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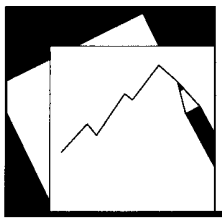

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Democracy and Reforms: Evidence from a New Dataset

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Democracy and Reforms: Evidence from a New Dataset*

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Abstract

Empirical evidence on the relationship between democracy and economic reforms is limited to few reforms, countries, and years. This paper studies the impact of democracy on the adoption of economic reforms using a new dataset on reforms in the financial, capital and banking sectors, product markets, agriculture, and trade for 150 countries over the period 1960–2004. Democracy has a positive and significant impact on the adoption of economic reforms but there is no evidence that economic reforms foster democracy. Our results are robust to the inclusion of a large variety of controls and estimation strategies.

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Keywords: institutions, political economy, transition, economic liberalization

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I. Introduction

Political and economic freedoms go hand in hand … or do they not? This is one of the oldest questions in economics and in political science, which is still largely unanswered. This paper answers this question using a novel dataset on economic reforms, which is the most exhaustive in the literature in terms of countries, years, and range of reform coverage.

This question is still open because there are very good theoretical arguments and numerous examples as to why political freedom can either hinder or facilitate economic reforms. Take the historical examples of Chile under Pinochet, or South Korea under Park. In both cases, important economic reforms were undertaken under dictatorial regimes. The majority of the contemporary industrialized countries were not democracies when they took off (Schwarz, 1992). In most cases, East Asian economies did develop under undemocratic regimes. In addition to these historical examples from every region of the world and different historical periods, there are compelling theoretical reasons as to why less democratic regimes may favor economic reforms and growth.

A fully democratic regime can fall prey to interest groups, which put their goals before general well being. Sometimes, capitalists entrenched in their rent-seeking positions are the main opponents of economic reforms. In a newly independent country only a 'benevolent dictator' can shelter the institutions, avoid that the state becomes captive of any specific interest group, and allow the state to perform its function in an efficient way.[1] In particular, interest groups can block reforms if there is uncertainty about the distribution of the benefits (Fernandez and Rodrik, 1991). In addition to pressure from interest groups, democracy can lead to excessive private and public consumption and lack of sufficient investment (Huntington, 1968); so dictatorial regimes can rely on financial repression to increase the domestic saving rate. Wages are typically higher under democracy (Rodrik, 1999). Several countries, including the Soviet Union and many East Asian countries, have been able to increase savings, and ultimately achieve high economic growth rate, thanks to a repressive political system and an attendant highly regulated financial system. In conclusion, do the historical examples and the theoretical arguments provide a compelling case against the role of democracy in fostering economic reforms? The answer to this question is a resounding no.

The alternative view that democracy often accompanies economic reforms is also based on strong theoretical arguments and solid empirical evidence. Secured property rights, as guaranteed by a democracy, are considered key to economic development. In general, dictators cannot credibly make commitments because of time-inconsistency; so no reform can be undertaken (McGuire and Olson, 1996). Autocratic rulers tend to be predatory, disrupting economic activity and making any reform effort meaningless; autocratic regimes have also an interest in postponing reforms and maintaining rent-generating activities for a restricted number of supporting groups. On the opposite, democratic rulers should be more

[1] Along these lines, Haggard (1990) argues "... Institutions can overcome collective-action dilemmas by restraining the self-interested behavior of groups through sanctions: collective action problems can be resolved by command."

sensitive to the interest of the public, and so more willing to implement reforms, which destroy monopolies in favor of the general interests. In addition to these theoretical arguments, there is strong empirical evidence that reforms are highly correlated with democracy.

