, while the more recent 1998 and 2000 elections were marked by tensions, foreign pressure and allegations of fraud. *Polity: +5 to 0 (1975); Freedom House: F to PF (1975). Przeworski et al. : N/A. Persson: 1975 exit to non-democracy status from Parliamentary-Proportional.*
- (3) **Sierra Leone (1967):** Since independence in 1961, Sierra Leone became parliamentary democracy. Democracy proved short-lived. Since the 1967 Presidential elections, several military coups have occurred and most of Sierra Leone's territory is under warfare. More than 50,000 civilians died in the nineties and some efforts to representative rule proved fragile. *Polity: +6 to -7 (1967); Freedom House: N/A. Przeworski et al. : 1967 from "parliamentarian" to "autocracy" and to "bureaucracy" status. Persson: 1969 exit to non-democracy status from Parliamentary-Proportional.*
- (4) **Somalia (1969):** Somalia became a presidential democracy after gaining independence

from Italy in 1960. Yet democratic government collapsed in 1969, when a military coup lead by Muhammad Siyad Barre assassinated acting President Abdirashid Ali Shermarke. A one-party socialist state regime was officially imposed in 1976. Somalia had never held elections of any type and it has no constitution. *Polity: +7 to -7 (1969); Freedom House: N/A. Przeworski et al. : from "mixed" status to "autocracy" and from 1979 till 1990 in "bureaucracy" status. Persson: 1967 exit to non-democracy status from Parliamentary-Majoritarian (but with many reversals in and out of democracy henceforth).*

- (5) **Zimbabwe (1987):** Independence movement leader Robert Mugabe was elected President in 1980. Since then his regime has become increasingly less tolerant to opposition. The 1987 Constitutional Ammendment increased the President's power. Mugabe was elected in the 1990 elections (which however were deemed as non free and impartial) and re-elected in an uncontested ballot in 1996 and 2002. *Polity: +1 to -6 (1987); Freedom House: PF with deterioration (1987-1988). Przeworski et al. : throughout the 1965-1990 period in "bureaucracy" status. Persson: 1994 exit to non-democracy status from Presidential-Majoritarian.*

Panel E – Non-Reforming Countries

Stable Democracies:

Australia, Austria, Bahamas, Belgium, Belize, Botswana, Canada, Colombia, Costa Rica, Cyprus, Denmark, Venezuela, Finland, France, Germany, Iceland, India, Ireland, Israel, Italy, Jamaica, Japan, Luxembourg, Malta, Mauritius, Namibia, Netherlands, New Zealand, Norway, Papua New Guinea, Sri Lanka, Sweden, Switzerland, Trinidad & Tobago, United Kingdom, United States

Stable Autocracies:

Afghanistan, Algeria, Angola, United Arab Emirates, Bahrain, Bhutan, Brunei, Burkina Faso, Burundi, Cambodia, Cameroon, Congo Democratic Republic (Zaire), Congo Republic, Cote d'Ivoire, Cuba, Egypt, Equatorial Guinea, Eritrea, Gabon, Guinea-Bissau, Iraq,

Kenya, Kuwait, Lao, Liberia, Libya, Morocco, Myanmar, North Korea, Oman, Qatar, Saudi Arabia, Singapore, Sudan, Togo, Tonga, Tunisia, Uganda, Vietnam

Appendix B

Data Sources and Variable Definitions

In this Appendix I provide detailed variable definitions and sources for each of the four Thesis Chapters.

B.1 Chapter 1: Democratization and Growth

Ln. GDP Level: Natural logarithm of real per capita GDP. GDP per capita based on purchasing power parity (PPP). PPP GDP is gross domestic product converted to international dollars using purchasing power parity rates. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes minus any subsidies not included in the value of the products. Data are in current international dollars. *Source: World Bank World Development Indicators CD-ROM (2002 Edition).*

GDP growth: Real per capita GDP growth is defined as the annual logarithmic change of real per capita GDP. *Source: World Bank World Development Indicators CD-ROM (2002 Edition).*

Investment: Gross capital formation relatively to GDP. Gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. *Source: World Bank World Development Indicators CD-ROM (2002 Edition).*

Government Consumption: General government final consumption expenditure (gen-

eral government consumption) measured as a share of GDP. It includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security, but excludes government military expenditures that are part of government capital formation. *Source: World Bank World Development Indicators CD-ROM (2002 Edition).*

Trade: The sum of exports and imports of goods and services measured as a share of gross domestic product. *Source: World Bank World Development Indicators CD-ROM (2002 Edition).*

Population Growth: Annual logarithmic change in population. *Source: World Bank World Development Indicators CD-ROM (2002 Edition).*

Schooling: Average years of schooling in the population aged 15 and above. *Source: Barro and Lee (2001)*

High and Low School: Countries that democratized and had above median schooling are: Argentina, Bulgaria, Chile, Ecuador, Spain, Guyana, Hungary, Indonesia, South Korea, Lesotho, Mexico, Panama, Peru, Philippines, Poland, Paraguay, Romania, Russia, Thailand, Uruguay, South Africa, Zambia. Countries that had below median average years of schooling are: Benin, Bangladesh, Ghana, Guatemala, Honduras, Haiti, Mali, Mozambique, Malawi, Nepal, and Senegal. The following countries democratized when average years of schooling were below median, but soon after the transition their schooling level increased above the median value: Bolivia, Brazil, the Dominican Republic, Nicaragua, Portugal, El Salvador, and Turkey.

Life Expectancy: Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life. The data has some arbitrary gaps. A linear interpolation is used to fill in these gaps. At the regressions the variable is entered as the logarithm of the interpolated series. *Source: World Bank World Development Indicators CD-ROM (2002 Edition).*

Trade Openness: A zero-one variable for trade openness based on five individual dummies for specific trade-related policies. A country was classified as closed if it displayed at least one of the following characteristics: (1) Average tariff rates of 40% or more (2) Non-tariff barriers covering 40% or more of trade. (3) A black market exchange rate that is depreciated by 20% or more relative to the official exchange rate, on average, during the 1970s or 1980s (4) A state monopoly on major export. (5) A socialist economic system. *Source: Wacziarg and Welch (2003).*

Independence period: Years, since independence, normalized 0 – 1. For countries that became independent before 1800, we use the 1800 as independence date. *Source: CIA Factbook, 2003 edition.*

Religious/Ethnic Fractionalization: Index of religious/ethnic heterogeneity. Constructed as one minus the Herfindahl index of the share of the largest religious/ethnic groups. It reflects the probability that two randomly selected individuals follow different religious/ethnic beliefs. Specifically, $RFract_i = 1 - \sum_{j=1}^j s_{i,j}^2$ where $s_{i,j}$ is the relative size of religion j in country i . *Source: Alesina et al. (2003)*

Muslim: Share of population that follows the Muslim religion. Estimated as the sum of shares of the Muslim, Sunni Muslim, Shii Muslim and Ibadiyah Muslim. *Source: Alesina et al. (2003).*

Confucian: Share of the population that follows the Confucian-Buddist religion. Estimated as the sum of shares of Buddhist, Lamaistic Buddhist, Confucian, Chondogyo, and Shintoist. *Source: Alesina et al. (2003).*

Oil: Indicator variable that equals one if the country is a member of the OPEC (Organization of the Petroleum Exporting Countries) or is classified by the IMF as a fuel exporting country. *Source: IMF World Economic Outlook 2003 (Statistical Appendix); OPEC web site <http://www.opec.org/>*

B.2 Chapter 2: What Determines Democratization?

B.2.1 Panel A: Variables used in benchmark analysis

GDP: Real per capita GDP. In the regressions the natural logarithm is used. *Source: World Bank World Development Indicators (2004 edition)*

Schooling: Average years of schooling in total population. *Source: Barro and Lee (2001).*

GDP Ratio: Current per capita GDP expressed relative to the United States ($US = 100$) in each year. *Source: Penn World Tables 6.1 edition.*

Growth: Annual logarithmic change of real per capita GDP. *Source: World Bank World Development Indicators (2004 edition)*

Urbanization: Share of the total population living in areas defined as urban in each country. *Source: World Bank World Development Indicators (2004 edition)*

Radios: Radios per 1000 people. Radios refer to radio receivers in use for broadcasts to the general public. The data has some arbitrary gaps and a linear interpolation has been applied. *Source: World Bank World Development Indicators (2004 edition)*

Literacy: Youth literacy rate is the percentage of people ages 15 – 24 who can, with understanding, read and write a short, simple statement on their everyday life. *Source: World Bank World Development Indicators (2004 edition)*

Independence: Years since independence, normalized 0 – 1. For countries that became independent before 1800, we use the 1800 as independence date. *Source: CIA Factbook, 2003 edition.*

Trade Openness: A zero-one variable for trade openness based on five individual dummies for specific trade-related policies. A country was classified as closed if it displayed at least one of the following characteristics: 1) Average tariff rates of 40% or more; 2) Non-tariff

barriers covering 40% or more of trade; 3) A black market exchange rate that is depreciated by 20% or more relative to the official exchange rate, on average, during the 1970s or 1980s; 4) A state monopoly on major export; 5) A socialist economic system. *Source: Wacziarg and Welch (2003), who update and extend Sachs and Warner (1995) variable.*

Trade Liberalization: An indicator variable that takes on the value one if a permanent trade liberalization has occurred during the current or the past three years. *Source: Wacziarg and Welch (2003)*

Trade/GDP: Sum of exports and imports of goods and services measured as a share of GDP. *Source: Penn World Tables 6.1 edition.*

Oil: Fuel exporting countries dummy variable, as defined by the IMF. It takes on the value of one in the following countries: Angola, United Arab Emirates, Bahrain, Brunei, Congo, Rep., Algeria, Gabon, Iran, Iraq, Libya, Nigeria, Oman, Qatar, Saudi Arabia, Turkmenistan, Trinidad and Tobago, Venezuela. For robustness we also defined an OPEC (Organization of the Petroleum Exporting Countries) member countries dummy. OPEC member countries are: United Arab Emirates, Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, Venezuela. *Source: IMF World Economic Outlook 2003 (Statistical Appendix); OPEC web site <http://www.opec.org/>*

Religious Fragmentation: Index of religious heterogeneity. Constructed as one minus the Herfindahl index of the share of the largest religious groups. It reflects the probability that two randomly selected individuals follow different religious beliefs. Specifically, $RFract_i = 1 - \sum_{j=1}^j s_{i,j}$ where $s_{i,j}$ is the relative size of religion j in country i . *Source: Alesina et al. (2003)*

Ethnic Fragmentation: Index of ethnic heterogeneity. Constructed as one minus the Herfindahl index of the share of the largest ethnical groups. It reflects the probability that two randomly selected individuals belong to different ethnical group. Specifically, $EFract_i = 1 - \sum_{j=1}^j s_{i,j}$ where $s_{i,j}$ is the relative size of group j in country i . *Source: Alesina et al. (2003)*

Armed Conflict Ending: An indicator variable that takes on the value one if a major

armed conflict has ended during the current or during the past three years. A major armed conflict is defined as at least 25 battle-related deaths per year and an accumulated total of at least 1,000 deaths (originally defined as "*intermediate armed conflict*") or at least 1,000 battle-related deaths per year (defined as "*war*"). For robustness we also used an alternative indicator variable that takes on the value one if a war has ended during the current or during the past three years. *Source: Armed Conflict Dataset (2003), International Peace Research Institute, Oslo (PRIO)*

Currency Crisis: A dummy variable that takes on the value one if a currency crisis has occurred in the current or during the last three years. *Source: Kraay (2003)*

Banking Crisis: A dummy variable that takes on the value one if a systematic or a minor banking crisis is in place. *Source: Caprio and Klingebiel (2003)*

Settler Mortality: Mortality rates faced by potential European settlers around 1800 – 1900. *Source: Acemoglu, Johnson, and Robinson (2001).*

Common Law and other Legal origin: Identifies the legal origin of the Company Law or Commercial Code of each country. There are five categories: (1) Common law; (2) French civil law; (3) German civil law; (4) Scandinavian civil law; (5) Socialist/Communist law. *Source: La Porta et al. (1999).*

Latitude: Absolute distance from the equator. *Source: Dollar and Kraay (2003)*

European Heritage: Percentage of the population speaking English or a major European Language. For robustness we also used the fraction of the population that speak English. *Source: Dollar and Kraay (2003), who update and extend Hall and Jones (1999) measure.*

Gini: The variable ranges from 0 till 1 with higher values indicating higher income inequality. The data is available for only 71 countries and has many gaps. In the regression we use the last available value. For robustness we also used five and a ten year moving average as well as linearly interpolated values. We also adjusted the income inequality data following

Dollar and Kraay (2003). *Source: World Bank's Inequality Around the World Database; combines data from Deininger-Squire, Dollar and Kraay, UN-WIDER World Income Inequality Database, and World Income Distribution.*

B.2.2 Panel B: Variables used in the cross-sectional estimates on former centrally-planned economies

Fertility: Births per woman. Total fertility rate represents the number of children that would be born to a woman if she were to live to the end of her childbearing years and bear children in accordance with prevailing age-specific fertility rates. *Source: World Bank World Development Indicators (2004 edition)*

GDP: Real per capita PPP-adjusted GDP in 1989 US dollars. *Source: de Melo, Denizer, Gelb and Tenev (2001)*

Industrialization: Share of industry in GDP in 1990, estimated at current prices. *Source: de Melo, Denizer, Gelb and Tenev (2001)*

Central Planning: Years that the country was under central planning in 1990. *Source: de Melo, Denizer, Gelb and Tenev (2001)*

Mean Growth: Average real GDP growth during 1985-1989. *Source: de Melo, Denizer, Gelb and Tenev (2001)*

"Rich" Natural Resources: Indicator variable that equals one if a country had relatively to the other transition countries rich natural resources (mainly natural gas and oil). The variable equals one for Kazakhstan, Russia and Turkmenistan and zero otherwise. *Source: de Melo, Denizer, Gelb and Tenev (2001)*

"Moderately Rich" Natural Resources: Indicator variable that equals one if a country had relatively to the other transition countries rich natural resources, but does not belong to the "rich natural resources" category. The variable equals one for Poland, Rumania, Georgia, Ukraine, Uzbekistan, Mongolia, China, and Vietnam and zero otherwise.

and zero otherwise. *Source: de Melo, Denizer, Gelb and Tenev (2001)*

Natural Trade Openness: This variable measures a country's geography predicted trade. It is taken from Dollar and Kraay (2003) and estimated as follows: (i) Estimate gravity equations using bilateral trade shares. (ii) Retrieve predicted bilateral trade by applying coefficient estimates to data on RHS variables for all countries. (iii) Sum across all trading partners to get predicted bilateral trade. (iv) Take logs. *Source: Dollar and Kraay (2003), who update and extend Frankel and Romer (1999) measure*

B.3 Chapter 3: Institutions, Politics and International Financial Flows

B.3.1 Sample Countries

Source-Reporting countries (19):

Austria (AUT)^{*h,eu*}, Belgium (BEL)^{*h,eu*}, Denmark (DNK)^{*h,eu*}, Finland (FIN)^{*h,eu*}, France (FRA)^{*h,eu*}, Germany (DEU)^{*h,eu*}, Ireland (IRL)^{*h,eu*}, Italy (ITA)^{*h,eu*}, Netherlands (NLD)^{*h,eu*}, Norway (NOR)^{*h*}, Portugal (start 1997 q4) (PRT)^{*h,eu*}, Spain (ESP)^{*h,eu*}, Sweden (SWE)^{*h,eu*}, Switzerland (CHE)^{*h*}, United Kingdom (GBR)^{*h,eu*}, United States (USA)^{*h*}, Japan (JPN)^{*h*}, Canada (CAN)^{*h*}, Australia (AUS)^{*h*}.

Recipient (vis-a-vis) countries (51):

Argentina (ARG), Australia (AUS)^{*h*}, Austria (AUT)^{*h,eu*}, Belgium (BEL)^{*h,eu*}, Bulgaria (BGR), Brazil (BRA), Botswana (BWA), Canada (CAN)^{*h*}, Switzerland (CHE)^{*h*}, Chile (CHL), China (CHN), Colombia (COL), Costa Rica (CRI), Czech Republic (CZE), Germany (DEU)^{*h,eu*}, Denmark (DNK)^{*h,eu*}, Ecuador (ECU), Spain (ESP)^{*h,eu*}, Estonia (EST), Finland (FIN)^{*h,eu*}, France (FRA)^{*h,eu*}, United Kingdom (GBR)^{*h,eu*}, Croatia (HRV), Hungary (HUN), Indonesia (IDN), Ireland (IRL)^{*h,eu*}, Israel (ISR), Italy (ITA)^{*h,eu*}, Jordan (JOR), Japan (JPN)^{*h*}, Korea, Republic of (KOR), Lithuania (LTU), Latvia (LVA), Mexico (MEX), Malaysia (MYS), Namibia (NAM), Netherlands (NLD)^{*h,eu*}, Norway (NOR)^{*h*}, New Zealand (NZL)^{*h*}, Peru

(PER), Philippines (PHL), Poland (POL), Portugal (PRT)^{*h,eu*}, Romania (ROM), Slovak Republic (SVK)^{*h*}, Slovenia (SVN), Sweden (SWE)^{*h,eu*}, Tunisia (TUN), Turkey (TUR), United States (USA)^{*h*}, South Africa (ZAF).

Note: *h* indicates "High-Income" countries (as classified by the World Bank); *eu* indicates European Union 15 member (before the 2004 Enlargement).

B.3.2 Bank flows data

Bank flow data are retrieved from the Bank of International Settlement's (BIS) Locational Banking Statistics. The Locational Banking Statistics in the oldest BIS data-source and it now covers data from banks located in 36 "reporting area" jurisdictions.

However, 17 "source" countries were excluded from the present study due to limited data availability. Specifically the following countries were excluded (year of first available observation in parenthesis): India (start 2001), Guernsey (start 2001), Isle of Man (start 2001), Taiwan (start 2000), Chile (start 2002), Bermuda (start 2002), Brazil (start 2002), Turkey (start 2000), Jersey (start 2001), Panama (start 2002) were excluded because these countries monetary authorities started reporting bank's assets and liabilities in the BIS after 2000. Singapore was excluded because the reported data is not comparable with the other statistics. The off-shore centers, namely the Bahamas, Bahrain, Cayman Islands, the Netherlands Antilles, Hong Kong and Luxembourg were excluded due to data unavailability for GDP and other macroeconomic variables at a quarterly basis (from IMF's International Financial Statistics). Moreover data from off-shores have many gaps and for some countries are not reported at a quarterly basis. For most "reporting area" countries data cover more than 90% of the international assets and liabilities of all banking institutions operating within their jurisdictions.

Assets and liabilities represent exposure both to non-residents in "vis-a-vis" countries as well as exposure to domestic residents in foreign country. Assets include almost all on balance-sheet items (plus some off-balance sheet items in the area of trustee business). As-

sets include mainly deposits and balances placed with non-resident banks, including bank's own related offices, and loans and advances to banks and non-banks. They also include holdings of securities and participations (i.e. permanent holdings of financial interest in other undertakings) in non-resident entities. Data also include trade-related credit, arrears of interest and principal that have not been written down and holdings of bank's own issues of international securities. They also "cover portfolio and direct investment flows of financial interest in enterprises" (BIS, 2003a).

Banks contributing to the BIS statistical database report only stocks. The BIS estimates flows by the change of stocks, adjusted by exchange rate changes (which is feasible, since individual banks also report the currency of international assets and liabilities) and other differences in valuation. This adjustment is clearly not perfect, since flows might have occurred at different exchange rates (see Wooldridge, 2002). However this is a typical problem of most capital flows data and is by far preferable to a manual adjustment (e.g. Van Rijckeghem and Weder, 2003). There are also many zeros in the data, which makes the logarithmic transformation impossible. Other limitations of the dataset [which are common to capital flows studies] are: *i*) the data do not capture indirect exposure to recipient countries, and *ii*) insufficient coverage of "off-balance sheet" exposure.

[Source: Locational Banking Statistics, Bank of International Settlements; Fall 2003 (includes both public and not-yet publicly available data)].

- **Aggregate asset bank flows:** Change of international financial claims of bank offices resident in the "reporting area" ("source" country) to all sectors in "vis-a-vis" countries ("recipient").
- **Inter-bank capital flows:** Change of international financial claims of bank offices resident in the "reporting area" only to banking institutions in vis-a-vis" countries ("recipient").
- **Aggregate liability bank flows:** Change of international financial liabilities of bank offices resident in the "reporting area" only to banking institutions in vis-a-vis" coun-

tries ("recipient").

B.3.3 Risk characteristics data

The International Country Risk Guide (ICRG) rating comprises 22 variables in three subcategories of risk: political, financial, and economic. It is produced by Political Risk Services (PRS) on a monthly basis from 1983. The ICRG staff collects political information and financial and economic data, converting these into risk points for each individual risk component on the basis of a consistent pattern of evaluation. The political risk assessments are made on the basis of subjective analysis of the available information, while the financial and economic risk assessments are made solely on the basis of objective data. After a risk assessment (rating) has been awarded to each of the 22 risk components, the components within each category of risk are added together to provide a risk rating for each risk category.

- **Political Risk:** The Political Risk index ranges from 0 denoting minimum level of institutional quality to 100 indicating a total absence of political risk. "*The aim of the political risk rating is to provide a means of assessing the political stability of the countries covered by ICRG on a comparable basis.*" The Political Risk Rating includes 12 variables covering both political and social attributes (components and weights). (1) : Government Stability, which includes government Unity, legislative strength, an popular support (16%). (2) : Socioeconomic Conditions, which include unemployment, consumer confidence, and poverty (16%). (3) : Investment Profile, which includes assessment in contract viability/expropriation, profits repatriation, and payment delays (16%). (4) : Internal Conflict, which includes civil war, terrorism/political violence, and civil disorder (16%). (5) : External Conflict, which includes war, cross-border conflict, and foreign pressures (16%). (6) : Corruption (8%). (7) : Military in Politics (8%). (8) : Religion in politics (8%). (9) : Law and Order (8%). (10) : Ethnic Tensions (8%). (11) : Democratic Accountability (8%). (12) : Bureaucracy Quality (4%).
- **Economic Risk:** The Economic Risk index ranges from 0 denoting the highest possible risk level to 50 indicating an elimination of economic risk. The variable is rescaled to

a 0 – 100 range. Its purpose is "... to provide a means of assessing a country's current economic strengths and weaknesses." It includes 5 weighted variables covering macroeconomic developments. (components and weights): (1) : GDP per Head of Population (10%). (2) : Real Annual GDP Growth (20%). (3) : Annual Inflation Rate (20%). (4) : Budget Balance as a Percentage of GDP (20%). (5) : Current Account Balance as a Percentage of GDP (30%)

- **Financial Risk:** The Financial Risk ranges from 0 denoting the highest possible risk level to 50 indicating an elimination of financial risk. The variable is rescaled to a 0 – 100 range. PRS write "...The overall aim of the Financial Risk Rating is to provide a means of assessing a country's ability to pay its way. In essence this requires a system of measuring a country's ability to finance its official, commercial, and trade debt obligations." The Financial Risk Rating includes 5 weighted variables covering financial and monetary sector developments (components and weights). (1) :Foreign Debt as a Percentage of GDP (20%). (2) : Foreign Debt Service as a Percentage of Exports of Goods and Services (20%). (3) : Current Account as a Percentage of Exports of Goods and Services (30%). (4) : Net Liquidity as Months of Import Cover (10%). (5) : Exchange Rate Stability (20%).

B.3.4 Other Controls & Instruments

- $Rate_{j,t}$ – **Lending rate:** Lending rate is the bank rate that usually meets the short and medium term financing needs of the private sector. [Source: IMF IFS line 60P]
- $Inf_{j,t}$ – **Inflation Rate:** Calculated as the change in CPI. [Source: IMF IFS line 64]
- $\ln(Y)$ – **Log real GDP per capita:** Logarithm of GDP per capita volume, converted to US dollars and adjusted with local CPI.[Source: IMF IFS 99B]
- $\ln(Area)$ – **Log Area:** Natural logarithm of land area in square kilometers.[Source: Rose (2002)]

- *Pop*– **Population:** Values correspond to mid-year estimates. A linear interpolation is used to fill in missing observations. At the regressions the variable is entered as the natural logarithm of the interpolated series [Source: IMF IFS line 99Z].
- *Tie_{i,j}*– **Ethnolinguistic Tie:** Dummy variable that equals one if the two countries share a common language or have former colonial relation.[Source: Glick and Rose (2002)]
- $\ln(Dist_{i,j})$ – **Distance:** Natural logarithm of greater circle distance between economic centres in a pair of countries.[Source: Rose (2004)]
- *Anti_direct_j*– **Anti-director rights index:** An index aggregating shareholder rights. The index is formed by adding 1 when: (1) the country allows shareholders to mail their proxy vote to the firm; (2) shareholders are not required to deposit their shares prior to the General Shareholders' Meeting; (3) cumulative voting or proportional representation of minorities in the board of directors is allowed; (4) an oppressed minorities mechanism is in place; (5) the minimum percentage of share capital that entitles a shareholder to call for an Extraordinary Shareholders' Meeting is less than or equal to 10 percent (the sample median); or ,(6) shareholders have preemptive rights that can only be waved by a shareholders' vote. The index ranges from 0 to 6.[Source: La Porta et al. (1998)]
- *Gov_own_j*– **Government Ownership of Commercial Banks:** Share of the assets of the top 10 banks, excluding development banks, in a given country controlled by the government at the 20 percent level in 1995. A bank is controlled by the government if government banking is larger than 20 percent and the state is the largest shareholder.[Source: La Porta et al. (2002)]
- *Overhead_j*– **Bank Overhead Costs:** The accounting value of a bank's overhead costs as a share of its total assets. The data is obtained from individual bank's balance sheets. The measure refers to 1995. [Source: La Porta et al. (2002)]
- *Bank_Sound_j*– **Bank Soundness Measure:** An index assessing the soundness of

banks in terms of their "general health and sound balance sheets." The index ranges from 1 to 7, where higher scores indicate stronger agreement with the statement. The score refers to the index in 1999. [Source: La Porta et al. (2002); originally from the World Economic Forum]

- *Corruption_j*– **Corruption:** A composite index for the year 2000 that draws on 14 data sources from seven institutions: the World Economic Forum, the World Business Environment Survey of the World Bank, the Institute of Management Development, Pricewaterhouse Coopers, the Political and Economic Risk Consultancy, the Economist Intelligence Unit and Freedom House's Nations in Transit. The score ranges between 0 and 10 with lower values indicating higher levels of corruption. [Source: Djankov et al (2003)]
- *Contract_j*– **Contract Enforceability:** "The relative degree to which contractual agreements are honoured and complications presented by language and mentality differences. Scale: 0–10 (higher scores indicating higher degree of enforceability) [Source: Djankov et al (2003), originally from Business Environmental Risk Intelligence]
- *Legal_time_j*– **Legal Time:** Estimated duration, in calendar days, between the plaintiff files the complaint till the time the landlord repossess the property. [Source: Djankov et al (2003)]
- *Schooling_{j,t}*– **Schooling:** Average years of schooling in the population aged 25 and above. The data are reported in five-year averages. [Source: Barro and Lee (2001)]
- *Life_expect_{j,t}*– **Life Expectancy:** Life expectancy at birth indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life. The data has some arbitrary gaps. A linear interpolation is used to fill in these gaps. At the regressions the variable is entered as the natural logarithm of the interpolated series. [Source: World Bank World Development Indicators CD-ROM (2004 Edition)].
- *ER_reg1*– **"Fine" Exchange Rate Regime:** Fine classification of exchange rate

arrangements. Ranges from 1, indicating a "fixed" exchange rate regime to 15, suggesting a freely floating exchange rate. Specifically the variable takes on the following values: (1)=No separate legal tender; (2)=Pre announced peg or currency board arrangement; 3=Pre announced horizontal band that is narrower than or equal to $+/- 2\%$; (4)=De facto peg; (5)=Pre announced crawling peg; (6)=Pre announced crawling band that is narrower than or equal to $+/- 2\%$; (7)=De factor crawling peg; (8)=De facto crawling band that is narrower than or equal to $+/- 2\%$; (9)=Pre announced crawling band that is wider than or equal to $+/- 2\%$; (10)= De facto crawling band that is narrower than or equal to $+/- 5\%$; (11)=Moving band that is narrower than or equal to $+/- 2\%$ (i.e., allows for both appreciation and depreciation over time); (12)=Managed floating; (13)=Freely floating; (14)=Freely falling; (15)=Dual market in which parallel market data is missing. [Source: Reinhart and Rogoff (2004)]

- ***ER_reg2*– "Coarse" Exchange Rate Regime:** Coarse classification of exchange rate arrangements. Ranges from 1, indicating a "fixed" exchange rate regime to 5, suggesting a freely floating exchange rate. Specifically the variable takes on the following values: (1): No separate legal tender, or pre announced peg or currency board arrangement, or pre announced horizontal band that is narrower than or equal to $+/- 2\%$, or de facto peg; (2): Pre announced crawling peg, or pre announced crawling band that is narrower than or equal to $+/- 2\%$ or De factor crawling peg, or de facto crawling band that is narrower than or equal to $+/- 2\%$. (3): Pre announced crawling band that is wider than or equal to $+/- 2\%$, or de facto crawling band that is narrower than or equal to $+/- 5\%$, or moving band that is narrower than or equal to $+/- 2\%$, or managed floating. (4): Freely floating. (5): Freely falling. (6): Dual market in which parallel market data is missing. [Source: Reinhart and Rogoff (2004)]
- **Latitude:** The absolute value of the geographical latitude of the country. Source: La Porta et al. (1999); originally from CIA Factbook]
- **Religious, Ethnic & Linguistic Fragmentation:** Constructed as one minus the Herfindahl index of the share of the largest religious, ethnical, and linguistic groups. It

reflects the probability that two randomly selected individuals follow different religious beliefs, belong to different ethnical groups, or do not speak the same language. [Source: Alesina et al. (2003)]

- **Legal Origin:** Identifies the legal origin of the Company Law or Commercial Code of each country. There are five categories: (1) Common law; (2) French civil law; (3) German civil law; (4) Scandinavian civil law; (5) Socialist/Communist law. [Source: La Porta et al. (1998, 1999)]

B.4 Chapter 4: Human Capital, the Structure of Production and Growth

B.4.1 Country Sample

Australia (AUS), Austria (AUT), Bangladesh (BGD), Belgium (BEL), Brazil (BRA), Canada (CAN), Chile (CHL), Colombia (COL), Costa Rica (CRI), Denmark (DNK), Egypt, Arab Rep. (EGY), Finland (FIN), France (FRA), Germany (DEU), Greece (GRC), India (IND), Indonesia (IDN), Israel (ISR), Italy (ITA), Jamaica (JAM), Japan (JPN), Jordan (JOR), Kenya (KEN), Korea, Rep. (KOR), Malaysia (MYS), Mexico (MEX), Morocco (MAR), Netherlands (NLD), New Zealand (NZL), Nigeria (NGA), Norway (NOR), Pakistan (PAK), Peru (PER), Philippines (PHL), Portugal (PRT), Singapore (SGP), South Africa (ZAF), Spain (ESP), Sri Lanka (LKA), Sweden (SWE), Turkey (TUR), United Kingdom (GBR), Venezuela, RB (VEN), Zimbabwe (ZWE)

B.4.2 Variable Definitions and Sources

Industry-Country Specific

- $GROWTH_{s,c}$: Annual growth rate of real value added in industry s in country c over the period 1980 – 1989. No data is available for Indonesia and Jamaica. Source: Rajan and Zingales (1998). Original source: United Nations Industrial Development Organization Industrial Statistics (UNIDO), 1993.
- $FRACT_{s,c}$: Share of industry s in total value added in manufacturing in each country c in 1980. Source: Rajan and Zingales (1998). Original source: UNIDO Industrial Statistics.
- $EMPGR_{s,c}$: Annual growth rate of employment in industry s in country c over the 1981 – 1990 period in log points. No data is available for Costa Rica, Jamaica, and Nigeria. Source: UNIDO Industrial Statistics.

Industry-Specific

- *HCINT* : Average years of schooling at the industry level. This variable is based on data from the 1980 Integrated Public Use Microdata Series. We extract two series: *i*) hours worked by industry and years of education; *ii*) number of employees by industry and education. Our calculations are based on eight groups of educational attainment: *i*) 0 years of schooling; *ii*) 1-4 years of schooling; *iii*) 5-8 years of schooling; *iv*) 9-11 years of schooling; *v*) 12 years of schooling; *vi*) 13-15 years of schooling; *vii*) 16 years of schooling; *viii*) more than 16 years of schooling. Average years of schooling in each industry is obtained by multiplying the share of employees in each educational attainment group by 0, 1, 6, 10, 12, 14, 16 and 18 respectively (changing these weights within the bounds of the group does not affect our results). We also calculate two additional industry-level human capital intensity indicators. *HCINT(SEC)*, the ratio of hours worked by employees with at least 12 years of schooling (completed secondary education) to total hours worked by all employees in each industry. And *HCINT(COLL)*, the ratio of hours worked by employees with at least 16 years of education (completed college studies) to total hours worked in each industry. Source: Integrated Public Use Microdata Series.
- *EXTFIN* : Industry dependence on external financing. This variable is estimated as the industry-level median of the ratio of capital expenditures minus cash flow over capital expenditures of U.S. firms. The variable refers to the 1980 – 1989 period. This variable measures the portion of capital expenditures not financed by internally generated cash. Source: Rajan and Zingales (1998). Original source: COMPUSTAT.
- *OPPORT* : Industry growth opportunities proxied by sales growth in the U.S. This variable is estimated as the industry-level median growth rate of sales over the 1980 – 1990 period of U.S. firms. Source: Fisman and Love (2004). Original source: COMPUSTAT.
- *TRADEINT* : Industry dependence on trade credit. This variable is calculated as the industry-median of ratio of accounts payable over total assets over the 1980 – 1989

period of US firms. Source: Fisman and Love (200a). Original source: COMPUSTAT.

- *INTANG* : Industry dependence on intangible assets. This variable is estimated as the industry-median of the ratio of intangible assets to net fixed assets over the 1980 – 1989 period of U.S. firms. Source: Claessens and Laeven (2003). Original source: COMPUSTAT.
- *INVINT* : Ratio of capital expenditure to property plant and equipment for U.S. firms in each industry averaged over the 1980-1989 period. Source: Rajan and Zingales (1998). Original source: COMPUSTAT. We also use three other measures of industry physical capital intensity. (1) One minus the share of wages in value added; (2) capital stock over value added; (3) capital stock over employment, all in 1980. Source: NBER-CES Manufacturing Industry Database (Bartelsman and Gray, 1996).
- *NONPROD* : Ratio of non-production workers to total employment of U.S. industries in 1980. Source: NBER-CES Manufacturing Industry Database (Bartelsman and Gray, 1996).

Country-Specific

- *PRIV* : Private credit to GDP. Ratio of private domestic credit held by monetary authorities and depository institutions (excluding interbank deposit) scaled by GDP in 1980. No data is available for Nigeria. Source: Fisman and Love (2003). Original source: IMF International Financial Statistics.
- *PROP*: Index of property rights protection on a scale from 1 to 5, where higher values indicate higher protection. The index equals the median rating for the period 1995 to 1999. Source: Claessens and Laeven (2003). Original source: The Index of Economic Freedom (The Heritage Foundation).
- *K/Y* : Log physical capital-GDP ratio. Physical capital stock is calculated using the perpetual inventory method as implemented by Hall and Jones (1999) and Caselli

(2005) and Penn World Table data on investment. Source: Penn World Table, 5.6 (downloadable from: <http://pwt.econ.upenn.edu>).

- SCH^{BL} : Average years of schooling years of the population aged 25 and over. No data is available for Nigeria and Morocco and for Egypt before 1980. Source: Barro and Lee (2001).
- SCH^{CS} : Average years of schooling of the population aged 25 and over. No data is available for Sri Lanka, Israel and Pakistan. Source: Cohen and Soto (2001).
- Y : Log of real GDP per worker. Source: Penn World Tables 5.6.
- $GROWTH$: Log growth rate of real GDP per worker. Source: Penn World Tables 5.6.
- $LFQUAL$: Labor force quality index on a 0-100 scale based on result in mathematics and science tests administered by the International Association for the Evaluation of Educational Achievement and by the International Assessment of Educational Progress. The test result data was originally collected and processed to ensure international and intertemporal comparability by Hanushek and Kimko (2000). Hanushek and Kimko have direct observations on test results for 31 countries between 1965 and 1991. They impute data for additional countries based on a model of test score determination. Bosworth and Collins (2003) follow the Hanushek and Kimko approach but use updated and additional primary data to impute test scores. As a result, labor force quality indicators are available for all countries in our sample. Source: Hanushek and Kimko (2000); Bosworth and Collins (2003).
- TAR^{SW} : Average import-weighted tariff rate over the 1980's on intermediates and capital goods. Source: Sachs and Warner (1995). Original source: UNCTAD.
- TAR^{WB} : Average unweighted tariff rate over the 1980's for all goods. Source: World Bank (<http://siteresources.worldbank.org/INTRANETTRADE/Resources/tar2002.xls>).

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Figures

The following pages report the Figures for all four Thesis Chapters.

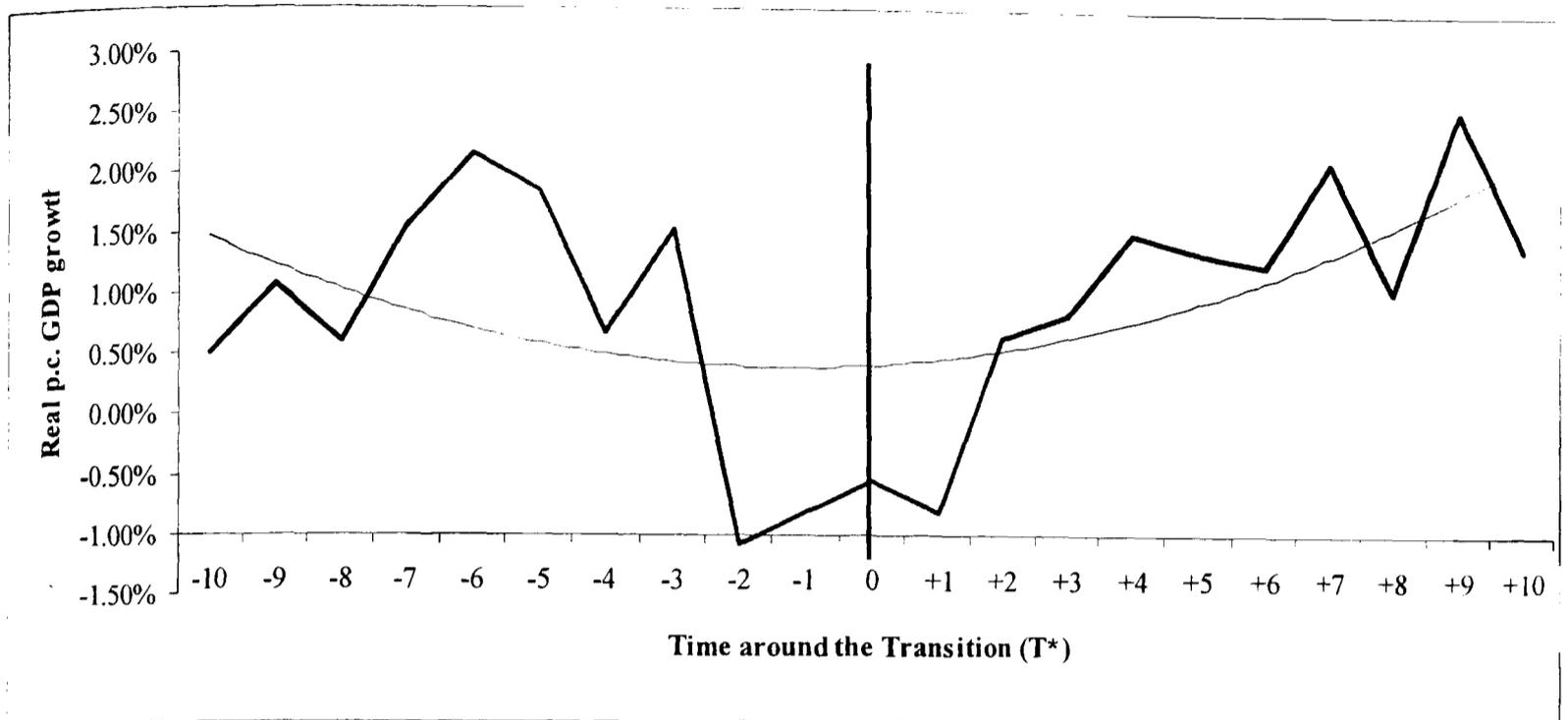


FIGURE 1.1a
MEAN ECONOMIC GROWTH BEFORE AND AFTER
A PERMANENT DEMOCRATIZATION

The figure describes the evolution of the cross-country mean growth in the ten years before and after a permanent democratic transition. The mean is estimated in all 67 countries that experienced either a “full” either a “partial” or a “borderline partial” democratization episode in the 1960-2000 period. The bold line gives a quadratic fit. Table 1 lists the democratization countries, the year of transition and provides a small event description. Appendix A2 gives a more detailed description of the democratization events. For details on our event identification methodology see Section III and Appendix A1.

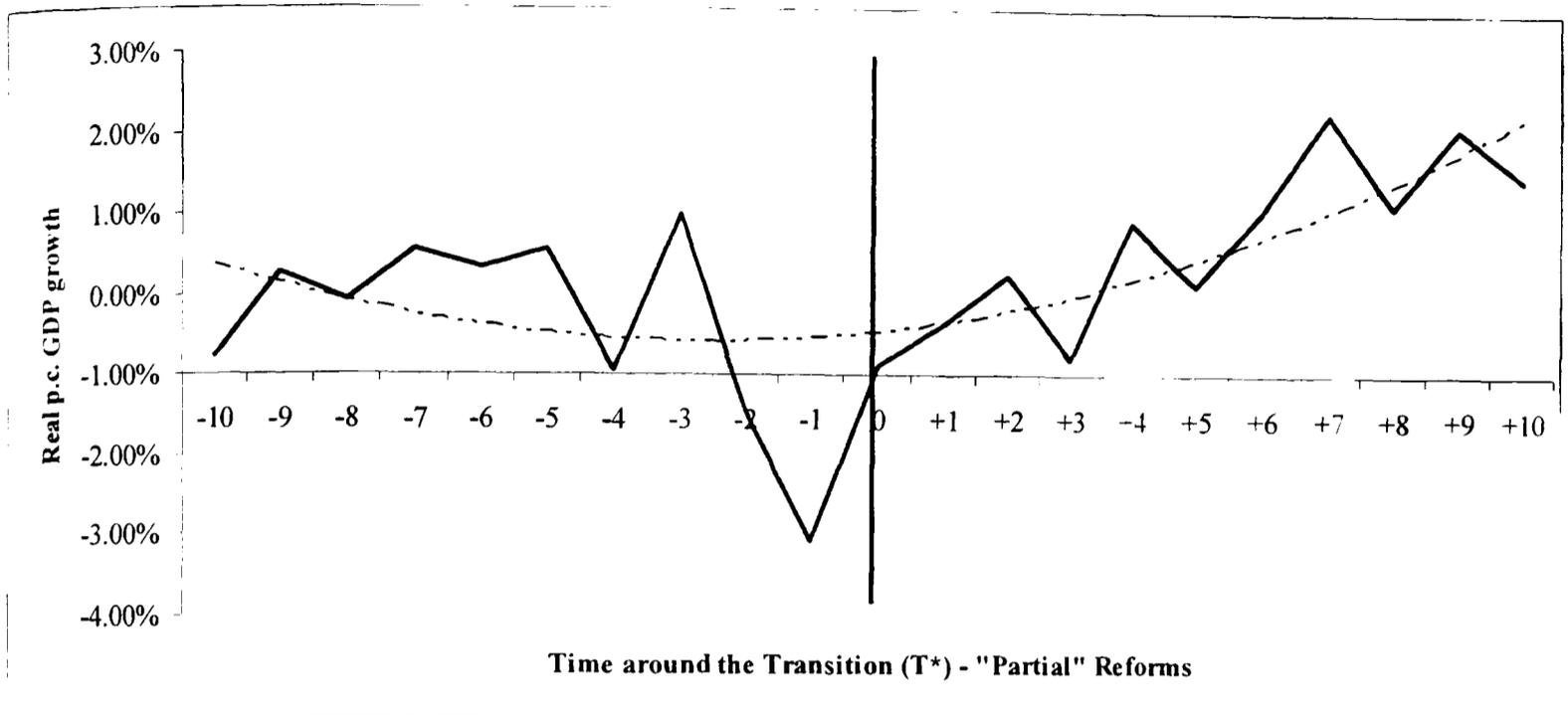


FIGURE 1.1b
MEAN ECONOMIC GROWTH BEFORE AND AFTER
A PERMANENT "PARTIAL" DEMOCRATIZATION

The figure describes the evolution of the cross-country mean growth in the ten years before and after a permanent "partial" democratic transition. The mean is estimated in all 25 countries that experienced a "partial" democratization episode in the 1960-2000 period. The bold line gives a quadratic fit. Table 1 lists the democratization countries, the year of transition and provides a small event description. Appendix A2 gives a more detailed description of the democratization events. For details on our event identification methodology see Section III and Appendix A1.

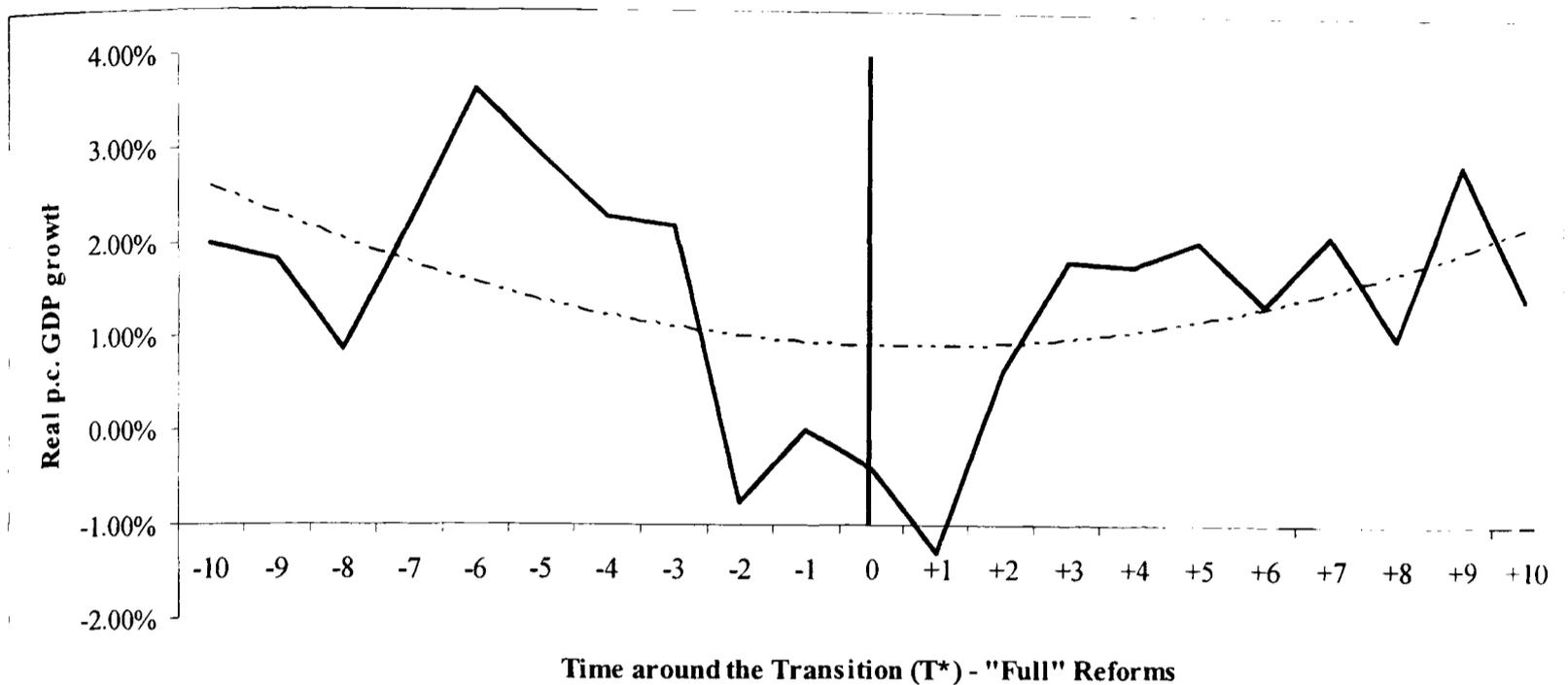


FIGURE 1.1c
MEAN ECONOMIC GROWTH BEFORE AND AFTER
A PERMANENT "FULL" DEMOCRATIZATION

The figure describes the evolution of the cross-country mean growth in the ten years before and after a permanent "full" democratic transition. The mean is estimated in all 37 countries that experienced a "full" democratization episode in the 1960-2000 period. The bold line gives a quadratic fit. Table 1 lists the democratization countries, the year of transition and provides a small event description. Appendix A2 gives a more detailed description of the democratization events. For details on our event identification methodology see Section III and Appendix A1.

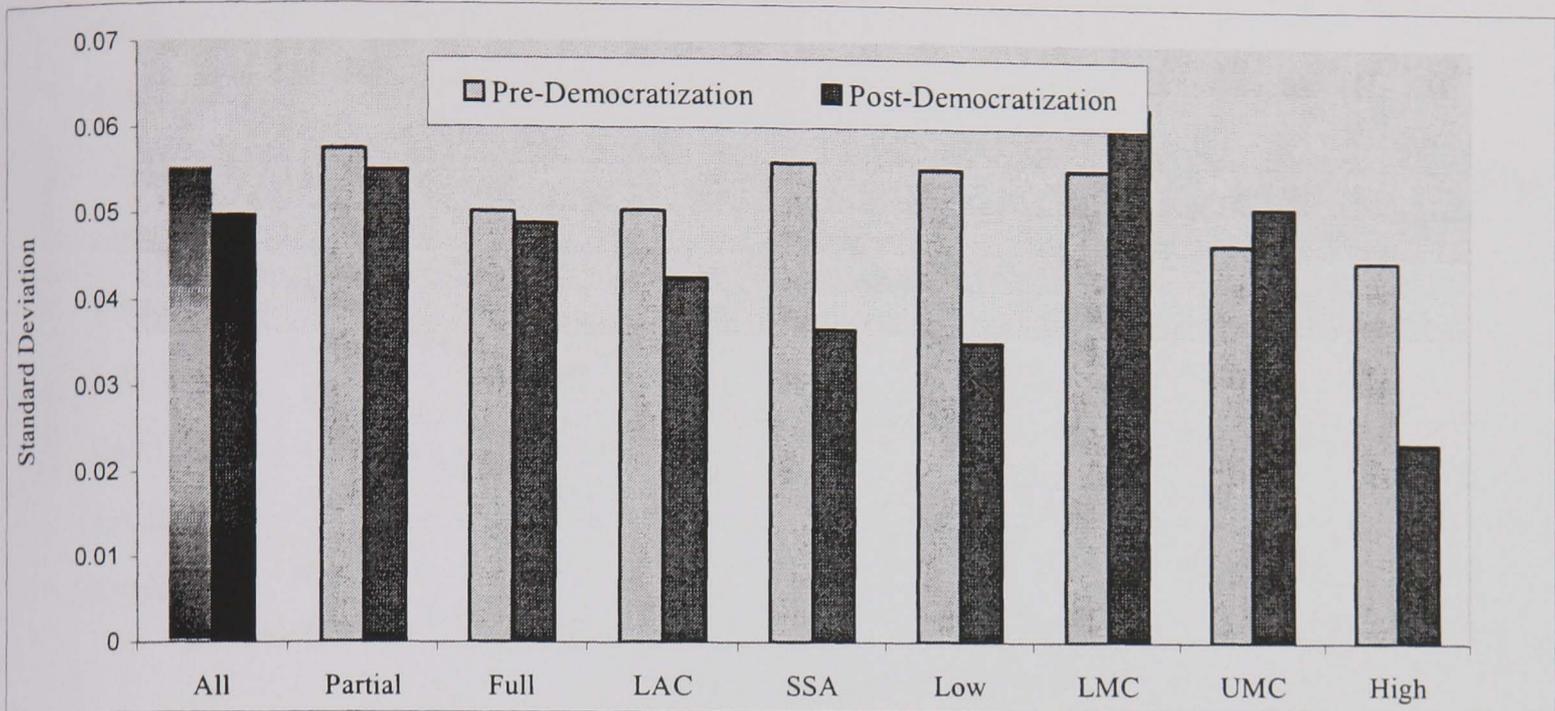


FIGURE 1.2.
STANDARD DEVIATION OF GROWTH BEFORE AND AFTER
A PERMANENT DEMOCRATIZATION

The figure gives the standard deviation of real per capital GDP growth before and after a permanent democratic transition. "All" corresponds to the full sample of permanent democratization countries (N=67). "Partial" corresponds to the sample of partial & "borderline" democratization countries (N=29); "Full" corresponds to the sample of "full" democratization countries (N=38). "LAC" corresponds to Latin America and Caribbean countries (N=19); "SSA" to sub-Saharan democratization countries (N=19); Low corresponds to low income countries that democratized (N=24); "LMC" corresponds to "lower-middle-income countries" that democratized; "UMC" corresponds to "upper-middle-income countries that democratized (N=15); High corresponds to "high-income countries" that democratized (N=4). The classification is taken from the World Bank. Table 1 lists the democratization countries, the year of transition and provides a small event description. Appendix A2 gives a more detailed description of the democratization events. For details on our event identification methodology see Section III and Appendix A1.

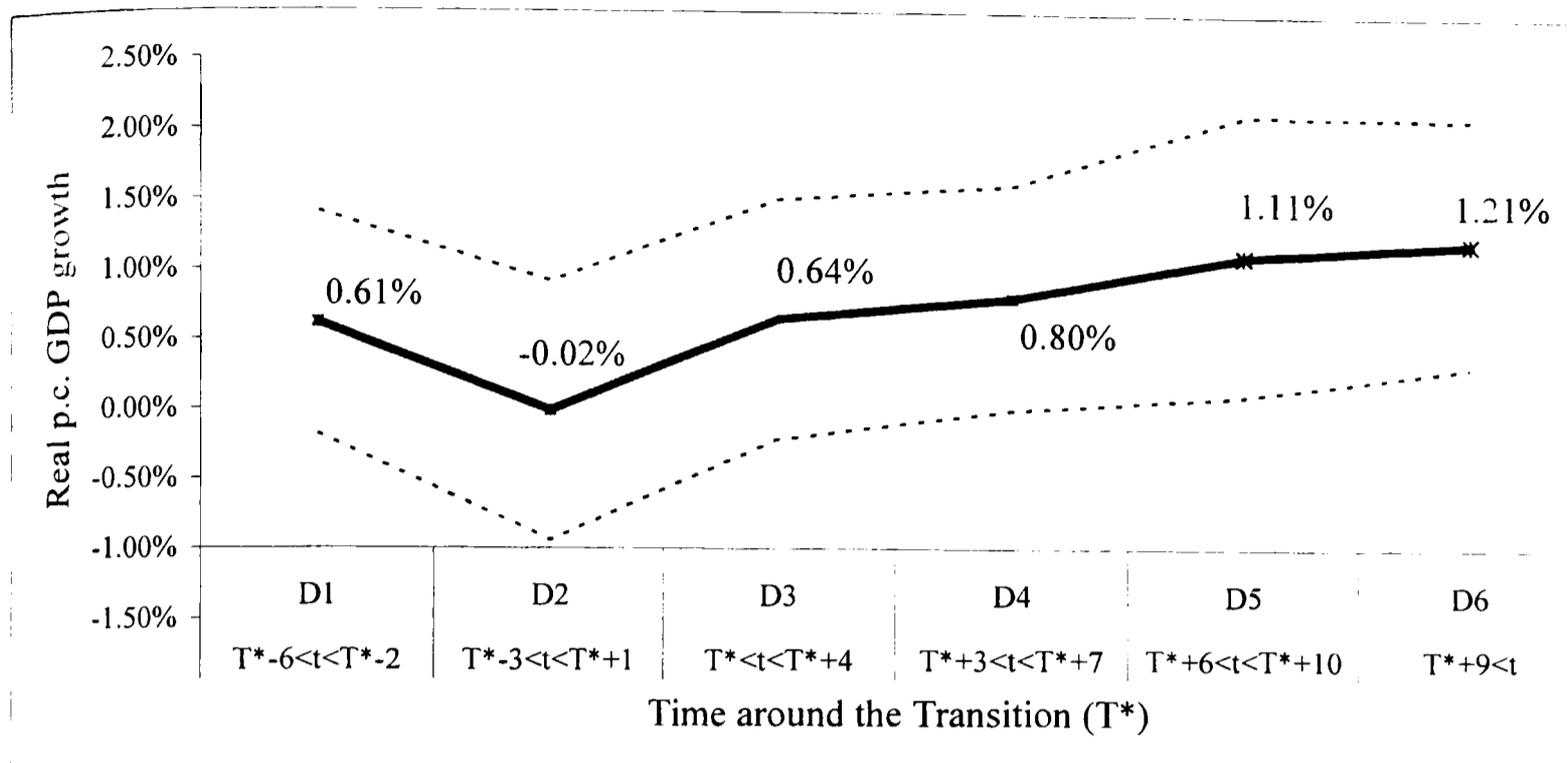


FIGURE 3.
**DYNAMIC EFFECT OF A PERMANENT DEMOCRATIZATION/
 FIXED EFFECT ESTIMATES**

The figure plots the coefficient (and 95% confidence intervals) of 6 indicator variables that capture the (average) dynamic impact of a permanent democratization. The dependent variable is real per capita GDP growth. D^1 is a dummy variable that takes on the value one in the fifth, fourth, and third pre democratization year and zero otherwise. D^2 is a dummy variable that takes on the value one in the second, first pre democratization year and on the transition year and zero otherwise. D^3 takes on the value one in the first, second and third post democratization year and zero otherwise. D^4 takes the value one in the fourth, fifth, and sixth post democratization year and zero otherwise. D^5 takes on the value one in the seventh, eighth, and ninth post democratization year and zero otherwise. D^6 takes the value one in the tenth and all subsequent (eleventh, twelfth, etc.) post democratization year and zero otherwise. The growth regression includes the following control variables: 2 lags of GDP growth (the dependent variable), 3 lags of investment, lag (4) of the natural logarithm of GDP, lag (1) of the log of life expectancy, lag (1) of trade openness, lag (1) of government consumption, and lag (1) of population growth. The specification also includes a full set of country fixed effects and is estimated with OLS. To control for common global shocks all variables enter the specification as deviations from period means. To achieve (almost) unbiased coefficients, the specification excludes all countries with less than 20 years of observations.

Figure 2.1
Schematic Theoretical Overview Of the Driving Forces And the Consequences
Of a Permanent Democratization

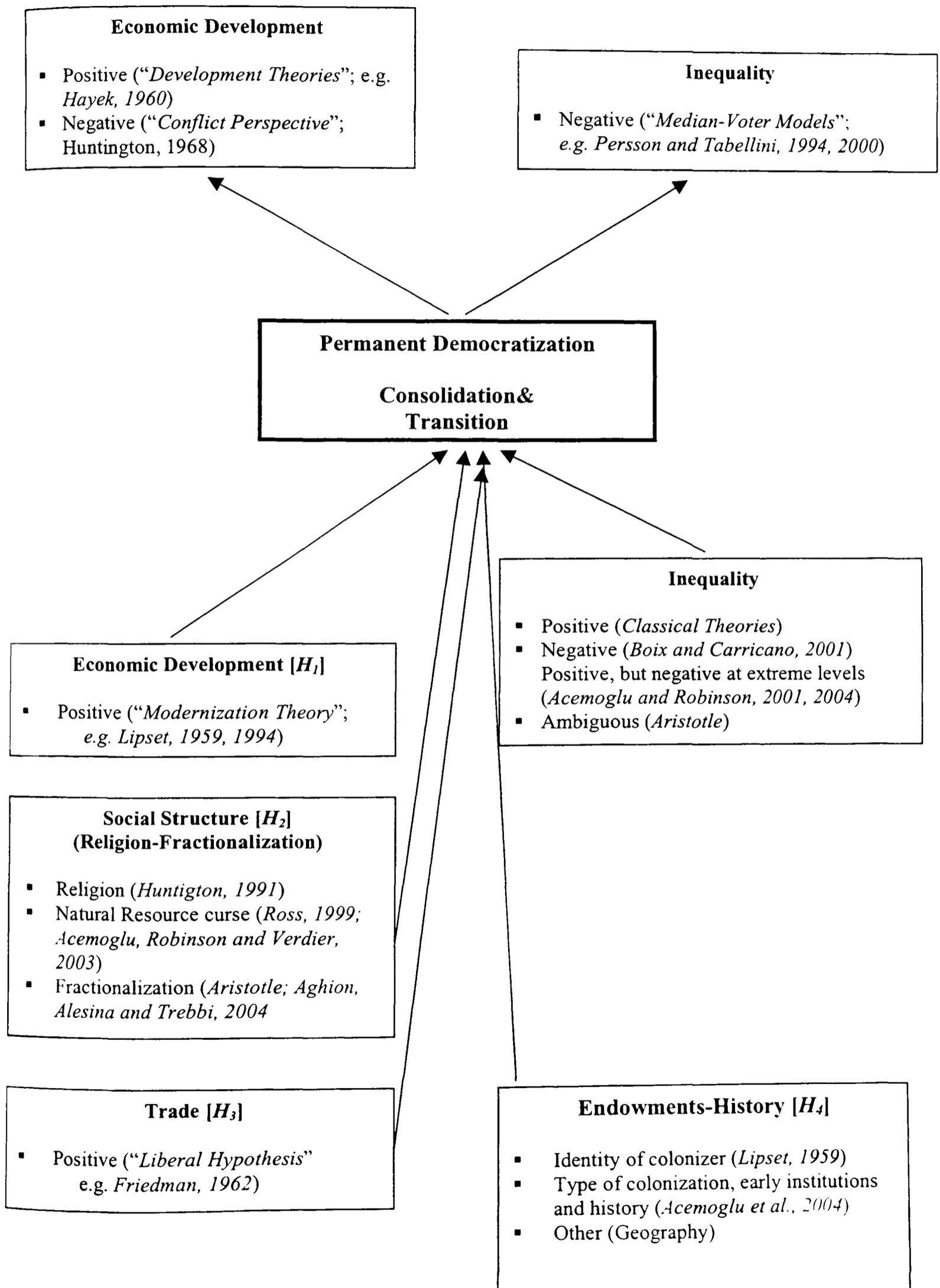


Figure 3.1 – Bank Flows and Political Institutions

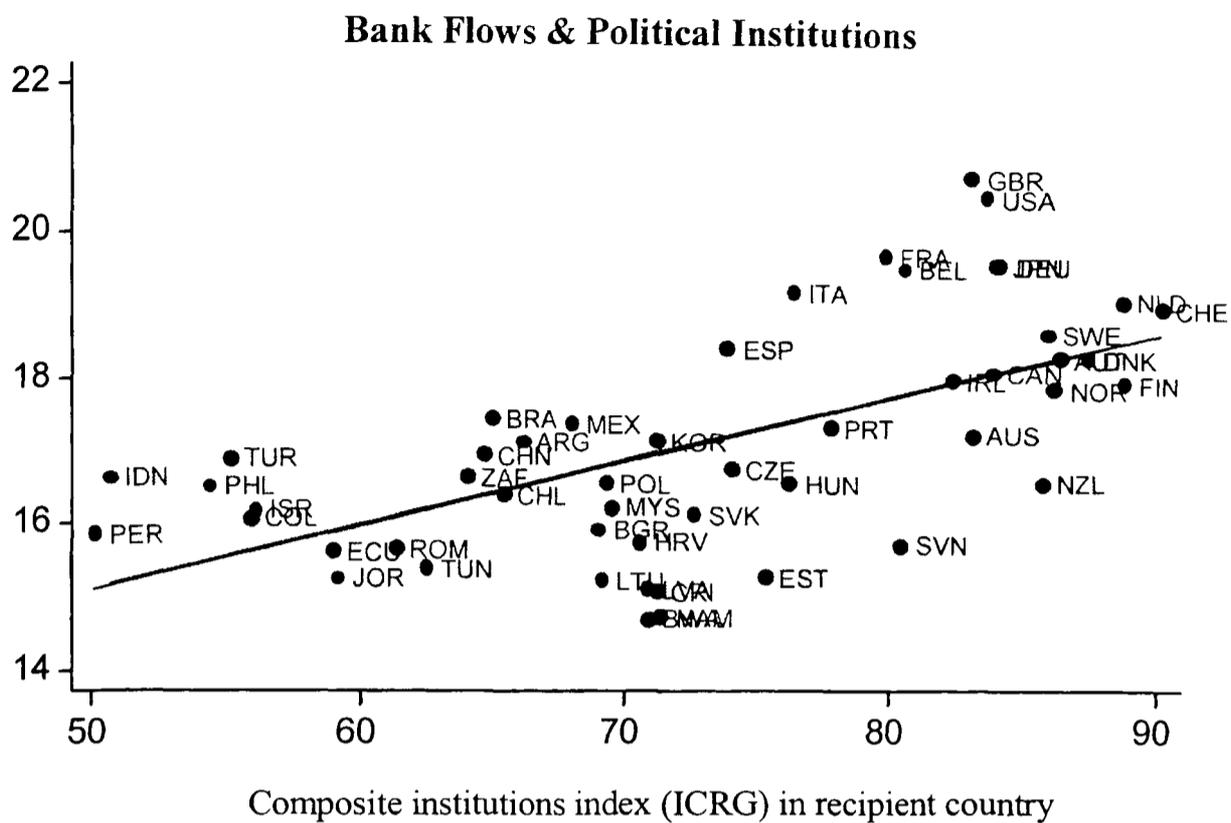


Figure 3.1 plots the cross-time mean of the natural logarithm of international bank flows (vertical axis) against the mean value of the aggregate institutions index “ICRG political risk” measure in the “recipient” country (horizontal axis). A higher value in the 0-100 composite institutions index corresponds to higher quality institutions and lower political risk. The dashed line gives a linear regression fit. For detailed variable definitions, sources, and country abbreviations see the Data Appendix. B3.

Figure 3.2 – Bank Flows and Corruption

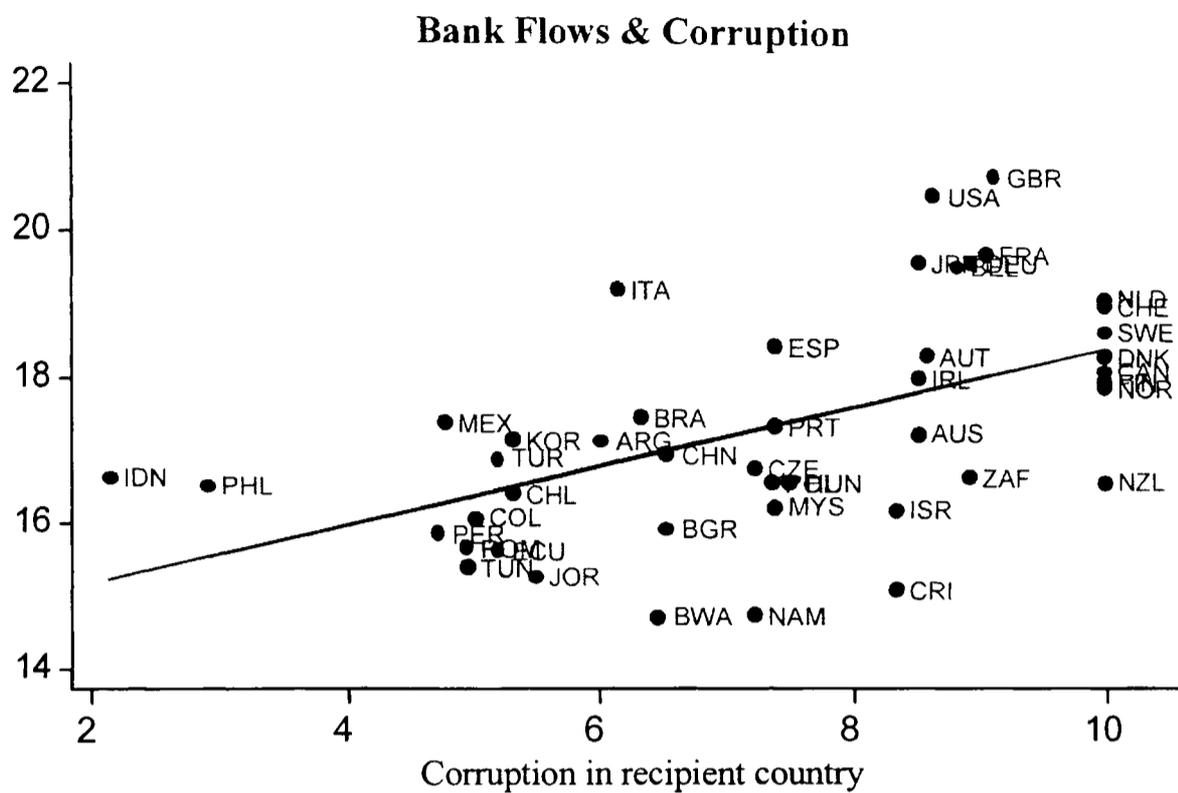


Figure 3.2 plots the cross-time mean of the natural logarithm of international bank flows (vertical axis) against corruption in the “recipient” country (horizontal axis). A higher value in the 0—10 corruption index implies lower levels of corruption. The dashed line gives a linear regression fit. For detailed variable definitions, sources, and country abbreviations see the Data Appendix B.3.

Figure 3.3 – Bank Flows and the Legal Environment

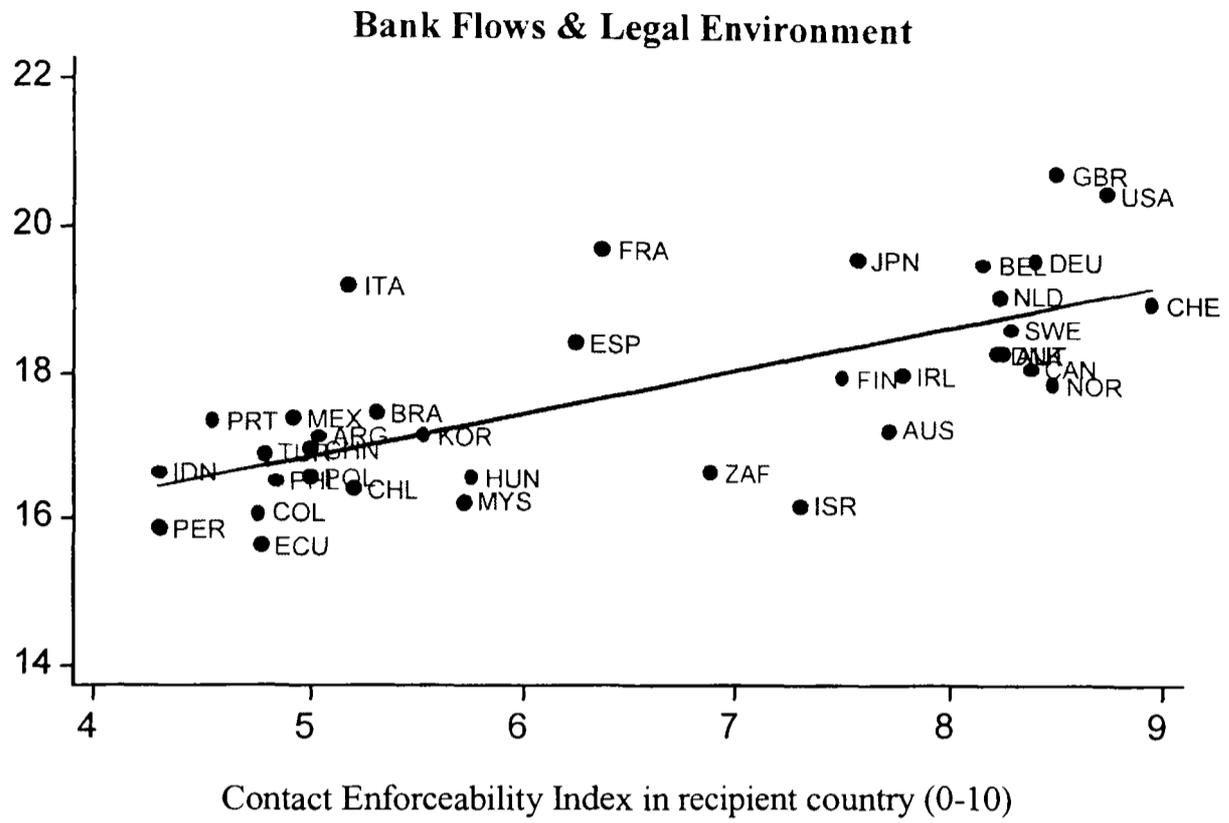


Figure 3.3 plots the cross-time mean of the natural logarithm of cross-border bank flows (vertical axis) against contract enforceability in the recipient country (horizontal axis). A higher value in the 0 to 10 Contract Enforceability index implies higher de facto quality legal system. The dashed line gives a linear regression fit. For detailed variable definitions, sources, and country abbreviations see the Data Appendix B.3.

Figure 3.4 – Bank Flows and Government Ownership of Banks

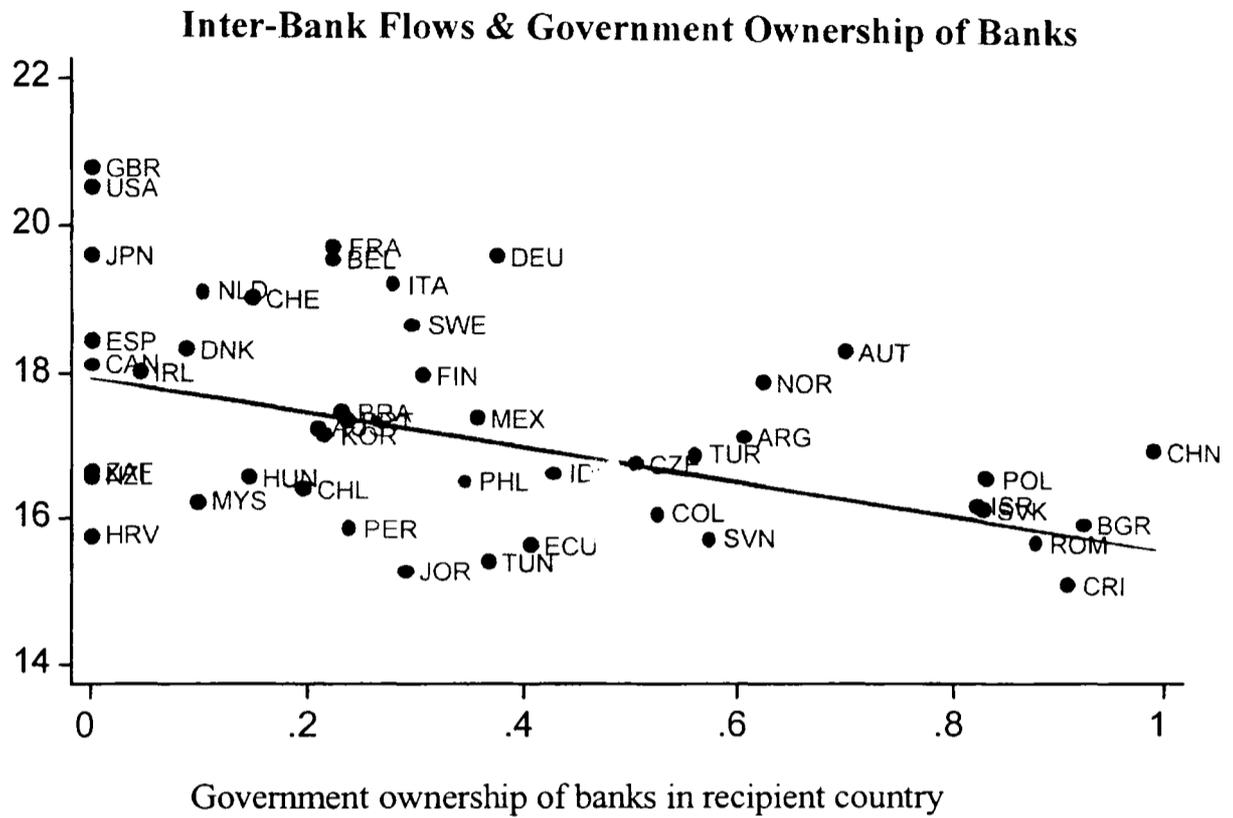


Figure 3.4 plots the cross-time mean of the natural logarithm of cross-border inter-bank bank flows (vertical axis) against government ownership of commercial banks in the recipient country (horizontal axis). The dashed line gives a linear regression fit. For detailed variable definitions, sources, and country abbreviations the Data Appendix B.3.

Figure 4.1a

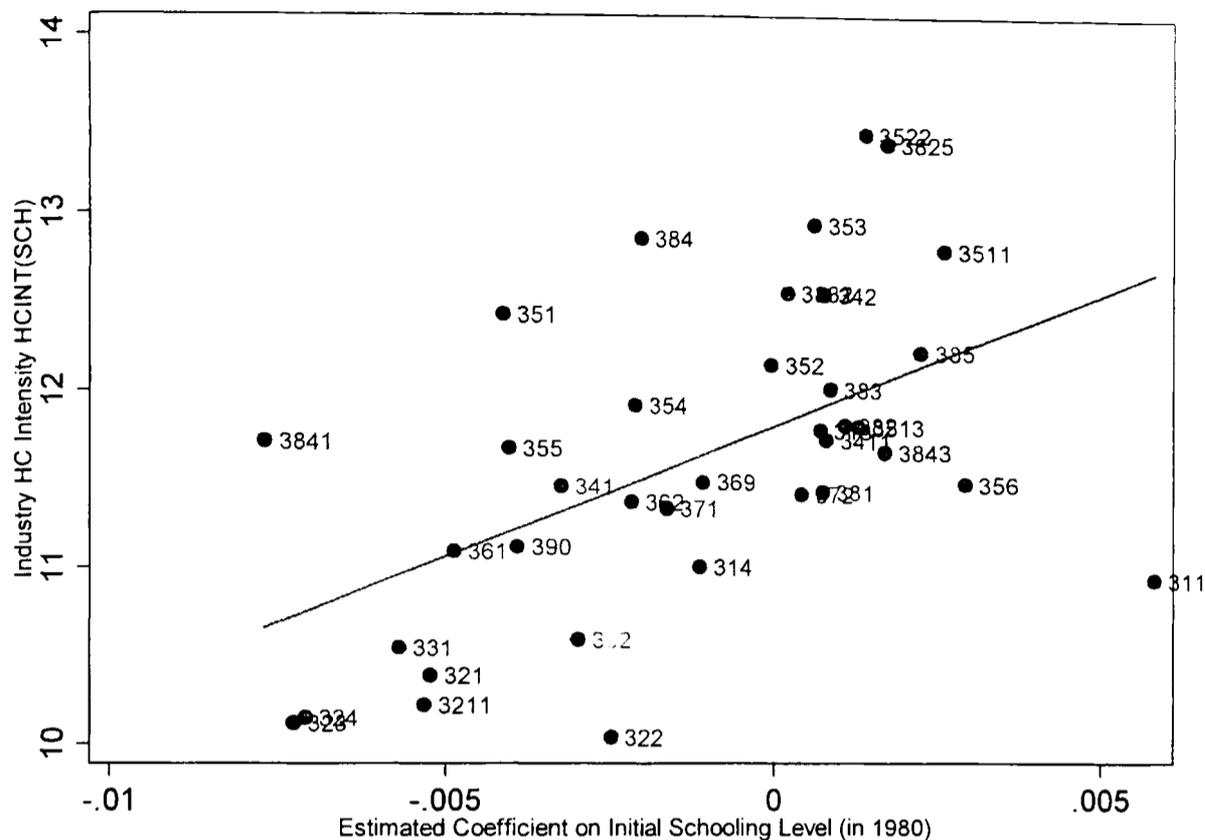
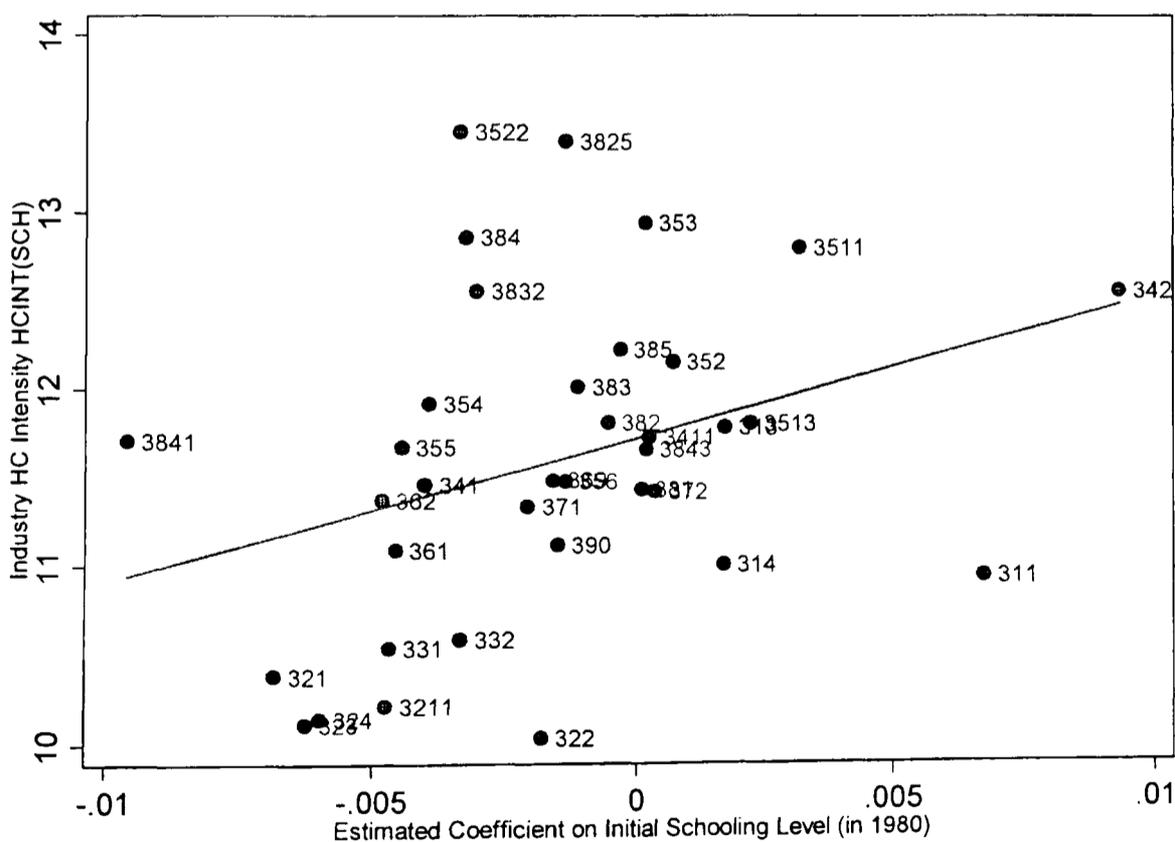


Figure 4.1b



Notes: Figures 4.1a and 4.1b plot the effect of country-level schooling (average years of schooling) in 1980 on industry growth in the 1980-1989 period (on the horizontal axis) against industry human-capital intensity $HCINT$ (on the vertical axis). The set of controls includes the initial share of industry s in total manufacturing in country c in 1980. The difference between Figure 4.1a and 4.1b is that the estimates of the effect of country-level schooling in industry growth in Figure 4.1b account for the differential industry growth of financial development and property rights for industry growth of finance-dependent and intangible-assets-dependent industries.

Figure 4.2a

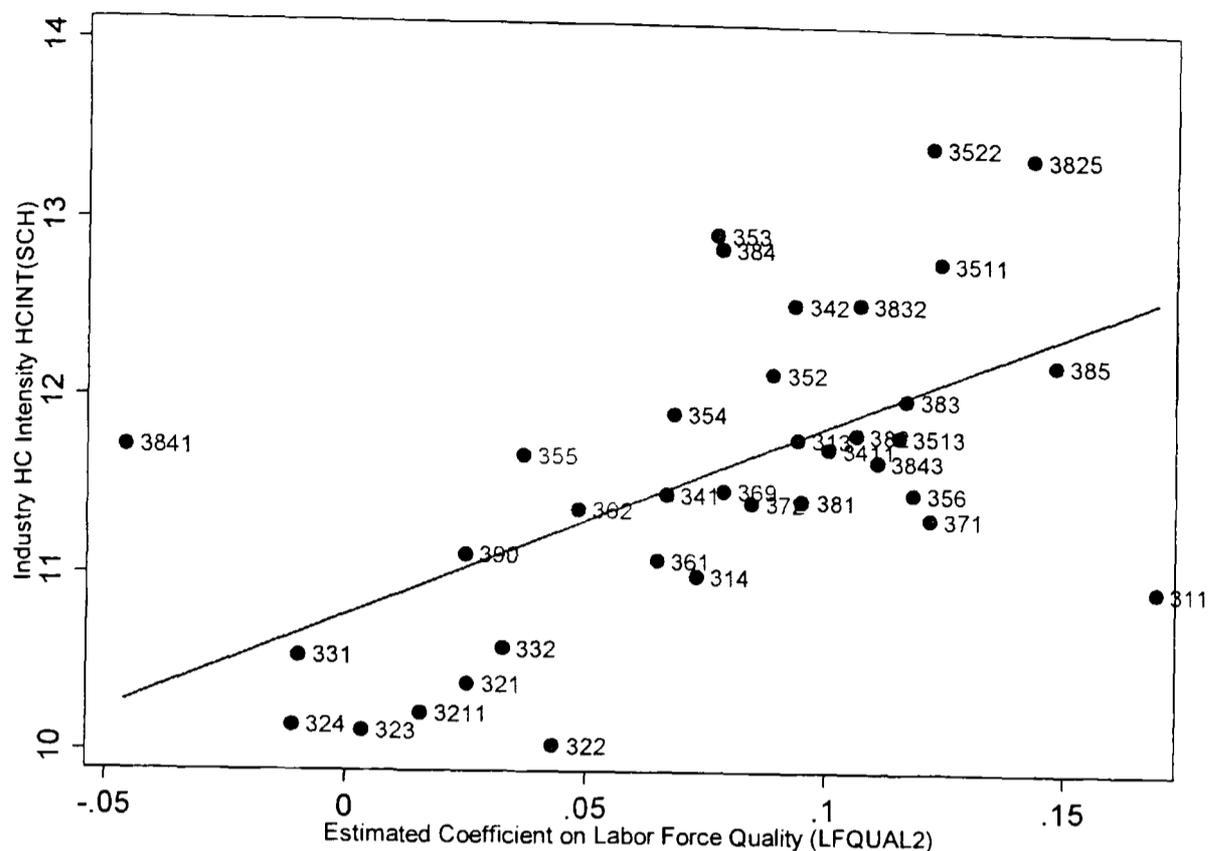
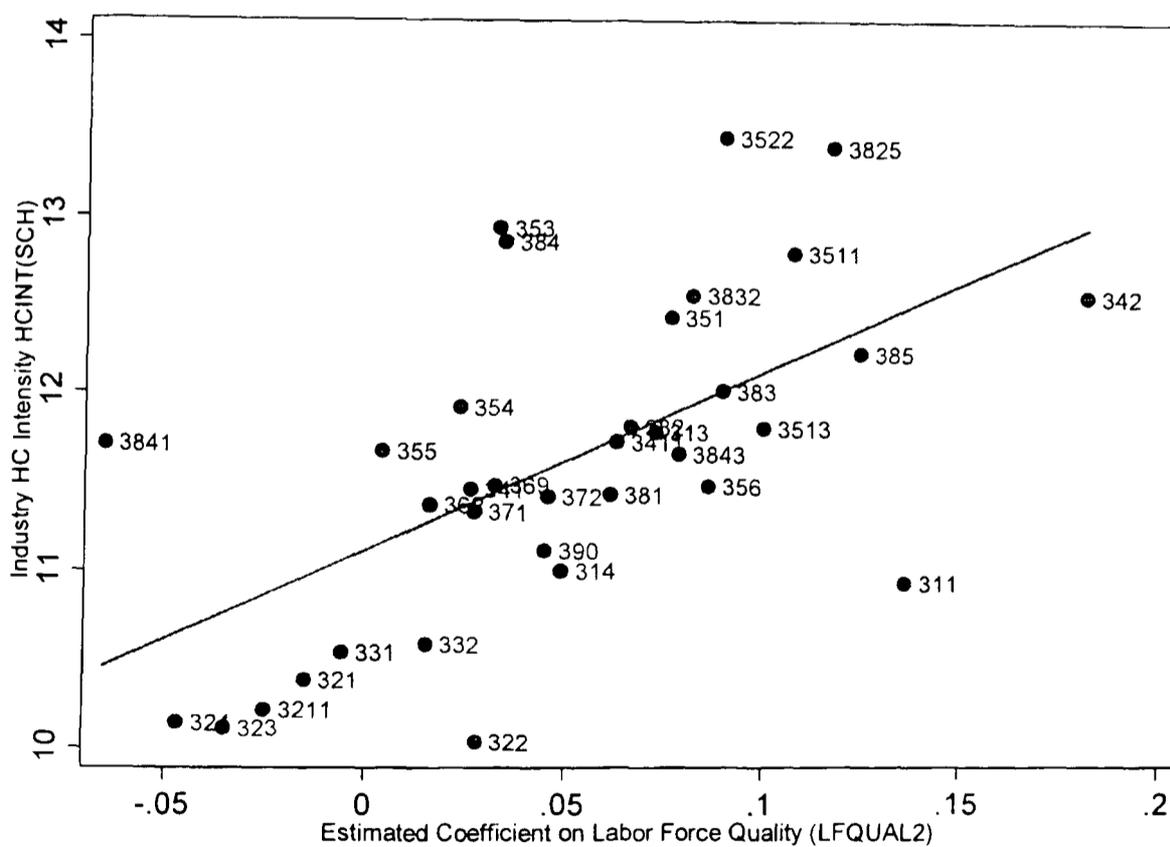


Figure 4.2b



Notes: Figures 4.2a and 4.2b plot the effect of initial country-level labor-force quality on industry growth in the 1980-1989 period (on the horizontal axis) against industry human-capital intensity $HCINT$ (on the vertical axis). The set of controls includes the initial share of industry s in total manufacturing in country c in 1980. The difference between Figure 4.2a and 4.2b is that the estimates of the effect of country-level schooling quality in industry growth in Figure 4.2b account for the differential industry growth of financial development and property rights for industry growth of finance-dependent and intangible-assets-dependent industries.

Figure 4.3a

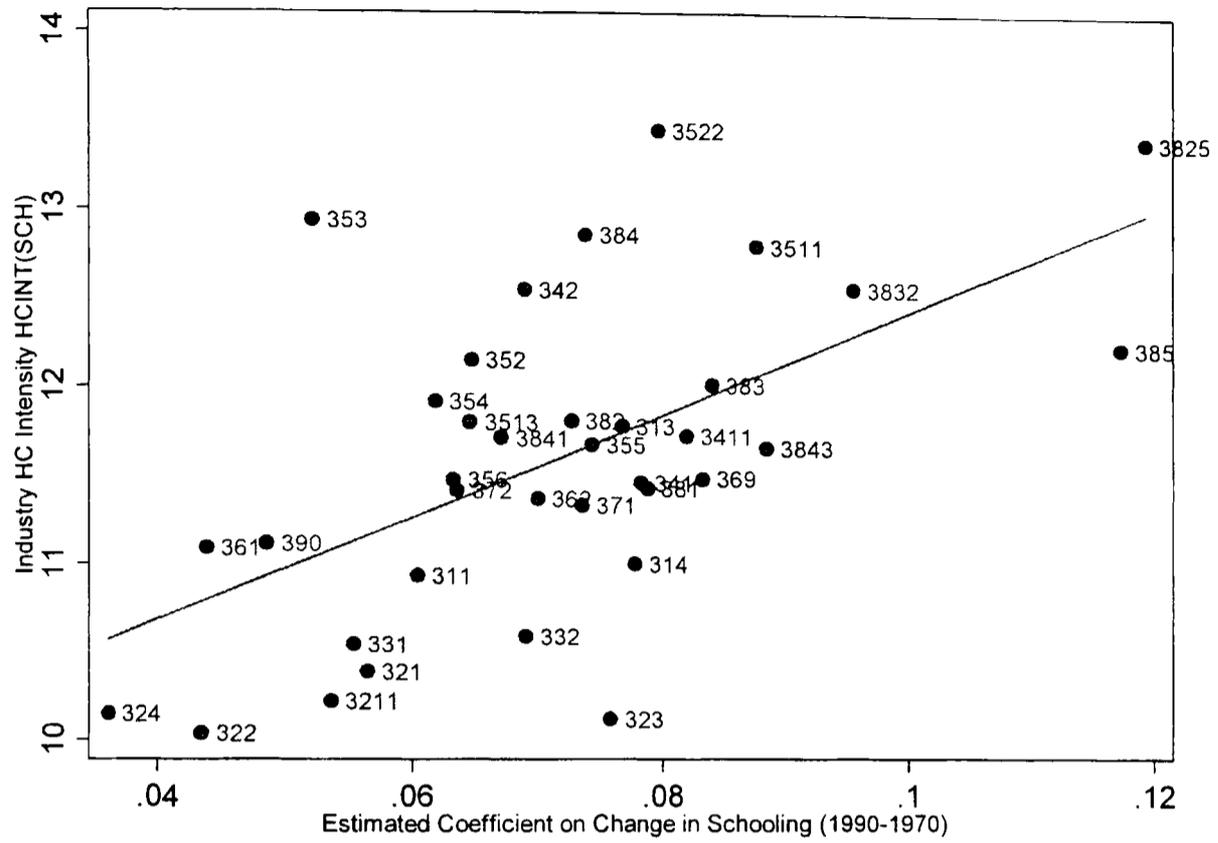
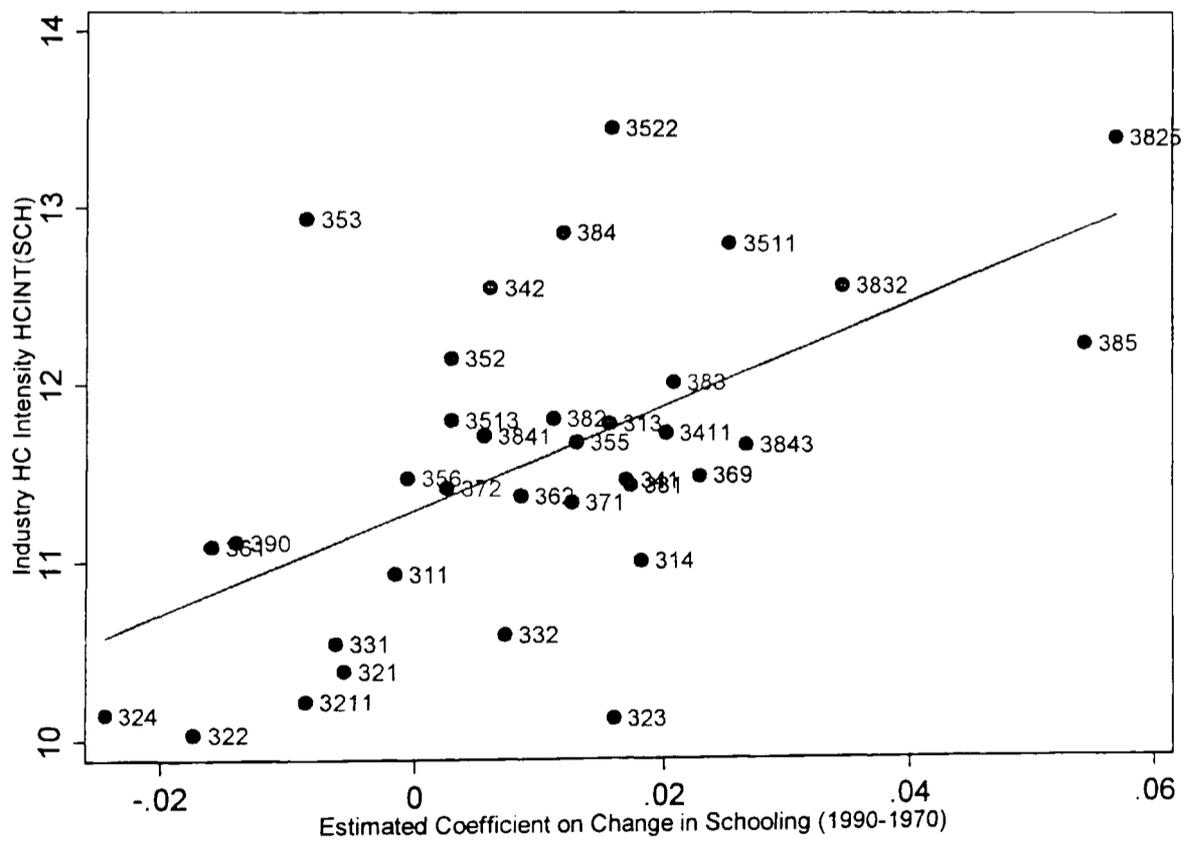


Figure 4.3b



Notes: Figures 4.3a and 4.3b plot the effect of the country-level increase in schooling 1970-1990 on industry growth (on the horizontal axis) against industry human-capital intensity *HCINT* (on the vertical axis). The set of controls includes the initial share of industry *s* in total manufacturing in country *c* in 1980. The difference between Figure 4.3a and 4.3b is that the estimates of the effect of country-level increase in schooling in industry growth in Figure 4.3b account for the differential industry growth of financial development and property rights for industry growth of finance-dependent and intangible-assets-dependent industries.