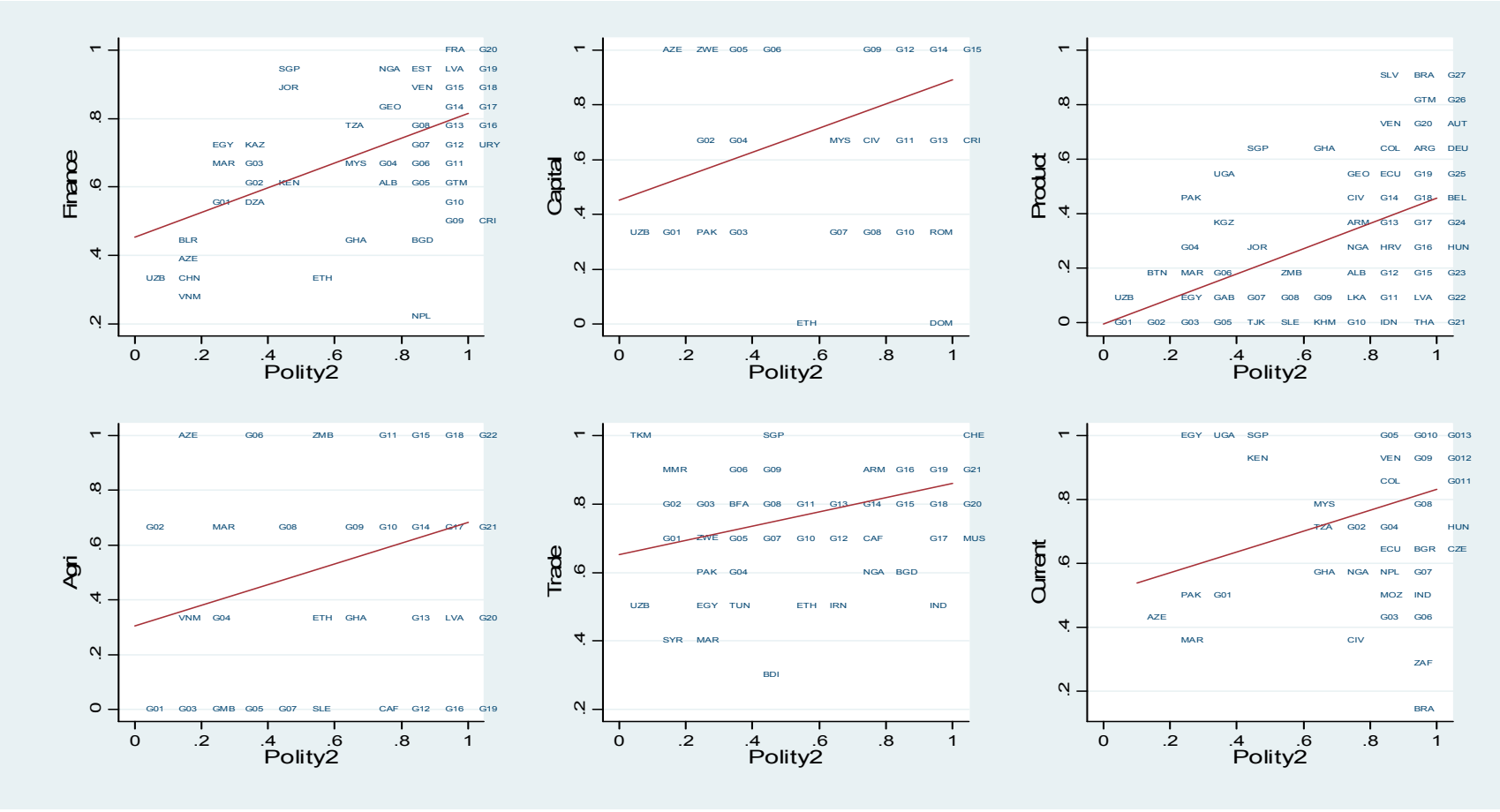
The correlation between democracy and economic reforms is very strong both across time and in a cross section. Figure 1 shows the correlation over time between the indices of democracy (measured as polity IV and normalized between 0 and 1) and reform (all the indices are normalized between 0 and 1, with 0 corresponding to the least reformed and 1 to the most reformed) in the following six sectors (or areas)[2]—(i) domestic financial, (ii) capital account, (iii) product markets (electricity and telecommunications), (iv) agriculture, (v) trade (based on tariffs) and (vi) current account transactions—over time.[3] All the cases show a strong correlation between democracy and regulation, with democracy usually preceding the deregulation process. Figure 2 shows that the correlation holds very strongly also when we take a cross section: countries that are more democratic are also more reformed. However, these correlations in themselves do not show that democracy necessarily causes economic reforms. The correlation could run in the opposite direction, or both democracy and economic reforms could be driven by a common third factor.