Tables

The following pages report the Tables for all four Thesis Chapters.

Table 1.1 – Democratization Event Chronology

Panel A— “Full” Democratization Episodes

Country & Year	Brief Description
Argentina (1983)	First free and fair elections after a prolonged period of military dictatorship.
Benin (1991)	Adoption of new democratic constitution; free and fair elections.
Bolivia (1982)	Return to civilian rule. Military steps down. Reconvocation of 1980 democratic constitution.
Brazil (1985)	First internationally deemed fair and free elections after a more than two decade long military rule.
Bulgaria (1990)	First post-communism free and fair general assembly elections.
Cape Verde (1991)	First post independence free and fair elections.
Chile (1990)	First free and fair presidential elections; Ending of two decade long military rule of Augusto Pinochet.
Croatia (2000)*	First free and fair legislative and presidential elections since independence and the ending of the Bosnian War.
Czech Republic (1993)	Independence from Czechoslovakia. First post-communism constitution came into effect.
Dominican Republic (1978)	Return to civilian rule. Free and fair presidential elections.
Ecuador (1979)	Internationally deemed free and fair Presidential elections after a prolonged period of military rule.
El Salvador (1994)	First free and fair elections after the end of a long-lasting civil war and military rule.
Estonia (1991)	Independence from USSR. Ratification of old (1938) constitution.
Greece (1975)	New democratic constitution; parliamentary elections marked the return to civilian rule.
Grenada (1984)	First free and fair elections after the US invasion (in October 1983) and the ending of military rule.
Guyana (1992)	First post independence (1966) free and fair elections.
Honduras (1982)	Adoption of new democratic constitution after a prolonged period of oppressive rule. First democratically elected president takes office.
Hungary (1990)	First post communism free and fair Presidential elections.
Korea, Republic of (1988)	Democratically elected government resumes office. Adoption of new democratic constitution.
Latvia (1991)	Independence from USSR. Ratification of old (1922) democratic constitution.
Lithuania (1991)	Independence form USSR.
Malawi (1994)	First post independence (1961), free and fair parliamentary and presidential elections.
Mali (1992)	New democratic constitution established a multi-party system. Fair and free legislative and presidential elections followed.
Mexico (1997)	For the first time since 1929 the Institutional Revolutionary party (PRI) lost the absolute power in the Lower House after the 1997 legislative elections.
Mongolia (1992)	New democratic constitution established a multi-party system.
Panama (1994)	Free and fair presidential and legislative elections after the US intervention.
Peru (1980)	Internationally declared fair and free legislative and presidential elections.
Philippines (1987)	Adoption of new democratic constitution; free and fair elections led to the overthrow of Marco’s regime.
Poland (1990)	First post communism, free and fair, presidential, legislative and local elections. Adoption of new democratic constitution.
Portugal (1976)	Return to civilian rule after a long-lived military regime (since 1926).
Romania (1990)	First post communism free and fair elections.
Sao Tome and Principe (1991)	First post independence (in 1975), fair and free legislative and presidential elections.
Slovak Republic (1993)	Independence form Czechoslovakia. First post-communism elections; a new democratic constitution came into effect.
Slovenia (1992)	First since gaining independence from Yugoslavia, free presidential and legislative elections. Adoption of a new democratic constitution.
South Africa (1994)	First free elections with universal participation, brought in power Nelson Mandela and ended the Apartheid regime.
Spain (1978)	New democratic constitution came into effect after Franco’s death.
Thailand (1992)	Military was forced to step down. Free legislative elections followed.
Uruguay (1985)	Army returned the power to the democratically elected president.

Table 1.1 – (cont.)

Panel B—“Partial” Democratization Episodes

Country & Year	Brief Description
Albania (1992)	Subsequent (in 1991 and 1992) elections marked the ending of the communist rule.
Bangladesh (1991)	First post independence (1971) free and fair elections.
Comoros (1990)	First post independence (1975) free and fair elections.
Djibouti (1999)*	First post independence (1977) internationally declared free and fair elections.
Ethiopia (1995)	First multi-party elections after a long-lived communist era.
Ghana (1996)	Internationally deemed free and fair parliamentary and presidential elections.
Guatemala (1996)	End of civil-war; return to civilian rule.
Haiti (1994)	A US intervention brought in power the winner of the 1990 elections.
Indonesia (1999)*	First multi-party elections after the collapse of the Suharto regime.
Lesotho (1993)	Military abandons power and internationally deemed free and fair elections mark the return to civilian rule.
Macedonia, FYR (1991)	Independence from Yugoslavia. First constitution approved. National unity government formed.
Madagascar (1993)	Presidential elections after a twenty-year long military junta.
Mozambique (1994)	First post independence (1975) parliamentary and presidential elections.
Nepal (1991)	First free and fair elections since the early sixties.
Nicaragua (1990)	Free and fair elections after the Somosa dictatorship and the Santinistas revolution.
Nigeria (1999)*	After consecutive coups and military interventions, internationally declared free and fair elections mark the return to civilian rule.
Paraguay (1993)	First Presidential elections after decades of military rule.
Russia (1993)	Adoption of first post-communism constitution; Free and fair Duma elections.
Senegal (2000)*	First post independence (1960), internationally deemed fair and free elections.
Suriname (1991)	Return to civilian government after a one-party regime; free and fair elections.
Tanzania (1995)	First post independence, internationally deemed free and fair elections.
Turkey (1983)	First free and fair legislative elections after a military dictatorship.
Ukraine (1991)	Independence from USSR. Legislative elections followed.
Zambia (1991)	First post independence, free and fair elections. New democratic constitution came into effect.

Panel C—“Borderline” Democratization Episodes

Country & Year	Brief Description
Central African Republic (1993)	First free election after the oppressive Bokassa rule. The 1996 presidential elections were deemed free, but marked by fraud allegations. Huge political instability is still present.
Iran, Islamic Republic of (1997)	First multi-candidate elections were held. Political reforms took place, but basic civil rights and political liberties have not been fully granted.
Jordan (1993)	Legalization of political parties and first free elections. Yet the political system is non competitive and fundamental political rights are not secured.
Niger (1999)*	Transition to civilian rule; presidential and legislative elections took place; although they were deemed fair and free, substantial political struggles are still present.
Pakistan (1988)	Legislative elections were held; restoration of the 1985 democratic constitution. In spite of fair and free elections in the nineties, the military coup of 1999 blocked democratization.

Table 1.1 reports the country, timing and a brief description of the democratization events. Panel A gives “Full Democratization” incidents; in these countries democratic institutions have been fully consolidated according both to the Polity and Freedom House indicators. Panel B gives “Partial Democratization”; in these countries a substantial democratic progress has occurred, but either of the two measures does not indicate a perfect democracy level. Panel C gives “Borderline Democratization” incidents; in these countries, democratic progress (reflected in either index) has taken place, but protection level of civil liberties is still very low. For details on our event identification methodology see Section 1.3. The Democratization Dataset Appendix A gives a more detailed description of the democratization events. * indicate late democratization episodes (after 1998) that are not considered in some of our regression estimates, due to limited data availability in the democratic period.

Table 1.2 -- Summary Statistics

Variable	All Episodes			"Full" Democratization			"Partial" Democratization		
	Pre-Democratization	Post-Democratization	Equality Test	Pre-Democratization	Post-Democratization	Equality Test	Pre-Democratization	Post-Democratization	Equality Test
Real GDP growth (3-year)	-0.0025	-0.0002	0.0023	0.0016	0.0027	0.0011	-0.0070	-0.0010	0.0060
<i>std.</i>	<i>0.06</i>	<i>0.06</i>	<i>0.71</i>	<i>0.06</i>	<i>0.07</i>	<i>0.90</i>	<i>0.06</i>	<i>0.05</i>	<i>0.42</i>
Real GDP growth (5-year)	0.0032	0.0045	0.0014	0.0120	0.0075	-0.0044	-0.0059	0.0006	0.0065
<i>std.</i>	<i>0.06</i>	<i>0.06</i>	<i>0.76</i>	<i>0.05</i>	<i>0.06</i>	<i>0.46</i>	<i>0.06</i>	<i>0.05</i>	<i>0.30</i>
Real GDP growth (10-year)	0.0071	0.0088	0.0017	0.0162	0.0113	-0.0049	-0.0036	0.0044	0.0080 *
<i>std.</i>	<i>0.06</i>	<i>0.05</i>	<i>0.60</i>	<i>0.05</i>	<i>0.05</i>	<i>0.25</i>	<i>0.06</i>	<i>0.00</i>	<i>0.10</i>
Investment	22.22	22.97	0.75	24.32	24.39	0.07	19.64	19.83	0.18
<i>std.</i>	<i>9.64</i>	<i>8.44</i>	<i>0.17</i>	<i>9.34</i>	<i>7.80</i>	<i>0.91</i>	<i>10.05</i>	<i>9.39</i>	<i>0.38</i>
Government Consumption	14.76	14.69	-0.08	14.64	14.91	0.27	14.92	14.30	-0.61
<i>std.</i>	<i>14.16</i>	<i>14.19</i>	<i>0.85</i>	<i>6.94</i>	<i>5.31</i>	<i>0.58</i>	<i>7.71</i>	<i>7.08</i>	<i>0.38</i>
Trade Openness	57.04	69.90	12.86 ***	59.58	74.77	15.19 ***	53.94	61.47	7.53 ***
<i>std.</i>	<i>30.88</i>	<i>38.64</i>	<i>0.00</i>	<i>30.57</i>	<i>42.31</i>	<i>0.00</i>	<i>31.02</i>	<i>29.53</i>	<i>0.01</i>
Schooling	4.62	5.67	1.05 ***	5.50	6.34	0.84 ***	3.35	4.33	0.97 ***
<i>std.</i>	<i>2.32</i>	<i>2.50</i>	<i>0.00</i>	<i>2.34</i>	<i>2.42</i>	<i>0.00</i>	<i>1.59</i>	<i>2.10</i>	<i>0.00</i>
Life Expectancy	61.20	65.19	3.98 ***	64.96	67.97	3.01 ***	55.96	59.99	4.03 ***
<i>std.</i>	<i>9.05</i>	<i>9.31</i>	<i>0.00</i>	<i>7.80</i>	<i>7.26</i>	<i>0.00</i>	<i>8.02</i>	<i>10.45</i>	<i>0.00</i>
Population Growth	0.0195	0.0141	-0.0054 ***	0.0147	0.0111	-0.0036 ***	0.0275	0.0194	-0.0081 ***
<i>std.</i>	<i>0.02</i>	<i>0.01</i>	<i>0.00</i>	<i>0.01</i>	<i>0.01</i>	<i>0.00</i>	<i>0.01</i>	<i>0.01</i>	<i>0.00</i>

The table reports the mean and standard deviation (in italics) of real per capita GDP growth and the other control variables employed in the growth regressions in the ten years before and the ten years after a permanent democratization event (the transition year is included in the Post-Democratization period). We also explore the 3 and 5 year averages of the growth rate of real per capita GDP. The table also reports a mean equality test. The mean difference between "before" and "after" years and the p-values (in italics) of a mean equality (assuming unequal variances before and after) is reported. Statistical significance is denoted by a * for 10%, ** for 5%, and *** for 1%. For some countries, we do not have a full 3, 5, or 10 years available given the timing of democratization, so we just take the available years in the average. For all variables, the summary statistics reflect data from 67 countries from 1960 to 2000. For schooling the summary statistics reflect data from 45 countries. "Full" (N=38) and "Partial", including "Borderline" (N=29) permanent democratization countries are given in Table 1.1. For details on our event identification methodology see Section 1.3.

The Democratization Dataset Appendix A gives a more detailed description of the democratization events. For variable sources and definitions see the Data Appendix B.1

Table 1.3 -- The Unconditional Effect Of Political Liberalization

Dep. Variable: Real GDP Growth	Pooled Cross-Section Time-Series	
	OLS (1)	Time and Country Fixed Effects (2)
All Democratization Countries		
Democratization Coeff.	0.0003	0.0066
<i>p-value</i>	<i>0.874</i>	<i>0.004</i>
<i>p-value (clustering)</i>		<i>0.036</i>
Observations	2040	2040
Countries	67	67
adj. R squared	0.0001	0.0958
All Democratization Countries (excl. recent and "partial borderline")		
Democratization Coeff.	-0.0005	0.0072
<i>p-value</i>	<i>0.802</i>	<i>0.003</i>
<i>p-value (clustering)</i>		<i>0.035</i>
Observations	1726	1726
Countries	57	57
adj. R squared	0.0001	0.0974
"Full" Democratization Countries		
Democratization Coeff.	-0.0005	0.0038
<i>p-value</i>	<i>0.026</i>	<i>0.188</i>
<i>p-value (clustering)</i>		<i>0.349</i>
Observations	1153	1153
Countries	38	38
adj. R squared	0.0051	0.0786
"Partial" Democratization Countries (excl. "borderline partial")		
Democratization Coeff.	0.0025	0.0140
<i>p-value</i>	<i>0.516</i>	<i>0.001</i>
<i>p-value (clustering)</i>		<i>0.010</i>
Observations	716	716
Countries	24	24
adj. R squared	0.0002	0.0867
"Partial" Democratization Countries		
Democratization Coeff.	0.0026	0.0113
<i>p-value</i>	<i>0.476</i>	<i>0.003</i>
<i>p-value (clustering)</i>		<i>0.020</i>
Observations	887	887
Countries	29	29
adj. R squared	0.0004	0.0788

The dependent variable is the annual real per capita GDP growth. Estimation is performed with OLS. In column (2) we estimate specification (1.3) adding both "time" and "country" fixed effects. P-values based on heteroskedasticity-adjusted standard errors are reported in italics (above). The Table also reports p-values based on standard errors adjusted for heteroskedasticity clustered by country (below). The democratization dummy takes the value one in the year and all subsequent years of a permanent democratization episode. For a list of the democratization episodes and their categorization to "full", "partial" and "borderline" see Table 1.1. For details on our event identification methodology see Section 1.3 and the Democratization Dataset Appendix A.

Table 1.4 -- Benchmark Dynamic Specification

	Pooled Cross Section		Within			
	OLS	IV	All countries	IV	20 years obs	
	(1)	(2)			(3)	(4)
Lag (1) Growth	0.2775 <i>0.000</i>	0.3939 <i>0.008</i>	0.2056 <i>0.000</i>	0.2617 <i>0.000</i>	0.1931 <i>0.000</i>	0.1860 <i>0.000</i>
Lag (2) Growth	-0.0197 <i>0.554</i>	-0.0137 <i>0.757</i>	-0.0665 <i>0.044</i>	-0.0104 <i>0.779</i>	-0.0646 <i>0.059</i>	-0.0280 <i>0.252</i>
Lag (3) Growth	0.0249 <i>0.354</i>	0.0418 <i>0.204</i>	-0.0431 <i>0.127</i>	-0.0301 <i>0.339</i>		0.0038 <i>0.856</i>
Investment	0.0006 <i>0.000</i>	-0.0004 <i>0.687</i>	0.0006 <i>0.028</i>	0.0001 <i>0.927</i>	0.0007 <i>0.012</i>	
Differenced Investment	0.0031 <i>0.000</i>	-0.0028 <i>0.573</i>	0.0031 <i>0.000</i>	0.0090 <i>0.000</i>	0.0029 <i>0.000</i>	
Lag (1) Diff. Investment	0.0004 <i>0.336</i>	-0.0014 <i>0.721</i>	0.0006 <i>0.135</i>	-0.0042 <i>0.024</i>	0.0006 <i>0.167</i>	
Lag (2) Diff. Investment	0.0002 <i>0.576</i>	-0.0007 <i>0.493</i>	0.0005 <i>0.157</i>	0.0009 <i>0.109</i>	0.0005 <i>0.184</i>	
Lag (3) Diff. Investment	0.0004 <i>0.148</i>	-0.0003 <i>0.733</i>	0.0007 <i>0.024</i>	0.0004 <i>0.405</i>		
Democratization	0.0047 <i>0.029</i>	0.0066 <i>0.022</i>	0.0064 <i>0.008</i>	0.0057 <i>0.084</i>	0.0062 <i>0.010</i>	0.0084 <i>0.003</i>
a1+a2+a3-1	-0.7174 <i>[0.000]</i>	-0.5780 <i>[0.000]</i>	-0.9040 <i>[0.001]</i>	-0.7789 <i>[0.000]</i>	-0.8714 <i>[0.000]</i>	-0.8382 <i>[0.000]</i>
Long-run Effect of Investment on Growth	0.0008 <i>[0.000]</i>	-0.0007 <i>[0.718]</i>	0.0006 <i>[0.023]</i>	0.0001 <i>[0.899]</i>	0.0008 <i>[0.023]</i>	
Long-run Effect of Investment on Income Level	0.0056 <i>[0.000]</i>	-0.0090 <i>[0.609]</i>	0.0053 <i>[0.000]</i>	0.0078 <i>[0.184]</i>	0.0046 <i>[0.0000]</i>	
Long-run Effect of Democratization on Growth	0.007 <i>[0.000]</i>	0.011 <i>[0.094]</i>	0.007 <i>[0.008]</i>	0.007 <i>[0.100]</i>	0.007 <i>[0.000]</i>	0.010 <i>[0.000]</i>
R-sq	0.1933		0.2171		0.207	0.147
Countries	67	67	67	67	45	112
Observations	1764	1699	1764	1605	1611	3969
Test of first order auto-corr.	<i>[0.958]</i>	<i>[0.691]</i>	<i>[0.860]</i>	<i>[0.129]</i>	<i>[0.259]</i>	<i>[0.345]</i>
Test of Over-identification		<i>[0.198]</i>		<i>[0.4756]</i>		

The dependent variable is the annual real per capita GDP growth. P-values based on heteroskedasticity and autocorrelation adjusted standard errors are reported in italics. Column (1) reports OLS estimates. Column (2) reports instrumental variables (IV) estimates. Column (3) reports fixed-effects (within) estimates. Column (4) reports fixed-effects (within) IV estimates. Columns (5) and (6) give fixed-effect estimates only for countries that we have at least 20 years of observations. In column (6) we exclude former socialist countries, replace the time fixed-effects with a linear trend and perform the estimation in all countries (reforming and non-reforming). In columns (2) and (4) the contemporaneous investment level, the contemporaneous differenced and the lagged differenced investment rate are being instrumented. The instrument set in column (2) includes: lag 4 and 5 of investment level, and lag 4 and 5 of the logarithm of income level. The instrument set in column (4) includes all instruments used in specification reported in column (2) plus lag 2 and 3 of inflation rate, lag 2 and 3 of trade openness, and lag 2 and 3 of government consumption.

The table also reports a test and in square brackets p-values of the significance of: 1) the long run effect of investment on growth, 2) the long-run effect of investment on output level, 3) the long-run effect of a permanent democratization on growth, 4) that the sum of the coefficients of the autoregressive growth terms is one. It also reports a test of first order serial correlation. P-values (in square brackets) of the significance are given. Under the null hypothesis there is no serial correlation. In the last row the p-value of a Sargan test of over-identifying restrictions is reported. Rejection of the null hypothesis casts doubt on the validity of the instruments. The democratization dummy takes the value of one in the year and all subsequent years of a permanent democratization transition. For details on our event identification methodology see Section 1.3. The Democratization Dataset Appendix A gives a more detailed description of the democratization events. For variable definitions and sources see the Data Appendix B.1.

**Table 1.5—Timing Of The Effect Of Democratization
Fixed Effect Estimates**

	All	Excl. Recent, Borderline & New Independent States		At least 20 years of observations		Transition & Non-Reformers
	(1)	(2)	(3)	(4)	(5)	(6)
Lag (1) Growth	0.2370 <i>0.000</i>	0.2097 <i>0.000</i>	0.2211 <i>0.000</i>	0.2147 <i>0.000</i>	0.2279 <i>0.000</i>	0.1722 <i>0.000</i>
Lag (2) Growth	-0.1004 <i>0.001</i>	-0.1208 <i>0.000</i>	-0.0966 <i>0.003</i>	-0.0818 <i>0.016</i>	-0.0522 <i>0.095</i>	-0.0246 <i>0.301</i>
Lag (1) Investment	0.0003 <i>0.406</i>	0.0005 <i>0.272</i>		0.0001 <i>0.384</i>		
Lag (2) Investment	0.0001 <i>0.805</i>	0.0001 <i>0.889</i>		0.0001 <i>0.795</i>		
Lag (3) Ln GDP	-0.0397 <i>0.000</i>	-0.0302 <i>0.000</i>	-0.0262 <i>0.000</i>	-0.0337 <i>0.000</i>	-0.0298 <i>0.000</i>	
D ¹	0.0088 <i>0.019</i>	0.0099 <i>0.012</i>	0.0092 <i>0.013</i>	0.0081 <i>0.042</i>	0.0071 <i>0.060</i>	0.0066 <i>0.150</i>
D ²	0.0009 <i>0.998</i>	0.0007 <i>0.882</i>	-0.0000 <i>0.995</i>	-0.0000 <i>0.681</i>	-0.0003 <i>0.938</i>	-0.00288 <i>0.555</i>
D ³	0.0079 <i>0.057</i>	0.0144 <i>0.000</i>	0.0133 <i>0.001</i>	0.0080 <i>0.082</i>	0.0054 <i>0.256</i>	0.0115 <i>0.005</i>
D ⁴	0.0093 <i>0.009</i>	0.0062 <i>0.114</i>	0.0045 <i>0.224</i>	0.0081 <i>0.032</i>	0.0047 <i>0.183</i>	0.00631 <i>0.154</i>
D ⁵	0.0165 <i>0.000</i>	0.0127 <i>0.007</i>	0.0103 <i>0.024</i>	0.01282 <i>0.009</i>	0.0093 <i>0.050</i>	0.0085 <i>0.112</i>
D ⁶	0.0162 <i>0.000</i>	0.0150 <i>0.001</i>	0.0111 <i>0.006</i>	0.01484 <i>0.001</i>	0.0104 <i>0.009</i>	0.0095 <i>0.048</i>
R-squared	0.175	0.147	0.154	0.155	0.153	0.1423
Countries	67	52	52	48	48	112
Observations	1857	1590	1665	1628	1728	4082
Time-Trend	No	No	No	No	No	Yes

The dependent variable is the annual real per capita GDP growth. P-values based on heteroskedasticity-adjusted standard errors are reported in italics. Estimation corresponds to specification of equation (1.5) and is performed with panel fixed effects. Column (1) performs the estimation to the full (partial, full, and borderline) sample of democratization countries. Columns (2) and (3) exclude countries with a "borderline" episode, countries that experienced a democratization episode after 1998 (where not enough post democratization observations are available) and countries where democratization occurred alongside independence from former Czechoslovakia, U.S.S.R. and Yugoslavia. Column (4) and (5) give estimates only for countries that we have at least 20 years of observations (to minimize the bias arising from the joint presence of individual country effects the lagged dependent variable). In column (6) estimation is performed to all countries (democratization and non-reforming countries). Socialist countries and nations with less than 20 years of observations are excluded, while the time nuisance parameters are replaced with a linear trend.

D¹ is a dummy variable that takes on the value one in the fifth, fourth, and third pre democratization year and zero otherwise. D² is a dummy variable that takes on the value one in the second, first pre-democratization year and on the transition year and zero otherwise. D³ takes on the value one in the first, second and third post democratization year and zero otherwise. D⁴ takes on the value one in the fourth, fifth, and sixth post democratization year and zero otherwise. D⁵ takes the value one in the seventh, eighth, and ninth post democratization year and zero otherwise. D⁶ takes on the value one in the tenth and all subsequent (eleventh, twelfth, etc.) post democratization year and zero otherwise. For a list of the democratization episodes see Table 1.1. For details on our event identification methodology see Section 1.3. The Democratization Dataset Appendix A gives a more detailed description of the democratization events. For variable definitions and sources see the Data Appendix B.1.

Table 1.6 - Democratization In a Cross-Country Growth Regression Framework

	OLS		Within (all)		Within (20 obs. years)	
	simple (1)	policy (2)	simple (3)	policy (4)	simple (5)	policy (6)
Lag (1) Growth	0.3046 <i>0.000</i>	0.3148 <i>0.000</i>	0.2213 <i>0.000</i>	0.2260 <i>0.000</i>	0.2127 <i>0.000</i>	0.1935 <i>0.000</i>
Lag (2) Growth	0.0077 <i>0.828</i>	-0.0278 <i>0.383</i>	-0.0657 <i>0.072</i>	-0.0993 <i>0.002</i>	-0.0599 <i>0.110</i>	-0.0953 <i>0.006</i>
Lag (3) Ln GDP level	-0.0015 <i>0.341</i>	-0.0041 <i>0.022</i>	-0.0360 <i>0.000</i>	-0.0406 <i>0.000</i>	-0.0349 <i>0.000</i>	-0.0350 <i>0.000</i>
Lag (1) Investment	0.0162 <i>0.739</i>	-0.0002 <i>0.996</i>	0.0358 <i>0.488</i>	0.0080 <i>0.844</i>	0.0004 <i>0.453</i>	0.0002 <i>0.740</i>
Lag (2) Investment	-0.0079 <i>0.899</i>	-0.0140 <i>0.767</i>	-0.0014 <i>0.982</i>	-0.0131 <i>0.774</i>	-0.0001 <i>0.845</i>	-0.0001 <i>0.799</i>
Lag (3) Investment	0.0177 <i>0.656</i>	0.0167 <i>0.609</i>	0.0353 <i>0.391</i>	0.0248 <i>0.458</i>	0.0003 <i>0.418</i>	0.0001 <i>0.782</i>
Lag (1) Population Growth	-0.1285 <i>0.300</i>	-0.1189 <i>0.378</i>	-0.1415 <i>0.387</i>	-0.2418 <i>0.151</i>	-0.2423 <i>0.454</i>	-0.5600 <i>0.024</i>
Lag (1) Schooling	0.0013 <i>0.120</i>		0.0049 <i>0.094</i>		0.0051 <i>0.079</i>	
Lag (1) Life Expectancy		0.0498 <i>0.000</i>		0.0819 <i>0.002</i>		0.0977 <i>0.000</i>
Lag (1) Government Consumption		-0.1233 <i>0.000</i>		-0.1535 <i>0.001</i>		-0.0019 <i>0.000</i>
Lag (1) Trade		0.0086 <i>0.161</i>		0.0217 <i>0.031</i>		0.0002 <i>0.087</i>
Democratization	0.005 <i>0.037</i>	0.004 <i>0.081</i>	0.009 <i>0.001</i>	0.009 <i>0.001</i>	0.0097 <i>0.000</i>	0.0077 <i>0.003</i>
Long-run Effect of Democratization on Income Level	3.370 <i>[0.346]</i>	0.971 <i>[0.171]</i>	0.264 <i>[0.001]</i>	0.228 <i>[0.000]</i>	0.278 <i>[0.001]</i>	0.220 <i>[0.002]</i>
R-sq	0.12	0.15	0.16	0.190	0.4560	0.1780
Countries	45	67	45	67	41	48
Observations	1453	1791	1453	1791	1388	1575

The dependent variable is the annual real per capita GDP growth. P-values based on heteroskedasticity-adjusted standard errors are reported in italics. All control variables are one year lagged. Columns (1) and (2) report OLS estimates. Columns (3)-(6) report fixed-effects (within) estimates. In columns (5) and (6) we exclude all countries, for which less than 20 years of observations are available. The table also reports a test and in square brackets p-values of the significance of the long run effect of a permanent democratization on output level. The democratization variable takes on the value one in the year and all subsequent years of a permanent democratization transition. For details on our event identification methodology see Section 1.3. The *Democratization Dataset Appendix A* gives a more detailed description of the democratization events. For variable definitions and sources see the *Data Appendix B.1*.

Table 1.7 -- Fixed Effects Dynamic Panel Cross-Country Growth Regressions With Transition Effects & Additional Controls

	Full Sample						Excl. Borderline & Recent Episodes			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Lag (1) Growth	0.2520 <i>0.000</i>	0.2395 <i>0.000</i>	0.2387 <i>0.000</i>	0.2352 <i>0.000</i>	0.2345 <i>0.000</i>	0.2284 <i>0.000</i>	0.2646 <i>0.000</i>	0.2524 <i>0.000</i>	0.2515 <i>0.000</i>	0.2405 <i>0.000</i>
Lag (2) Growth	-0.0694 <i>0.017</i>	-0.0930 <i>0.003</i>	-0.0921 <i>0.010</i>	-0.0960 <i>0.002</i>	-0.0947 <i>0.003</i>	-0.0894 <i>0.006</i>	-0.0829 <i>0.007</i>	-0.1061 <i>0.001</i>	-0.1055 <i>0.002</i>	-0.1004 <i>0.003</i>
Lag (3) Ln GDP Level	-0.0348 <i>0.000</i>	-0.0381 <i>0.000</i>	-0.0388 <i>0.000</i>	-0.0391 <i>0.000</i>	-0.0389 <i>0.000</i>	-0.0409 <i>0.000</i>	-0.0330 <i>0.000</i>	-0.0355 <i>0.000</i>	-0.0349 <i>0.000</i>	-0.0376 <i>0.000</i>
Lag (1) Investment		0.0004 <i>0.098</i>	0.0004 <i>0.092</i>	0.0003 <i>0.231</i>	0.0002 <i>0.310</i>	-0.0002 <i>0.522</i>		0.0002 <i>0.471</i>	0.0001 <i>0.625</i>	0.0000 <i>-0.290</i>
Lag (1) Population Growth			-0.1946 <i>0.550</i>	-0.2633 <i>0.427</i>	-0.2748 <i>0.414</i>	-0.2013 <i>0.539</i>		-0.3959 <i>0.096</i>	-0.4156 <i>0.083</i>	0.2690 <i>0.068</i>
Lag (1) Life Expectancy				0.1068 <i>0.000</i>	0.1000 <i>0.000</i>	0.0967 <i>0.001</i>		0.0881 <i>0.002</i>	0.0764 <i>0.008</i>	0.2310 <i>0.017</i>
Lag (1) Government Consumption					-0.0003 <i>0.497</i>	-0.0004 <i>0.424</i>			-0.0004 <i>0.427</i>	-0.0004 <i>0.448</i>
Lag (1) Trade						0.0004 <i>0.000</i>				0.0005 <i>0.000</i>
Transition dummy	-0.0005 <i>0.885</i>	0.0010 <i>0.767</i>	0.0012 <i>0.722</i>	-0.0002 <i>0.948</i>	-0.0002 <i>0.966</i>	0.0015 <i>0.677</i>	-0.0011 <i>0.777</i>	0.0001 <i>0.973</i>	0.0002 <i>0.959</i>	0.0020 <i>0.596</i>
Post Democratization dummy	0.0071 <i>0.004</i>	0.0100 <i>0.000</i>	0.0101 <i>0.000</i>	0.0088 <i>0.001</i>	0.0081 <i>0.005</i>	0.0092 <i>0.003</i>	0.0072 <i>0.005</i>	0.0093 <i>0.001</i>	0.0085 <i>0.004</i>	0.0096 <i>0.003</i>
R-sq	0.177	0.175	0.175	0.180	0.178	0.194	0.176	0.182	0.180	0.203
Countries	67	67	67	67	67	67	57	57	57	57
Observations	1978	1870	1870	1870	1832	1811	1684	1582	1544	1528
Test of first order serial correlation	<i>[0.770]</i>	<i>[0.913]</i>	<i>[0.901]</i>	<i>[0.951]</i>	<i>[0.862]</i>	<i>[0.759]</i>	<i>[0.755]</i>	<i>[0.900]</i>	<i>[0.785]</i>	<i>[0.664]</i>

The dependent variable is the annual real per capita GDP growth. P-values based on heteroskedasticity-adjusted standard errors are reported in italics. Estimation is performed with panel (country) fixed effects (within). In columns (1) to (6) estimation is performed to all 67 countries that experienced a permanent democratization. In columns (7) to (10) we exclude countries with "borderline" democratization and countries that experienced a democratization episode after 1998 (where not enough post democratization observations are available). The transition dummy takes on the value one in the five years surrounding a permanent democratic transition.

The Post democratization dummy takes on the value one in the third post democratization and all subsequent democratic years. All independent variables are one-year lagged. The table also reports p-values (in square brackets) of a test for first-order residual correlation. Under the null hypothesis there is no serial correlation. For details on our event identification methodology see Section 1.3. The Democratization Dataset Appendix A gives a more detailed description of the democratization events. For variable definitions and sources see the Data Appendix B.1.

Table 1.8 - Endogeneity

	All (Full & Partial) Democartizations			At least 20 years of observations				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag (1) Growth	0.1929 <i>0.000</i>	0.1748 <i>0.000</i>	0.1695 <i>0.000</i>		0.1673 <i>0.000</i>	0.1610 <i>0.000</i>	0.2330 <i>0.000</i>	0.1541 <i>0.000</i>
Lag (2) Growth	-0.0559 <i>0.042</i>	-0.0829 <i>0.000</i>	-0.0784552 <i>0.006</i>		-0.0552 <i>0.003</i>	-0.0653 <i>0.028</i>	-0.0693 <i>0.077</i>	-0.0646 <i>0.041</i>
Lag (3) Ln GDP Level	-0.0518 <i>0.000</i>	-0.0587 <i>0.000</i>	-0.0621 <i>0.000</i>		-0.0433 <i>0.000</i>	-0.0477 <i>0.000</i>	-0.0514 <i>0.000</i>	-0.0540 <i>0.000</i>
Lag (1) Investment		0.0007 <i>0.000</i>	0.0002 <i>0.457</i>			0.0004 <i>0.117</i>	-0.0001 <i>0.800</i>	0.0000 <i>0.284</i>
Lag (1) Population Growth		0.0264 <i>0.001</i>	-0.3447 <i>0.283</i>			-0.3995 <i>0.235</i>	0.0786 <i>0.736</i>	-0.3596 <i>0.969</i>
Lag (1) Ln. Life Expectancy		0.0802 <i>0.002</i>	0.0894 <i>0.021</i>			0.0881 <i>0.020</i>	0.0869 <i>0.013</i>	0.0918 <i>0.026</i>
Lag (1) Government Consumption			-0.0005 <i>0.197</i>				-0.0004 <i>0.331</i>	-0.0005 <i>0.240</i>
Lag (1) Trade			0.0005 <i>0.000</i>				0.0004 <i>0.001</i>	0.0004 <i>0.000</i>
Democratization	0.0172 <i>0.100</i>	0.0268 <i>0.004</i>	0.0254 <i>0.010</i>	0.0169 <i>0.050</i>	0.0203 <i>0.012</i>	0.0219 <i>0.049</i>	0.0203 <i>0.017</i>	0.0177 <i>0.068</i>
Selection Estimation (Heckman)	ML	two-step	ML	ML	two-step	ML	ML	ML
2nd stage indep. variables	Independ. Years Trend Religion	Independ. Years Trend Religion Region Dummies	Independ. Years Trend Religion	Independ. Years Trend Region Dummies	Independ. Years Trend Religion Region Dummies	Independ. Years Trend Religion Fractionalization	Independ. Years Trend Religion Fractionalization Openness	Independ. Years Trend & Region Religion Fractionalization Income & Oil
Rho	-0.13 (0.122)	-0.237	-0.233 (0.120)	-0.136 (0.092)	-0.1678	-0.171 (0.144)	-0.195 (0.112)	-0.138 (0.126)
Equation independence [p-value]	[0.2916]		[0.0473]	[0.1430]		[0.2457]	[0.0881]	[0.279]
Observations	3140	2986	2902	2792	2665	2550	1854	2483

The dependent variable is the annual real per capita GDP growth. P-values based on heteroskedasticity-adjusted standard errors are reported in italics. The democratization variable takes on the value of one in the year and all subsequent years of a permanent democratization transition. In all specifications, it is treated as endogenous. In columns (3)--(8) we exclude all countries, for which less than 20 years of observations are available. The table reports diagnostics of the first-stage selection (treatment) equation. ML stands for maximum likelihood estimation (probit) and 2-step stands for Heckman's efficient two-step procedure. Depending on the specification, the democratization indicator variable is predicted in the treatment equation with Religion that includes the share of Muslim and Confucian in the population. Fractionalization that includes proxies of religious and ethnical heterogeneity. Oil is a dummy variable for oil-producing nations. Indep. Years measures years since independence. Income is the 3-year lag value of the logarithm of per capita GDP. A linear time trend, which controls for the trending behavior of the democratization variable and some of the selection equation regressors. For variable definitions and sources see the Data Appendix B. Rho is the estimated correlation coefficient (and its standard error in parenthesis) between the residuals of the growth regression (second stage) and the democratization selection equation (first stage). The table also reports p-values of a Wald test of equation independence. Under the null hypothesis the first and second stage equations are independent.

Table 1.9 -- Measurement Error & Alternative Democratization Episodes

	Excluding Recent and Borderline			Freedom House			Polity		
	OLS	Within	Within with Control Group	OLS	Within	Within with Control Group	OLS	Within	Within with Control Group
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lag (1) Growth	0.3528 <i>0.000</i>	0.2539 <i>0.000</i>	0.1557 <i>0.00</i>	0.2642 <i>0.00</i>	0.1718 <i>0.00</i>	0.1289 <i>0.00</i>	0.2100 <i>0.00</i>	0.1241 <i>0.00</i>	0.1517 <i>0.00</i>
Lag (2) Growth	-0.0180 <i>0.589</i>	-0.1025 <i>0.003</i>	-0.0362 <i>0.13</i>	-0.0338 <i>0.31</i>	-0.1113 <i>0.00</i>	-0.0570 <i>0.04</i>	-0.0228 <i>0.48</i>	-0.0980 <i>0.00</i>	-0.0368 <i>0.14</i>
Lag (3) Ln GDP level	0.0020 <i>0.056</i>	-0.0373 <i>0.000</i>	-0.0287 <i>0.00</i>	0.0027 <i>0.02</i>	-0.0487 <i>0.00</i>	-0.0460 <i>0.00</i>	0.0022 <i>0.04</i>	-0.0383 <i>0.00</i>	-0.0310 <i>0.00</i>
Lag Investment	0.0077 <i>0.615</i>	0.0305 <i>0.204</i>		0.0448 <i>0.005</i>	0.0600 <i>0.060</i>		0.0504 <i>0.006</i>	0.0810 <i>0.003</i>	
Lag (1) Differenced Investment	-0.0128 <i>0.745</i>	-0.0198 <i>0.613</i>		-0.0120 <i>0.755</i>	-0.0217 <i>0.599</i>		0.0250 <i>0.527</i>	0.0035 <i>0.933</i>	
Lag (2) Differenced Investment	-0.0252 <i>0.452</i>	-0.0302 <i>0.354</i>		-0.0116 <i>0.715</i>	-0.0184 <i>0.587</i>		-0.0051 <i>0.880</i>	-0.0218 <i>0.531</i>	
Democratization	0.0047 <i>0.046</i>	0.0113 <i>0.000</i>	0.0053 <i>0.07</i>	0.0032 <i>0.26</i>	0.0088 <i>0.01</i>	-0.0001 <i>0.99</i>	0.0052 <i>0.03</i>	0.0100 <i>0.00</i>	0.0053 <i>0.08</i>
R-sq	0.13	0.18	0.16	0.10	0.14	0.17	0.07	0.13	0.16
Countries	57	57	112	53	53	112	61	61	103
Observations	1544	1544	4082	1264	1264	3193	1815	1815	3736

The dependent variable is the annual real per capita GDP growth. P-values based on heteroskedasticity-adjusted standard errors are reported in italics. Columns (1), (4) and (7) report OLS estimates. Columns (2), (5) and (8) report fixed-effects (within) estimates. Columns (3), (6) and (9) report fixed-effects (within) estimates, when we exclude countries with less than 20 years of observations, former socialist countries, but bring in the system non-reforming countries as control group. In columns (3), (6), and (9) we replace the time nuisance fixed parameters with a linear time trend. Columns (1), (2) and (3) exclude countries with a "borderline" episode and countries that experienced democratization after 1998 (where not enough post democratization observations are available). In columns (4), (5) and (6) a democratization is defined solely according to a permanent jump of Freedom House characterization. In columns (7), (8) and (9) a democratization is defined solely according to a permanent jump of the Polity 21-scaled democracy indicator. For more details on construction of the democratization dummy and the serial correlation see notes in Table 1.4.

Table 1.10 - Dynamic Growth Regressions With Non-Reformers As Control Group & Time Trends

	Average Effect		Regional Effects		Intensity of Reforms		High vs. Low Schooling	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag (1) Growth	0.1562 <i>0.000</i>	0.1828 <i>0.000</i>	0.1547 <i>0.000</i>	0.1804 <i>0.000</i>	0.1561 <i>0.000</i>	0.1827 <i>0.000</i>	0.1364 <i>0.001</i>	0.1561 <i>0.000</i>
Lag (2) Growth	-0.0534 <i>0.034</i>	-0.0305 <i>0.215</i>	-0.0543 <i>0.031</i>	-0.0320 <i>0.194</i>	-0.0535 <i>0.033</i>	-0.0306 <i>0.214</i>	-0.0143 <i>0.577</i>	0.0022 <i>0.932</i>
Lag (3) Growth	-0.0178 <i>0.400</i>	0.0000 <i>0.999</i>	-0.0193 <i>0.363</i>	-0.0019 <i>0.927</i>	-0.0178 <i>0.400</i>	-0.0003 <i>0.990</i>	-0.0136 <i>0.541</i>	-0.0005 <i>0.983</i>
Lag (4) Ln GDP Level	-0.0408 <i>0.000</i>		-0.0405 <i>0.000</i>		-0.0410 <i>0.000</i>		-0.0330 <i>0.000</i>	
Democratization	0.0060 <i>0.051</i>	0.0073 <i>0.022</i>						
Democratization - Other			0.0100 <i>0.028</i>	0.0115 <i>0.015</i>				
Democratization - Latin America			0.0073 <i>0.144</i>	0.0103 <i>0.043</i>				
Democratization - Europe			-0.0119 <i>0.099</i>	-0.0169 <i>0.025</i>				
Democratization - Full					0.0069 <i>0.054</i>	0.0053 <i>0.155</i>		
Democratization - Partial					0.0041 <i>0.410</i>	0.0116 <i>0.026</i>		
Democratization - HighSchooling							0.0103 <i>0.006</i>	0.0102 <i>0.009</i>
Democratization - LowSchooling							-0.0068 <i>0.123</i>	-0.0043 <i>0.368</i>
Trends	Regional	Reg. & Income						
R-sq	0.1727	0.1477	0.1731	0.1486	0.1725	0.1477	0.1765	0.1578
Countries	112	112	112	112	112	112	90	90
Observations	3969	3969	3969	3969	3969	3969	3181	3181

The dependent variable is the annual real per capita GDP growth. P-values based on heteroskedasticity-adjusted standard errors are reported in italics. Estimation is performed to all countries, so countries without democratization (either permanent democracies or permanent autocracies) serve as control group. Estimation is performed to countries where there are at least 20 years of observations. Former socialist republics and countries are excluded from the estimation. The democratization dummy takes on the value one in the year and all subsequent post democratization years. In columns (3)-(4) we allow the democratization dummy to differ between Latin America, EU15 and the other reform countries. In columns (5)-(6) we allow the democratization variable to differ depending on whether a country experienced a "full" or a "partial" democratization. In columns (7)-(8) we allow the democatization dummy to differ between reforming countries with above and below median value of avergae years of schooling. Models (1), (3), (5) and (7) include six regional and a high income time trend. Models (2), (4), (6), and (8) include six regional and four income-level trends.

Table 1.11 -- Alternative Estimation Techniques Without Dynamics

Estimation Method:	OLS		Random Effects		Fixed Effects		Arellano & Bond		Arellano & Bond System	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Initial Log GDP Level	-0.0002 <i>0.899</i>	-0.0035 <i>0.056</i>	-0.0038 <i>0.170</i>	-0.0104 <i>0.000</i>	-0.0323 <i>0.000</i>	-0.0405 <i>0.000</i>	-0.0731 <i>0.168</i>	-0.1211 <i>0.019</i>	-0.0477 <i>0.241</i>	-0.0373 <i>0.135</i>
Investment	0.0008 <i>0.000</i>	0.0004 <i>0.055</i>	0.0007 <i>0.000</i>	0.0000 <i>0.915</i>	0.0010 <i>0.000</i>	0.0002 <i>0.290</i>	-0.0018 <i>0.009</i>	-0.0019 <i>0.000</i>	0.0004 <i>0.605</i>	-0.0005 <i>0.421</i>
Population Growth	0.0140 <i>0.943</i>	0.0425 <i>0.794</i>	0.2300 <i>0.263</i>	0.0407 <i>0.808</i>	0.3214 <i>0.407</i>	-0.2350 <i>0.413</i>	1.8653 <i>0.001</i>	0.3758 <i>0.539</i>	1.6453 <i>0.019</i>	0.0999 <i>0.861</i>
Schooling	0.0011 <i>0.253</i>		0.0024 <i>0.080</i>		0.0047 <i>0.093</i>		-0.0042 <i>0.608</i>		0.0206 <i>0.060</i>	
Life Expectancy		0.0569 <i>0.000</i>		0.0899 <i>0.000</i>		0.0821 <i>0.003</i>		0.1794 <i>0.114</i>		0.2639 <i>0.021</i>
Government Consumption		-0.0011 <i>0.000</i>		-0.0009 <i>0.001</i>		-0.0006 <i>0.215</i>		0.0008 <i>0.342</i>		-0.0009 <i>0.394</i>
Trade		0.0001 <i>0.078</i>		0.0002 <i>0.001</i>		0.0004 <i>0.000</i>		0.0005 <i>0.012</i>		0.0005 <i>0.029</i>
Democratization	0.0066 <i>0.008</i>	0.0039 <i>0.095</i>	0.0070 <i>0.013</i>	0.0054 <i>0.041</i>	0.0101 <i>0.000</i>	0.0106 <i>0.000</i>	0.0223 <i>0.057</i>	0.0288 <i>0.005</i>	0.0215 <i>0.007</i>	0.0159 <i>0.053</i>
adj. R-squared	0.0481	0.0504			0.1009	0.1266				
Countries	45	67	45	67	45	67	45	67	45	67
Observations	1499	1867	1499	1867	1499	1867	1455	1797	1456	1801
Test of first-order serial correlation	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Test of second-order serial correlation							[0.067]	[0.023]	[0.043]	[0.021]
Over-identification test							[0.683]	[0.325]	[0.416]	[0.999]

The dependent variable is the annual real per capita GDP growth. P-values based on heteroskedasticity-adjusted standard errors are reported in italics. All control variables are one year lagged. Columns (1) and (2) report OLS estimates. Columns (3) and (4) report random-effects estimates. Columns (5) and (6) report fixed-effect (within) estimates. OLS, Fixed and Random Effect specifications also include a constant term (not reported). Columns (7) and (8) report the one-step GMM estimates based on the Arellano and Bond (1991) difference procedure. Columns (9) and (10) report system two-step GMM estimates based on the Arellano and Bover (1995) and Blundel and Bond (1998) procedure. Standard errors are corrected with the procedure suggested by Windmeijer (2004).

The table also reports a test of first and second-order (for the GMM methods) order residual serial correlation. P-values (in square brackets) of the significance are given. Under the null hypothesis there is no serial correlation. The table also reports a Hansen-Sargan test of over-identifying restrictions. Under the null of instrument validity it is distributed as chi-square. P-values of both tests are reported in square brackets. The democratization dummy takes the value of one in the year and all subsequent years of a permanent democratization transition. For details on our event identification methodology see Section 1.3. The Democratization Dataset Appendix A gives a more detailed description of the democratization events. For variable definitions and sources see the Data Appendix B.1

Table 1.12 -- Dynamic Panel GMM Techniques

	Arellano-Bond Difference		Arellano-Bond System		
	(1)	(2)	(3)	(4)	(5)
Lag (1) Growth	0.0772 <i>0.567</i>	0.1953 <i>0.078</i>	0.2729 <i>0.064</i>	0.2677 <i>0.000</i>	0.3286 <i>0.001</i>
Lag (2) Growth	-0.1882 <i>0.029</i>	-0.2347 <i>0.001</i>	-0.0192 <i>0.768</i>	-0.0556 <i>0.181</i>	-0.0968 <i>0.036</i>
Lag (3) Ln GDP level	-0.0968 <i>0.040</i>	-0.1164 <i>0.001</i>		-0.0093 <i>0.250</i>	-0.0077 <i>0.597</i>
Investment		-0.0005 <i>0.511</i>		0.0000 <i>0.957</i>	-0.0004 <i>0.541</i>
Population Growth		-0.2579 <i>0.769</i>		0.1286 <i>0.801</i>	-0.2435 <i>0.752</i>
Life Expectancy		0.2191 <i>0.139</i>		0.1457 <i>0.026</i>	0.2240 <i>0.080</i>
Government Consumption		-0.0003 <i>0.860</i>		-0.0014 <i>0.096</i>	-0.0020 <i>0.068</i>
Trade		0.0002 <i>0.584</i>		0.0003 <i>0.057</i>	0.0002 <i>0.649</i>
Democratization	0.0128 <i>0.092</i>	0.0176 <i>0.101</i>	0.0135 <i>0.216</i>	0.0081 <i>0.133</i>	0.0147 <i>0.044</i>
Countries	57	57	57	57	57
Observations	1567	1472	1624	1532	1532
Test of first order serial correlation	-3.77 [0.000]	-3.81 [0.000]	-2.66 [0.008]	-2.62 [0.010]	-4.38 [0.000]
Test of second order serial correlation	0.09 [0.928]	0.85 [0.393]	-0.46 [0.642]	-0.18 [0.855]	0.50 [0.615]
Test of Over-identification [p-value]	0.87 [1.000]	47.32 [1.000]	40.93 [0.302]	44.13 [1.000]	41.76 [1.000]
Procedure	onestep	twostep	twostep	onestep	twostep

The dependent variable is the annual real per capita GDP growth. P-values based on heteroskedasticity-adjusted standard errors are reported in italics. Columns (1) and (2) report GMM estimates based on the Arellano and Bond (1991) difference procedure. Columns (3), (4) and (5) report system GMM estimates based on the Arellano and Bover (1995) and Blundell and Bond (1998) procedure. All control variables are treated as endogenous and are being instrumented with further lag values. The last row states whether the one or the two step method is used. In the two-step estimates standard errors are corrected with the procedure suggested by Windmeijer (2004).

The table also reports a test of first and second-order order residual serial correlation. P-values (in square brackets) of the significance are given. Under the null hypothesis there is no serial correlation. The table also reports a Hansen-Sargan test of over-identifying restrictions. Under the null of instrument validity it is distributed as chi-square. P-values of both tests are reported in square brackets. The GMM system specifications also include a constant term (not reported). The democratization dummy takes the value of one in the year and all subsequent years of a permanent democratization transition. For details on our event identification methodology see Section 1.3. The Democratization Dataset Appendix A gives a more detailed description of the democratization events. For variable definitions and sources see the Data Appendix B.1.

Table 2.1 -- Country sample

Panel A: Base Sample				Panel B: New Independent States		Panel C: Always Democracies	
Full Democratizations (A1)	Partial Democratizations (A2)	Always Authoritarian (A3) (A4)		Full and Partial Democratizations (B1)	Always Authoritarian (B2)	(C)	
Argentina (1983)	Albania (1992)	Afghanistan ^{B/L}	Jordan ^{bord}	<u>Full Democratizations</u>	Armenia	Australia	Israel
Benin (1991)	Bangladesh (1991)	Algeria	Kenya		Azerbaijan	Austria	Italy
Bolivia (1982)	Comoros (1990)	Angola ^{n/a}	Kuwait ^{B/L}	Croatia (2000)	Belarus	Bahamas	Jamaica
Brazil (1985)	Djibouti (1999) ^{n/a}	Arab Emirates ^{n/a}	Lao ^{n/a}	Czech Rep. (1993)	Bosnia ^{n/a}	Belgium	Japan
Bulgaria (1990)	Ethiopia (1995)	Bahrain ^{B/L}	Lebanon	Estonia (1991)	Georgia	Belize	Luxembourg
Cape Verde (1991)	Ghana (1996)	Bhutan ^{n/a}	Liberia	Latvia (1991)	Kazakhstan	Botswana	Malta
Chile (1990)	Guatemala (1996)	Brunei ^{n/a}	Libya ^{n/a}	Lithuania (1991)	Kyrgyz Republic	Canada	Mauritius
Dom. Rep. (1978)	Haiti (1994)	Burkina Faso	Morocco	Slovak Rep. (1993)	Moldova	Colombia	Namibia
Ecuador (1979)	Indonesia (1999)	Burundi	Myanmar	Slovenia (1991)	Serbia-Montenegro	Costa Rica	Netherlands
El Salvador (1994)	Lesotho (1993)	Cambodia	Niger ^{bord}		Tajikistan	Cyprus	New Zealand
Greece (1975)	Madagascar (1993)	Cameroon	North Korea ^{n/a}	<u>Partial Democratizations</u>	" Turkmenistan ^{/a}	Denmark	Norway
Grenada (1983)	Mozambique (1994)	Centr. Africa ^{bord}	Oman ^{n/a}		Uzbekistan	Venezuela	Papua New Guinea
Guyana (1992)	Nepal (1991)	Congo, Dem. ^{B/L}	Pakistan ^{bord}	FYROM (1991)		Finland	Sri Lanka
Honduras (1982)	Nicaragua (1990)	Congo, Rep.	Qatar ^{n/a}	Russia (1993)		France	Sweden
Hungary (1990)	Nigeria (1999)	Cote d'Ivoire	Saudi Arabia ^{n/a}	Ukraine (1991)		Germany	Switzerland
Malawi (1994)	Paraguay (1993)	Cuba ^{B/L}	Sierra Leone ^{B/L}			Iceland	Trinidad & Tobago
Mali (1992)	Senegal (2000)	Egypt	Singapore			India	United Kingdom
Mexico (1997)	Suriname (1991) ^{n/a}	Equatorial Guinea	Somalia			Ireland	United States
Mongolia (1992) ^{n/a}	Tanzania (1995)	Eritrea ^{n/a}	Sudan ^{B/L}				
Panama (1994)	Turkey (1983)	Gabon	Togo				
Peru (1980)	Zambia (1991)	Gambia	Tonga ^{n/a}				
Philippines (1987)		Guinea-Bissau	Tunisia				
Poland (1990)		Iran ^{bord}	Uganda				
Portugal (1976)		Iraq ^{B/L}	Zimbabwe				
Romania (1990)			Vietnam				
Sao Tome (1991) ^{n/a}							
South Africa (1994)							
South Korea (1988)							
Spain (1978)							
Thailand (1992)							
Uruguay (1985)							

Panel A gives the base sample countries. Panel B reports the new independent states that followed the separation of Czechoslovakia, U.S.S.R., and Yugoslavia. For completeness Panel C reports the countries that are throughout the sample period stable democracies. Sample countries are categorized depending on whether they managed to permanently abandon autocratic ruling. There are three categories. Full democratizations are countries that permanently abandoned autocratic ruling and get an almost perfect score in civil rights and political liberties protection. Partial democratizations are countries that abandoned autocracy, but the level of civil rights protection is not perfect. Always authoritarian are those countries that are consistently throughout the sample period stable autocracies. For details on the sample and our democratization event identification methodology and for a brief description of the democratic transition see Appendix A. The year of democratic transition is given in parenthesis. ^{n/a} indicates that data is unavailable for both GDP and schooling. ^{B/L} indicates data unavailability for GDP, but availability on schooling statistics. ^{bord} indicates "borderline" democratization countries.

Table 2.2 -- Descriptive Analysis

The “modernization hypothesis” & Social Structure Theories

Panel A: By Income Level

Degree of Change in Democratic Institutions	Level of Economic Development (in 1975)				
	< 1,000 USD (19 count.)	< 2,000 USD (17 count.)	< 4,000 USD (20 count.)	< 6,000 USD (8 count.)	>6,000 USD (10 count.)
“Always Authoritarian”	Guinea-Bissau, Uganda, Burkina Faso, Burundi, Rwanda, China, Congo, Dem. Rep., Pakistan	Cameroon, Central African Republic, Chad, Congo, Rep., Egypt, Kenya, Mauritania, Sierra Leone, Togo	Algeria, Angola, Côte d'Ivoire, Equatorial Guinea, Guinea, Morocco, Syria, Tunisia, Zimbabwe	Iran,	Gabon, Singapore,
“Partial Democratic Transition”	Tanzania, Ethiopia, Nepal, Haiti, Bangladesh, Lesotho, Nigeria	Ghana, Indonesia, Madagascar, Mozambique, Senegal, Zambia	Comoros, Guatemala, Paraguay	Nicaragua, Turkey	
“Full Democratic Transition”	Malawi, Mali, São Tomé, Benin	Honduras, Cape Verde	Bolivia, Dominican Republic, Ecuador, Guyana, Korea, Philippines, Romania	Chile, Panama, El Salvador, Brazil, Peru,	Mexico, Uruguay, Hungary, Portugal, South Africa, Argentina, Greece, Spain

Panel B: By Schooling

Degree of Change in Democratic Institutions	Average Years of Schooling (in 1975)				
	< 1.5 years (14 count.)	< 2.5 years (15 count.)	< 3.5 years (14 count.)	< 5 years (16 count.)	>5 years (12 count.)
“Always Authoritarian”	United Arab Emirates, Sudan, Togo, Afghanistan, Myanmar, Uganda, Rwanda, Niger	Sierra Leone, Congo, Egypt, Liberia, Iraq, Algeria, Libya, Zimbabwe, Iran, Cameroon, Kenya, Tunisia, Pakistan	Syria, Bahrain, Kuwait	Jordan, Swaziland, China, Cuba	Singapore
“Partial” Democratic Transition”	Nepal, Mozambique, Haiti, Bangladesh	Guatemala, Senegal	Tanzania, Indonesia, Zambia, Nicaragua, Ghana, Turkey	Lesotho, Paraguay	Russia
“Full” Democratic Transition”	Mali, Benin		Malawi, Honduras, Portugal, El Salvador, Brazil	Dominican Republic, Mexico, Thailand, South Africa, Guyana, Ecuador, Peru, Bolivia, Spain	Panama, Chile, Philippines, Uruguay, Argentina, Korea, Bulgaria, Romania, Hungary, Poland

Table 2.2 (cont.)

The “modernization hypothesis” & Social Structure Theories (cont.)

Panel C: By Religious Fragmentation

Degree of Change in Democratic Institutions	Religious Heterogeneity				
	< 0.19 (25 count.)	< 0.35 (25 count.)	< 0.50 (25 count.)	< 0.65 (27 count.)	>0.65 (26 count.)
“Always Authoritarian”	Morocco, Algeria ^o , Tunisia, Mauritania, Libya ^o , Qatar ^o , Cambodia, Equatorial Guinea, Saudi Arabia ^o , Jordan, Iran ^o	Niger, Myanmar, Egypt, Uzbekistan, Turkmenistan ^o , Guinea, Afghanistan, United Arab Emirates ^o , Tajikistan	Bhutan, Eritrea, Syria, Oman ^o , Brunei ^o , Swaziland, Kyrgyz Republic, Armenia, Iraq ^o , Liberia, Korea, Dem., Azerbaijan, Pakistan	Cuba, Rwanda, Burundi, Sierra Leone, Laos, Bahrain ^o , Moldova, Burkina Faso, Kazakhstan, Belarus, Guinea-Bissau, Tonga, Angola, Uganda, Chad	Georgia, Singapore, Togo, Congo, Rep ^o ., China, Gabon ^o , Kuwait ^o , Bosnia and Herzegovina, Congo, Dem., Cameroon, Zimbabwe, Côte d'Ivoire, Kenya, Lebanon, Central African Republic
“Partial” Democratic Transition”	Turkey, Comoros, Djibouti, Nepal, Senegal	Bangladesh, Paraguay, Indonesia ^o	Guatemala, Nicaragua, Russian Federation, Haiti, Albania	Madagascar, FYROM, Ukraine, Ethiopia, Tanzania	Mozambique, Lesotho, Zambia, Nigeria ^o , Suriname, Ghana
“Full Democratic Transition”	Cape Verde, Mongolia, Thailand, Ecuador, Portugal, Greece	Poland, Mexico, Mali, São Tomé, Peru, Bolivia, Argentina, Honduras, Romania, Slovenia, Philippines, Dominican Republic, Panama	Uruguay, El Salvador, Chile, Pakistan, Lithuania, Croatia, Spain, Estonia	Hungary, Benin, Latvia, Slovakia, Grenada, Bulgaria, Brazil	Czech Republic, Korea, Rep, Guyana, Malawi, South Africa

“Always authoritarian” are those countries that remained non-democratic throughout the sample period (1960-2000). “Partial Democratic Transition” countries moved from a non-democratic regime to democracy, but democratic institutions have not reached the highest level. “Full Democratic Transition” countries managed to move out of an autocratic regime and have fully consolidated democratic institutions.

“Democratization” and “always authoritarian” countries are reported in Table 2.1. For the methodology in identifying “always authoritarian”, “partial democratic transition” and “full democratic transition countries” see Appendix A.

Depending on data availability, in Panel A countries are split into five groups based on their level of per capita GDP in 1975 (before the Third Wave of Democratization began). GDP data come from the World Bank. In Panel B, the countries are split in five groups based on the schooling level in 1975. Educational attainment statistics come from Barro and Lee (2001). In Panel C countries are split based on the level of religious fragmentation. Fragmentation data are retrieved from Alesina *et al.* (2003). ^o indicates an oil exporting country (classification follows World Bank's World Economic Outlook or OPEC membership). For detailed variable definitions and sources see Appendix B.2.

Table 2.3 -- Descriptive statistics and tests of means

Variables	<i>Always Authoritarian</i>	<i>All Democratization</i>	<i>Full Democratization</i>	<i>Early Democratization</i>
GDP	2257.5 (1838.8)	3375.08** (2761.89)	4427.5** (3008.2)	5553.55** (3095.32)
Urbanization	0.341 (0.334)	0.3785 (0.202)	0.45** (0.194)	0.506** (0.175)
Radios	127.62 (102.48)	177.11* (158.72)	238.88*** (169.38)	284.25*** (208.10)
Schooling	2.26 (1.29)	3.88*** (2.06)	4.648*** (2.03)	4.534*** (1.40)
Literacy rate	0.5875 (0.2255)	0.725* (0.254)	0.831*** (0.2205)	0.893*** (0.897)
Ethnic Fragmentation	0.556 (0.26)	0.457* (0.26)	0.409*** (0.23)	0.344*** (0.22)
Religious Fragmentation	0.437 (41.96)	0.385 (0.248)	0.355 (0.229)	0.306** (0.19)
Muslim share	0.466 (41.96)	0.189*** (32.6)	0.052*** (16.4)	0.072*** (25.6)
Confucian share	0.076 (0.226)	0.042 (0.182)	0.069 (0.24)	0.016* (0.062)
Trade/GDP	0.648 (0.513)	0.512 (0.283)	0.551 (0.288)	0.432** (0.20)
Trade openness	0.056 (0.233)	0.128 (0.337)	0.167 (0.379)	0.266 (0.457)
Independence	0.157 (0.212)	0.411*** (0.348)	0.477*** (0.33)	0.611*** (0.30)
Settler mortality	251.32 (186.27)	301.28 (655.22)	276.65 (767.23)	72.01*** (2.68)
European Lang. Share	0.024 (0.131)	0.299*** (0.40)	0.457*** (0.428)	0.595*** (0.409)
Gini coefficient (around 1975)	0.4126 (0.1015)	0.4421 (0.1178)	0.4417 (0.1254)	0.46 (0.996)

Table 2.3 reports summary statistics of the main variables employed in the regression analysis. All variables values correspond to year 1975 (before the Third Wave of democratization began). Mean values and standard deviations are reported in parenthesis. Column (1) gives the mean and standard deviation in the "always autocratic" sub-sample (i.e. countries that remained throughout the sample autocratic). Column (2) gives descriptive statistics in the democratization event countries. Column (3) gives the mean and standard deviation in countries that experienced a full consolidation of democratic institutions ("Full Democratizations"). Column (4) gives the mean and standard deviation of countries that democratized before 1990 ("Early Democratizations"). *, **, *** indicate that mean values between the always autocratic countries and each democratization group are statistically different from each other at the 10%, 5%, and 1% level respectively (assuming unequal variances). For the country classification, see Table 2.1. For details on the democratization event identification methodology and a brief description of the democratic transition see Appendix A. For detailed variable definitions and sources see Appendix B.2.

Table 2.4 -- The modernization hypothesis

	All Democr.	Full only	In. Borderline	Excluding new independent countries						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ln GDP	0.151 <i>0.000</i>	0.138 <i>0.000</i>	0.152 <i>0.000</i>	0.129 <i>0.000</i>		0.077 <i>0.034</i>	0.048 <i>0.017</i>	0.066 <i>0.009</i>		0.188 <i>0.038</i>
Schooling					0.053 <i>0.000</i>					0.046 <i>0.041</i>
Literacy						0.003 <i>0.097</i>				
Urbanization							0.018 <i>0.230</i>			-0.041 <i>0.219</i>
Ln Radios								0.055 <i>0.024</i>		0.004 <i>0.938</i>
GDP Ratio									0.004 <i>0.000</i>	
Controls	No	No	No	No	No	Trend	Trend	Trend	No	Initial Values
Observed Probability	0.191	0.140	0.201	0.175	0.162	0.239	0.177	0.199	0.180	0.307
Predicted Probability	0.162	0.087	0.174	0.151	0.127	0.121	0.042	0.087	0.169	0.293
Wald test	42.62 [<i>0.00</i>]	40.60 [<i>0.00</i>]	44.39 [<i>0.00</i>]	31.71 [<i>0.00</i>]	50.94 [<i>0.00</i>]	146.78 [<i>0.00</i>]	164.90 [<i>0.00</i>]	120.78 [<i>0.00</i>]	6.81 [<i>0.00</i>]	19.17 [<i>0.00</i>]
Pseudo R-squared	0.12	0.22	0.11	0.10	0.15	0.35	0.41	0.34	0.02	0.08
Observations	3321	3321	3321	3167	2788	2048	3129	2267	3190	1430
Countries	115	115	115	95	72	78	94	95	95	55

Pooled cross-section probit estimates with annual data (1960-2000). The estimated regression is of the form $Democ=F(X;B)$. The dependent variable takes on the value one in the year and all subsequent years following a permanent democratic transition. Estimation is performed with maximum likelihood. Probit slope derivatives (marginal effects) are reported. P-values based on heteroskedasticity-adjusted standard errors clustered by country are reported in italics. All specifications include a constant term (marginal effect not reported). The table also reports: i) Mc-Fadden's pseudo R-squared; ii) A Wald chi-square test of the joint significance of estimated coefficients with p-value given in italics; iii) the observed probability of a permanent democratization and iv) the predicted probability estimated at the mean of the independent variables. Democratization events are reported in Table 2.1. A detailed chronology is given in Appendix A. Estimation is performed in all countries that were non-democratic in the beginning of the sample (1960). For detailed variable definitions and sources see Appendix B.2.

The specifications in columns (6)–(8) include a linear time trend (marginal effect always significantly positive, not reported). In column (10) all independent variables correspond to 1975 values (before the first democratization episode). In column (1) we perform the estimation in the “full” sample (62 democratization countries and 53 always authoritarian nations). In column (2) the dependent variable equals one in the year and all subsequent years of full democratization events only (38 countries given in Table 2.1, Panel A). In column (3), “borderline” episodes are also considered as permanent democratizations (Table 2.1; Panel C). In columns (4)–(10) newly independent countries (Table 2.1; Panel E) are excluded from the estimation.

Table 2.5 -- Social Structure, Economic Freedom & Income

	Religion		Fractionalization				Trade			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ln GDP	0.116 <i>0.000</i>	0.048 <i>0.000</i>	0.031 <i>0.002</i>	0.039 <i>0.002</i>	0.013 <i>0.032</i>	0.014 <i>0.006</i>	0.045 <i>0.000</i>	0.027 <i>0.000</i>	0.027 <i>0.006</i>	0.028 <i>0.003</i>
Muslim	-0.152 <i>0.010</i>	-0.088 <i>0.006</i>	-0.134 <i>0.000</i>	-0.108 <i>0.002</i>	-0.075 <i>0.000</i>	-0.055 <i>0.000</i>	-0.116 <i>0.007</i>	-0.051 <i>0.004</i>	-0.130 <i>0.000</i>	-0.101 <i>0.000</i>
Confucian	-0.002 <i>0.269</i>	-0.001 <i>0.078</i>	-0.001 <i>0.003</i>	-0.106 <i>0.134</i>	-0.061 <i>0.010</i>	-0.052 <i>0.004</i>	-0.143 <i>0.030</i>	-0.044 <i>0.055</i>	-0.125 <i>0.000</i>	-0.088 <i>0.011</i>
Oil		-0.051 <i>0.001</i>				-0.018 <i>0.003</i>		-0.026 <i>0.001</i>		-0.037 <i>0.006</i>
Religious Fragmentation			-0.149 <i>0.000</i>		-0.079 <i>0.001</i>	-0.060 <i>0.001</i>			-0.127 <i>0.001</i>	-0.104 <i>0.004</i>
Ethnic Fragmentation				-0.090 <i>0.036</i>	-0.024 <i>0.251</i>	-0.008 <i>0.627</i>				-0.018 <i>0.567</i>
Trade Openness							0.045 <i>0.075</i>		0.040 <i>0.050</i>	
Trade/GDP								-0.018 <i>0.067</i>		-0.015 <i>0.401</i>
Additional Controls	No	Decade dum.	Decade dum.	Decade dum.	Trend	Trend	Trend	Trend	Trend	Decade dum.
Observed Probability	0.175	0.175	0.174	0.174	0.174	0.174	0.217	0.175	0.217	0.174
Predicted Probability	0.145	0.019	0.035	0.043	0.016	0.012	0.041	0.017	0.031	0.028
Wald test	42.51 [<i>0.00</i>]	248.40 [<i>0.00</i>]	233.21 [<i>0.00</i>]	253.56 [<i>0.00</i>]	193.54 [<i>0.00</i>]	188.14 [<i>0.00</i>]	207.63 [<i>0.00</i>]	199.12 [<i>0.00</i>]	176.44 [<i>0.00</i>]	243.14 [<i>0.00</i>]
Pseudo R-squared	0.13	0.47	0.48	0.45	0.52	0.54	0.52	0.51	0.55	0.51
Observations	3166	3166	3166	3144	3144	3144	2437	3166	2441	3144
Countries	94	94	94	93	93	93	75	94	75	93

Pooled cross-section probit estimates with annual data (1960-2000). Estimation is performed in all countries that were non-democratic in the beginning of the sample (1960). Newly independent countries (Table 2.1; Panel E) are excluded from the estimation. The estimated regression is of the form $Democ = F(X; B)$. The dependent variable takes on the value one in the year and all subsequent years following a permanent democratic transition. Estimation is performed with maximum likelihood. Probit slope derivatives (marginal effects) are reported. P-values based on heteroskedasticity-adjusted standard errors clustered by country are reported in italics. All specifications include a constant term (marginal effect not reported). The table also reports: i) Mc-Fadden's pseudo R-squared; ii) A Wald chi-square test of the joint significance of estimated coefficients with p-value given in italics; iii) the observed probability of a permanent democratization and iv) the predicted probability estimated at the mean of the independent variables. Democratization events are reported in Table 2.1. A detailed chronology is given in Appendix A. Estimation is performed in all countries that were non-democratic in the beginning of the sample (1960). For detailed variable definitions and sources see Appendix B.2. Columns (5) - (9) include a linear time trend and columns (2), (3), (4) and (10) include decade dummies (marginal effects not reported).

Table 2.6 -- Endowment, Institutions & Income

	Endowments	European Heritage		Legal Origin		Settler Mortality			History	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ln GDP	0.045 <i>0.001</i>	0.078 <i>0.012</i>	0.086 <i>0.003</i>	0.050 <i>0.000</i>	0.022 <i>0.001</i>	0.017 <i>0.036</i>	0.010 <i>0.025</i>	0.0027 <i>0.066</i>	0.084 <i>0.000</i>	0.016 <i>0.001</i>
Latitude	0.001 <i>0.421</i>	0.002 <i>0.122</i>	0.029 <i>0.188</i>		0.001 <i>0.216</i>					
European Heritage		0.159 <i>0.001</i>	0.065 <i>0.044</i>							0.023 <i>0.219</i>
Muslim			-0.113 <i>0.048</i>		-0.059 <i>0.002</i>		-0.036 <i>0.002</i>	-0.0002 <i>0.000</i>	-0.054 <i>0.388</i>	-0.023 <i>0.218</i>
Confucian			-0.097 <i>0.377</i>		-0.054 <i>0.099</i>		-0.228 <i>0.083</i>	-0.0007 <i>0.000</i>	-0.160 <i>0.019</i>	-0.050 <i>0.283</i>
Oil			-0.148 <i>0.003</i>							-0.024 <i>0.002</i>
Common Law				-0.006 <i>0.801</i>	-0.004 <i>0.755</i>					0.010 <i>0.426</i>
Ln Settler Mortality						-0.009 <i>0.217</i>	-0.004 <i>0.410</i>	-0.0042 <i>0.014</i>		
Independence									0.204 <i>0.000</i>	0.052 <i>0.001</i>
Additional Controls	Trend	No	No	Trend	Trend	Trend	Decade	Trend	No	Trend
Observed Probability	0.175	0.175	0.175	0.175	0.175	0.131	0.131	0.139	0.182	0.182
Predicted Probability	0.041	0.146	0.143	0.040	0.019	0.017	0.009	0.003	0.134	0.016
Wald test	165.87 [0.00]	63.42 [0.00]	74.51 [0.00]	169.31 [0.00]	200.95 [0.00]	88.85 [0.00]	165.78 [0.00]	138.35	70.08 [0.00]	175.65 [0.00]
Pseudo R-squared	0.41	0.13	0.16	0.41	0.50	0.41	0.47	0.58	0.18	0.53
Observations	3167	3167	3166	3167	3166	1938	1937	1855	3035	3035
Countries	94	94	94	94	94	49	49	46	94	94

Pooled cross-section probit estimates with annual data (1960-2000). Estimation is performed in all countries that were non-democratic in the beginning of the sample. Newly independent countries (Table 2.1; Panel E) are excluded from the estimation. The estimated regression is of the form $Democ=F(X:B)$. The dependent variable takes on the value one in the year and all subsequent years following a permanent democratic transition. Estimation is performed with maximum likelihood. Probit slope derivatives (marginal effects) are reported. P-values based on heteroskedasticity-adjusted standard errors clustered by country are reported in italics. All specifications include a constant term. The table also reports: i) Mc-Fadden's pseudo R-squared; ii) A Wald chi-square test of the joint significance of estimated coefficients with p-value given in italics; iii) the observed probability of a permanent democratization and iv) the predicted probability estimated at the mean of the independent variables. Democratization events are reported in Table 2.1. A detailed chronology is given in Appendix A. In column (8) we exclude from the estimation Mali and Nigeria. For detailed variable definitions and sources see Appendix B.2. Columns (1), (4), (5), (6), (8) and (10) include a linear time trend and column (7) decade dummies (marginal effects not reported).

Table 2.7 -- Income, Social Structure, Economic Freedom, Institutions & Democratic Transitions

	Modernization hypothesis		Social Structure			Initial Conditions, History, Institutions				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ln GDP	0.009 <i>0.000</i>		0.003 <i>0.001</i>	0.003 <i>0.020</i>	0.002 <i>0.046</i>	0.002 <i>0.034</i>	0.004 <i>0.096</i>	0.005 <i>0.071</i>	0.001 <i>0.596</i>	0.006 <i>0.021</i>
Schooling		0.005 <i>0.000</i>								
Muslim			-0.009 <i>0.003</i>	-0.009 <i>0.004</i>	-0.011 <i>0.000</i>	-0.006 <i>0.041</i>	-0.005 <i>0.487</i>	-0.007 <i>0.289</i>	0.004 <i>0.598</i>	-0.004 <i>0.572</i>
Confucian			-0.009 <i>0.250</i>	-0.009 <i>0.275</i>	-0.009 <i>0.070</i>	-0.009 <i>0.080</i>	-0.013 <i>0.150</i>	-0.014 <i>0.088</i>	-0.036 <i>0.222</i>	-0.023 <i>0.014</i>
Oil			-0.005 <i>0.000</i>	-0.005 <i>0.074</i>	-0.004 <i>0.075</i>	-0.005 <i>0.053</i>	-0.012 <i>0.197</i>	-0.013 <i>0.167</i>	-0.001 <i>0.877</i>	-0.013 <i>0.124</i>
Ethnic Fragmentation				-0.005 <i>0.162</i>			-0.006 <i>0.502</i>			
Religious Fragmentation					-0.010 <i>0.004</i>		0.001 <i>0.946</i>			
Independence						0.009 <i>0.001</i>	0.020 <i>0.002</i>	0.021 <i>0.001</i>	0.036 <i>0.001</i>	0.024 <i>0.000</i>
European Heritage								-0.001 <i>0.847</i>		
Ln Settler Mortality									0.003 <i>0.308</i>	
Common Law										0.013 <i>0.032</i>
Additional Controls	No	No	Trend	Trend	Trend	Trend	No	No	No	No
Observed Probability	0.018	0.017	0.018	0.018	0.018	0.019	0.019	0.019	0.016	0.019
Predicted Probability	0.017	0.013	0.005	0.004	0.004	0.004	0.015	0.015	0.011	0.015
Wald test	10.69 [0.00]	41.76 [0.00]	97.45 [0.00]	91.48 [0.00]	103.69 [0.00]	98.93 [0.00]	47.47 [0.00]	48.28 [0.00]	68.73 [0.00]	50.36 [0.00]
Pseudo R-squared	0.02	0.06	0.19	0.19	0.21	0.20	0.05	0.05	0.08	0.06
Observations	2662	2377	2661	2644	2661	2530	2513	2530	1660	2530
Countries	93	72	93	91	93	92	91	92	48	92

Pooled cross-section probit estimates with annual data (1960-2000). Estimation is performed in all countries that were non-democratic in the beginning of the sample (1960). Newly independent countries (Table 2.1; Panel E) are excluded from the estimation. The estimated regression is of the form $Democ=F(X;B)$. The dependent variable takes on the value one only in the year the democratic transition. Estimation is performed with maximum likelihood. Probit slope derivatives (marginal effects) are reported. P-values based on heteroskedasticity-adjusted standard errors clustered by country are reported in italics. All specifications include a constant term (marginal effect not reported). Estimation is performed in all countries that were non-democratic in the beginning of the sample.

Table 2.8 -- Additional Factors Influencing the Democratic Transition

	Liberal Hypothesis			Economic Growth & Crisis				Collective Action		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ln GDP	0.001 <i>0.647</i>	0.002 <i>0.077</i>	0.011 <i>0.024</i>	0.006 <i>0.004</i>	0.001 <i>0.762</i>	0.003 <i>0.338</i>	0.012 <i>0.015</i>	0.007 <i>0.021</i>	0.003 <i>0.344</i>	0.006 <i>0.091</i>
Independence	0.018 <i>0.016</i>	0.010 <i>0.001</i>	0.018 <i>0.158</i>	0.026 <i>0.020</i>	0.025 <i>0.000</i>	0.027 <i>0.000</i>	0.023 <i>0.038</i>	0.023 <i>0.001</i>	0.023 <i>0.001</i>	0.022 <i>0.005</i>
Trade Openness	0.042 <i>0.000</i>									
Trade/GDP		0.001 <i>0.66</i>								
Trade Liberalization (t to t-3)			0.055 <i>0.000</i>				0.042 <i>0.005</i>	0.037 <i>0.018</i>	0.040 <i>0.016</i>	0.037 <i>0.019</i>
Growth (average t to t-3)				-0.111 <i>0.020</i>			-0.193 <i>0.005</i>	-0.153 <i>0.004</i>		-0.154 <i>0.003</i>
Currency Crisis (t to t-3)					0.021 <i>0.002</i>				0.015 <i>0.061</i>	
Banking Crisis						0.035 <i>0.001</i>			0.029 <i>0.016</i>	
Armed Conflict Ending (t to t-3)								0.026 <i>0.010</i>	0.022 <i>0.026</i>	0.025 <i>0.011</i>
Additional Controls	Religion	Religion/Trend/Oil	Religion	No	No	No	Religion	Religion	Religion	Soc. Structure
Observed Probability	0.02	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.02
Predicted Probability	0.02	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Wald test	46.92 [0.00]	98.45 [0.00]	26.72 [0.00]	30.48 [0.00]	42.73 [0.00]	26.78 [0.00]	26.39 [0.00]	53.3 [0.00]	45.98 [0.00]	56.56 [0.00]
Pseudo R-squared	0.09	0.20	0.06	0.05	0.05	0.06	0.07	0.10	0.08	0.10
Observations	1851	2530	1851	2393	2280	2280	1765	1719	1684	1719
Countries	73	92	73	82	81	81	63	61	65	61

Pooled cross-section probit estimates with annual data (1960-2000). Estimation is performed in all countries that were non-democratic in the beginning of the sample (1960). Newly independent countries (Table 2.1; Panel E) are excluded from the estimation. The estimated regression is of the form $Democ=F(X;B)$. The dependent variable takes on the value one only in the year the democratic transition. Estimation is performed with maximum likelihood. Probit slope derivatives (marginal effects) are reported. P-values based on heteroskedasticity-adjusted standard errors clustered by country are reported in italics. All specifications include a constant term. The table also reports: i) Mc-Fadden's pseudo R-squared; ii) A Wald chi-square test of the joint significance of estimated coefficients with p-values given in italics; iii) the observed probability of a permanent democratization and iv) the predicted probability estimated at the mean of the independent variables. Democratization events are reported in Table 2.1. A detailed chronology is given in Appendix A.

Estimation is performed in all countries that were non-democratic in the beginning of the sample (1960). For detailed variable definitions and sources see Appendix B.2. Columns (1) - (3) and (7) - (9) include religious controls (marginal effects not reported). Column (2) includes an oil dummy and Column (10) include social structure controls (marginal effects not reported).

Table 2.9 -- Democratization Theories & Post-Communism Independence Wave

	Modernization		Social Structure				Trade		Endowments	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ln GDP in 1989	1.132		0.658	0.589	0.723	0.687	2.703		1.801	1.822
	<i>0.023</i>		<i>0.400</i>	<i>0.400</i>	<i>0.342</i>	<i>0.376</i>	<i>0.001</i>		<i>0.013</i>	<i>0.012</i>
Fertility in 1990		-1.554						-5.028		
		<i>0.007</i>						<i>0.001</i>		
Muslim			-0.008	-0.009	-0.008	-0.115				
			<i>0.113</i>	<i>0.123</i>	<i>0.130</i>	<i>0.136</i>				
Religious Fragmentation				-0.778		-1.382				
				<i>0.509</i>		<i>0.339</i>				
Ethnic Fragmentation					0.367	0.893				
					<i>0.680</i>	<i>0.461</i>				
Trade/GDP							-0.008	-0.003		
							<i>0.154</i>	<i>0.473</i>		
European Heritage									-6.692	-8.152
									<i>0.075</i>	<i>0.093</i>
Gini (earliest value)							-0.158	-1.830	-0.110	-0.357
							<i>0.024</i>	<i>0.046</i>	<i>0.133</i>	<i>0.729</i>
Gini Squared								0.035		0.005
								<i>0.067</i>		<i>0.816</i>
Observed Probability	0.50	0.48	0.50	0.50	0.50	0.50	0.56	0.56	0.56	0.56
Predicted Probability	0.49	0.35	0.44	0.45	0.43	0.46	0.52	0.34	0.46	0.50
Wald test	5.18 [0.02]	7.22 [0.01]	11.54 [0.01]	14.10 [0.00]	10.72 [0.01]	11.48 [0.02]	13.49 [0.01]	26.68 [0.00]	7.40 [0.06]	8.52 [0.07]
Pseudo R-squared	0.33	0.37	0.38	0.40	0.39	0.41	0.72	0.78	0.65	0.66
Observations	20	21	20	20	20	20	16	16	16	16
Countries	20	21	20	20	20	20	16	16	16	16

Cross-country probit estimates. Estimation is performed in newly independent countries that emerged after the collapse of Czechoslovakia, the U.S.S.R. and Yugoslavia (Table 2.1; Panel E). The estimated regression is of the form $Democ = F(X;B)$. The dependent variable takes on the value one if a new independent country (former Republic) became democratic and zero if the country has remained autocratic. Estimation is performed with maximum likelihood. Probit slope derivatives (marginal effects) are reported. P-values based on heteroskedasticity-adjusted standard errors are reported in italics. All specifications include a constant term, which is not reported. The table also reports: i) Mc-Fadden's pseudo R-squared; ii) A Wald chi-square test of the joint significance of estimated coefficients with p-value given in italics; iii) the observed probability of a permanent democratization and iv) the predicted probability estimated at the mean of the independent variables. Democratization events are reported in Table 2.1. A detailed chronology is given in Appendix A.

Table 2.10 – Democratization Theories & The Fall of the Berlin Wall

	Modernization Hypothesis			Social Structure Theories			Endowments, Trade Openess & Growth			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ln GDP in 1989	0.328 <i>0.054</i>			-0.183 <i>0.217</i>	0.395 <i>0.023</i>	0.382 <i>0.070</i>	0.765 <i>0.000</i>	0.744 <i>0.000</i>	0.646 <i>0.006</i>	0.631 <i>0.013</i>
Fertility in 1990		-0.320 <i>0.030</i>								
Industrialization in 1990			2.554 <i>0.024</i>							
Muslim				-0.667 <i>0.001</i>						
Confucian				-11.501 <i>0.017</i>						
Religious Fragmentation					-0.784 <i>0.264</i>				-0.988 <i>0.040</i>	-2.252 <i>0.027</i>
Ethnic Fragmentation					-0.509 <i>0.427</i>				0.211 <i>0.635</i>	-0.156 <i>0.836</i>
"Rich" Natural Resources						-0.457 <i>0.077</i>				
"Moderately Rich" Resources						0.030 <i>0.915</i>				
Central Planning (years in)							-0.018 <i>0.018</i>	-0.009 <i>0.275</i>	-0.011 <i>0.165</i>	-0.018 <i>0.059</i>
Independence							13.103 <i>0.046</i>	18.672 <i>0.002</i>	14.363 <i>0.003</i>	
Natural Trade Openess								0.639 <i>0.033</i>	0.360 <i>0.002</i>	0.740 <i>0.016</i>
Mean Growth (1985-89)										-0.098 <i>0.034</i>
Observed Probability	0.57	0.53	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
Predicted Probability	0.58	0.52	0.58	0.11	0.58	0.58	0.67	0.71	0.90	0.79
Wald test	3.72 [0.05]	4.70 [0.03]	5.07 [0.02]	17.42 [0.00]	6.31 [0.02]	7.98 [0.05]	18.05 [0.00]	36.97 [0.00]	18.05 [0.00]	19.87 [0.00]
Pseudo R-squared	0.11	0.18	0.13	0.35	0.17	0.18	0.41	0.56	0.64	0.60
Countries	28	30	28	28	28	28	28	28	28	28

Cross-country probit estimates. Estimation is performed in newly independent countries that emerged after the collapse of Czechoslovakia, the U.S.S.R. and Yugoslavia (Table I; Panel E) and eight formerly centrally planned economies that were affected by the collapse of Soviet Union. The dependent variable takes on the value one if a new independent country or a centrally planned economy became democratic in the nineties and zero if the country has remained autocratic. Estimation is performed with maximum likelihood. Probit slope derivatives (marginal effects) are reported. P-values based on heteroskedasticity-adjusted standard errors are reported in italics. For more details on the regression diagnostics, see previous Table notes. Democratization events are reported in Table I. A detailed chronology is given in Appendix A. All variables are retrieved from de Melo et al. (2001).

Table 2.11 -- Political Economy - Inequality

	Transition & Consolidation						Transition				
	(1)	(2)	(3)	(4)	(5)	Full only		(8)	(9)	Full only	
						(6)	(7)			(10)	
Ln GDP	0.152 <i>0.00</i>	0.110 <i>0.00</i>					0.096 <i>0.00</i>		0.010 <i>0.07</i>	0.001 <i>0.85</i>	
Schooling			0.091 <i>0.00</i>	0.077 <i>0.00</i>	0.078 <i>0.00</i>			0.072 <i>0.00</i>			0.003 <i>0.00</i>
Gini	0.001 <i>0.79</i>	-0.002 <i>0.49</i>	0.008 <i>0.04</i>	0.005 <i>0.21</i>	0.027 <i>0.23</i>		0.019 <i>0.09</i>	0.025 <i>0.11</i>	0.000 <i>0.77</i>	-0.002 <i>0.42</i>	0.000 <i>0.02</i>
Gini squared					0.000 <i>0.31</i>		0.000 <i>0.09</i>	0.000 <i>0.19</i>		0.000 <i>0.50</i>	
Muslim		-0.353 <i>0.00</i>		-0.045 <i>0.76</i>	-0.073 <i>0.61</i>		-0.299 <i>0.00</i>	-0.110 <i>0.36</i>		-0.029 <i>0.04</i>	-0.009 <i>0.01</i>
Confucian		-0.315 <i>0.08</i>		-0.371 <i>0.00</i>	-0.411 <i>0.00</i>		-0.171 <i>0.12</i>	-0.233 <i>0.00</i>		-0.031 <i>0.03</i>	-0.003 <i>0.20</i>
Independence				0.383 <i>0.00</i>	0.361 <i>0.01</i>			0.321 <i>0.00</i>		0.033 <i>0.03</i>	0.008 <i>0.04</i>
Controls	Trend	Trend	No	No	No		Trend	No	Trend	No	No
Observed Probability	0.30	0.30	0.29	0.30	0.30		0.23	0.24	0.03	0.03	0.02
Predicted Probability	0.19	0.14	0.25	0.24	0.24		0.06	0.12	0.02	0.02	0.00
Wald test	101.05 [<i>0.00</i>]	129.27 [<i>0.00</i>]	31.17 [<i>0.00</i>]	36.74 [<i>0.00</i>]	35.99 [<i>0.00</i>]		77.52 [<i>0.00</i>]	26.26 [<i>0.00</i>]	27.56 [<i>0.00</i>]	34.92 [<i>0.00</i>]	41.43 [<i>0.00</i>]
Pseudo R-squared	0.31	0.41	0.16	0.22	0.23		0.45	0.35	0.08	0.06	0.21
Observations	1570	1570	1421	1377	1377		1570	1377	1139	1127	1067
Countries	71	71	54	53	53		71	53	63	62	49

Pooled cross-section probit estimates with annual data (1960-2000). Estimation is performed in all countries that were non-democratic in the beginning of the sample (1960). Newly independent countries (Table 2.1; Panel E) are excluded from the estimation. The estimated regression is of the form $Democ = F(X;B)$. The dependent variable takes on the value one only in the year the democratic transition. Estimation is performed with maximum likelihood. Probit slope derivatives (marginal effects) are reported. P-values based on heteroskedasticity-adjusted standard errors clustered by country are reported in italics. All specifications include a constant term (marginal effect not reported). The specifications reported in columns (1), (2), (6) and (8) also include a linear time trend. Estimation is performed in all countries that were non-democratic in the beginning of the sample.

The table also reports: i) McFadden's pseudo R-squared; ii) A Wald chi-square test of the joint significance of estimated coefficients with p-value given in italics; iii) the observed probability of a permanent democratization and iv) the predicted probability estimated at the mean of the independent variables. Democratization events are reported in Table 2.1. A detailed chronology is given in Appendix A.