[2] We will use the term "sector" in the rest of the paper to denote the broad area in which the reforms take place.
[3] See below for data description.

Figure 1. Regulation and Democracy over Time

Notes to Figure 1: This figure shows the correlation over time between the indices of democracy on the y-axis (measured as polity IV and normalized between 0 and 1) and reforms on the x-axis (all the indices are normalized between 0 and 1, with 0 corresponding to the least reformed and 1 to the most reformed) in the following eight sectors (or areas) – (i) domestic financial, (ii) capital account, (iii) product markets (electricity and telecommunications), (iv) agriculture, (v) labor, (vi) trade (based on tariffs) and (vii) current account transactions.

Figure 2. Democracy and Reforms, 2000



Notes: This figure shows the correlation in 2000 between the indices of democracy on the y-axis (measured as polity IV and normalized between 0 and 1) and reforms on the x-axis (all the indices are normalized between 0 and 1, with 0 corresponding to the least reformed and 1 to the most reformed) in the following eight sectors (or areas) – (i) domestic financial, (ii) capital account, (iii) product markets (electricity and telecommunications), (iv) agriculture, (v) labor, (vi) trade (based on tariffs) and (vii) current account transactions. The country codes and groups used in this figures are described in Tables A2 and A3.

The sharp contrast between these opposing views has left the question of the effects of democracy on economic reforms largely unanswered. The goal of this paper is to address again this issue using a novel database, which covers almost 150 countries, 6 sectors and spanning more than 40 years of data.
The main findings are that an increase in the quality of democratic institutions is significantly correlated with the adoption of economic reforms but there is no evidence of a feedback effect from economic to political liberalization. These results are robust to controlling for country, reform-specific effects and any possible interaction among them. Global reform waves and possible country-time varying determinants of reforms (including crises, reforms in neighboring countries, existence of compensation for losers, human capital and bureaucratic quality, and several political variables) do not weaken these results, which are also robust to using an instrumental variable strategy.

The remainder of the paper is organized as follows. Section 2 reviews the existing literature on economic reforms and democracy; Section 3 presents the data; Section 4 presents the results on the effects of democracy on reforms, controlling for other possible determinants of reforms and the possibility of reverse causality and omitted variables; Section 5 concludes.

II. Democracy and Reforms: Theory and Empirics

While there is a vast theoretical and empirical literature that considers the determinants of economic reforms in general, there is scarce evidence, particularly empirical, on the relationship between democracy and reforms.[4]

Economic theory does not give a clear answer on whether political liberalizations favor or hinder economic reforms or if the relationship could go both ways. Democratic regimes could lead to more reforms if reforms create more winners than losers (Giavazzi and Tabellini, 2005). Democratically elected governments may also have greater legitimacy to implement and sustain policies bearing high short-term costs; similarly institutional changes—e.g., strengthening an independent legal system or a professional civil service required to ensure political freedom and democracy—could lead also to successful market reforms. Finally, democracy could create an environment conducive to economic reforms by limiting rent-seeking and putting in place a system of checks and balances (Dethier, Ghanem and Zoli, 1999).

Alternatively, political liberalization could lead to less economic reforms if the electoral system creates a pivotal voter with veto power. For instance, it has been argued that Chile in the late 70s and the 80s implemented several forward-looking economic reforms because the military regime did not have to respond to a short-sighted electorate. At the same time, it has been argued that Costa Rica has been a laggard in economic reforms because the democratic system gives veto power to groups that can lose from reforms. Democratic legislators are more likely to adopt time-inconsistent policies (Quinn 2000). In fact, uncertainty about the

[4] For some recent papers, see Alesina, Ardagna, and Trebbi (2005), Abiad and Mody (2005), Drazen and Easterly (2001), and Lora (1998).

impact of economic reforms at the individual level could also lead a rational electorate to vote against reforms even if they are known ex ante to benefit a majority of them (Fernandez and Rodrik, 1991).