Table 2.12 -- Alternative Indicators (Polity IV and Freedom House)

	Transition & Consolidation					Transition				
	Polity IV (1960-2000)			Freedom House (1973-2000)		Polity IV (1960-2000)			Freedom House (1973-2000)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ln GDP	0.070 <i>0.000</i>	0.066 <i>0.019</i>	0.072 <i>0.001</i>	0.072 <i>0.000</i>	0.032 <i>0.012</i>	0.002 <i>0.480</i>	0.004 <i>0.154</i>	-0.002 <i>0.656</i>	0.002 <i>0.677</i>	-0.005 <i>0.449</i>
Independence	0.316 <i>0.000</i>	0.265 <i>0.000</i>	0.312 <i>0.000</i>	0.189 <i>0.000</i>	0.114 <i>0.000</i>	0.033 <i>0.002</i>	0.029 <i>0.000</i>	0.024 <i>0.000</i>	0.019 <i>0.044</i>	0.007 <i>0.548</i>
Muslim	0.081 <i>0.191</i>		0.001 <i>0.330</i>	-0.200 <i>0.000</i>	-0.207 <i>0.000</i>				-0.017 <i>0.049</i>	-0.018 <i>0.116</i>
Confucian	-0.182 <i>0.000</i>		-0.002 <i>0.008</i>	-0.422 <i>0.000</i>	-0.312 <i>0.000</i>				-0.043 <i>0.034</i>	-0.024 <i>0.239</i>
Oil	-0.133 <i>0.000</i>	-0.124 <i>0.049</i>	-0.136 <i>0.055</i>	-0.117 <i>0.000</i>	-0.097 <i>0.000</i>				-0.006 <i>0.587</i>	-0.002 <i>0.000</i>
Religious Fragmentation		-0.080 <i>0.380</i>	-0.020 <i>0.857</i>	-0.177 <i>0.000</i>	-0.185 <i>0.000</i>					
Ethnic Fragmentation		0.031 <i>0.727</i>	0.028 <i>0.758</i>	0.076 <i>0.029</i>	0.134 <i>0.020</i>					0.010 <i>0.522</i>
Latitude					0.004 <i>0.000</i>					0.001 <i>0.11</i>
European Heritage					0.131 <i>0.000</i>					0.020 <i>0.135</i>
Trade Liberalization (t to t-3)						0.028 <i>0.092</i>				
Growth (average t to t-3)							-0.208 <i>0.000</i>			
Crisis (t to t-3)								0.028 <i>0.000</i>	0.026 <i>0.002</i>	0.028 <i>0.001</i>
Other	No	No	No	Trend/Non-clustered S.E.		No	No	No	Trend/Non-clustered S.E.	
Observed Probability	0.20	0.21	0.21	0.25	0.25	0.02	0.02	0.02	0.03	0.03
Predicted Probability	0.17	0.18	0.17	0.13	0.13	0.02	0.02	0.02	0.02	0.02
Wald test	66.86 [0.00]	64.21 [0.00]	66.00 [0.00]	622.73 [0.00]	654.95 [0.00]	42.31 [0.00]	51.92 [0.00]	44.41 [0.00]	71.23 [0.00]	23.14 [0.00]
Pseudo R-squared	0.13	0.13	0.13	0.39	0.40	0.04	0.05	0.07	0.12	0.13
Observations	3035	3013	3013	2251	2251	1832	2333	2188	1572	1572
Countries	94	93	93	93	93	72	82	80	82	82

Table 2.13 -- Ordered Analysis (Polity IV and Freedom House)

	Polity IV (1960-2000)					Freedom House (1973-2000)				
	Probit			Logit		Probit			Logit	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ln GDP	0.333 <i>0.000</i>	0.309 0.064	0.319 <i>0.009</i>	0.612 <i>0.000</i>	0.489 <i>0.100</i>	0.361 <i>0.034</i>	0.508 <i>0.000</i>	0.360 <i>0.004</i>	0.421 <i>0.040</i>	0.653 <i>0.002</i>
Schooling		0.026 0.629			0.150 <i>0.075</i>	0.081 <i>0.189</i>				
Independence	0.845 <i>0.001</i>	0.592 0.055	0.497 <i>0.132</i>	1.073 <i>0.004</i>	1.095 <i>0.139</i>	0.738 <i>0.036</i>	0.548 <i>0.108</i>	0.667 <i>0.072</i>	0.375 <i>0.470</i>	0.315 <i>0.568</i>
Muslim			-0.513 <i>0.157</i>	-0.499 <i>0.253</i>	-0.071 <i>0.926</i>	-0.022 <i>0.935</i>	-0.004 <i>0.206</i>	-0.478 <i>0.186</i>	-0.700 <i>0.232</i>	-0.489 <i>0.393</i>
Confucian			-0.056 <i>0.751</i>	-0.002 <i>0.993</i>	-0.352 <i>0.208</i>	-0.292 <i>0.144</i>	-0.003 <i>0.148</i>	-0.584 <i>0.013</i>	-0.083 <i>0.903</i>	0.323 <i>0.604</i>
Oil			-0.628 <i>0.093</i>	-1.158 <i>0.059</i>	-1.593 <i>0.019</i>	-1.488 <i>0.000</i>	-0.872 <i>0.049</i>			-1.359 <i>0.061</i>
Religious Fragmentation			-0.203 <i>0.709</i>		0.099 <i>0.926</i>		-0.257 <i>0.595</i>	0.066 <i>0.892</i>	0.008 <i>0.992</i>	-0.343 <i>0.681</i>
Ethnic Fragmentation			0.032 <i>0.928</i>		0.615 <i>0.346</i>		0.091 <i>0.821</i>	-0.432 <i>0.303</i>		0.388 <i>0.600</i>
Trade Openness								0.456 <i>0.011</i>	0.763 <i>0.020</i>	
European Heritage									1.286 <i>0.035</i>	1.377 <i>0.027</i>
Latitude									0.025 <i>0.104</i>	0.018 <i>0.215</i>
Trend	No	Yes	Yes	No	No	No	No	Yes	Yes	No
Anciliary parameter 1	3.120	3.460	3.267	5.278	5.270	2.963	3.589	2.987	4.526	5.037
Anciliary parameter 2	3.642	4.037	3.834	6.179	6.204	4.513	5.066	4.658	7.396	7.642
Wald test	66.25 [0.00]	89.78 [0.00]	96.60 [0.00]	84.82 [0.00]	94.30 [0.00]	90.75 [0.00]	70.8 [0.00]	112.09 [0.00]	103.66 [0.00]	80.26 [0.00]
Pseudo R-squared	0.08	0.11	0.13	0.09	0.09	0.15	0.13	0.17	0.19	0.15
Observations	2893	2201	2893	2893	2201	1697	2249	1736	1758	2249
Countries	89	64	89	89	64	65	93	74	75	93

Pooled cross-section ordered probit and logit estimates with annual data (1960-2000). Estimation is performed in all countries that were non-democratic in the beginning of the sample. Newly independent countries (Table 2.1; Panel E) are excluded from the estimation. The estimated regression is of the form $Democ=F(X;B)$. The dependent variable takes three values. In columns (1) - (5) the three values are generated from the 21-range Polity IV index when it is divided equally into three categories. In columns (5) - (10) the three values are generated from the Freedom House characterization "Free", "Partial Free" and "Not Free". Estimation is performed with maximum likelihood assuming normally distributed errors in columns (1)-(3) and (6)-(8) and logistically distributed errors in columns (4), (5), (9) and (10). Probit and Logit coefficients are reported. P-values based on heteroskedasticity-adjusted standard errors clustered by country are reported in italics. Estimation is performed in all countries that were non-democratic in the beginning of the sample.

Table 2.14 -- Dynamic Probit Analysis (Polity IV Index, 1960-2000)

	Base Sample (Countries initially non-democratic)				All (Democratization, Always Autocratic, Always Democratic) Countries			
	(1a)	(1b)	(2a)	(2b)	(3b)	(3b)	(4a)	(4b)
Ln GDP	0.029	0.130	0.014	0.138	0.040	0.170	0.025	0.124
	<i>0.084</i>	<i>0.000</i>	<i>0.545</i>	<i>0.000</i>	<i>0.040</i>	<i>0.000</i>	<i>0.251</i>	<i>0.000</i>
Growth	-0.557	0.153	-1.164	1.150	-0.809	0.603	-1.038	0.822
	<i>0.052</i>	<i>0.250</i>	<i>0.006</i>	<i>0.275</i>	<i>0.025</i>	<i>0.443</i>	<i>0.007</i>	<i>0.369</i>
Muslim			-0.101	0.046	-0.064	-0.032	-0.095	0.017
			<i>0.109</i>	<i>0.642</i>	<i>0.218</i>	<i>0.734</i>	<i>0.137</i>	<i>0.854</i>
Confucian			0.279	-0.610	0.367	-0.467	0.235	-0.330
			<i>0.049</i>	<i>0.002</i>	<i>0.006</i>	<i>0.009</i>	<i>0.066</i>	<i>0.047</i>
Trade Openness			0.094	0.180			0.082	0.078
			<i>0.102</i>	<i>0.041</i>			<i>0.109</i>	<i>0.254</i>
Oil					-0.094	0.012		
					<i>0.222</i>	<i>0.920</i>		
Ethnic Fragmentation							0.118	-0.047
							<i>0.435</i>	<i>0.631</i>
Religious Fragmentation							-0.063	0.116
							<i>0.479</i>	<i>0.370</i>
Observed Probability		0.32		0.37		0.52		0.58
Predicted Probability		0.24		0.33		0.62		0.73
Wald test		1291.2 [0.00]		1021 [0.00]		1926.38 [0.00]		1357 [0.00]
Pseudo R-squared		0.72		0.73		0.82		0.81
Observations		2858		2222		4147		3409
Countries		98		76		133		109

Dynamic probit estimates (marginal effects). Columns (1a), (2a), (3a) and (4a) report estimates for the probability to transit from a non-democratic polity to democracy. Columns (1b), (2b), (3b) and (4b) report estimates of the probability to remain a democracy. For each full model the probability of a country to transit and stay democratic (transition plus consolidation) is given by the sum of the alpha (i.e. the ones taken from (1a), (2a), (3a) and (4a)) and beta (i.e. the ones taken from (1b), (2b), (3b) and (4b)) coefficients. The dependent variable takes on the value one when the Polity democracy index is greater than zero and zero otherwise. Models (1) and (2) are estimated in those countries that were in the beginning of the sample non-democratic. Models (3) and (4) are estimated to all countries. All specifications include a constant term (marginal effect not reported). P-values based on heteroskedasticity-adjusted standard errors are reported in italics.

The table also reports: i) Mc-Fadden's pseudo R-squared; ii) A Wald chi-square test of the joint significance of estimated coefficients; iii) the observed probability of a permanent democratization, iv) the predicted probability estimated at the mean of the independent variables. Democratization events are reported in Table 2.1. A detailed chronology is given in Appendix A. Estimation is performed in all countries that were non-democratic in the beginning of the sample. For detailed variable definitions and sources see Appendix B.2.

Table 2.15 -- Linear Probability Model & IV Non-Linear models

	Linear Probability Model - Polity IV (1960-2000)					Instrumental Variables Probit Model				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Ln GDP	0.151 <i>0.000</i>	0.024 <i>0.744</i>		0.135 <i>0.001</i>	0.104 <i>0.087</i>	0.070 <i>0.000</i>	0.237 <i>0.000</i>	0.344 <i>0.000</i>	0.060 <i>0.000</i>	0.049 <i>0.000</i>
Schooling			-0.049 <i>0.024</i>							
Independence				0.084 <i>0.314</i>	0.113 <i>0.309</i>			0.075 <i>0.163</i>		
Muslim				-0.147 <i>0.187</i>	-0.100 <i>0.437</i>	-0.049 <i>0.000</i>	-0.113 <i>0.001</i>	0.001 <i>0.987</i>	-0.110 <i>0.000</i>	-0.128 <i>0.000</i>
Confucian				0.096 <i>0.630</i>	0.110 <i>0.533</i>	-0.089 <i>0.000</i>	-0.235 <i>0.008</i>	-0.243 <i>0.008</i>	-0.253 <i>0.000</i>	-0.183 <i>0.000</i>
Oil				-0.230 <i>0.021</i>	-0.662 <i>0.000</i>	-0.034 <i>0.000</i>	-0.248 <i>0.000</i>	-0.242 <i>0.000</i>		
Ethnic Fragmentation				-0.007 <i>0.968</i>	0.088 <i>0.663</i>			0.059 <i>0.392</i>		-0.112 <i>0.000</i>
Religious Fragmentation				0.057 <i>0.616</i>	0.078 <i>0.620</i>			0.214 <i>0.003</i>		-0.024 <i>0.261</i>
Trade Openness					0.062 <i>0.417</i>				0.420 <i>0.000</i>	0.153 <i>0.020</i>
Latitude					0.003 <i>0.403</i>					
European Heritage					0.037 <i>0.743</i>					
Year Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Trend	No	No	Trend	Trend
Country Fixed-Effects	No	Yes	Yes	No	No	No	No	No	No	No
R-squared	0.20	0.50	0.46	0.29	0.27	0.19	0.18	0.25	0.54	0.55
Observations	3153	3153	2793	2831	2472	3035	3142	2989	2338	2316
Countries	113	113	75	103	89	94	93	92	75	74

The estimated regression is of the form $Democ=F(X;B)$. Columns (1) to (5) give OLS estimates. The dependent variable in columns (1) to (5) takes on the value one when the Polity democracy index is greater than zero and zero otherwise. Estimation excludes countries that were throughout the sample period (1960-2000) always democratic (Table 2.1; Panel C). Time-fixed effects are included, but the estimates are not reported. The specifications in columns (1) and (2) also include a vector of country specific intercepts (estimates not reported). In columns (6) to (10) the dependent variable takes on the value one in the year and all subsequent years following a permanent democratic transition.

Estimation is performed in all countries that were non-democratic in the beginning of the sample. A detailed chronology is given in Appendix A. Columns (6), (7) and (8) report marginal effects of instrumental variable probit estimates. Ln GDP is treated as endogenous and instrumented with legal origin and years since independence in column 6. In columns (7) and (8) the instruments are latitude, European heritage and a linear time-trend. In columns (9) and (10) both trade openness and Ln GDP are treated as endogenous. The instrument set includes: latitude, landlocked, years since independence, legal origin, and European heritage. P-values based on heteroskedasticity-adjusted standard errors clustered by country are reported in italics. R-squared is the overall adjusted R-squared in the OLS estimates and Mc Fadden's pseudo R-squared in the maximum likelihood estimates. Democratization events are reported in Table 2.1. A detailed chronology is given in Appendix A. For detailed variable definitions and sources see Appendix B.2.

Table 3.1 -- Summary Statistics

Variable	Mean	Std. Dev.	Min	Max	Observations	Number of panels
Gravity Variables and Bank Flows						
Logarithm of gross asset flows	17.49	2.27	13.82	24.99	50830	903
Logarithm of gross liability flows	17.56	2.27	13.82	24.93	51443	907
Logarithm distance -- $[\ln Dist_{i,j}]$	7.79	1.07	4.80	9.42	72200	950
Real per capita GDP in "source" country -- $[Y_{i,t}]$	9654.38	8494.77	12.16	46515.76	69000	950
Real per capita GDP in "recipient" country -- $[Y_{j,t}]$	9101.84	8107.29	0.01	36481.79	50224	931
Population (in millions) in "source" country -- $[Pop_{i,t}]$	41.64	59.76	3.50	284.80	17100	950
Population (in millions) in "recipient" country -- $[Pop_{j,t}]$	60.06	173.33	1.05	1284.97	16093	950
Logarithm of land area in "source" country -- $[\ln Area_{i,t}]$	12.57	1.77	10.35	16.08	72200	950
Logarithm of land area in "recipient" country -- $[\ln Area_{j,t}]$	12.53	1.67	9.93	16.08	72200	950
Lending Rate in "source" Country -- $[Rate_{i,t}]$	9.58	4.24	1.85	30.00	67950	950
Inflation rate in "recipient" country -- $[Inf_{j,t}]$	78.41	655.47	-92.58	18296.40	66063	950
Institutions, Risk and Other Characteristics in Recipient Country						
ICRG Political Risk -- $[Inst_{j,t-1}]$	72.49	13.24	33.00	97.00	64429	950
ICRG Economic Risk -- $[Economic_Risk_{j,t}]$	71.38	12.18	21.00	99.00	64429	950
ICRG Financial Risk -- $[Financial_Risk_{j,t}]$	74.78	16.58	16.00	100.00	64429	950
Corruption -- $[Corruption_{j,t}]$	7.28	2.02	2.14	10.00	63536	836
Antidirector's Rights -- $[Anti_direct_{j,t}]$	2.97	1.32	0.00	5.00	72200	646
Contract Enforceability -- $[Contract_{j,t}]$	6.49	1.57	4.29	8.94	50540	665
Legal Time -- $[Legal_time_{j,t}]$	267.42	217.32	33.00	1080.00	70756	931
Government Ownership of Banks -- $[Gov_Own_{j,t}]$	0.41	0.32	0.00	1.00	64980	855
Bank overhead costs -- $[Overhead_{j,t}]$	0.04	0.03	0.00	0.13	72200	950
Bank soundness measure -- $[Bank_Sound_{j,t}]$	4.67	1.48	1.74	6.66	59204	779
Schooling -- $[Schooling_{j,t}]$	7.75	2.35	2.48	12.25	53040	780
Life Expectancy -- $[Life_expect_{j,t}]$	72.61	5.85	38.10	81.56	46808	950
Exchange Rate Regime -- $[ER_reg_{j,t}]$	8.81	3.93	1.00	15.00	62320	931

Table 3.1 reports the descriptive statistics and the abbreviations of all variables employed in the paper. Columns 1 to 4 report the panel mean, standard deviation the minimum and maximum value respectively. The last two columns give the total number of observations and the number of country pairs (panels). For precise variable definitions and sources see Appendix B.3.

Table 3.2 -- Pairwise Correlation Matrix

Panel A - Bank Flows, Gravity Factors, & Risk Characteristics

	Gross Asset flows	Inter-bank flows	Log Liability flows	ln Dist _{i,j}	Tie _{i,j}	ln Y _{i,t}	ln Y _{j,t}	Pop _{i,t}	Pop _{j,t}	Political Risk _{j,t}	Economic Risk _{j,t}	Financial Risk _{j,t}
Logarithm of Gross Asset flows	1.00											
Logarithm of Gross Inter-bank flows	0.89	1.00										
Logarithm of Gross Liability flows	0.69	0.68	1.00									
Log Distance	-0.24	-0.27	-0.28	1.00								
Ethnolinguistic Ties	0.14	0.14	0.12	0.05	1.00							
Logarithm of GDP p.c. in "source"	0.09	0.08	0.09	0.24	0.11	1.00						
Logarithm of GDP p.c. in "recipient"	0.35	0.36	0.30	-0.09	0.10	-0.01	1.00					
Log Population in "source"	0.26	0.24	0.25	0.17	0.04	0.31	-0.01	1.00				
Log Population in "recipient"	0.21	0.18	0.21	0.22	-0.04	0.00	0.15	-0.02	1.00			
Political Risk (institutions) in "recipient"	0.41	0.43	0.37	-0.31	0.07	-0.01	0.41	0.01	-0.19	1.00		
Financial Risk in "recipient"	0.38	0.39	0.37	-0.24	0.08	0.01	0.40	0.00	-0.02	0.73	1.00	
Economic Risk in "recipient"	0.35	0.37	0.35	-0.20	0.12	0.01	0.37	0.01	-0.15	0.65	0.70	1.00

Panel B - Risk Characteristics & Institutional Performance in Recipient Country

	Political Risk	Financial Risk	Economic Risk	Corruption	Anti-direct	Contract Enforce	Gov. Own.	Overhead	Bank Sound	Schooling	Life Expect	ER_reg1
Political Risk (composite institutions)	1.00											
Financial Risk	0.73	1.00										
Economic Risk	0.65	0.70	1.00									
Corruption	0.74	0.56	0.51	1.00								
Anti-director's rights	0.09	0.06	0.03	0.24	1.00							
Contract Enforceability Index	0.72	0.62	0.59	0.87	0.14	1.00						
Government Ownership of Banks	-0.30	-0.34	-0.35	-0.31	-0.33	-0.35	1.00					
Bank overhead costs	-0.41	-0.43	-0.52	-0.40	-0.11	-0.49	0.28	1.00				
Bank soundness measure	0.47	0.35	0.36	0.67	0.26	0.70	-0.44	-0.29	1.00			
Schooling	0.60	0.49	0.35	0.64	0.31	0.76	-0.23	-0.32	0.49	1.00		
Life Expectancy	0.53	0.43	0.36	0.51	0.00	0.59	-0.26	-0.35	0.39	0.53	1.00	
Exchange Rate Regime 1	-0.22	-0.23	-0.36	-0.10	0.31	-0.07	0.07	0.05	-0.14	0.06	-0.13	1.00

Table 3.2 gives the correlation structure of the main variables employed in the empirical analysis. Panel a gives the pairwise correlations of the gravity factors, the bank flows and the country risk characteristics. Panel B gives the pairwise correlation of the country risk indicators and the institutional performance measures. Appendix B.3 gives the sources and detailed variable definitions.

Table 3.3 -- Benchmark Regression Estimates

	(1)	(2)	(3)	(4)	(5)	(6)
$\ln Y_{i,t}$	0.3286 ^a (5.12)	0.2924 ^a (5.33)	0.1851 ^a (3.45)	0.1852 ^a (3.45)	0.1860 ^a (3.75)	0.0915 ^c (1.73)
$\ln Y_{j,t}$	0.3932 ^a (11.01)	0.2289 ^a (7.86)	0.2314 ^a (7.57)	0.2326 ^a (7.51)	0.1278 ^a (6.71)	0.1171 ^a (6.03)
$\ln Pop_{i,t}$	0.8631 ^a (20.48)	0.8789 ^a (24.15)	0.8633 ^a (23.90)	0.8633 ^a (23.90)	0.8774 ^a (25.15)	0.7069 ^a (21.60)
$\ln Pop_{j,t}$	0.7172 ^a (16.25)	0.8292 ^a (20.72)	0.8398 ^a (20.50)	0.8384 ^a (20.43)	0.7841 ^a (18.30)	0.7459 ^a (21.26)
$\ln Area_i$	-0.2761 ^a (8.15)	-0.3094 ^a (11.03)	-0.2718 ^a (9.72)	-0.2717 ^a (9.71)	-0.2754 ^a (10.34)	—
$\ln Area_j$	-0.0699 ^c (1.88)	-0.0957 ^a (2.92)	-0.0916 ^a (2.75)	-0.0906 ^a (2.72)	-0.0328 (0.91)	—
$\ln Dist_{i,j}$	-0.8145 ^a (17.28)	-0.6476 ^a (15.13)	-0.6558 ^a (14.58)	-0.6563 ^a (14.59)	-0.7063 ^a (14.43)	-0.7811 ^a (17.49)
$Tie_{i,j}$	0.6126 ^a (5.23)	0.5939 ^a (5.66)	0.6075 ^a (5.87)	0.6060 ^a (5.86)	0.4493 ^a (4.37)	0.3324 ^a (3.03)
$Rate_{i,t}$			-0.0683 ^a (5.36)	-0.0683 ^a (5.36)	-0.0703 ^a (5.90)	—
$Inf_{j,t}$				-0.0001 (1.32)	-0.00001 (0.17)	—
$Inst_{j,t-1}$		0.0569 ^a (16.34)	0.0581 ^a (16.22)	0.0576 ^a (15.71)		
$\ln Inst_{j,t-1}$					1.9851 ^a (8.80)	1.8611 ^a (8.35)
Adj. R ²	0.4610	0.5172	0.5216	0.5228	0.5740	0.5487
Observations	38688	37871	35232	35232	35232	37871
Country-pairs	863	859	855	855	855	859
Regional & Income Dummies	No	No	No	No	Yes	Yes

The dependent variable is the natural logarithm of gross asset flows from country i ("source" country) to county j ("recipient" country) in quarter t . Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. ^{a, b, c} denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). The specifications in columns (5) and (6) include regional and income dummies at the recipient country (coefficients not reported). The classification is taken from the World Bank.

Y denotes real GDP, Pop total population, and $Area$ the land area (in square kilometers) in the "source" (i) and capital "recipient" country (j). $Dist$ is the distance between i and j and Tie an indicator variable that equals one if the two countries have colonial or linguistic ties. $Rate_{i,t}$ is the lending rate in the "source" and $Inf_{j,t}$ the inflation rate in the "recipient" country. $Inst_{j,t-1}$ is the 0-100 ICRG index of institutional quality-political risk. Appendix B.3 gives the sources and detailed variable definitions.

Table 3.4 -- Alternative Panel Methodologies

	Between	Within	Random Effects	Semi-Fixed ("source")	Semi-Fixed ("recipient")	Double-Fixed	Prais-Winsten	Random effects autocorr. (ar1)	FGLS autocorr.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$\ln Y_{i,t}$	0.2132 ^a (3.66)	0.0716 ^a (2.68)	0.1222 ^a (5.35)	0.0654 (1.50)	0.1791 ^a (4.31)	0.0548 (1.39)	0.1768 ^a (3.71)	0.1186 ^a (4.73)	0.1748 ^a (12.29)
$\ln Y_{j,t}$	0.2150 ^a (7.49)	0.0054 (0.59)	0.1122 ^a (13.91)	0.2606 ^a (8.39)	0.0093 (0.55)	0.0089 (0.53)	0.2432 ^a (8.02)	0.1384 ^a (14.85)	0.3085 ^a (38.42)
$\ln Pop_{i,t}$	0.7353 ^a (18.29)	1.1370 ^a (4.31)	0.8318 ^a (24.03)	2.5067 ^a (3.74)	0.8852 ^a (30.88)	2.1040 ^a (4.03)	0.8856 ^a (23.56)	0.8363 ^a (24.30)	0.8870 ^a (86.00)
$\ln Pop_{j,t}$	0.8093 ^a (17.94)	-1.7561 ^a (9.78)	0.6998 ^a (19.13)	0.8201 ^a (23.03)	-1.8630 ^a (4.08)	-1.7747 ^a (3.98)	0.8251 ^a (19.66)	0.7384 ^a (20.2)	0.7954 ^a (74.32)
$\ln Area_i$	-0.2090 ^a (6.18)	—	-0.2001 ^a (7.43)	—	-0.2903 ^a (13.30)	—	-0.2655 ^a (8.97)	-0.2051 ^a (7.64)	-0.2797 ^a (33.41)
$\ln Area_j$	-0.0455 (1.23)	—	0.1001 ^a (3.05)	-0.0963 ^a (3.31)	—	—	-0.0684 ^b (1.97)	0.0670 ^b (2.14)	-0.0807 ^a (9.03)
$\ln Dist_{ij}$	-0.6903 ^a (14.32)	—	-0.8718 ^a (21.5)	-0.6631 ^a (16.34)	-0.6616 ^a (13.64)	-0.6306 ^a (14.37)	-0.7138 ^a (15.34)	-0.8519 ^a (21.12)	-0.7035 ^a (57.34)
$Tie_{i,t}$	0.5691 ^a (4.93)	—	1.0426 ^a (9.55)	0.3931 ^a (4.09)	0.4259 ^a (4.48)	0.1516 ^c (1.86)	0.6501 ^a (6.04)	1.0118 ^a (9.37)	0.5685 ^a (19.18)
$Rate_{i,t}$	-0.0826 ^a (3.48)	-0.0092 ^b (2.02)	0.0041 (1.03)	-0.0025 (0.22)	-0.0702 ^a (7.26)	-0.0013 ^a (7.26)	-0.0667 ^a (5.49)	0.0021 (0.42)	-0.0604 ^a (13.73)
$Inf_{j,t}$	0.0002 (0.36)	0.00001 (0.80)	-0.0001 (1.05)	-0.0001 (1.58)	0.0001 (1.01)	0.0003 (0.98)	-0.0001 (0.24)	-0.0001 (0.96)	-0.0001 ^c (1.81)
$\ln Inst_{j,t,t}$	4.0712 ^a (11.5)	0.3656 ^a (4.36)	0.6354 ^a (8.16)	3.5661 ^a (16.26)	0.3315 ^b (1.98)	0.3431 ^b (2.13)	3.39 ^a (15.15)	0.8375 ^a (9.08)	2.8652 ^a (37.73)
Adj. R ²	0.7705	0.1138	0.5368	0.5556	0.6266	0.6751	0.5089	0.5626	
Observations	35232	35232	35232	35232	35232	35232	35232	35232	35225
Country-pairs	855	855	855	855	855	855	855	855	848

The dependent variable is the natural logarithm of gross asset flows from country i ("source") to county j ("recipient") in quarter t . Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. ^{a, b, c} denote significance at the 1%, 5%, and 10% levels, respectively. All specifications include period fixed effects (not reported). Columns 1, 2, and 3 report the "between", "within" and random effects (GLS) estimates respectively. R² is the "within"-R² for the fixed effect and the overall R² for random effects. The estimations in columns (4) and (5) include "source" and "recipient" country dummies respectively. The specification reported in column (6) includes both "source" and recipient" country dummies. Columns (7)–(9) control for residual auto-correlation. The last row gives the estimated autocorrelation coefficient. Column (6) reports the Prais-Winsten estimator, column (7) random effect GLS that allow for autocorrelation and column (8) gives feasible GLS estimates that allow for panel-specific residual correlation. Y denotes real GDP, Pop total population, and $Area$ the land area (in square kilometers) in the "source" (i) and capital "recipient" country (j). $Dist$ is the distance between i and j and Tie an indicator variable that equals one if the two countries have colonial or linguistic ties. $Rate_{i,t}$ is the lending rate in the "source" and $Inf_{j,t}$ the inflation rate in the "recipient". $Inst_{j,t,t}$ is the 0-100 ICRG index of institutional quality-political risk.

Table 3.5 – Specific Institutional Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\ln Y_{i,t}$	0.1896 ^a (3.41)	0.1792 ^a (3.35)	0.1896 ^a (3.50)	0.2435 ^a (4.09)	0.2197 ^a (4.03)	0.2380 ^a (4.08)	0.1985 ^a (3.69)
$\ln Y_{j,t}$	0.1689 ^a (6.26)	0.1504 ^a (5.84)	0.1334 ^a (5.13)	0.1381 ^a (6.49)	0.0979 ^a (5.36)	0.1162 ^a (5.36)	0.1480 ^a (6.03)
$\ln Pop_{i,t}$	0.8743 ^a (23.20)	0.8785 ^a (24.28)	0.8774 ^a (23.69)	0.8864 ^a (22.54)	0.8946 ^a (22.67)	0.8896 ^a (23.00)	0.8772 ^a (23.96)
$\ln Pop_{j,t}$	0.9914 ^a (20.86)	0.9777 ^a (21.16)	0.9708 ^a (23.69)	0.8137 ^a (17.43)	0.8459 ^a (19.34)	0.8174 ^a (17.38)	0.9776 ^a (20.75)
$\ln Area_i$	-0.2836 ^a (9.40)	-0.2905 ^a (10.21)	-0.2842 ^a (9.71)	-0.2686 ^a (8.88)	-0.2834 ^a (10.47)	-0.2717 ^a (8.88)	-0.2786 ^a (9.72)
$\ln Area_j$	-0.1446 ^c (4.22)	-0.1432 ^a (4.34)	-0.1063 ^a (3.11)	-0.1044 ^a (4.34)	-0.1298 ^a (3.67)	-0.0770 ^b (1.98)	-0.1591 ^a (4.41)
$\ln Dist_{i,j}$	-0.6494 ^a (13.54)	-0.6113 ^a (15.13)	-0.6555 ^a (15.13)	-0.8485 ^a (16.12)	-0.7676 ^a (15.64)	-0.8371 ^a (16.30)	-0.6895 ^a (14.27)
$Tie_{i,j}$	0.4848 ^a (4.44)	0.5129 ^a (4.93)	0.4664 ^a (4.32)	0.2038 ^c (1.92)	0.2778 ^a (2.75)	0.2116 ^b (2.00)	0.3780 ^a (3.54)
$Rate_{i,t}$	-0.0677 ^a (5.43)	-0.0685 ^a (5.43)	-0.0685 ^a (5.43)	-0.0759 ^a (6.09)	-0.0765 ^a (6.41)	-0.0772 ^a (6.13)	-0.0715 ^a (5.83)
$Inf_{j,t}$	-0.0002 ^a (3.01)	-0.0001 (0.39)	-0.0001 (0.39)	-0.0001 ^b (2.04)	-0.0001 ^c (1.72)	0.000 (1.11)	0.000 (0.94)
$\ln Inst_{j,t-1}$		1.8453 ^a (9.43)			2.4526 ^a (10.49)		
$\ln Economic_Risk_{j,t-1}$			1.8679 ^a (7.49)			1.4058 ^a (4.47)	1.814 ^a (7.41)
$Corruption_j$	0.4144 ^a (14.3)	0.3136 ^a (9.43)	0.3562 ^a (11.52)				0.3130 ^a (9.53)
$Anti_direct_j$				0.0584 (1.50)	0.0707 ^c (1.95)	0.0440 (1.11)	
$Contract_j$				0.4436 ^a (12.60)	0.2983 ^a (12.60)	0.3947 ^a (10.90)	
$\ln Legal_time_j$							0.2747 ^a (4.38)
Adj. R ²	0.5293	0.5394	0.5372	0.5418	0.5632	0.5457	0.5431
Observations	34404	34087	34087	30732	30415	30415	34087
Country-pairs	757	757	757	596	596	596	757

The dependent variable is the natural logarithm of gross asset flows from country i ("source" country) to county j ("recipient" country) in quarter t . Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. ^a, ^b, ^c denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). Y denotes real GDP, Pop total population, and $Area$ the land area (in square kilometers) in the "source" (i) and capital "recipient" country (j). $Dist$ is the distance between i and j and Tie an indicator variable that equals one if the two countries have colonial or linguistic ties. $Rate_{i,t}$ is the lending rate in the "source" and $Inf_{j,t}$ the inflation rate in the "recipient" country. $Inst_{j,t-1}$ is the 0-100 ICRG index of institutional quality-political risk. $Economic_Risk_{j,t-1}$ is ICRG time-varying measure of economic riskiness. $Corruption_j$ is a 0-10 variable that measures the level of corruption (higher values indicate lower corruption). $Anti_direct_j$ is a 0-6 measure of the legal protection of shareholders. $Contract_j$ is a 0-10 measure of legal system's quality and $Legal_time_j$ is a measure of the time it takes to complete a simple legal case (tenant eviction for non-payment). The Data Appendix B.3 gives the sources and detailed variable definitions.

Table 3.6 -- Banking Sector Characteristics & Inter-Bank Flows

	Aggregate Flows			Inter-Bank Flows		
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln Y_{i,t}$	0.2405 ^a (4.17)	0.2405 ^a (4.17)	0.2325 ^a (4.22)	0.2034 ^a (3.28)	0.1696 ^a (2.97)	0.1955 ^a (3.30)
$\ln Y_{j,t}$	0.3117 ^a (10.17)	0.3117 ^a (10.17)	0.2335 ^a (8.11)	0.2825 ^a (8.06)	0.2173 ^a (7.25)	0.2398 ^a (7.45)
$\ln Pop_{i,t}$	0.8616 ^a (21.50)	0.8719 ^a (23.65)	0.8685 ^a (22.70)	0.8532 ^a (19.73)	0.8618 ^a (21.48)	0.8560 ^a (20.55)
$\ln Pop_{j,t}$	0.5786 ^a (20.86)	0.6928 ^a (15.67)	0.6182 ^a (13.96)	0.7101 ^a (13.10)	0.8017 ^a (15.48)	0.7155 ^a (13.32)
$\ln Area_i$	-0.2370 ^a (7.50)	-0.2601 ^a (9.16)	-0.2463 ^a (8.30)	-0.2238 ^a (6.65)	-0.2460 ^a (8.03)	-0.2302 ^a (7.19)
$\ln Area_j$	-0.0389 (1.06)	-0.0694 ^b (2.00)	-0.0063 (0.18)	-0.1275 ^a (3.16)	-0.1686 ^a (4.38)	-0.1029 ^a (2.66)
$\ln Dist_{i,j}$	-0.9135 ^a (20.22)	-0.7788 ^a (20.22)	-0.8775 ^a (20.22)	-0.9020 ^a (18.01)	-0.7658 ^a (15.64)	-0.8701 ^a (18.05)
$Tie_{i,j}$	0.3698 ^a (3.30)	0.4244 ^a (3.95)	0.3556 ^a (3.20)	0.3059 ^a (2.61)	0.3849 ^a (3.39)	0.3156 ^a (2.70)
$Rate_{i,t}$	-0.0746 ^a (5.56)	-0.0738 ^a (5.83)	-0.0759 ^a (5.80)	-0.0659 ^a (4.79)	-0.0653 ^a (5.00)	-0.0670 ^a (4.96)
$Inf_{j,t}$	-0.0003 ^a (6.59)	-0.0001 ^a (1.34)	-0.0001 (0.59)	-0.0002 ^a (4.94)	-0.0001 (1.23)	-0.0001 (0.62)
$\ln Inst_{j,t-1}$		2.6800 ^a (10.39)			2.7969 ^a (10.20)	
$\ln Economic_Risk_{j,t-1}$			2.5018 ^a (10.16)			2.4933 ^a (8.32)
Gov_Own_j	-1.9021 ^a (11.15)	-1.5298 ^a (9.51)	-1.6187 ^a (10.16)	-1.5612 ^a (7.09)	-1.2846 ^a (6.33)	-1.4706 ^a (7.26)
$Bank_Sound_j$				0.1780 ^a (3.91)	0.1476 ^a (3.55)	0.1349 ^a (3.05)
$Overhead_j$				-7.0798 ^a (2.74)	-0.7862 (0.33)	-1.3169 (0.52)
Adj. R ²	0.5041	0.5346	0.5232	0.5182	0.5438	0.5300
Observations	35172	34748	34748	33075	32762	32762
Country-pairs	800	799	799	708	708	708

In columns (1), (2) and (3) the dependent variable is the natural logarithm of gross asset flows from country i ("source" country) to county j ("recipient" country) in quarter t . In columns (4)–(6) the dependent variable is the natural logarithm of gross asset flows from banks located in country i ("source" country) to the banking sector only in country j ("recipient" country) in quarter t . Absolute value of t -statistics based on robust standard errors (clustering by country pairs) are given in italics. ^a, ^b, ^c denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported).

Y denotes real GDP, Pop total population, and $Area$ the land area (in square kilometers) in the "source" (i) and capital "recipient" country (j). $Dist$ is the distance between i and j and Tie an indicator variable that equals one if the two countries have colonial or linguistic ties. $Rate_{i,t}$ is the lending rate in the "source" and $Inf_{j,t}$ the inflation rate in the "recipient" country. $Inst_{j,t-1}$ is the 0-100 ICRG index of institutional quality-political risk. $Economic_Risk_{j,t-1}$ is ICRG time-varying measure of economic riskiness. Gov_Own_j denotes the percentage that the government owns in the ten largest banks. $Bank_Sound_j$ is a 1-7 index assessing the soundness of banks in terms of their general health and sound balance sheets. $Overhead_j$ denotes bank's overhead costs as a share of its total assets. The Data Appendix B.3 gives the sources and detailed variable definitions.

Table 3.7 – Developed vs. Middle (& Low) Income Countries – European Union Effect

	Developed (High-Income) Countries						Developing Countries	
	Pooled Cross-Section Time Series				Fixed-Effects		OLS	FE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>ln Y_{i,t}</i>	0.2893 ^a (4.85)	0.3246 ^a (4.85)	0.3453 ^a (5.19)	0.3291 ^a (5.01)	0.6428 (0.50)	0.6359 (0.44)	0.0298 (0.43)	4.3612 ^a (4.99)
<i>ln Y_{j,t}</i>	0.3121 ^a (6.13)	0.3362 ^a (6.33)	0.1637 ^b (2.49)	0.1325 ^b (2.45)	-1.2640 ^a (2.08)	-1.1637 ^a (1.93)	0.4415 ^a (6.13)	-0.1987 (0.26)
<i>ln Pop_{i,t}</i>	0.8955 ^a (20.66)	0.8719 ^a (18.51)	0.8598 ^a (18.51)	0.8772 ^a (18.68)	0.1104 ^a (2.15)	0.1060 ^a (2.08)	0.8307 ^a (17.33)	-0.0415 (0.70)
<i>ln Pop_{j,t}</i>	0.8272 ^a (18.17)	0.8072 ^a (16.62)	0.9093 ^a (17.37)	0.8105 ^a (13.55)	-0.0275 (1.28)	-0.0239 (1.10)	0.4415 ^a (6.13)	-0.0302 (1.30)
<i>ln Area_i</i>	-0.3020 ^a (-8.98)	-0.2960 ^a (8.46)	-0.2914 ^a (8.28)	-0.2946 ^a (8.44)	—	—	-0.2409 ^a (6.77)	-0.0100 (0.69)
<i>ln Area_j</i>	-0.1112 ^a (2.95)	-0.1100 ^a (2.85)	-0.1540 ^b (3.33)	-0.1215 ^a (2.55)	—	—	0.3501 ^a (4.93)	0.0000 (1.04)
<i>ln Dist_{ij}</i>	-0.7075 ^a (12.92)	-0.6530 ^a (11.10)	-0.6620 ^a (10.47)	-0.7078 ^a (11.10)	—	—	-0.5313 ^a (7.52)	—
<i>Tie_{ij}</i>	0.3884 ^a (3.21)	0.4069 ^a (3.34)	0.2794 ^b (2.43)	0.2061 ^c (1.74)	—	—	0.5325 ^a (12.65)	—
<i>Rate_{i,t}</i>	-0.0647 ^a (4.75)	-0.0647 ^a (4.75)	-0.0694 ^a (5.20)	-0.0690 ^a (5.19)	0.0150 (1.55)	0.0146 (1.52)	-0.0789 ^a (3.93)	—
<i>Inf_{j,t}</i>	0.0038 ^a (5.17)	0.0038 ^a (5.17)	0.0035 ^a (5.43)	0.0037 ^a (5.55)	0.0039 ^a (6.29)	0.0039 ^a (6.25)	-0.0011 (1.57)	—
<i>ln Inst_{j,t-1}</i>	3.3658 ^a (9.70)	3.3416 ^a (9.67)	2.4383 ^a (6.91)	1.9250 ^a (5.20)			1.0574 ^b (3.73)	
<i>Inst_{j,t-1}</i>					0.0083 ^b (1.99)	0.0075 ^c (1.82)		0.0071 ^c (1.92)
<i>EU_one</i>		0.0118 (0.09)	0.0565 (0.42)	-0.0160 (0.12)		-0.3665 ^a (3.01)		
<i>EU_both</i>		0.2694 ^b (2.48)	0.2963 ^a (2.86)	0.1798 ^c (1.67)		0.1383 ^c (1.69)		
<i>Corruption_j</i>			0.0778 (1.20)	0.0197 (0.29)				
<i>Anti_direct_j</i>			0.0956 ^b (2.43)	0.0610 (1.41)				
<i>Contract_j</i>			0.1792 ^a (3.18)	0.2308 ^a (3.99)				
<i>Gov_Own_j</i>				-0.8293 ^a (3.73)				
Adj. R ²	0.5332	0.5349	0.5398	0.5428	0.6978	0.6987	0.3687	0.6045
Observations	22870	22870	21836	21836	22870	22870	12362	12499
Country-pairs	413	413	377	377	413	413	442	454

The dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t*. Absolute value of *t*-statistics based on robust standard errors (clustering by country pairs) are given in italics. ^a ^b ^c denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). In columns (1)–(6) estimation is performed only to high income countries, while in columns (7) and (8) only to low and middle income countries. Classification is taken from the World Bank. The specifications in columns (5), (6) and (8) beside the time intercepts also include country-pair fixed effects.

EU_one is an indicator variable that equals one if one country is a member of the European Union (before the 2004 Enlargement). *EU_both* is an indicator variable that equal one if both countries are members of the EU. For other variable abbreviations, see previous Tables. The Data Appendix B.3 gives the sources and detailed variable definitions.

Table 3.8 – Political, Economic and Financial Risk (Dynamic AR(4) Specifications)

	Pooled Cross-Section Time Series			Country-Pair Fixed-Effects		
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln Y_{i,t}$	0.0403 ^a (2.08)	0.0473 ^a (2.41)	0.0441 ^a (2.29)	0.4393 ^a (4.70)	0.4446 ^a (4.77)	0.4450 ^a (4.78)
$\ln Y_{j,t}$	0.0531 ^a (6.92)	0.0523 ^a (6.42)	0.0633 ^a (7.58)	-0.0066 (0.55)	-0.0049 (0.42)	-0.0068 (0.59)
$\ln Pop_{i,t}$	0.1848 ^a (16.56)	0.1732 ^a (15.7)	0.1688 ^a (15.68)	1.0783 ^a (3.01)	1.0823 ^a (2.99)	1.0868 ^a (3.00)
$\ln Pop_{j,t}$	0.1817 ^a (15.35)	0.1520 ^a (13.10)	0.1341 ^a (12.31)	-1.0539 ^a (3.4)	-0.8784 ^a (2.95)	-0.8062 ^a (2.53)
$\ln Area_i$	-0.0558 ^a (7.35)	-0.0492 ^a (6.40)	-0.0486 ^a (6.47)	—	—	—
$\ln Area_j$	-0.0205 ^a (2.68)	0.0008 (0.10)	-0.0048 (0.64)	—	—	—
$\ln Dist_{ij}$	-0.1445 ^a (11.82)	-0.1631 ^a (12.99)	-0.1519 ^a (12.63)	—	—	—
Tie_{ij}	0.1171 ^a (4.94)	0.0935 ^a (3.82)	0.1005 ^a (4.32)	—	—	—
$Rate_{i,t}$	-0.0134 ^a (3.81)	-0.0124 ^a (3.58)	-0.0124 ^a (3.64)	-0.0045 (0.77)	-0.0041 (0.69)	-0.0039 (0.67)
$Inf_{j,t}$	0.0000 (0.41)	0.0000 (0.55)	0.0000 (0.69)	0.0000 (0.65)	0.0000 (0.41)	0.0000 (0.26)
$Inst_{j,t-1}$ [<i>Political_Risk</i> _{<i>j,t-1</i>}]	0.0134 ^a (14.50)			0.0066 ^a (3.45)		
<i>Economic_Risk</i> _{<i>j,t-1</i>}		0.0136 ^a (14.57)			0.0003 (0.14)	
<i>Financial_Risk</i> _{<i>j,t-1</i>}			0.0081 ^a (12.89)			-0.0013 (0.87)
Adj. R ²	0.680	0.679	0.678	0.1507	0.1501	0.1501
“Within” R ²	—	—	—	—	—	—
Observations	30,521	30,521	30,521	30,521	30,521	30,521
Country-pairs	770	770	770	770	770	770
Long-Run Effect of Relevant Risk Factor	0.0611 ^a	0.0657 ^a	0.0403 ^a	0.010 ^a	0.000	-0.002

The dependent variable is the natural logarithm of gross asset flows from country *i* (“source” country) to county *j* (“recipient” country) in quarter *t*. Absolute value of *t*-statistics based on robust standard errors (clustering by country pairs) are given in italics. ^{a, b, c} denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects in columns (1)-(4) and with both period and country-pair fixed effects in columns (5)-(8) (intercepts not reported). *Y* denotes real GDP, *Pop* total population, and *Area* the land area (in square kilometers) in the “source” (*i*) and capital “recipient” country (*j*). *Dist* is the distance between *i* and *j* and *Tie* an indicator variable that equals one if the two countries have colonial or linguistic ties. *Rate*_{*i,t*} is the lending rate in the “source” and *Inf*_{*j,t*} the inflation rate in the “recipient” country. *Inst*_{*j,t-1*} is the 0-100 ICRG index of institutional quality-political risk. *Economic_Risk*_{*j,t-1*} is ICRG time-varying measure of economic riskiness and *Financial_Risk*_{*j,t-1*} is ICRG time-varying measure that quantifies the health of the financial sector. The specifications also include 4 lags of the dependent variable (coefficients not reported; coefficients positive and significant). The last row tabulates the long-run effect of political, economic and financial risk on cross-border bank flows. The long-run multiplier is estimated as the point estimate divided by 1 minus the algebraic sum of the autoregressive terms. The Data Appendix B.3 gives the sources and detailed variable definitions.

Table 3.9 -- Liability Flows, Institutional Quality and Political Risk

	(1)	(2)	(3)	(4)	(5)	(6)
$\ln Y_{i,t}$	0.2634 ^a (4.02)	0.0461 (1.13)	0.2962 ^a (4.32)	0.2905 ^a (4.26)	-0.0741 (1.24)	0.0416 (1.08)
$\ln Y_{j,t}$	0.2328 ^a (7.15)	0.1216 ^a (4.93)	0.0692 ^a (2.75)	0.0608 ^b (2.40)	0.2270 ^a (7.06)	0.0118 ^a (0.61)
$\ln Pop_{i,t}$	0.7986 ^a (19.10)	2.0331 ^a (3.29)	0.8124 ^a (19.29)	0.8137 ^a (19.30)	0.7673 ^a (20.04)	1.8668 ^a (3.44)
$\ln Pop_{j,t}$	0.7908 ^a (17.20)	0.9624 ^a (21.22)	0.8507 ^a (17.40)	0.8902 ^a (16.10)	0.7766 ^a (16.49)	-1.1970 ^a (3.02)
$\ln Area_i$	-0.2508 ^a (7.45)	—	-0.2409 ^a (7.45)	-0.2539 ^a (7.39)	-0.1603 ^a (4.07)	—
$\ln Area_j$	-0.1868 ^a (4.76)	-0.2446 ^a (4.76)	-0.0602 ^a (4.59)	-0.2537 ^a (6.23)	-0.0674 ^a (4.68)	—
$\ln Dist_{i,j}$	-0.7318 ^a (14.37)	-0.6461 ^a (14.52)	-0.7777 ^a (14.33)	-0.7523 ^a (13.30)	-0.7842 ^a (15.88)	-0.6663 ^a (12.27)
$Tie_{i,j}$	0.5771 ^a (4.82)	0.5771 ^a (4.82)	0.2447 ^b (2.11)	0.2650 ^b (2.26)	0.4779 ^a (3.96)	0.0787 (0.83)
$Rate_{i,t}$	-0.0516 ^a (3.77)	0.0157 (1.65)	-0.0516 ^a (3.77)	-0.0593 ^a (4.54)	-0.0674 ^a (4.68)	0.0154 ^c (1.86)
$Inf_{j,t}$	-0.002 ^a (3.05)	-0.002 ^a (2.78)	-0.0001 (0.94)	-0.0001 (0.98)	-0.0002 ^a (3.27)	-0.0001 ^a (2.60)
$\ln Inst_{j,t-1}$	2.7482 ^a (9.13)	1.0507 ^a (3.87)	1.5642 ^a (6.07)	1.3776 ^a (4.75)	2.6572 ^a (8.99)	0.3099 ^b (2.17)
$Corruption_j$		0.3407 ^a (9.70)		0.0915 ^a (1.63)		
$Anti_direct_j$			0.1268 ^a (3.09)	0.1051 ^a (2.62)		
$Contract_j$			0.3622 ^a (9.19)	0.2935 ^a (5.36)		
$\ln Inst_{i,t-1}$					4.4664 ^a (7.54)	1.7398 ^a (5.30)
Adj. R ²	0.4655	0.5496	0.5057	0.5067	0.4743	0.6349
Observations	35257	33967	29964	29964	35457	35457
Country-pairs	861	760	589	589	861	861
Fixed effects	No	“Source”	No	No	No	“Source” & “Recipient”

The dependent variable is the natural logarithm of gross liability flows from country i (“source” country) to county j (“recipient” country) in quarter t . Absolute value of t -statistics based on robust standard errors (clustering by country pairs) are given in italics. ^a, ^b, ^c denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). The specification in column (2) includes “source” country fixed-effects (intercepts not reported). The specification in column (6) includes both “source” and “recipient” country dummies (intercepts not reported). Y denotes real GDP, Pop total population, and $Area$ the land area (in square kilometers) in the “source” (i) and capital “recipient” country (j). $Dist$ is the distance between i and j and Tie an indicator variable that equals one if the two countries have colonial or linguistic ties. $Rate_{i,t}$ is the lending rate in the “source” and $Inf_{j,t}$ the inflation rate in the “recipient” country. $Inst_{j,t-1}$ is the 0-100 ICRG index of institutional quality-political risk. $Economic_Risk_{j,t-1}$ is a measure of economic riskiness. $Corruption_j$ is a 0-10 variable that measures the level of corruption (higher values indicate lower corruption). $Anti_direct_j$ is a 0-6 measure of the legal protection of shareholders. $Contract_j$ is a 0-10 measure of legal system’s quality. The Data Appendix B.3 gives the sources and detailed variable definitions.

Table 3.10 -- Sensitivity Analysis: Additional Controls

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\ln Y_{i,t}$	0.1964 ^a (3.67)	0.0659 (1.51)	0.1972 ^a (4.03)	0.1968 ^a (4.82)	0.1968 ^a (3.94)	0.2247 ^a (9.31)	0.1047 ^a (2.34)
$\ln Y_{j,t}$	0.2084 ^b (7.25)	0.1807 ^b (7.14)	0.0386 ^b (2.44)	0.0725 ^a (3.09)	0.0574 ^a (3.57)	0.0325 ^a (3.41)	0.0593 ^a (4.35)
$\ln Pop_{i,t}$	0.8770 ^a (23.42)	1.8032 ^a (2.87)	0.8980 ^a (25.48)	0.8761 ^a (23.20)	0.8946 ^a (25.45)	5.7873 ^a (27.12)	1.4637 ^b (2.47)
$\ln Pop_{j,t}$	0.8432 ^a (18.06)	0.8459 ^a (22.08)	0.9138 ^a (17.30)	0.8396 ^a (15.07)	0.8510 ^a (16.94)	1.0452 ^a (6.12)	0.8541 ^a (10.15)
$\ln Area_i$	-0.2732 ^a (9.52)	—	-0.2902 ^a (11.16)	-0.2369 ^a (7.98)	-0.2879 ^a (10.98)	—	—
$\ln Area_j$	-0.1295 ^a (3.76)	-0.1098 ^a (3.82)	-0.0931 ^b (2.51)	-0.0616 ^c (1.69)	-0.0914 ^b (2.40)	—	-0.0966 ^b (2.40)
$\ln Dist_{i,j}$	-0.7514 ^a (15.73)	-0.6940 ^a (17.02)	-0.7276 ^a (13.80)	-0.9361 ^a (18.16)	-0.7034 ^a (15.92)	—	-0.6768 ^a (3.20)
$Tie_{i,j}$	0.4747 ^a (4.57)	0.3079 ^a (3.33)	0.2916 ^a (2.88)	0.1579 (1.45)	0.2788 ^a (2.77)	—	0.0417 (0.45)
$Rate_{i,t}$	-0.0782 ^a (6.18)	-0.0070 (0.69)	-0.0787 ^a (6.77)	-0.1763 ^a (10.19)	-0.0762 ^a (6.56)	0.0567 ^a (18.99)	0.0105 (1.19)
$Inf_{j,t}$	0.0000 (0.87)	-0.0002 (0.45)	0.0001 ^b (2.27)	-0.0001 (0.33)	0.0001 ^b (2.38)	0.0000 ^a (2.08)	0.0001 (0.00)
$\ln Inst_{j,t-1}$	2.7401 ^a (12.09)	2.2776 ^a (12.92)	1.2368 ^a (5.41)	—	1.1925 ^a (5.03)	0.1401 ^c (1.67)	1.1533 ^a (5.93)
$Schooling_{j,t}$	0.1250 ^a (5.57)	0.0942 ^a (4.87)	0.0141 (0.42)	0.1124 ^a (3.23)	0.0897 ^b (2.06)	—	0.0897 ^b (2.06)
$\ln Life_expect_{j,t}$	—	4.3397 ^a (6.96)	4.3609 ^a (5.93)	—	4.1834 ^a (6.14)	—	4.1834 ^a (6.14)
$Corruption_j$	—	—	0.0897 ^b (2.06)	0.1433 ^a (3.13)	0.0586 (1.38)	—	0.0645 ^b (1.92)
$Anti_direct_j$	—	—	-0.0284 (0.77)	0.0546 (1.39)	0.0398 (1.10)	—	0.0277 (0.83)
$Contract_j$	—	—	0.2512 ^a (4.11)	0.1977 ^a (2.81)	0.2606 ^a (5.73)	—	0.2791 ^a (7.58)
Gov_Own_j	—	—	-0.6092 ^a (3.48)	-0.8626 ^a (4.58)	-0.6795 ^a (3.83)	—	-0.7316 ^a (4.89)
$ER_reg1_{j,t}$	—	—	—	—	-0.0238 ^a (2.79)	-0.0290 ^a (9.23)	—
$ER_reg2_{j,t}$	—	—	—	—	—	—	-0.0734 ^a (3.03)
Adj. R ²	0.5246	0.5814	0.5824	0.7853	0.5824	0.0865	0.6272
Observations	28269	28269	25762	26067	28651	32884	28651
Fixed-effects	No	“Source”	No	“Between”	No	“Source” & “Recipient”	“Source”

The dependent variable is the natural logarithm of gross asset flows from country i ("source" country) to county j ("recipient" country) in quarter t . Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. ^a, ^b, ^c denote significance at the 1%, 5%, and 10% levels, respectively. Estimation is performed by OLS with period fixed effects (intercepts not reported). The specifications given in columns (2) and (7) include "source" country fixed-effects (intercepts not reported). In column (4) results from the cross-section of country-pairs is reported ("between"). Column (6) reports "fixed-effect" estimates (within). The R² in column (4) and (5) is the between and the within R², respectively.

$Schooling_{j,t}$ denotes the average years of schooling. $Life_expect_{j,t}$ is the life expectancy at birth. $ERreg1$ and ER_reg2 denote a "fine" and a "coarse" classification of the exchange rate regime (higher values indicate more flexible regime). For other variable abbreviations see Notes in Tables 4-10. The Data Appendix B.3 gives the sources and variable definitions.

Table 3.11 -- Sensitivity Analysis: Data Quality and Alternative Econometric Techniques

	OLS		Tobit		Poisson Pseudo Maximum Likelihood (PPML)		
	(1)	(2)	(3)	(4)	(5)	(6)	
<i>ln Y_{i,t}</i>	0.4611 ^a (4.10)	0.3769 ^a (4.26)	0.4604 ^a (12.48)	0.4406 ^a (5.49)	0.1262 (1.38)	0.0387 (0.41)	0.1143 (1.33)
<i>ln Y_{j,t}</i>	0.2408 ^a (3.32)	0.4627 ^a (33.21)	0.2869 ^a (21.21)	0.2583 ^a (19.66)	0.4786 ^a (7.86)	0.0079 (0.22)	0.088 (1.52)
<i>ln Pop_{i,t}</i>	1.7571 ^a (18.11)	1.2426 (1.26)	1.8321 ^a (82.87)	3.3917 ^a (4.03)	0.8737 ^a (11.67)	1.7348 (1.36)	0.8670 ^a (12.18)
<i>ln Pop_{j,t}</i>	1.1354 ^a (9.84)	1.5177 ^a (58.71)	1.1644 ^a (40.24)	1.2079 ^a (38.78)	0.9065 ^a (13.27)	1.5817 (1.59)	0.8622 ^a (10.83)
<i>ln Area_i</i>	-0.6048 ^a (8.11)	—	-0.6318 ^a (39.99)	—	-0.2847 ^a (6.63)	—	-0.2888 ^a (7.39)
<i>ln Area_j</i>	-0.0199 (0.25)	0.0115 (0.53)	-0.0750 ^a (3.65)	-0.1069 ^a (5.28)	-0.2649 ^a (5.47)	—	-0.2349 ^a (4.81)
<i>ln Dist_{ij}</i>	-1.4625 ^a (12.99)	-1.2267 ^a (40.90)	-1.5199 ^a (50.26)	-1.2455 ^a (41.04)	-0.44078 ^a (6.54)	-0.3376 ^a (6.23)	-0.4335 ^a (6.56)
<i>Tie_{ij}</i>	0.2328 (0.92)	0.8359 ^a (3.72)	0.2395 ^a (3.72)	0.0325 (0.49)	0.3433 ^b (2.04)	-0.1031 (1.14)	0.2459 (1.50)
<i>Rate_{i,t}</i>	-0.1788 ^a (5.98)	0.0374 ^b (2.21)	-0.1908 ^a (18.97)	-0.0160 (1.08)	-0.0637 ^a (3.19)	-0.0113 (0.82)	-0.0699 ^a (3.91)
<i>Inf_{j,t}</i>	-0.0003 ^c (1.86)	-0.0003 ^a (4.27)	-0.0002 ^a (3.48)	-0.0002 ^a (3.21)	-0.0006 ^a (3.47)	0.0001 (1.18)	0.0001 ^c (1.77)
<i>ln Life_expect_{j,t}</i>	7.0688 ^a (4.85)	11.4577 ^a (31.41)		5.060 ^a (13.75)			7.338 (4.02)
<i>ln Inst_{j,t-1}</i>		4.4113 ^a (24.73)	4.1016 ^a (23.31)	3.3286 ^a (17.71)	3.8592 ^a (7.82)	1.1169 ^b (2.05)	1.3027 ^a (2.70)
<i>Corruption_j</i>	0.1970 ^a (2.58)		0.0742 ^a (2.58)	0.1397 ^a (4.90)			0.0081 (0.11)
<i>Anti_direct_j</i>	0.0229 (0.26)		0.0791 ^b (2.06)	0.0311 (1.40)			0.1057 ^b (2.16)
<i>Contract_j</i>	0.2964 ^b (2.44)		0.2841 ^a (2.58)	0.2668 ^a (8.50)			0.2047 ^b (2.36)
<i>Gov_Own_j</i>	-0.8744 ^b (2.06)		-0.6092 ^a (3.48)	-0.3541 ^a (3.05)			-0.9058 ^a (3.10)
R ²	0.4036	0.0901	0.0834	0.1000			
Wald χ^2					9420.19	43138.35	12503.26
Observations	32862	39123	32521	32541	39123	39123	32541
Left-censored Obs.	2130	3891	2106	2106	3891	3891	2106
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed-effects	No	“Source”	No	“Source”	No	“Source” & “Recipient”	No

The dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t*. Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. ^a ^b ^c denote significance at the 1%, 5%, and 10% levels, respectively. In column (1) estimation is performed by OLS with period fixed effects (intercepts not reported). In columns (2), (3) and (4) estimation is performed with Tobit (maximum likelihood). The pseudo-R² (defined as one minus the ratio of the full model to the constant-only log-likelihoods) is reported. Columns (5)– (7) report estimates of a Poisson pseudo-maximum likelihood estimation. The specifications in columns (2) and (4) include a vector of source country fixed effect. The model in column (5) includes a vector of source and a vector of recipient country fixed effects (Intercepts not reported). For other variable abbreviations see Notes in Tables 4-10. The Data Appendix B.3 gives the sources and variable definitions.

Table 3.12 –Instrumental Variables Cross-Sectional Results

	(1)	(2)	(3)	(4)	(5)
$\ln Y_i$	0.2285 ^b (2.27)	0.25098 ^a (2.04)	0.3244 ^a (2.70)	0.2561 ^b (2.29)	0.3483 ^a (2.85)
$\ln Y_j$	0.3095 ^a (5.51)	0.2484 ^a (4.03)	0.301 ^a (3.27)	0.1813 ^b (2.51)	0.1754 ^b (2.18)
$\ln Pop_i$	0.8900 ^a (15.79)	0.9356 ^a (15.12)	0.975 ^a (16.62)	0.9670 ^a (16.36)	0.9560 ^a (16.94)
$\ln Pop_j$	0.9297 ^a (7.82)	0.9179 ^a (11.06)	0.8095 ^a (6.36)	0.7924 ^a (6.54)	0.6328 ^a (4.20)
$\ln Area_i$	0.2958 ^a (5.03)	-0.3248 ^a (5.70)	-0.3006 ^a (4.38)	-0.3231 ^a (4.61)	-0.2739 ^a (4.35)
$\ln Area_j$	0.0408 (0.45)	-0.0077 (0.14)	-0.1825 (1.13)	0.0113 (0.17)	0.0819 (0.65)
$\ln Dist_{i,j}$	-0.7924 ^a (7.20)	-0.8147 ^a (11.38)	-1.1684 ^a (12.07)	-0.8954 ^a (7.98)	-1.18497 ^a (8.94)
$Tie_{i,j}$	0.8829 ^a (5.02)	0.7723 ^a (4.58)	0.580 ^a (3.13)	0.455 ^b (2.44)	0.4088 ^c (1.71)
$Rate_i$	-0.0228 (0.76)	-0.0389 (1.00)	-0.0603 ^c (1.73)	-0.035 (1.06)	-0.0606 ^c (1.93)
Inf_j	0.0211 ^b (2.18)	0.0102 (1.54)	0.0218 (1.58)	0.0078 (1.19)	0.0130 ^c (1.66)
$\ln Life_expect_{j,t}$	2.4534 ^b (1.96)	3.0261 ^a (4.53)	4.291 ^a (4.16)	2.831 ^a (4.01)	5.4852 ^a (5.60)
ER_regI_j	-0.0777 ^a (2.66)	-0.0676 ^a (4.93)	-0.0453 (1.56)	-0.0683 ^a (2.70)	-0.0129 (0.37)
$Inst_j$ [<i>Political_Risk_j</i>]	0.0488 ^b (2.05)				
$Corruption_j$		0.3057 ^a (4.31)			
$Anti_direct_j$			0.4466 ^c (1.69)		
$Contract_j$				0.4398 ^a (2.79)	
Gov_Own_j					-4.276 ^a (3.75)
Adj. R ²	0.594	0.597	0.5891	0.587	0.5345
Observations	753	682	584	589	717
Over-identification Test	0.367	2.35	0.784	4.154	3.16
Sargan-Hansen J statistic	(0.83)	(0.31)	(0.676)	(0.245)	(0.368)
	Religious, Linguistic and Ethnical Fractionalization			Legal Origin Dummies	
First-stage R ² of excluded instruments	0.3504	0.417	0.2361	0.464	0.2175

The Table reports instrumental variables estimates. The dependent variable is the natural logarithm of gross asset flows from country i ("source" country) to county j ("recipient" country) in the first quarter of 2000. Absolute values of t-statistics based on robust standard errors (clustered at the recipient country) are given in italics. ^{a, b, c} denote significance at the 1%, 5%, and 10% levels, respectively.

The table reports a Sargan-Hansen test of overidentifying assumptions (the J statistic and the p value in parenthesis). Under the null the excluded instruments are valid instruments. The last row gives the R squared in the first stage of the excluded instruments. In columns (1) and (2) the instruments for the composite institutions (political risk) and the corruption index [*Corruption_j*] are measures of linguistic, ethnical and religious fragmentation. In column (3), (4) and (5) the instruments for the antidirector's rights measure [*Anti_direct_j*], the contract enforceability index [*Contract_j*] and the percentage that the government owns in the ten largest banks [*Gov_Own_j*] are legal origin dummy variables. For variable abbreviations see Notes in Tables 4-10. The Data Appendix B.3 gives the sources and variable definitions.

Table 3.13 -- Sample Sensitivity Analysis

		<i>Inst_{j,t-1}</i>	<i>Corruption_j</i>	<i>Contract_j</i>	<i>Anti_directs_j</i>	<i>Gov_Own_j</i>
<i>Panel A</i>						
Excluding USA	(a)	0.0574 ^a (15.73)	—	—	—	—
	(b)	—	-0.0280 (0.73)	0.2984 ^a (5.81)	0.1317 ^a (2.74)	-0.9014 ^a (4.72)
	(c)	0.0339 ^a (8.01)	0.0227 (0.61)	0.2285 ^a (4.83)	0.0580 (1.23)	-0.5407 ^a (2.99)
<i>Panel B</i>						
Excluding G3	(a)	0.0555 ^a (15.51)	—	—	—	—
	(b)	—	-0.0497 (1.28)	0.2855 ^a (5.54)	0.1258 ^a (2.64)	-0.9021 ^a (4.77)
	(c)	0.0327 ^a (7.87)	0.0010 (0.03)	0.2194 ^a (4.58)	0.0556 (1.18)	-0.5550 ^a (3.10)
<i>Panel C</i>						
Excluding intra-G7	(a)	0.0436 ^a (10.35)	—	—	—	—
	(b)	—	-0.1982 ^a (3.58)	0.3013 ^a (4.98)	0.0508 (0.88)	-1.0852 ^a (5.06)
	(c)	0.0212 ^a (4.85)	-0.1634 ^a (2.96)	0.2571 ^a (4.49)	-0.0711 (1.28)	-0.8314 ^a (3.96)
<i>Panel D</i>						
Data before 1994	(a)	0.0529 ^a (14.13)	—	—	—	—
	(b)	—	-0.0610 (1.33)	0.3809 ^a (6.71)	0.1143 ^b (1.92)	-0.8519 ^a (3.89)
	(c)	0.0316 ^a (5.88)	0.0495 (1.05)	0.3037 ^a (5.33)	-0.0215 (0.34)	-0.6226 ^a (2.99)
<i>Panel E</i>						
Data after 1993	(a)	0.0677 ^a (13.18)	—	—	—	—
	(b)	—	0.020 (0.05)	0.2142 ^a (3.69)	0.1477 ^a (2.87)	-0.9398 ^a (4.39)
	(c)	0.0457 ^a (8.96)	0.0173 (0.43)	0.1652 ^a (3.11)	0.0854 ^c (1.67)	-0.4423 ^b (2.19)
<i>Panel F</i>						
Without year intercepts	(a)	0.05587 ^a (16.43)	—	—	—	—
	(b)	—	-0.0189 (0.50)	0.2996 ^a (5.88)	0.1258 ^a (2.59)	-0.9100 ^a (4.75)
	(c)	0.0354 ^a (8.70)	0.0306 (0.83)	0.2263 ^a (4.81)	0.0480 (1.01)	-0.5332 ^a (2.94)

The dependent variable is the natural logarithm of gross asset flows from country *i* ("source" country) to county *j* ("recipient" country) in quarter *t*. Absolute value of t-statistics based on robust standard errors (clustering by country pairs) are given in italics. ^a, ^b, ^c denote significance at the 1%, 5%, and 10% levels, respectively. Not recorded independent variables: $\ln Y_{i,t}$, $\ln Y_{j,t}$, $\ln Pop_{i,t}$, $\ln Pop_{j,t}$, $\ln Area_{i,t}$, $\ln Area_{j,t}$, $\ln Dist_{i,j}$, $Tic_{i,j}$, $Rate_{i,t}$, $Inf_{j,t}$. *Inst_{j,t-1}* is the 0-100 ICRG index of institutional quality-political risk. *Corruption_j* is a 0-10 variable that measures the level of corruption (higher values indicate lower corruption). *Anti_direct_j* is a 0-6 measure of the legal protection of shareholders. *Contract_j* is a 0-10 measure of legal system's quality. *Gov_Own_j* denotes the percentage that the government owns in the ten largest banks. Appendix B.3 gives the sources and detailed variable definitions.

Table 4.1 -- Industry Measures of Human Capital Intensity (Dependence)

ISIC Code	Industry Name	<i>HCINT</i>	<i>HCINT(SEC)</i>	<i>HCINT(COLL)</i>
3522	Drugs	13.45	87.22%	35.14%
3825	Office, computing	13.40	90.01%	29.29%
353	Petroleum refineries	12.94	87.26%	25.05%
384	Transportation equipment	12.86	84.20%	23.42%
3511	Basic chemicals excl. fertilizers	12.79	84.06%	24.54%
3832	Radio	12.55	83.29%	18.79%
342	Printing and Publishing	12.54	83.89%	19.97%
351	Industrial chemicals	12.42	81.60%	20.03%
385	Professional goods	12.22	79.31%	18.50%
352	Chemicals	12.15	77.08%	18.96%
383	Electric machinery	12.01	76.08%	15.29%
354	Petroleum and coal products	11.92	69.06%	14.08%
382	Machinery	11.81	76.23%	10.23%
3513	Synthetic resins	11.80	75.21%	15.14%
313	Beverages	11.78	73.81%	13.09%
3411	Pulp, paper	11.72	75.23%	10.68%
3841	Ship	11.71	74.78%	9.99%
355	Rubber products	11.67	74.39%	10.26%
3843	Motor vehicle	11.65	73.46%	10.95%
369	Non-metal products	11.48	67.80%	14.20%
356	Plastic products	11.48	71.50%	10.19%
341	Paper and Products	11.46	70.51%	11.05%
381	Metal products	11.43	69.87%	9.71%
372	Non-ferrous metals	11.42	70.31%	9.66%
362	Glass	11.37	69.13%	8.68%
371	Iron & Steel	11.33	69.61%	8.32%
390	Other ind.	11.11	65.12%	11.92%
361	Pottery	11.09	65.01%	9.87%
314	Tobacco	11.00	66.04%	10.99%
311	Food products	10.93	65.55%	9.74%
332	Furniture	10.59	58.31%	7.09%
331	Wood Products	10.54	59.29%	7.06%
321	Textile	10.38	53.83%	6.94%
3211	Spinning	10.21	49.76%	5.49%
324	Footwear	10.14	52.07%	3.69%
323	Leather	10.12	50.69%	7.06%
322	Apparel	10.04	51.09%	5.07%
	Mean	11.61	71.13%	13.52%
	Standard Deviation	0.90	10.87%	7.12%
	Median	11.65	71.50%	10.95%
	0.25 Percentile	11.09	65.55%	9.66%
	0.75 Percentile	12.15	77.08%	18.50%

Table 4.1 reports average years of schooling of employees (*HCINT*) for all industries in our sample and two additional measures of industry-level human capital intensity (*HCINT(SEC)* and *HCINT(COLL)*). *HCINT(SEC)* is the ratio of hours worked by employees with at least 12 years of schooling (secondary education) to total hours worked. *HCINT(COLL)* is the ratio of hours worked by employees with at least 16 years of schooling (college) to total hours worked. The bottom rows give some descriptive statistics. The data comes from the US Census of Population Integrated Public Use Microdata Series and corresponds to 1980. See the Appendix B.4 for details on the construction of the three human capital intensity measures.

Table 4.2. -- Correlation Structure

Panel A - Industry-level Variables

<i>HCINT</i>	1								
<i>HCINT(SEC)</i>	0.9780*	1							
<i>HCINT(COLL)</i>	0.9239*	0.8502*	1						
<i>NONPROD</i>	0.8665*	0.8193*	0.8660*	1					
<i>EXTFIN</i>	0.5614*	0.5200*	0.5431*	0.4885*	1				
<i>INTANG</i>	0.2253	0.2421	0.281	0.3741	0.1443	1			
<i>INVINT</i>	0.5721*	0.5654*	0.5645*	0.5808*	0.8116*	0.4038	1		
<i>TRADEINT</i>	-0.2018	-0.2135	-0.233	-0.2149	-0.1149	-0.1553	-0.1047	1	
<i>OPPORT</i>	0.3475	0.3397	0.3684	0.4213	0.6498*	0.3557	0.7666*	-0.1927	1

Panel B - Country-level Variables

<i>SCH80(BL)</i>	1								
<i>SCH70(BL)</i>	0.9698*	1							
$\Delta(SCH(BL)9070)$	-0.015	-0.1761	1						
$\Delta(SCH(BL)9080)$	-0.2837	-0.2424	0.6824*	1					
<i>LFQUAL</i>	0.6622*	0.6651*	0.1073	0.0825	1				
<i>PRIV</i>	0.4188*	0.4071*	0.1239	0.0987	0.5884*	1			
<i>K/Y</i>	0.7284*	0.7650*	0.0661	0.1389	0.7016*	0.5753*	1		
<i>PROP</i>	0.6123*	0.6241*	-0.054	-0.1168	0.5678*	0.3783	0.5879*	1	
<i>Y</i>	0.7703*	0.7881*	-0.1304	-0.1936	0.5091*	0.4251*	0.6088*	0.6342*	1

Panel A reports correlations between the main industry-level variables. The correlations are based on either 36 or 37 industry observations, depending on the variables considered. Panel B reports correlations between the main country-level variables. These correlations are based on 39 to 43 country observations, depending on the variables considered. The Data Appendix B.4 gives detailed variable definitions and sources.

* denotes that the correlation is significant at the 1% confidence level.

Table 4.3 -- Human Capital Level (Quantity & Quality) and Industry Growth

	Average Years of Schooling (<i>SCH</i>)				Labor Force Quality (<i>LFQUAL</i>)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>FRACTs,c</i>	-0.8817 <i>(3.48)</i>	-0.9402 <i>(3.73)</i>	-0.9052 <i>(3.55)</i>	-0.9631 <i>(3.80)</i>	-1.0199 <i>(3.95)</i>	-0.9757 <i>(3.75)</i>	-0.9367 <i>(3.56)</i>	-0.9994 <i>(3.80)</i>
Human Capital Quantity Interaction [<i>SCH80 X HCINT</i>]	0.0034 <i>(2.55)</i>	0.0024 <i>(1.87)</i>	0.0030 <i>(2.24)</i>	0.0021 <i>(1.56)</i>			-0.0008 <i>(0.56)</i>	-0.0015 <i>(1.09)</i>
Human Capital Quality Interaction [<i>LFQUAL X HCINT</i>]					0.0869 <i>(3.50)</i>	0.0715 <i>(2.82)</i>	0.0931 <i>(3.13)</i>	0.0865 <i>(2.96)</i>
Finance Interaction [<i>PRIV X EXTFIN</i>]		0.1015 <i>(2.77)</i>		0.1004 <i>(2.76)</i>		0.0734 <i>(2.15)</i>		0.0753 <i>(2.18)</i>
Property Rights Interaction [<i>PROP X INTANG</i>]			0.0069 <i>(2.48)</i>	0.0068 <i>(2.47)</i>		0.0057 <i>(2.07)</i>		0.0060 <i>(2.11)</i>
Adjusted R2	0.222	0.245	0.224	0.247	0.216	0.257	0.233	0.257
Obs	1240	1207	1240	1207	1277	1217	1240	1217
Countries	40	40	40	40	42	41	40	41
Industry-Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Differential in Real Growth (75%-25%)	0.0177	0.0128	0.0156	0.0109	0.0220	0.0181	0.0236	0.0219

The dependent variable is the average annual real growth rate of value added at the industry-country level for the period 1980-1989 (*GROWTHs,c*). *FRACTs,c* indicates the industry share in total value added in manufacturing in 1980. The human capital quantity (years of schooling) interaction is the product of industry-level human capital intensity (*HCINT*) and country-level average years of schooling in 1980 (*SCH80*). The human capital quality (schooling quality) interaction is the product of *HCINT* and an indicator of the country-level quality of the labor force (*LFQUAL*). The finance interaction is the product of industry-level dependence on external finance (*EXTFIN*) and country-level financial development in 1980 (*PRIV*). The property rights interaction is the product of industry dependence on intangible assets (*INTANG*) and a country-level measure of property rights protection (*PROP*).

The last row reports on the magnitude of the human capital level effect. We calculate how much faster an industry at the 75th percentile of human capital intensity is predicted to grow relative to an industry at the 25th percentile, when comparing a country with a level of human capital at the 75th percentile to a country at the 25th percentile. The Data Appendix B.4 gives more detailed variable definitions and the sources of the data. All specifications include country and industry fixed effects. Absolute values of t-statistics based on robust standard errors are reported in parenthesis and italics below the coefficients.

Table 4.4 -- Human Capital Accumulation and Industry Growth

	(1)	(2)	(3)	(4)	(5)	(6)
<i>FRACTs,c</i>	-0.8274 <i>(3.18)</i>	-0.9017 <i>(3.46)</i>	-0.8603 <i>(3.27)</i>	-0.9303 <i>(3.53)</i>	-0.9090 <i>(3.46)</i>	-0.9350 <i>(3.56)</i>
Human Capital Accumulation Interact [$\Delta(SCH9070) \times HCINT$]	0.0087 <i>(2.37)</i>	0.0108 <i>(3.44)</i>	0.0086 <i>(2.36)</i>	0.0108 <i>(3.44)</i>	0.0103 <i>(3.26)</i>	0.0107 <i>(3.30)</i>
Finance Interaction [$PRIV \times EXTFIN$]		0.1081 <i>(2.87)</i>		0.1042 <i>(2.82)</i>		0.0965 <i>(2.05)</i>
Property Rights Interaction [$PROP \times INTANG$]			0.0084 <i>(2.92)</i>	0.0078 <i>(2.81)</i>		0.0074 <i>(2.45)</i>
Investment Interaction [$\Delta K/L9070 \times INVINT$]					0.0001 <i>(3.11)</i>	0.0000 <i>(0.37)</i>
Adjusted R2	0.263	0.241	0.267	0.245	0.238	0.244
Obs	1203	1171	1203	1171	1171	1171
Countries	39	39	39	39	39	39
Industry-Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes
Differential in Real Growth (75%-25%)	0.0090	0.0112	0.0089	0.0112	0.0107	0.0111

The dependent variable is the annual compounded growth rate of real value added at the industry-country level for the period 1980-1989 (*GROWTHs,c*). *FRACTs,c* indicates the industry share in total value added in manufacturing in 1980. The human capital accumulation interaction is the product of industry-level human capital intensity (*HCINT*) and the country-level change in average years of schooling over the 1970-1990 period (ΔSCH). The finance interaction is the product of industry-level dependence on external finance (*EXTFIN*) and country-level financial development in 1980 (*PRIV*). The property rights interaction is the product of industry dependence on intangible assets (*INTANG*) and a country-level measure of property rights protection (*PROP*).

The investment interaction is the product of an industry-level measure of physical capital intensity and the country-level change in capital per worker over the 1970-1990 period ($\Delta K/L$). In columns (5) and (6), the industry-level variable is the Rajan and Zingales (1998) investment intensity, defined as the ratio of capital expenditures to property plant and equipment over the 1980-1989 period (*INVINT*). The last row reports on the magnitude of the human capital accumulation effect. We calculate how much faster an industry at the 75th percentile of human capital intensity is predicted to grow relative to an industry at the 25th percentile, when comparing a country with a rate of human capital accumulation over the 1970-1990 period at the 75th percentile to a country at the 25th percentile. The Data Appendix B.4 gives more detailed variable definitions and the sources of the data. All specifications include country and industry fixed effects. Absolute values of t-statistics based on robust standard errors are reported in parenthesis and italics below the coefficients.

Table 4.5 -- Capital Accumulation, Human Capital Level and Industry Growth

	Schooling Years (<i>SCH</i>)		Labor Force Quality (<i>LFQUAL</i>)		Both <i>SCH</i> & <i>LFQUAL</i>		Physical Capital	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>FRACTs,c</i>	-0.8657 (3.23)	-0.9424 (3.50)	-0.9076 (3.31)	-0.9681 (3.52)	-0.9075 (3.30)	-0.9689 (3.52)	-0.9356 (3.46)	-0.9578 (3.47)
Human Capital Accumulation Interaction [$\Delta(SCH9070) \times HCINT$]	0.0107 (2.77)	0.0123 (3.71)	0.0067 (1.88)	0.0093 (3.03)	0.0068 (1.84)	0.0089 (2.83)	0.0117 (3.48)	0.0087 (2.90)
Human Capital Quantity Interaction [<i>SCH70</i> \times <i>HCINT</i>]	0.0038 (2.59)	0.0026 (1.78)			0.0001 (0.08)	-0.0004 (0.32)	0.0032 (2.01)	
Human Capital Quality Interaction [<i>LFQUAL</i> \times <i>HCINT</i>]			0.0770 (2.99)	0.0621 (2.35)	0.0759 (2.54)	0.0668 (2.26)		0.0675 (2.32)
Finance Interaction [<i>PRIV</i> \times <i>EXTFIN</i>]		0.0887 (2.47)		0.0707 (2.02)		0.0709 (2.02)	0.0864 (1.90)	0.0798 (1.83)
Property Rights Interaction [<i>PROP</i> \times <i>INTANG</i>]		0.0065 (2.25)		0.0061 (2.07)		0.0061 (2.07)	0.0070 (2.28)	0.0070 (2.26)
Investment Interaction [$\Delta K/L9070$] \times <i>INVINT</i>]							0.0109 (0.48)	-0.0040 (0.16)
Physical Capital Level Interaction [<i>K L70</i>] \times <i>INVINT</i>]							-0.0211 (1.51)	-0.0154 (1.17)
Adjusted R2	0.220	0.248	0.271	0.253	0.226	0.253	0.248	0.253
Obs	1203	1171	1203	1171	1203	1171	1171	1171
Countries	39	39	39	39	39	39	39	39
Industry-Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The dependent variable is the average annual real growth rate of value added at the industry-country level for the period 1980-1989 (*GROWTHs,c*). *FRACTs,c* indicates the industry share in total value added in manufacturing in 1980. The human capital accumulation interaction is the product of industry-level human capital intensity (*HCINT*) and the country-level change in average years of schooling over the 1970-1990 period ($\Delta S C H$). The human capital quantity (years of schooling) interaction is the product of industry-level human capital intensity (*HCINT*) and country-level average years of schooling in 1970 (*SCH70*). The human capital quality (schooling quality) interaction is the product of *HCINT* and an indicator of the country-level quality of the labor force (*LFQUAL*).

The finance interaction is the product of industry-level dependence on external finance (*EXTFIN*) and country-level financial development in 1980 (*PRIV*). The property rights interaction is the product of industry dependence on intangible assets (*INTANG*) and a country-level measure of property rights protection (*PROP*).

The investment interaction is the product of industry-level investment intensity (*INVINT*) and the country-level change in capital per worker over the 1970-1990 period ($\Delta K/L$). The physical capital level interaction is the product of *INVINT* and capital per worker in 1970 (*K L*). The Data Appendix B.4 gives more detailed variable definitions and the sources of the data. All specifications include country and industry fixed effects. Absolute values of t-statistics based on robust standard errors are reported in parenthesis and italics below the coefficients.

Table 4.6 -- Financial Development, Human Capital and Industry Growth

	(1)	(2)	(3)	(4)	(5)	(6)
<i>FRACTs,c</i>	-0.9469 (3.52)	-0.9743 (3.53)	-0.9448 (3.52)	-0.9713 (3.54)	-0.9332 (3.47)	-0.9676 (3.52)
Human Capital Accumulation Interaction [$\Delta(SCH9070) \times HCINT$]	0.0126 (3.81)	0.0094 (3.06)	0.0124 (3.78)	0.0094 (3.06)	0.0129 (3.84)	0.0094 (3.08)
Human Capital Quantity Interaction [$SCH70 \times HCINT(SCH)$]	0.0028 (1.93)		0.0027 (1.87)		0.0031 (2.09)	
Human Capital Quality Interaction [$LFQUAL \times HCINT(SCH)$]		0.0660 (2.53)		0.0641 (2.45)		0.0698 (2.66)
Finance Interaction [$PRIV \times EXTFIN$]	0.0819 (2.34)	0.0626 (1.84)	0.0344 (0.81)	0.0139 (0.34)		
Property Rights Interaction [$PROP \times INTANG$]	0.0058 (2.02)	0.0053 (1.82)	0.0051 (1.90)	0.0046 (1.69)	0.0047 (1.73)	0.0043 (1.58)
Finance-Trade Credit Interaction [$PRIV \times TRADEINT$]	-0.8580 (2.85)	-0.9060 (2.91)			-0.5672 (1.82)	-0.6580 (2.05)
Finance-Growth Opportunities Interaction [$PRIV \times OPPORT$]			1.1524 (1.71)	1.1968 (1.77)	1.1560 (1.98)	0.9699 (1.66)
Adjusted R2	0.252	0.258	0.251	0.256	0.252	0.259
Obs	1171	1171	1171	1171	1171	1171
Countries	39	39	39	39	39	39
Industry-Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes

The dependent variable is the average annual real growth rate of value added at the industry-country level for the period 1980-1989 ($GROWTHs,c$). $FRACTs,c$ indicates the industry share in total value added in manufacturing in 1980. The human capital accumulation interaction is the product of industry-level human capital intensity ($HCINT$) and the country-level change in average years of schooling over the 1970-1990 period (ΔSCH). The human capital quantity (years of schooling) interaction is the product of industry-level human capital intensity ($HCINT$) and country-level average years of schooling in 1970 ($SCH70$). The human capital quality (schooling quality) interaction is the product of $HCINT$ and an indicator of the country-level quality of the labor force ($LFQUAL$). The finance interaction is the product of industry-level dependence on external finance ($EXTFIN$) and country-level financial development in 1980 ($PRIV$).

The property rights interaction is the product of industry dependence on intangible assets ($INTANG$) and a country-level measure of property rights protection ($PROP$). The finance trade credit interaction is the product of an industry-level measure of trade credit dependence ($TRADEINT$) and the country-level financial development ($PRIV$) in 1980. The finance growth opportunities interaction is the product of an industry-level measure of global industry growth opportunities ($OPPORT$) and country-level financial development in 1980. The Data Appendix B.4 gives more detailed variable definitions and the sources of the data. All specifications include country and industry fixed effects. Absolute values of t-statistics based on robust standard errors are reported in parenthesis and italics below the coefficients.

Table 4.7 -- Human Capital Accumulation, Human Capital Level and Employment Growth

	Average Schooling Years (<i>SCH</i>)				Labor Force Quality (<i>LBQUAL</i>)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>FRACTs,c</i>	-0.1222 <i>(1.16)</i>	-0.1437 <i>(1.36)</i>	-0.1433 <i>(1.36)</i>	-0.1404 <i>(1.33)</i>	-0.1472 <i>(1.35)</i>	-0.1659 <i>(1.52)</i>	-0.1659 <i>(1.52)</i>	-0.1643 <i>(1.51)</i>
Human Capital Accumulation Interaction [$\Delta(SCH9070) \times HCINT$]	0.0083 <i>(4.61)</i>	0.0087 <i>(4.81)</i>	0.0087 <i>(4.79)</i>	0.0088 <i>(4.81)</i>	0.0045 <i>(2.71)</i>	0.0050 <i>(2.99)</i>	0.0050 <i>(2.98)</i>	0.0050 <i>(3.00)</i>
Human Capital Quantity Interaction [$SCH70 \times HCINT(SCH)$]	0.0041 <i>(5.15)</i>	0.0040 <i>(4.85)</i>	0.0040 <i>(4.78)</i>	0.0041 <i>(4.80)</i>				
Human Capital Quality Interaction [$LFQUAL \times HCINT(SCH)$]					0.0680 <i>(4.29)</i>	0.0666 <i>(4.02)</i>	0.0666 <i>(3.93)</i>	0.0671 <i>(3.96)</i>
Finance Interaction [$PRIV \times EXTFIN$]		0.0217 <i>(1.57)</i>	0.0218 <i>(1.58)</i>			0.0161 <i>(1.21)</i>	0.0161 <i>(1.21)</i>	
Property Rights Interaction [$PROP \times INTANG$]		0.0005 <i>(0.41)</i>	0.0006 <i>(0.46)</i>	0.0003 <i>(0.22)</i>		0.0008 <i>(0.62)</i>	0.0008 <i>(0.61)</i>	0.0006 <i>(0.43)</i>
Finance-Trade Credit Interaction [$PRIV \times TRADEINT$]			0.0821 <i>(0.54)</i>	0.1847 <i>(1.17)</i>			0.0001 <i>(0.00)</i>	0.0806 <i>(0.48)</i>
Finance-Growth Opportunities Interaction [$PRIV \times OPPORT$]				0.3308 <i>(1.64)</i>				0.2614 <i>(1.29)</i>
Adjusted R2	0.428	0.437	0.437	0.437	0.431	0.440	0.439	0.439
Obs	1124	1094	1094	1094	1124	1094	1094	1094
Countries	39	39	39	39	39	39	39	39
Industry-Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The dependent variable is the annual logarithmic growth rate in employment at the industry-country level for the period 1981-1990 ($\Delta MPGRs,c$). *FRACTs,c* indicates the industry share in total value added in manufacturing in 1980. The human capital accumulation interaction is the product of industry-level human capital intensity (*HCINT*) and the country-level change in average years of schooling over the 1970-1990 period (ΔSCH). The human capital quantity (years of schooling) interaction is the product of industry-level human capital intensity (*HCINT*) and country-level average years of schooling in 1970 (*SCH70*). The human capital quality (schooling quality) interaction is the product of *HCINT* and an indicator of the country-level quality of the labor force (*LFQUAL*). The finance interaction is the product of industry-level dependence on external finance (*EXTFIN*) and country-level financial development in 1980 (*RRIV*).

The property rights interaction is the product of industry dependence on intangible assets (*INTANG*) and a country-level measure of property rights protection (*PROP*). The finance trade credit interaction is the product of an industry-level measure of trade credit dependence (*TRADEINT*) and the country-level financial development in 1980 (*RRIV*). The finance growth opportunities interaction is the product of an industry-level measure of global industry growth opportunities (*OPPORT*) and country-level financial development in 1980. The Data Appendix B.4 gives more detailed variable definitions and the sources of the data. All specifications include country and industry fixed effects. Absolute values of t-statistics based on robust standard errors are reported in parenthesis and italics below the coefficients.

Table 4.8 -- Tariff Protection, Human Capital and Industry Growth

	Median tariff rate threshold				40% tariff rate threshold			
	World Bank		Sachs-Warner		World Bank		Sachs-Warner	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>FRACTs,c</i>	-0.9774 <i>(3.54)</i>	-0.9365 <i>(3.51)</i>	-0.9984 <i>(3.50)</i>	-0.9812 <i>(3.57)</i>	-0.9841 <i>(3.37)</i>	-0.9523 <i>(3.36)</i>	-1.0241 <i>(3.43)</i>	-0.9886 <i>(3.42)</i>
HC Accumulation - HC Intensity in "Low Tariff" [<i>Δ(SCH9070) X HCINT X LOW</i>]	0.0049 <i>(2.05)</i>	0.0114 <i>(3.29)</i>	0.0118 <i>(3.03)</i>	0.0149 <i>(3.97)</i>	0.0100 <i>(3.32)</i>	0.0122 <i>(3.88)</i>	0.0094 <i>(2.55)</i>	0.0121 <i>(3.35)</i>
HC Accumulation - HC Intensity in "High Tariff" [<i>Δ(SCH9070) X HCINT X HIGH</i>]	0.0125 <i>(1.72)</i>	0.0166 <i>(2.39)</i>	0.0029 <i>(0.32)</i>	0.0116 <i>(1.76)</i>	-0.0268 <i>(1.06)</i>	-0.0250 <i>(0.89)</i>	-0.0272 <i>(0.81)</i>	-0.0277 <i>(0.88)</i>
HC Quality - HC Intensity in "Low Tariff" [<i>LFQUAL X HCINT X LOW</i>]	0.0938 <i>(3.20)</i>		0.0563 <i>(1.93)</i>		0.0498 <i>(2.43)</i>		0.0689 <i>(2.77)</i>	
HC Quality - HC Intensity in "High Tariff" [<i>LFQUAL X HCINT X HIGH</i>]	0.0848 <i>(1.39)</i>		0.0952 <i>(1.42)</i>		0.2518 <i>(1.48)</i>		0.4629 <i>(1.34)</i>	
HC Quantity - HC Intensity in "Low Tariff" [<i>SCH70 X HCINT X LOW</i>]		0.0032 <i>(2.06)</i>		0.0024 <i>(1.48)</i>		0.0021 <i>(1.69)</i>		0.0023 <i>(1.72)</i>
HC Quantity - HC Intensity in "High Tariff" [<i>SCH70 X HCINT X HIGH</i>]		0.0000 <i>(0.01)</i>		0.0010 <i>(0.26)</i>		0.0181 <i>(0.89)</i>		0.0228 <i>(1.19)</i>
Other Controls	Financial Development X Growth Opportunities [<i>PRIV X OPPORT</i>]; Financial Development X Trade Affinity [<i>PRIV X TRADEINT</i>]; Property Rights Protection X Intangibility Intensity [<i>PROP X INTANG</i>]							
Adjusted R2	0.260	0.251	0.263	0.257	0.265	0.257	0.268	0.261
Obs	1171	1171	1078	1078	1171	1171	1078	1078
Countries	39	39	35	35	39	39	35	35
Industry-Country Fixed-Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The dependent variable is the average annual real growth rate of value added at the industry-country level for the period 1980-1989 (*GROWTHs,c*). *FRACTs,c* indicates the industry share in total value added in manufacturing in 1980. *HIGH* and *LOW* are indicator variables that equal one if a country has relatively high and relatively low tariff rates respectively and zero otherwise. In columns (1)-(4) we use the median value of tariffs in our sample as a threshold between *HIGH* and *LOW*. In columns (5)-(8) we use a 40% threshold. Tariff data is taken from the World Bank in columns (1), (2), (5), and (6). In columns (3), (4), (7) and (8) we use tariff data from Sachs and Warner (1995). The human capital accumulation interactions (*Δ(SCH9070) X HCINT X HIGH* and *Δ(SCH9070) X HCINT X LOW*) equal the product of industry-level human capital intensity (HCINT) and the country-level change in average years of schooling over the 1970-1990 period (*ΔSCH*).

The human capital quantity (years of schooling) interactions (for *HIGH* and *LOW* tariff countries) equal the product of industry-level human capital intensity (HCINT) and country-level average years of schooling in 1970 (*SCH70*). The human capital quality (schooling quality) interactions (for *HIGH* and *LOW* tariff countries) equal the product of HCINT and an indicator of the country-level quality of the labor force (*LFQUAL*). All specifications also include (coefficients not reported): A finance trade credit interaction, defined as the product of an industry-level measure of trade credit dependence (*TRADEINT*) and the country-level financial development in 1980 (*RRIV*). A finance growth opportunities interaction, defined as the product of an industry-level measure of global industry growth opportunities (*OPPORT*) and country-level financial development in 1980 (*RRIV*). And a property rights interaction, defined as the product of industry dependence on intangible assets (*INTANG*) and a country-level measure of property rights protection (*PROP*). The Data Appendix B.4 gives more detailed variable definitions and the sources of the data.

All specifications include country and industry fixed effects. Absolute values of t-statistics based on robust standard errors are reported in parenthesis and italics below the coefficients.

Table 4.9 -- Measurement Error and Logarithmic Specifications

	Change (1990-1980) in schooling and initial (1980) level of schooling measured as					
	Average Schooling Years			Logarithm of Average Schooling Years		
	<i>Barro-Lee</i> (1)	<i>Cohen-Soto</i> (2)	<i>IV Barro-Lee</i> (3)	<i>Barro-Lee</i> (4)	<i>Cohen-Soto</i> (5)	<i>IV Barro-Lee</i> (6)
<i>FRACTs,c</i>	-0.9808 (3.78)	-0.9972 (3.50)	-1.0176 (3.52)	-0.9929 (3.71)	-1.0112 (3.51)	-1.0273 (3.48)
Human Capital Accumulation Interaction [$\Delta(SCH9080) \times HCINT$]	0.0193 (3.76)	0.0203 (2.46)	0.0294 (2.39)	0.1505 (3.50)	0.0850 (2.00)	0.1404 (1.91)
Human Capital Quantity Interaction [$SCH80 \times HCINT$]	0.0036 (2.70)	0.0026 (2.43)	0.0039 (2.60)	0.0466 (3.89)	0.0332 (2.63)	0.0455 (2.44)
Finance Interaction [$PRIV \times EXTFIN$]	0.0583 (1.32)	0.0486 (1.09)	0.0507 (1.13)	0.0473 (1.12)	0.0444 (1.01)	0.0434 (1.01)
Property Rights Interaction [$PROP \times INTANG$]	0.0043 (1.63)	0.0050 (1.85)	0.0044 (1.57)	0.0036 (1.35)	0.0047 (1.71)	0.0041 (1.45)
Finance-Trade Credit Interaction [$PRIV \times TRADEINT$]	-0.6370 (1.90)	-0.5810 (1.67)	-0.6062 (1.66)	-0.6928 (2.05)	-0.5894 (1.68)	-0.6272 (1.74)
Finance-Growth Opportunities Interaction [$PRIV \times OPPORT$]	0.6672 (0.92)	0.6950 (0.91)	0.6779 (0.89)	0.6797 (0.94)	0.6944 (0.91)	0.6931 (0.92)
Adjusted R2	0.265	0.273	0.317	0.274	0.272	0.3303
Obs	1207	1131	1121	1207	1131	1121
Countries	40	38	37	40	38	37
Industry-Country Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes

The dependent variable is the average annual real growth rate of value added at the industry-country level for the period 1980-1989 ($GROWTHs,c$). *FRACTs,c* indicates the industry share in total value added in manufacturing in 1980. The human capital accumulation interaction is the product of industry-level human capital intensity ($HCINT$) and the country-level change in average years of schooling over the 1970-1980 period (ΔSCH). The human capital quantity (years of schooling) interaction is the product of industry-level human capital intensity ($HCINT$) and country-level average years of schooling in 1980 ($SCH80$). In columns (1) and (4) we use schooling data from Barro and Lee (2001). In columns (2) and (5) we use schooling data from Cohen and Soto (2002). Columns (3) and (6) report instrumental-variables estimates using Cohen-Soto changes in schooling and the initial schooling level as instruments for the corresponding Barro-Lee variables. The models estimated in columns (4)-(6) rely on the logarithmic change in schooling and the log level of schooling in 1980. The finance interaction is the product of industry-level dependence on external finance ($EXTFIN$) and country-level financial development in 1980 ($PRIV$). The property rights interaction is the product of industry dependence on intangible assets ($INTANG$) and a country-level measure of property rights protection ($PROP$). The finance trade credit interaction is the product of an industry-level measure of trade credit dependence ($TRADEINT$) and the country-level financial development in 1980 ($PRIV$). The finance growth opportunities interaction is the product of an industry-level measure of global industry growth opportunities ($OPPORT$) and country-level financial development in 1980. The Data Appendix B 4 gives more detailed variable definitions and the sources of the data. All specifications include country and industry fixed effects. Absolute values of t-statistics based on robust standard errors are reported in parenthesis and italics below the coefficients.

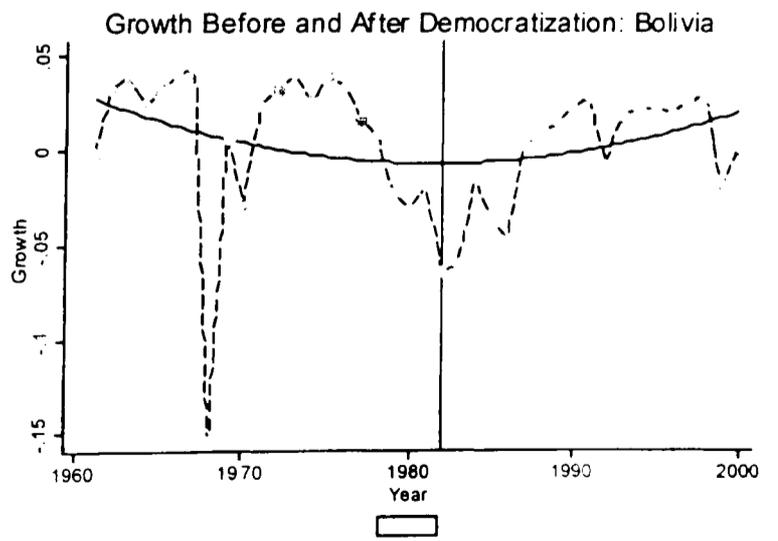
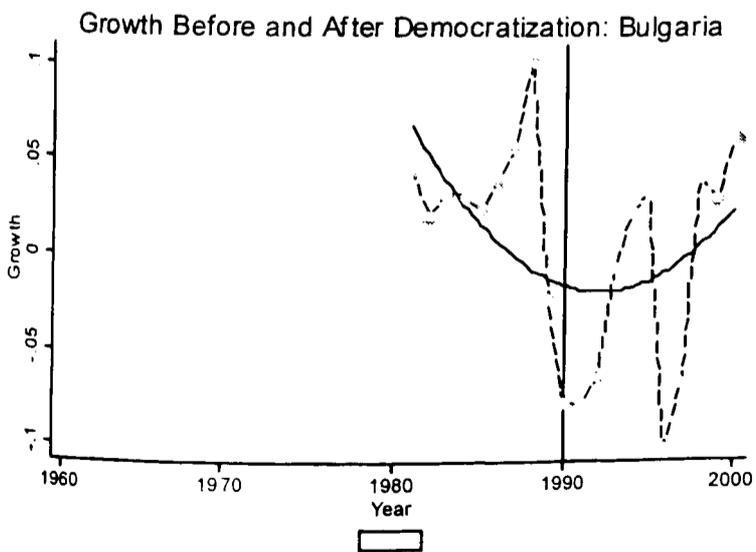
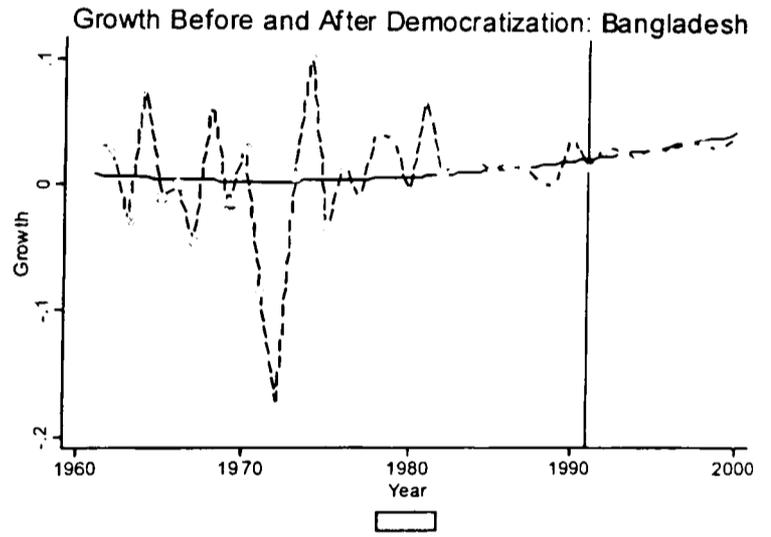
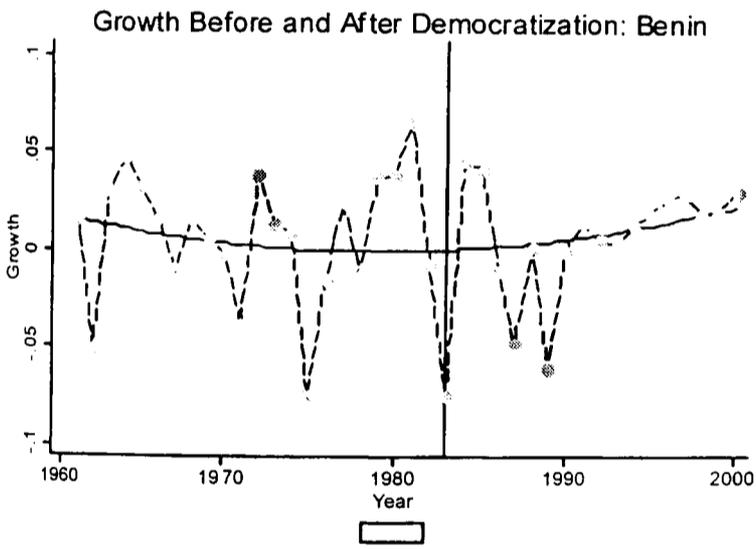
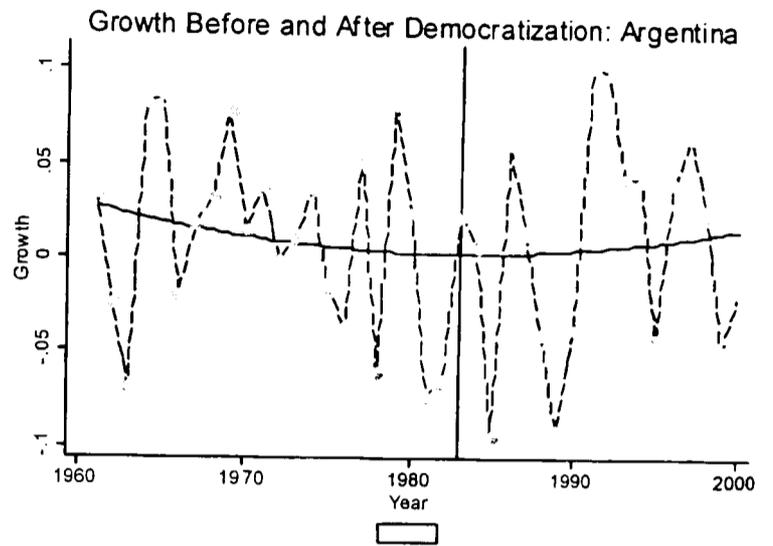
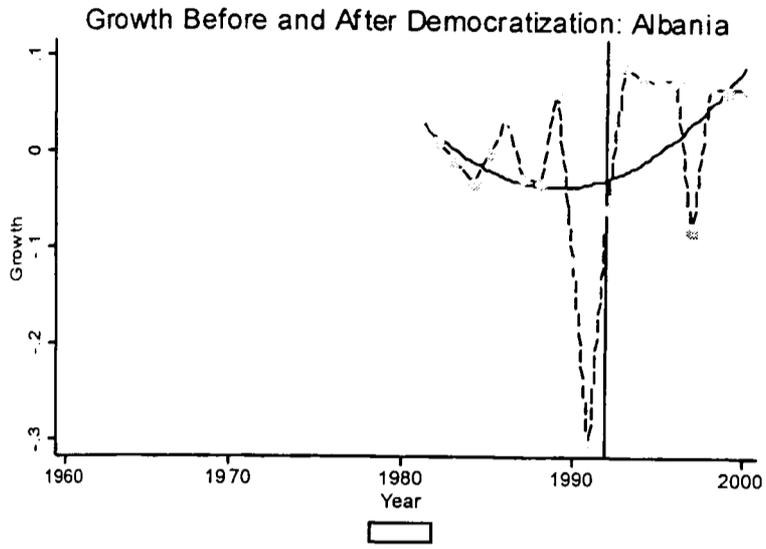
Notes to Table 4.10

In Panel A the dependent variable is the annual growth rate of real value added for the period 1980-1989 ($GROWTH_{s,c}$). In Panel B the dependent variable is the annual growth rate of employment for the period 1981-1990 ($EMPGR_{s,c}$). $FRACT_{s,c}$ indicates the industry share in total value added in manufacturing in 1980. The human capital accumulation interaction is the product of industry-level human capital intensity ($HCINT$) and the country-level change in average years of schooling over the 1970-1990 period (ΔSCH). The human capital quantity (years of schooling) interaction is the product of $HCINT$ and country-level average years of schooling in 1970 ($SCH70$). The human capital quality (schooling quality) interaction is the product of $HCINT$ and an indicator of the country-level quality of the labor force ($LFQUAL$). The interaction between productivity level and industry human capital intensity is the product of the logarithm of GDP per worker (Y) in 1970 and industry-level human capital intensity ($HCINT$). The interaction between the physical capital-output ratio and industry human capital intensity is the product of the logarithm of the physical capital to GDP ratio (K/Y) in 1970 and industry human capital intensity ($HCINT$). The interaction between property rights and industry human capital intensity is the product of property rights protection ($PROP$) and the industry human capital intensity ($HCINT$). The interaction between productivity growth and industry human capital intensity is the product of the logarithmic growth rate of GDP per worker ($GROWTH$) over the 1970-1990 period and industry human capital intensity ($HCINT$). All specifications also include (coefficients not reported): A finance trade credit interaction, defined as the product of an industry-level measure of trade credit dependence ($TRADEINT$) and the country-level financial development in 1980 ($PRIV$). A finance growth opportunities interaction, defined as the product of an industry-level measure of global industry growth opportunities ($OPPORT$) and country-level financial development in 1980 ($PRIV$). And a property rights interaction, defined as the product of industry dependence on intangible assets ($INTANG$) and a country-level measure of property rights protection ($PROP$). The Data Appendix B.4 gives more detailed variable definitions and the sources of the data. All specifications include country and industry fixed effects. Absolute values of t-statistics based on robust standard errors are reported in parenthesis and italics below the coefficients.

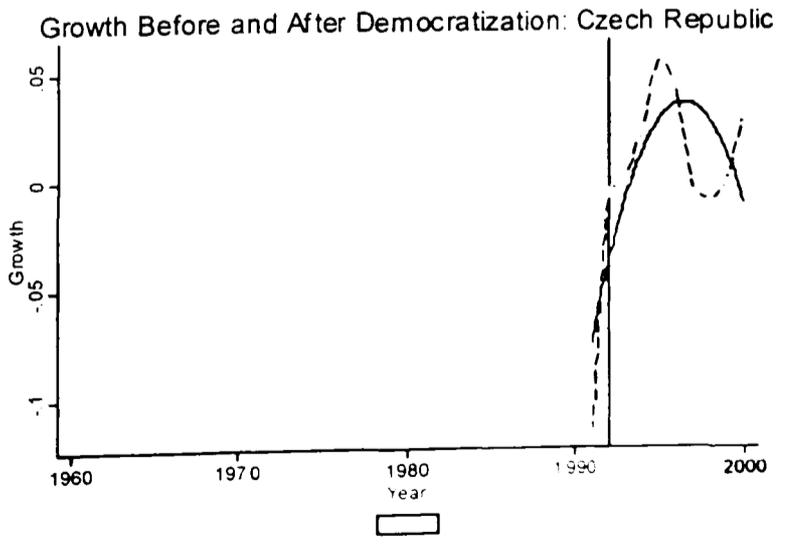
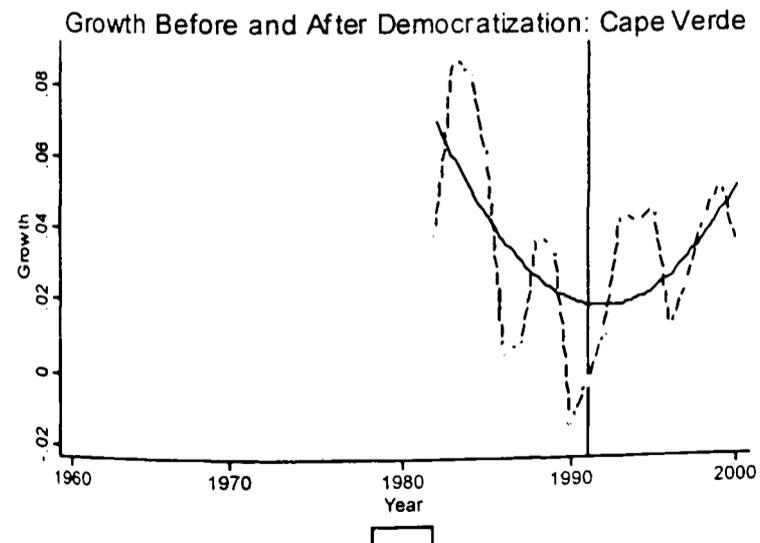
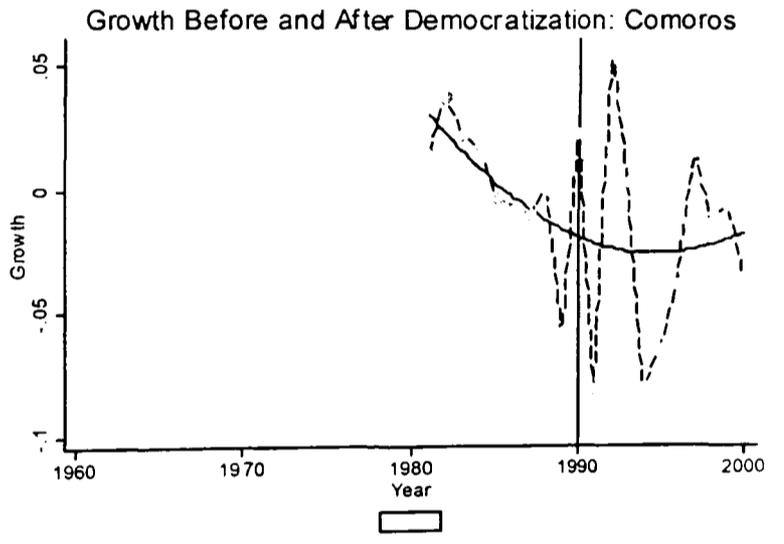
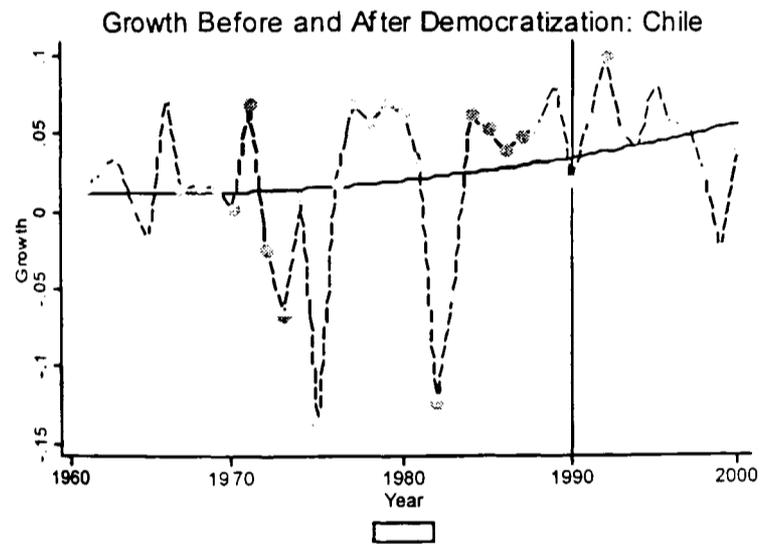
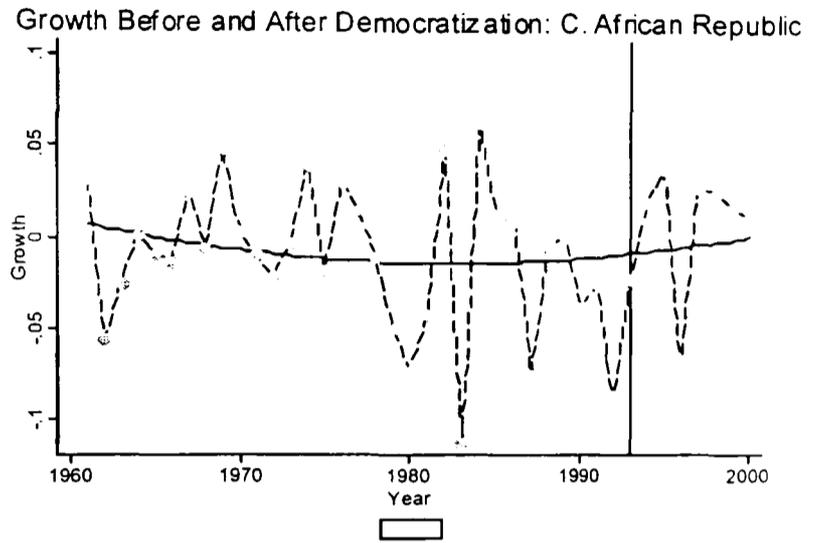
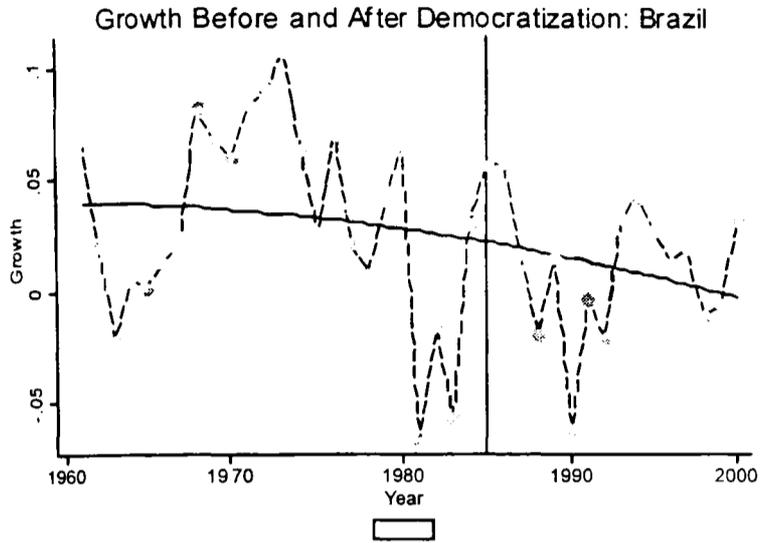
Supplementary Appendix

The following country-specific Figures plot GDP p.c. growth before and after incidents of permanent democratic transitions in the 1960-2000 period.

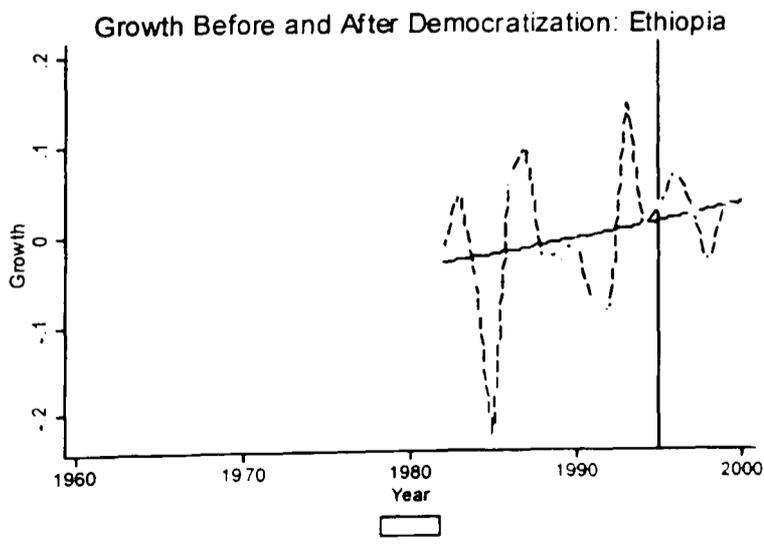
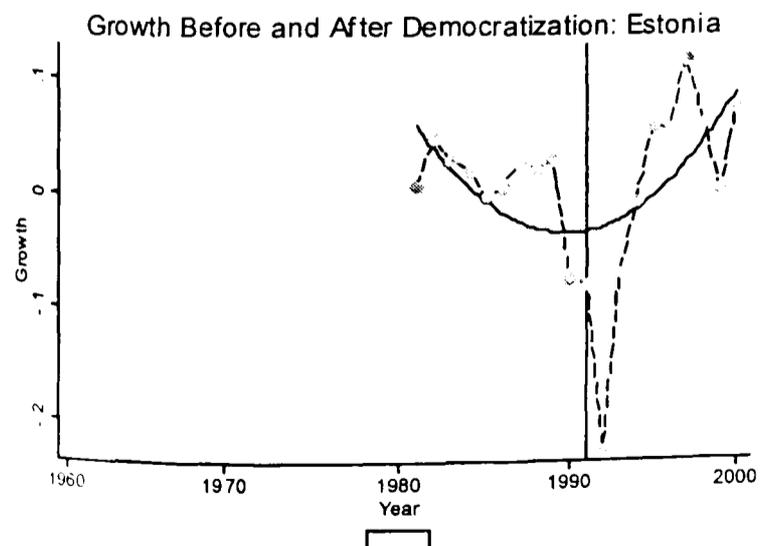
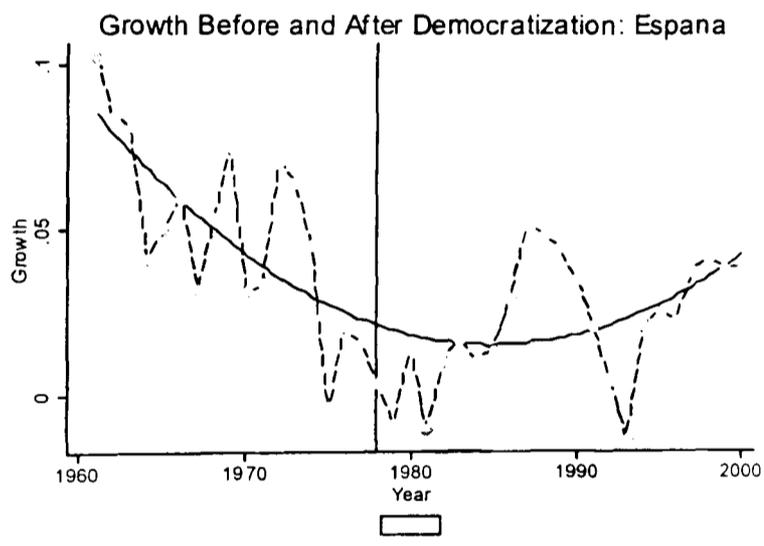
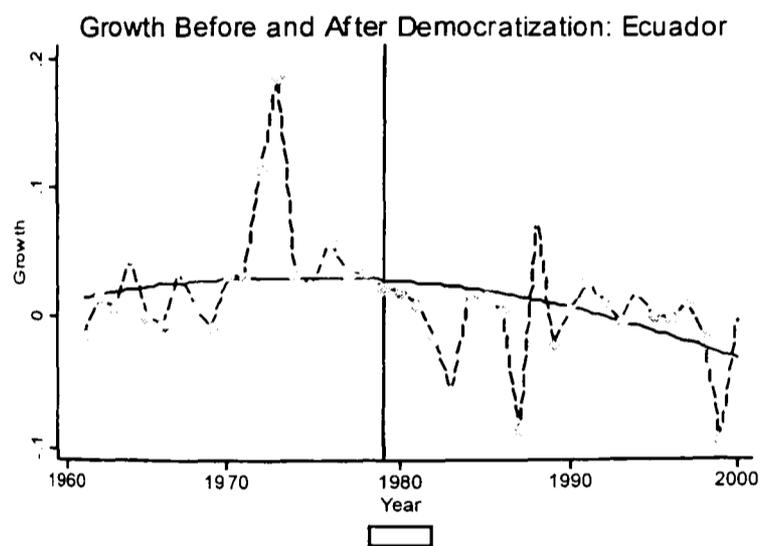
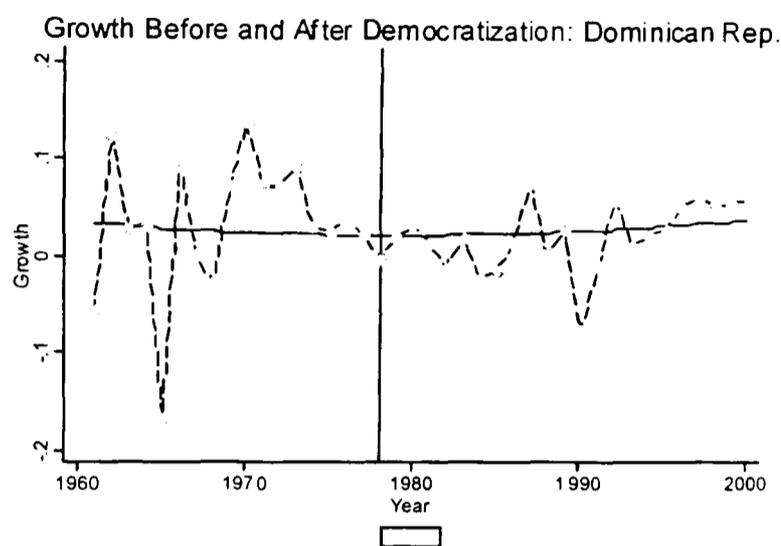
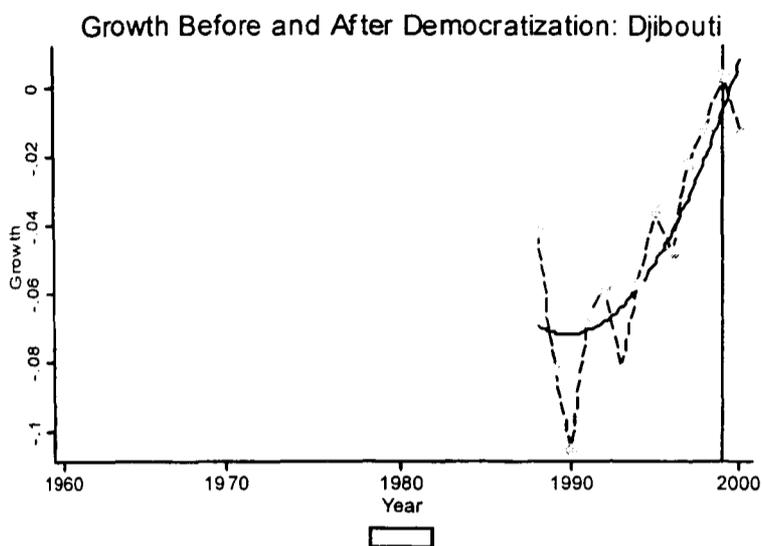
SUPPLEMENTARY APPENDIX—COUNTRY GRAPHS AROUND DEMOCARTIZATION



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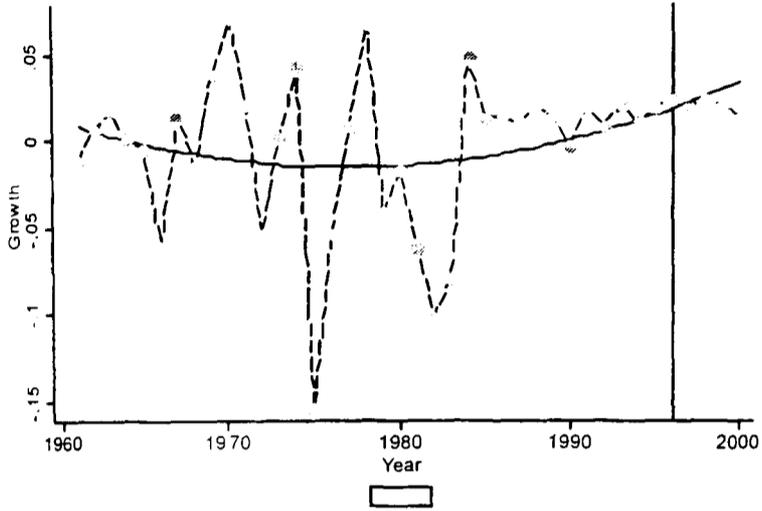


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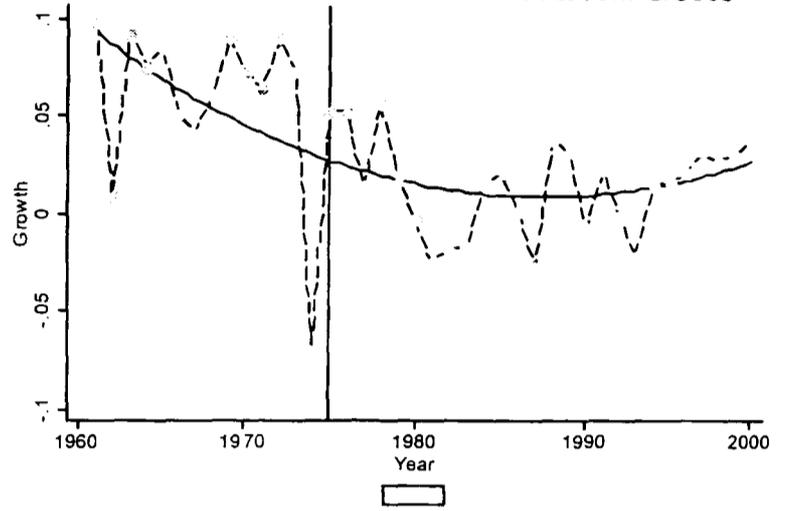


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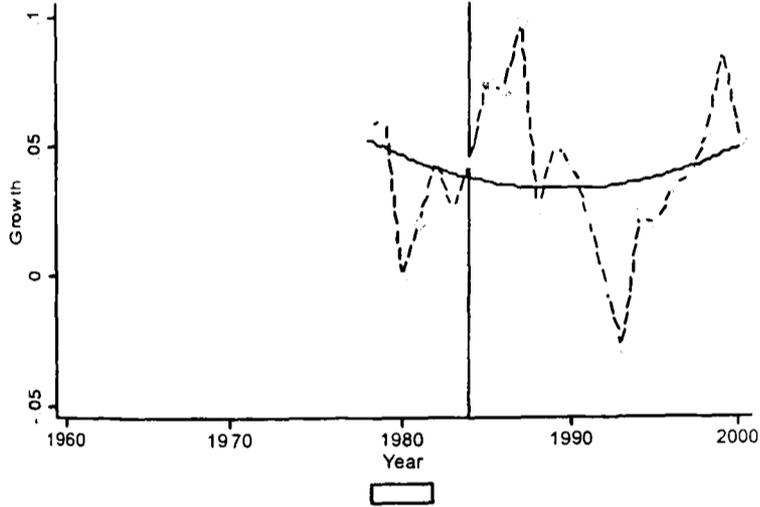
Growth Before and After Democratization: Ghana



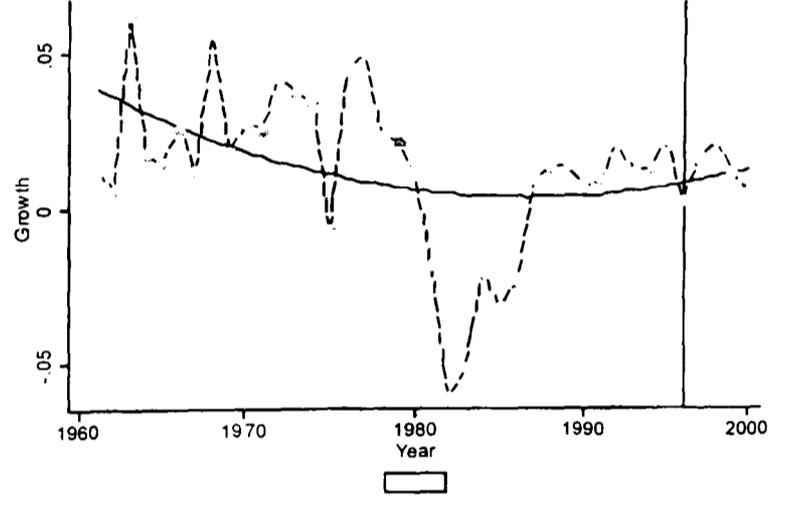
Growth Before and After Democratization: Greece



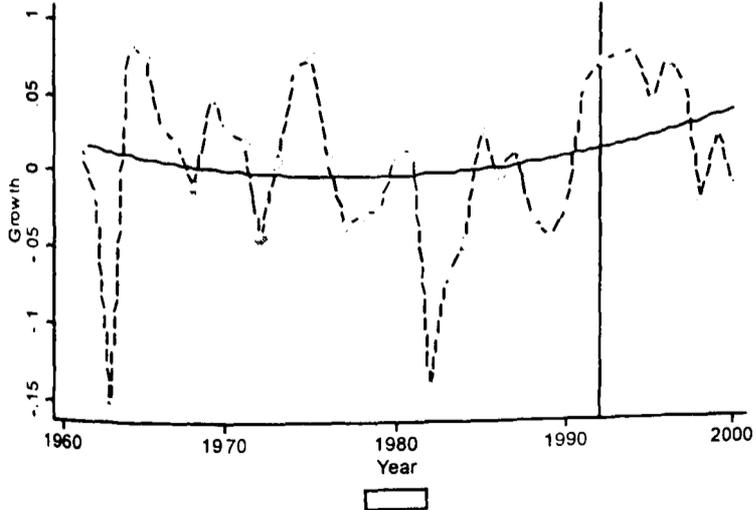
Growth Before and After Democratization: Grenada



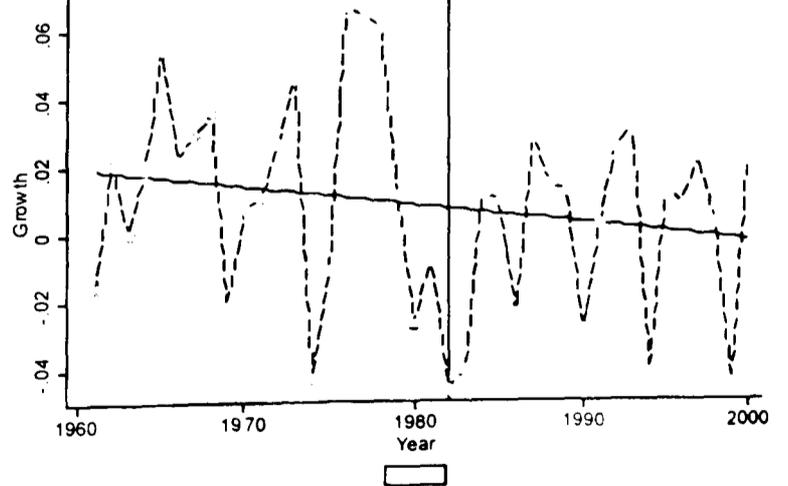
Growth Before and After Democratization: Guatemala



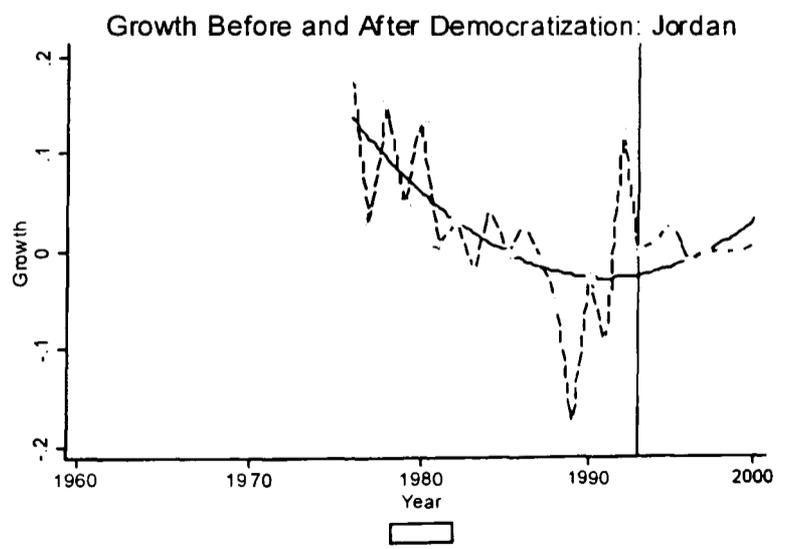
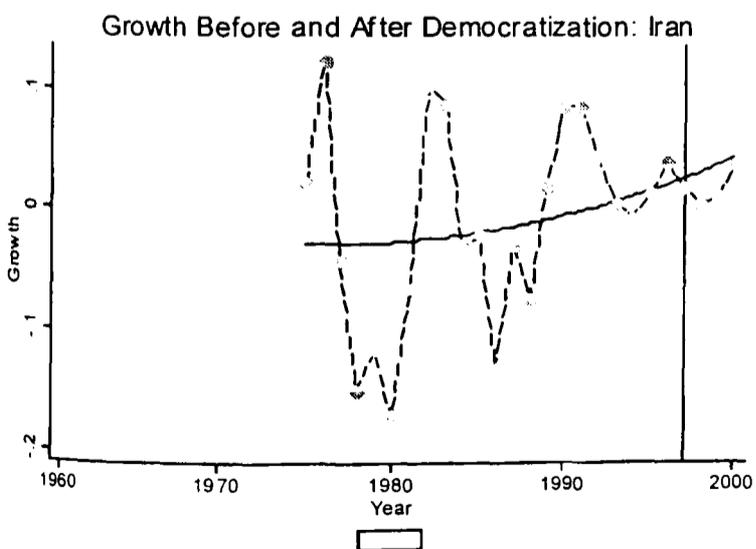
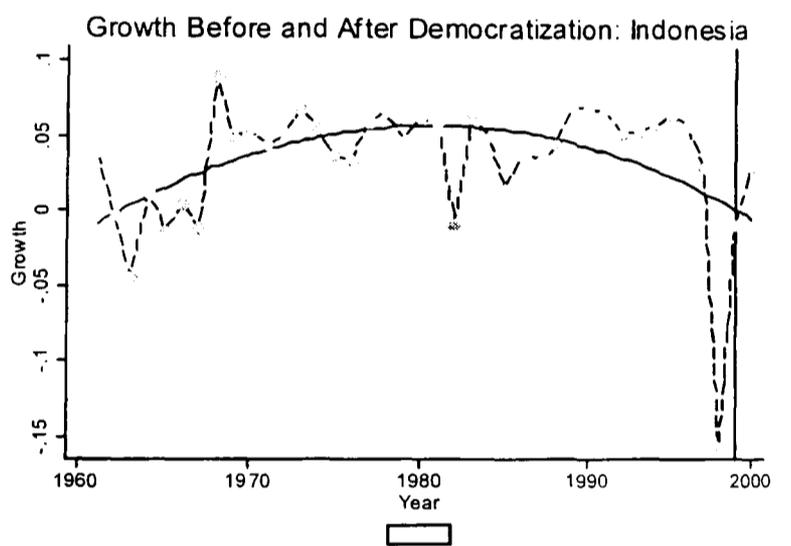
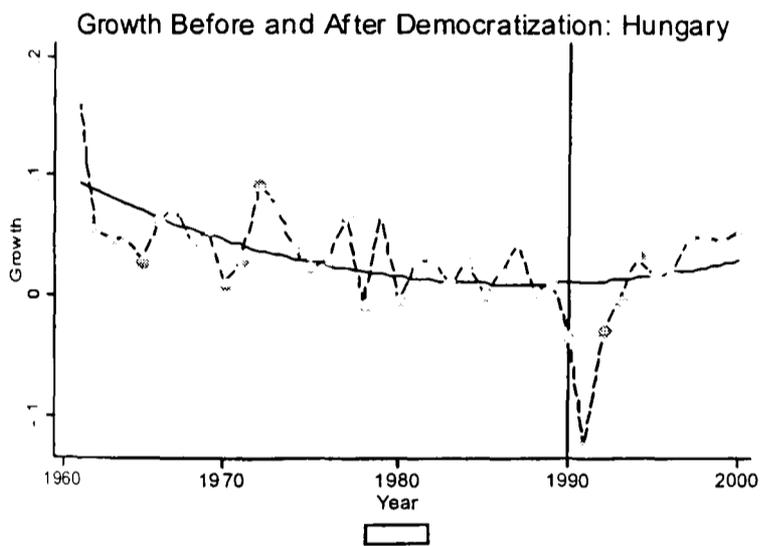
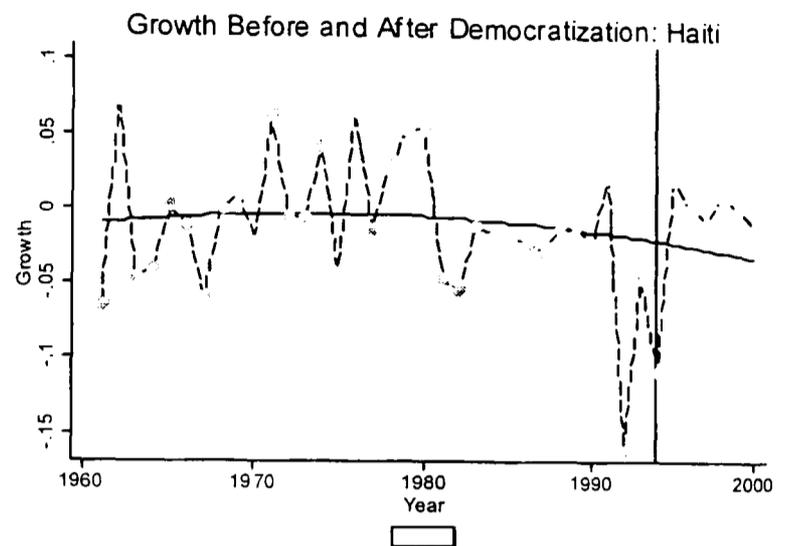
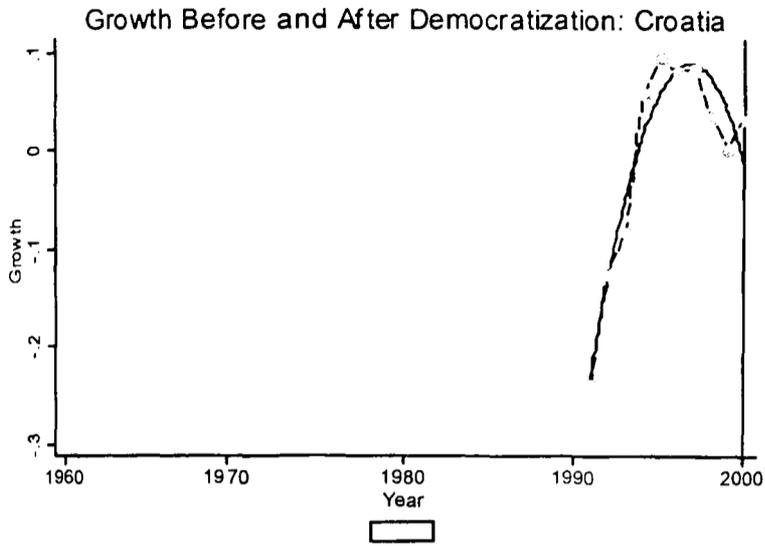
Growth Before and After Democratization: Guyana



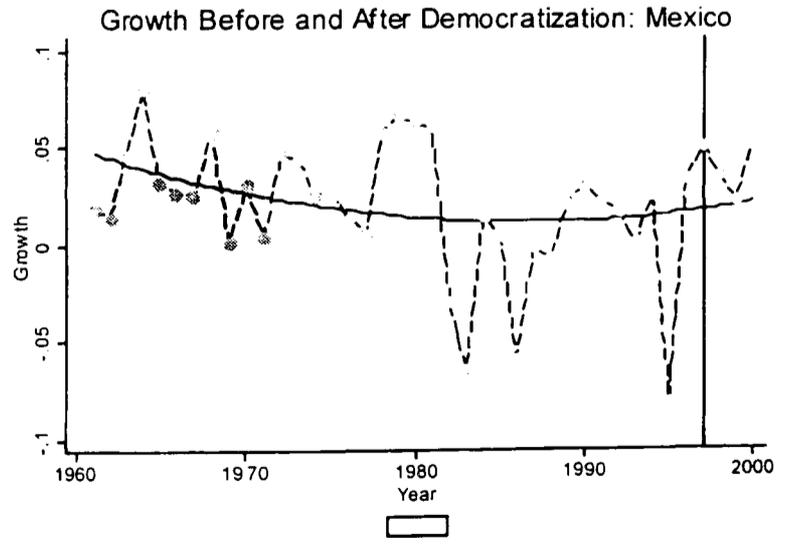
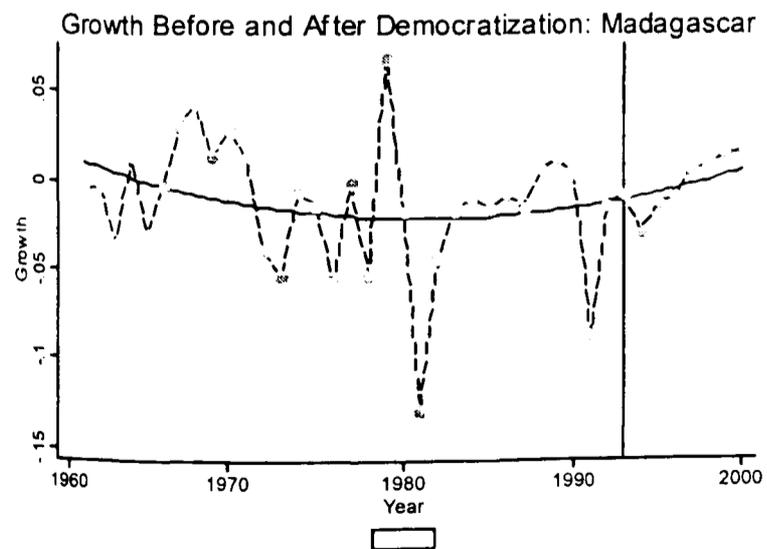
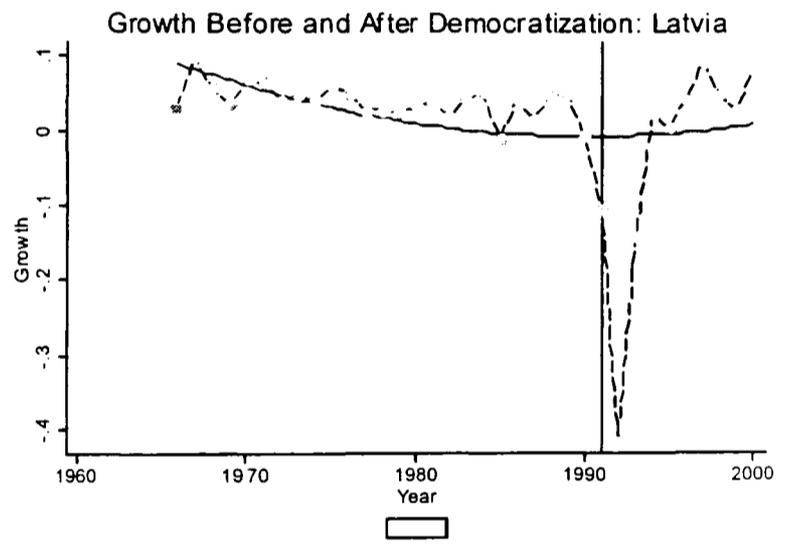
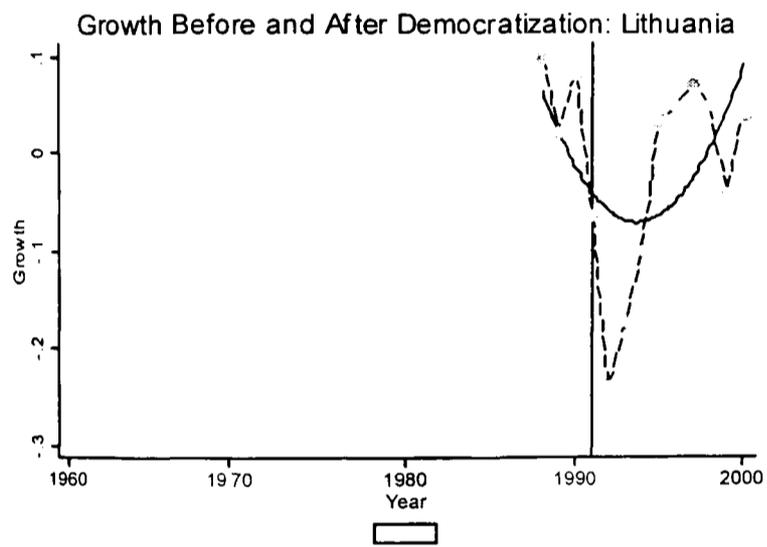
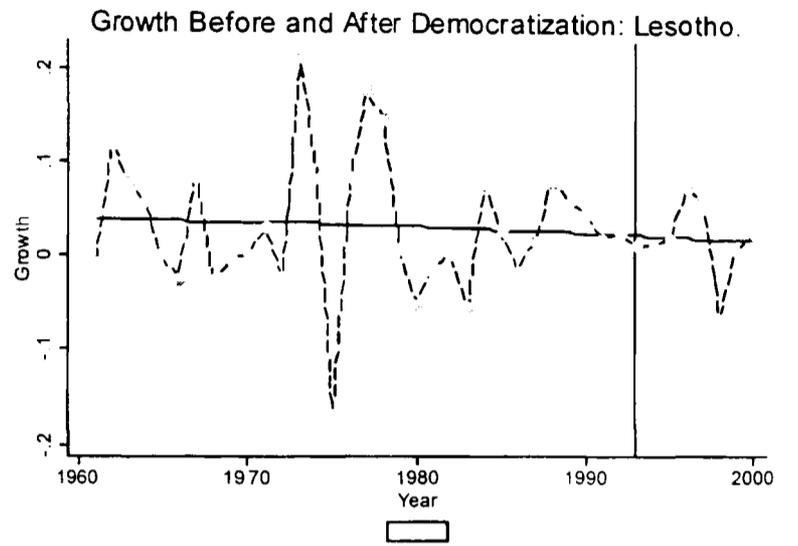
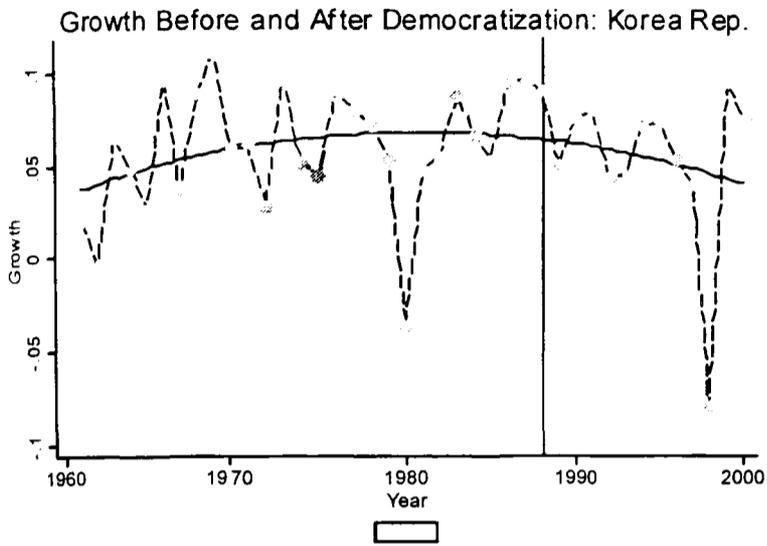
Growth Before and After Democratization: Honduras



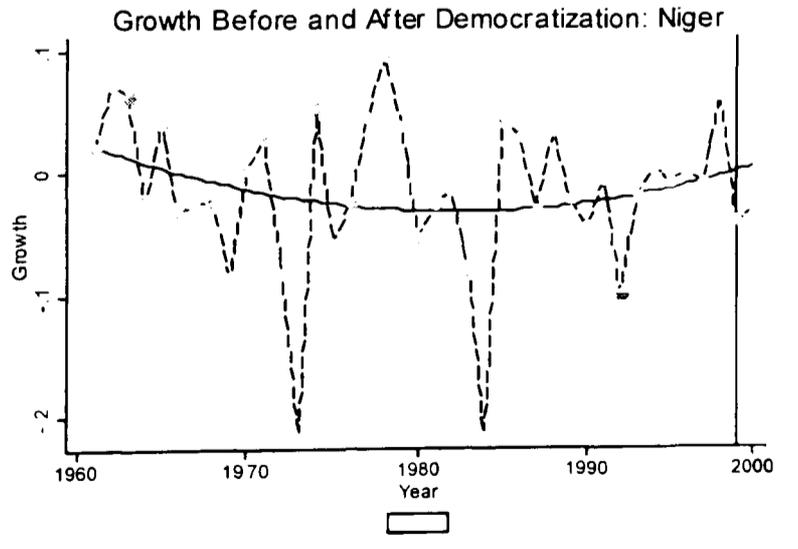
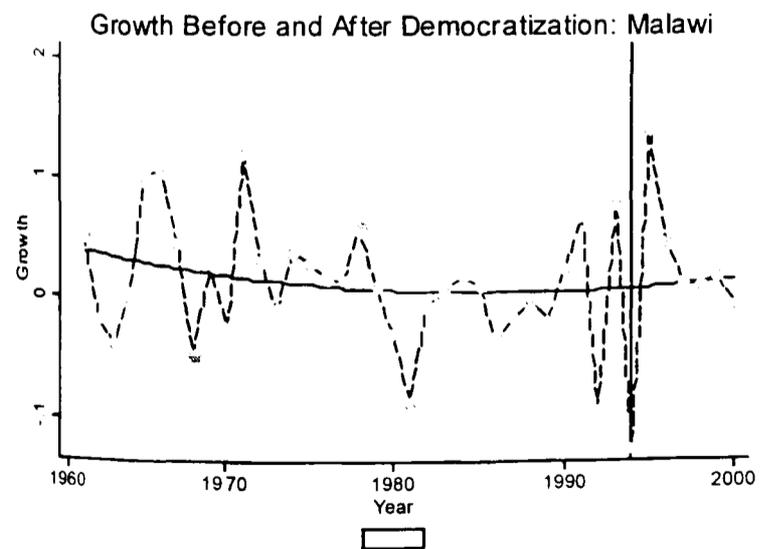
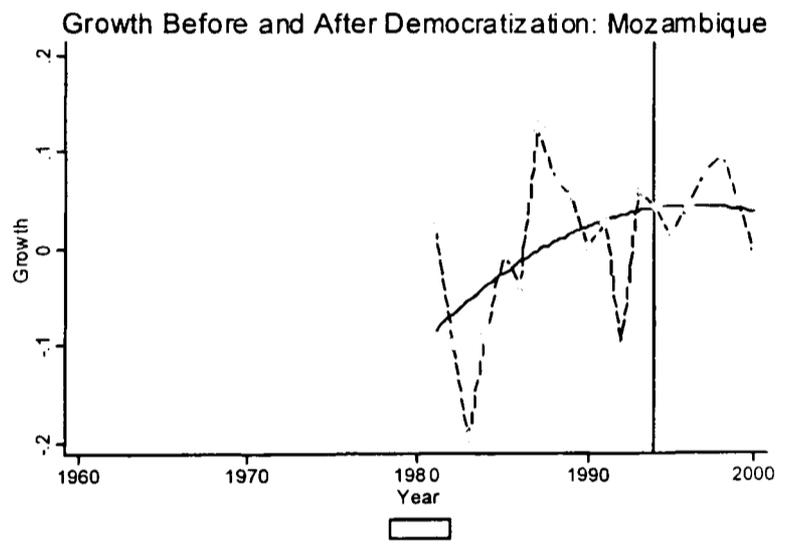
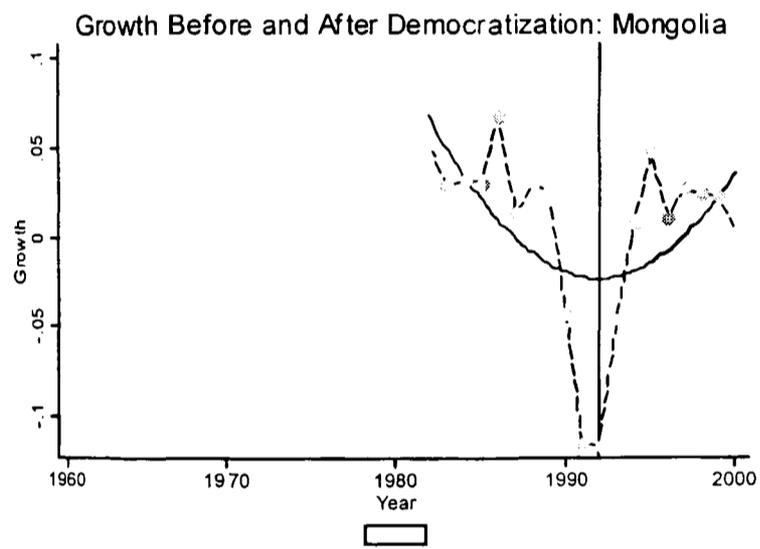
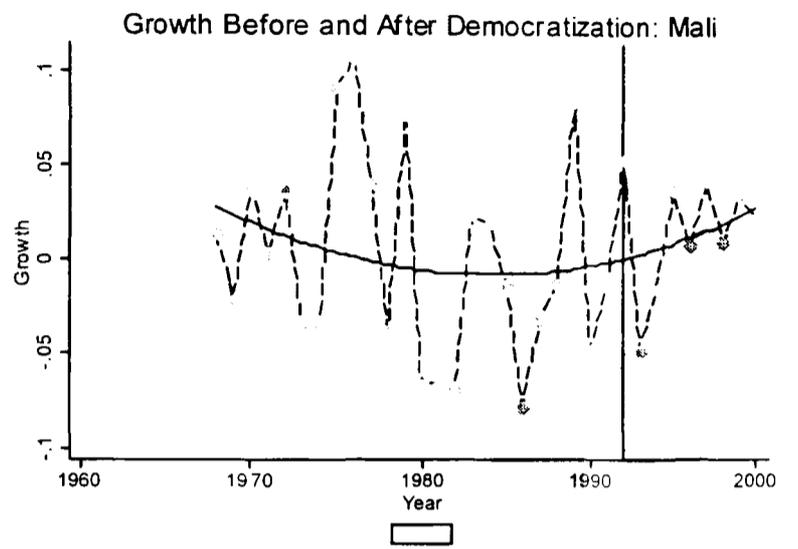
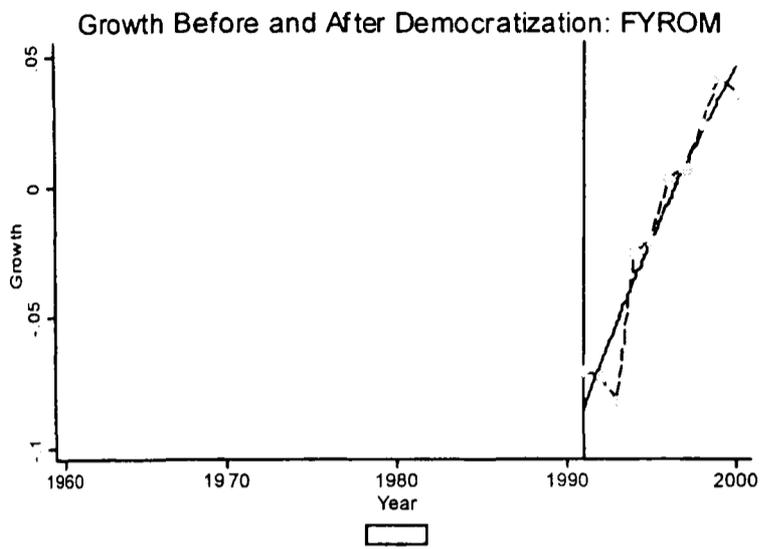
SUPPLEMENTARY APPENDIX—COUNTRY GRAPHS AROUND DEMOCARTIZATION



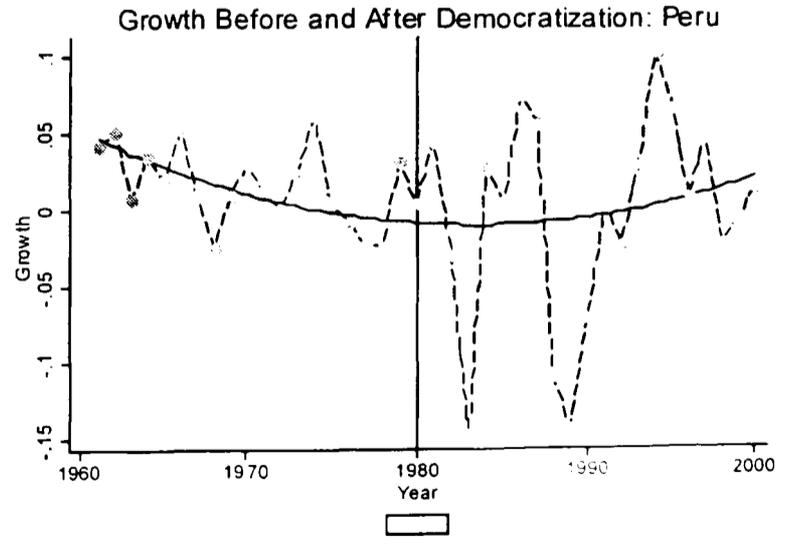
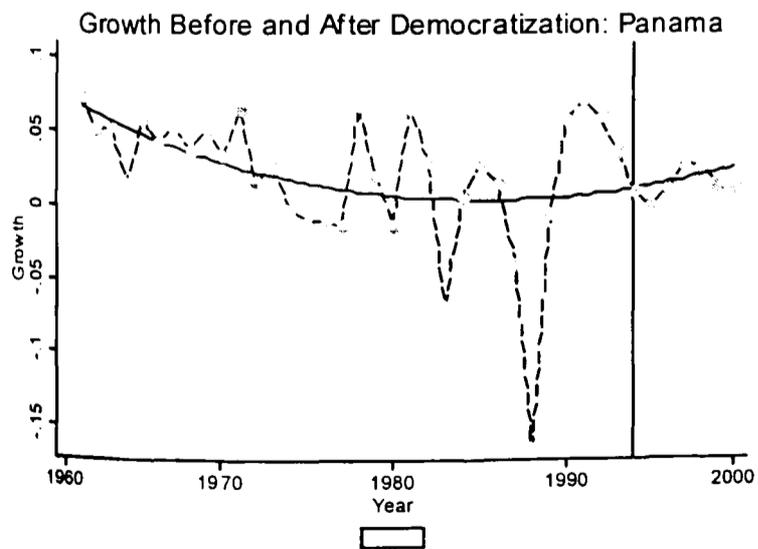
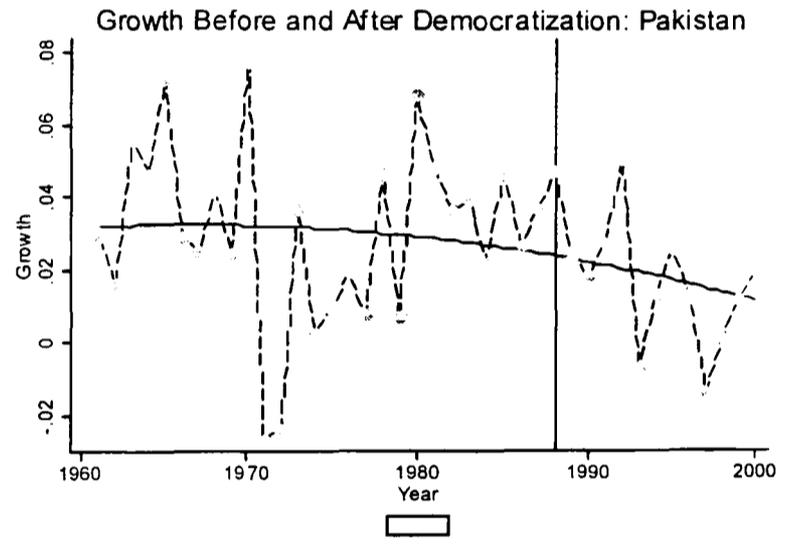
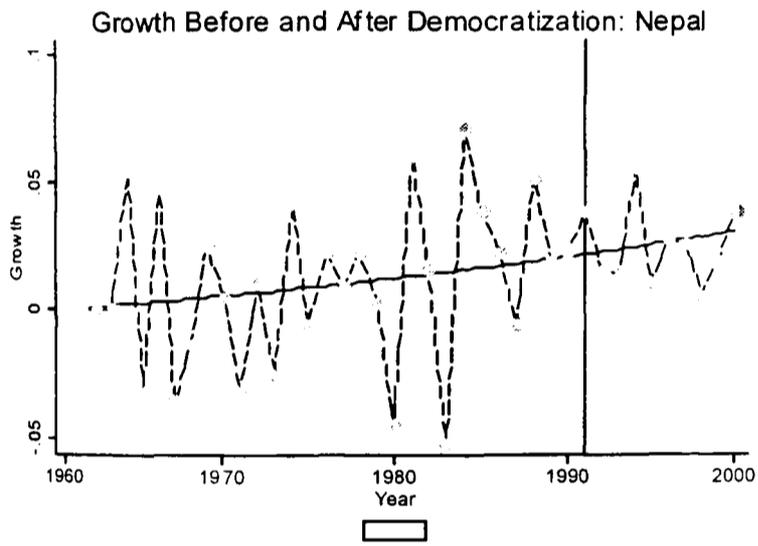
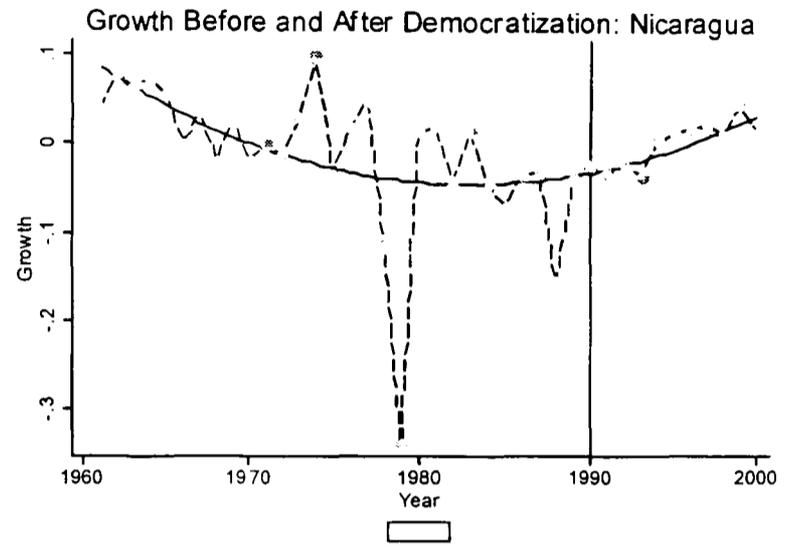
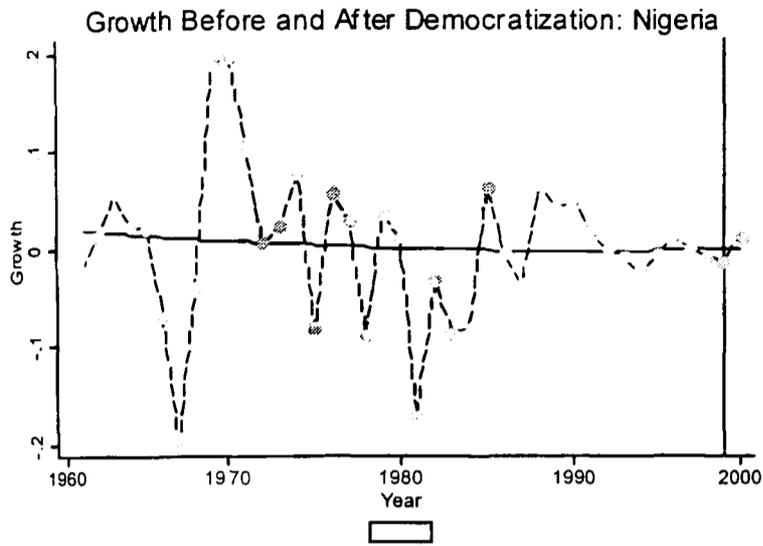
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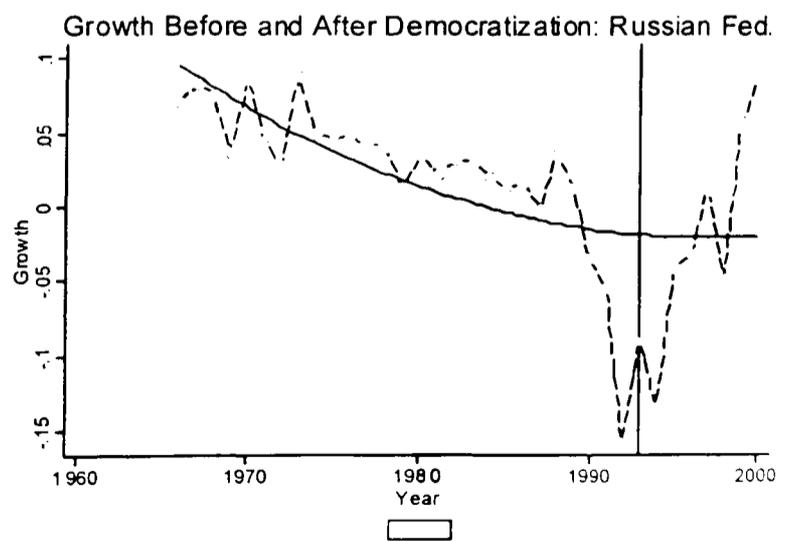
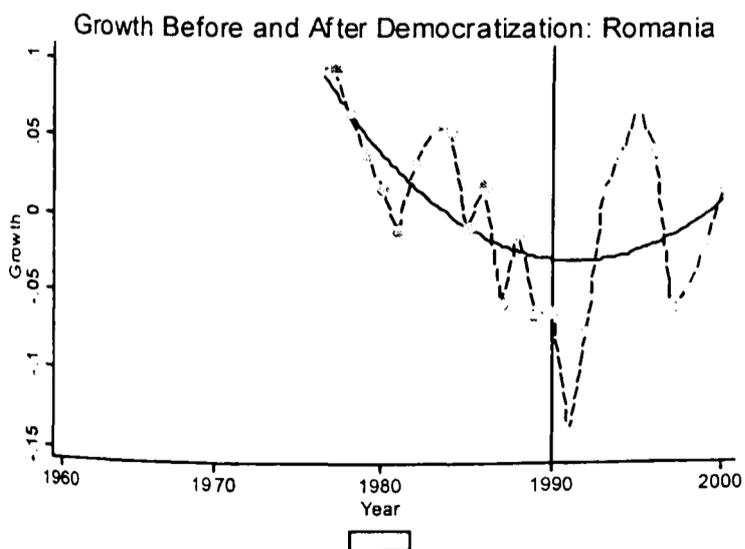
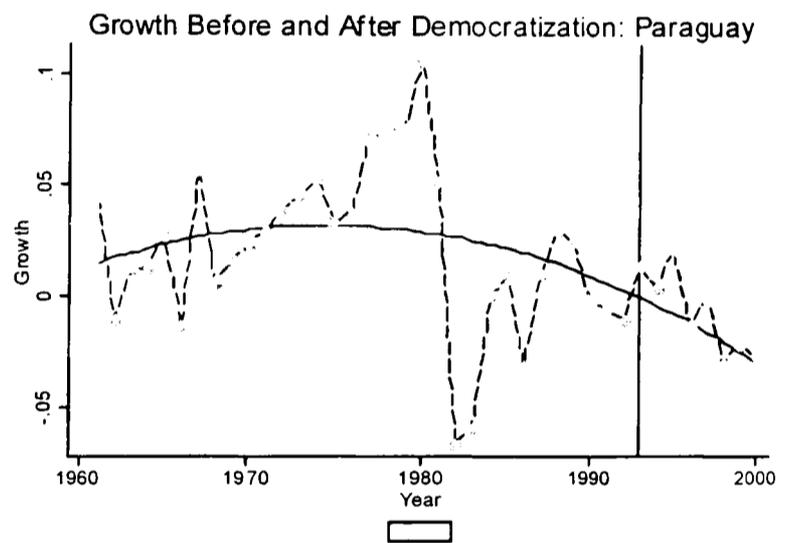
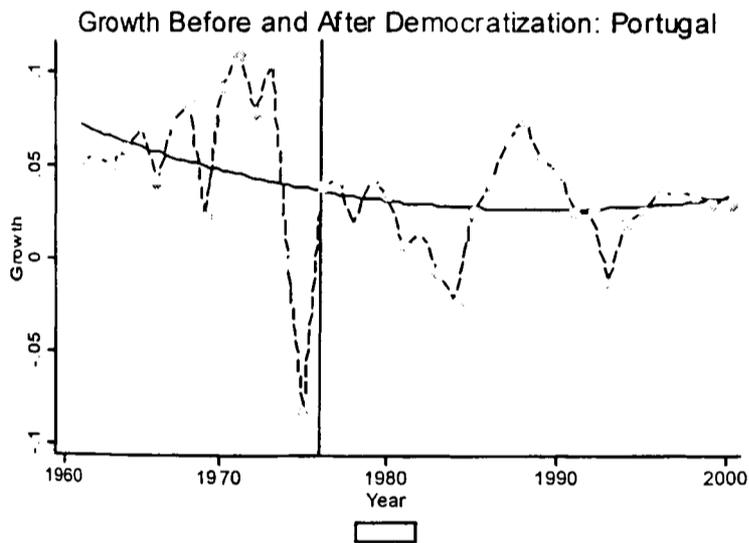
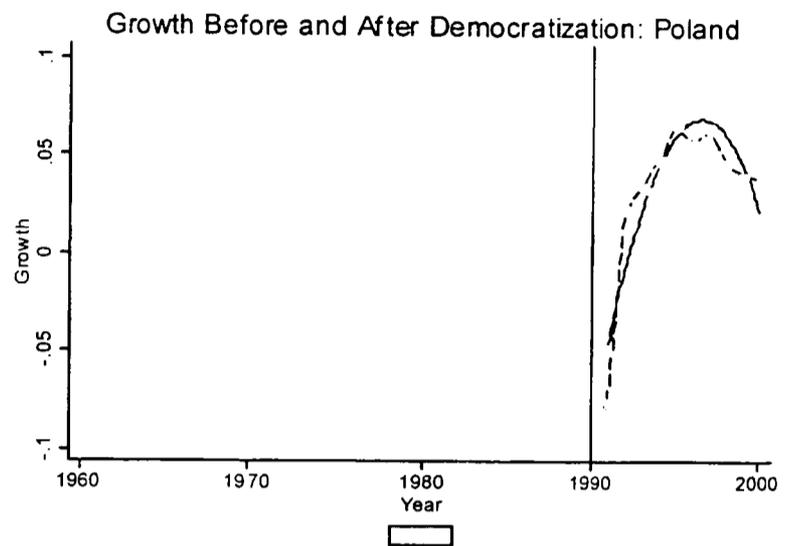
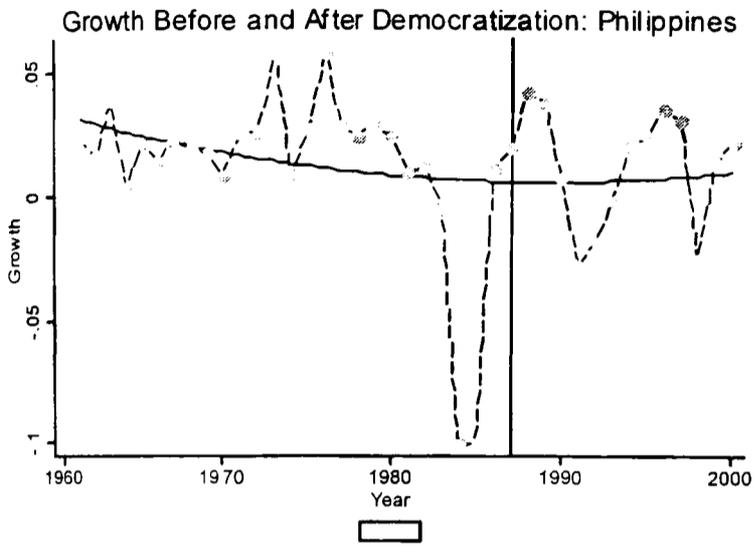
SUPPLEMENTARY APPENDIX—COUNTRY GRAPHS AROUND DEMOCARTIZATION



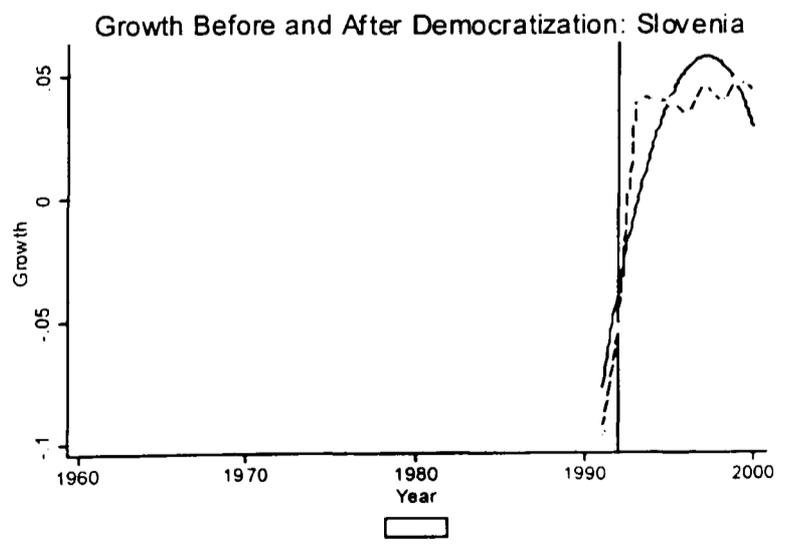
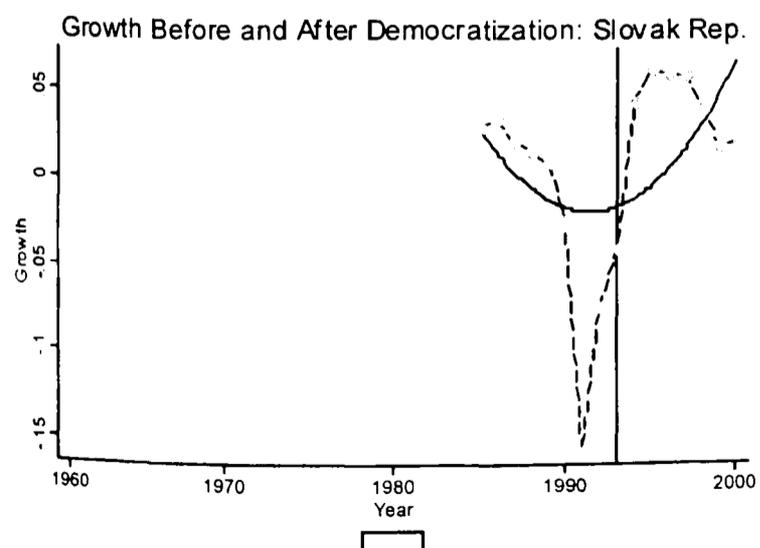
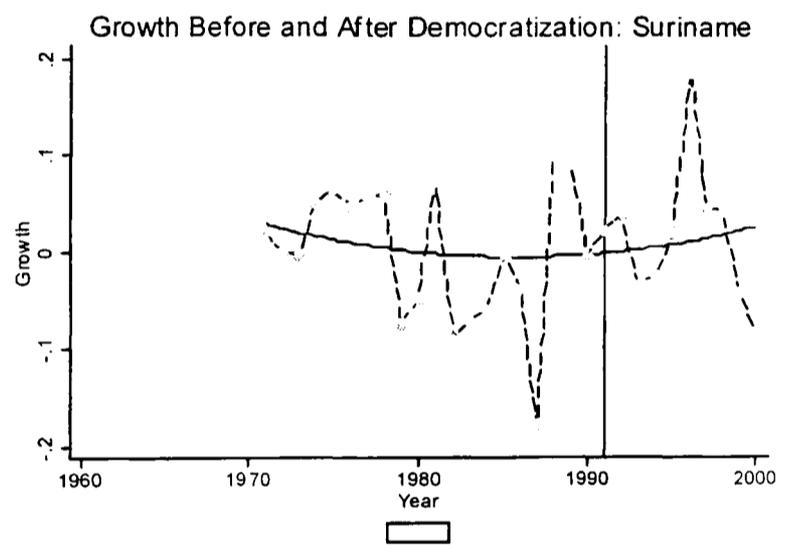
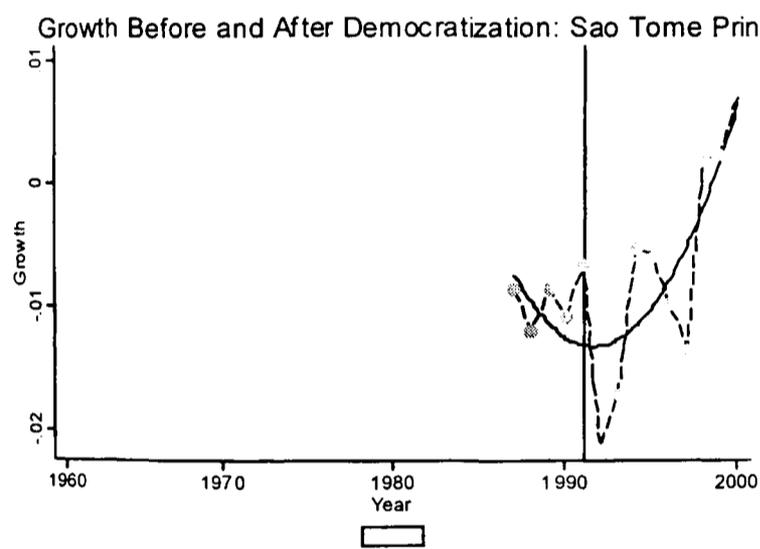
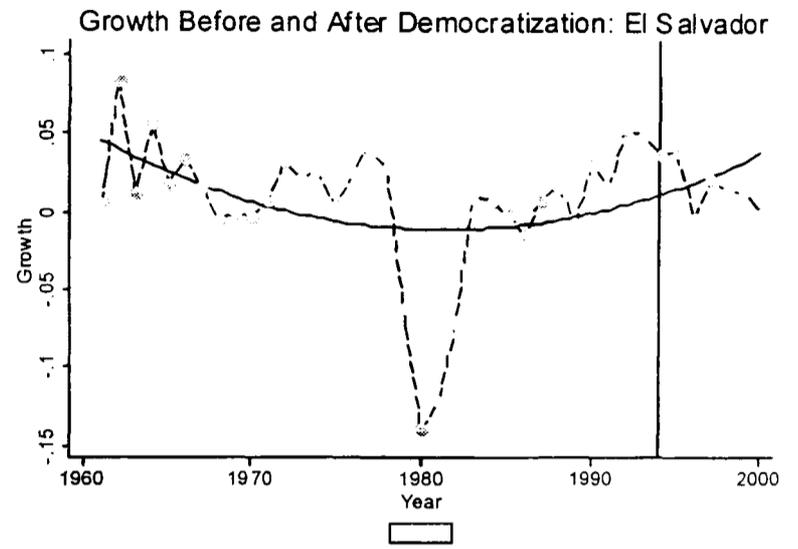
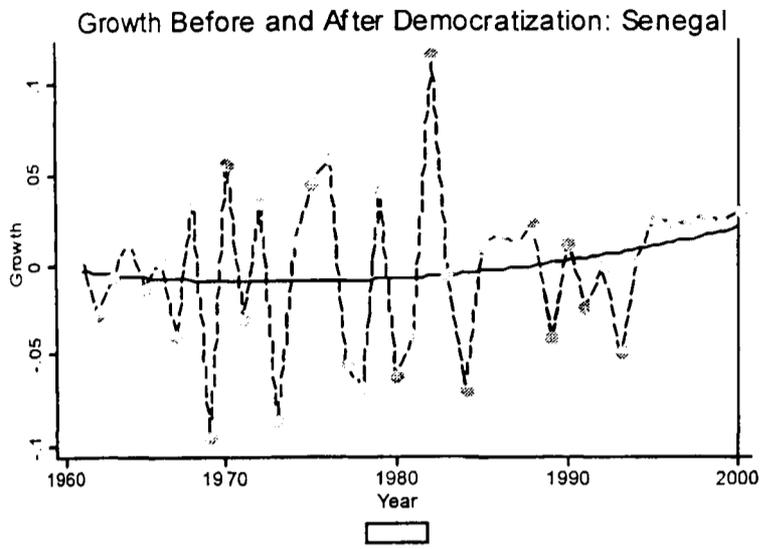
SUPPLEMENTARY APPENDIX—COUNTRY GRAPHS AROUND DEMOCARTIZATION



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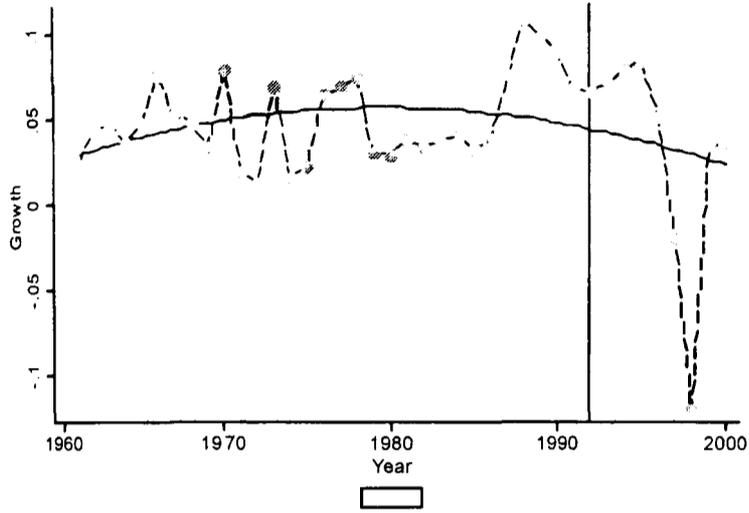


SUPPLEMENTARY APPENDIX—COUNTRY GRAPHS AROUND DEMOCARTIZATION

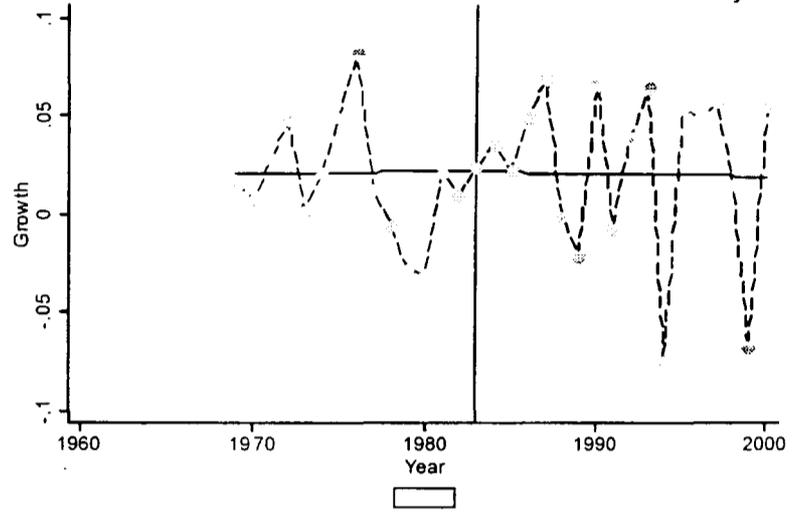


SUPPLEMENTARY APPENDIX—COUNTRY GRAPHS AROUND DEMOCARTIZATION

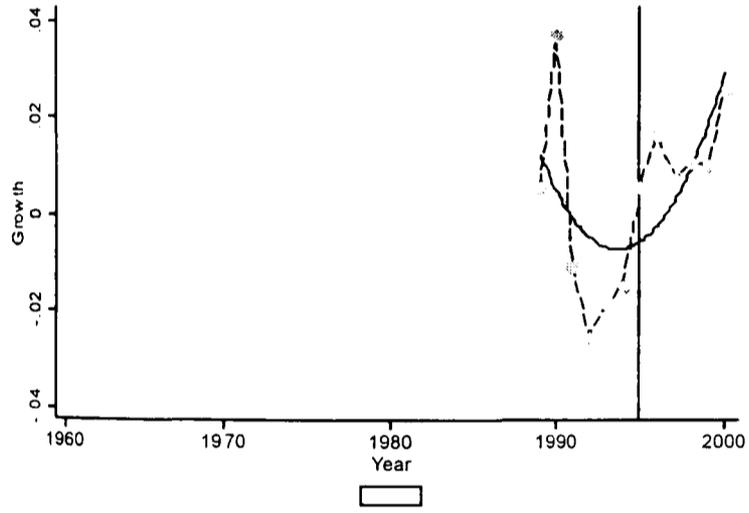
Growth Before and After Democratization: Thailand



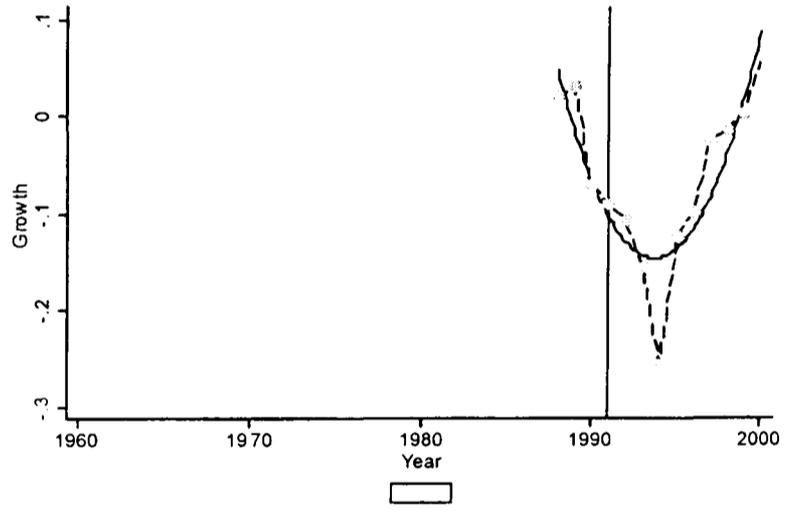
Growth Before and After Democratization: Turkey



Growth Before and After Democratization: Tanzania

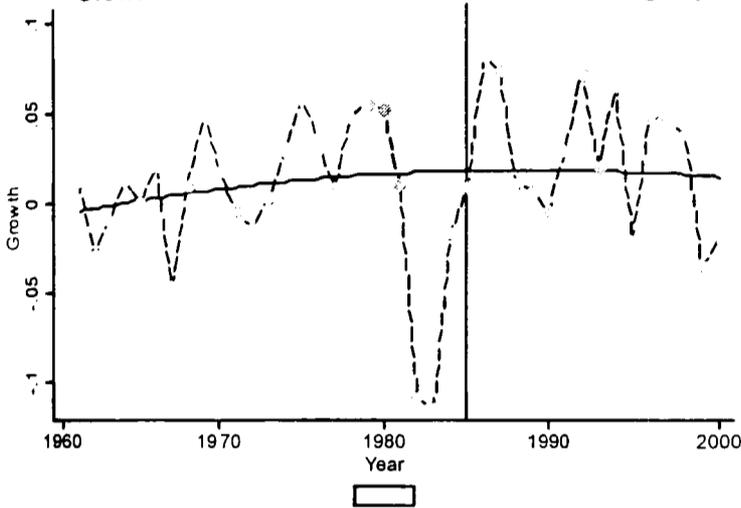


Growth Before and After Democratization: Ukraine

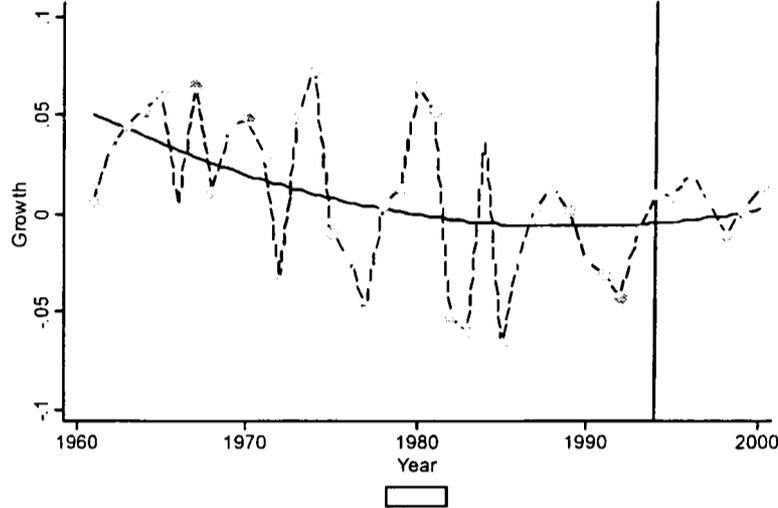


SUPPLEMENTARY APPENDIX—COUNTRY GRAPHS AROUND DEMOCARTIZATION

Growth Before and After Democratization: Uruguay



Growth Before and After Democratization: South Africa



Growth Before and After Democratization: Zambia