The theoretical predictions about the feedback effect from economic reforms to democratization are ambiguous as well. For example, economic liberalizations could be associated with higher quality of democratic institutions if they increase the power of the middle class (Rajan and Zingales, 2003). On the other hand, liberalization could lower democracy through increases in income inequality and the associated political strife and violence (Quinn, 1997, Dixon and Boswell, 1996).

On the empirical side, only a few empirical papers have looked at the relationship between democracy and reforms. Among the available evidence, Giavazzi and Tabellini (2005) study the feedback effects between economic and political liberalizations. Economic liberalization is defined as the event of becoming open, where openness is defined as in Wacziarg and Welch (2008). Political liberalization is the event of becoming a democracy; where democracy is defined by strictly positive values of polity2. Using a panel of 140 countries over 1960–2000 (with country and year fixed effects), Giavazzi and Tabellini (2005) find evidence of a positive and significant relationship between democratizations and trade reforms; they find that the feedback effect could run in both directions although the causality is *more* likely to run from political to economic reforms. In comparison, we find little evidence of feedback effects from reforms to democracy.[5] Similarly, Persson (2005) shows that the forms of democracy (parliamentary, proportional and permanent ones) are important in explaining variation in trade reforms (measured by the Wacziarg and Welch index) and an index protection of property rights.[6] Amin and Djankov (2009) show that democracy (measured by Freedom House or PolityIV scores) is good for micro-reforms (as defined in the World Bank's Doing Business Database).[7] Eichengreen and Leblang (2008) find evidence of a positive two-way relationship between democracy and globalization defined as trade and capital account liberalization.[8] They, however, find that these effects are not uniform across time and space.

[5] Not, however, that the results are not directly comparable because Giavazzi and Tabellini (2005) consider only trade reforms.

[6] Banerji and Ghanem (1997), and Milner and Kubota (2005) also look at trade reforms. The former presents cross-country evidence to show that authoritarian regimes are associated with higher protectionism (measured by an index of protectionism from Dollar (1992)), while the latter show that regime changes towards democracy are associated with greater liberalization (measured by tariff rates and Sachs Warner indices). Banerji and Ghanem (1997) also find evidence that more authoritarian regimes are associated with greater wage distortions, as measured by the ratio of manufacturing wage rate to the nonmanufacturing value added per worker.

[7] Micro-reforms are defined as reforms that lower the administrative costs of starting or running a business. The World Bank's Doing Business Database dataset covers only the last 5 years so a long-term analysis is not possible.

[8] Their measure of trade liberalization is imports plus exports as a fraction of GDP; the authors also check the robustness of their results using the dichotomous measure of Wacziarg and Welch (2004). Capital controls are measured combining information from the International Monetary Fund's *Annual Report on Exchange*

Quinn (2000) examines the relationship between democracy and international financial liberalization. He measures international financial regulation through changes in current and capital account openness created using the *Exchange Arrangements and Exchange Restrictions* from the IMF. Democracy is measured by changes in polity2. Quinn uses both panel data techniques and individual country VARs for 40–50 countries over 1950–97 and finds evidence that democracies liberalize international finance, especially capital accounts. Unlike this paper, he also finds evidence of feedback effects from financial liberalization to democratizations whereby capital account liberalization is associated with decreases in democracy 6 to 15 years later.[9] Finally, Olper, Falkowski and Swinnen (2009) study the effect of regime transitions from autocracy to democracy on agricultural policy distortions, measured by indicators of government transfers to the agriculture sector. They find that while agriculture protection increases after a country's transition to democracy, there is no effect when the regime shifts from democracy to autocracy.

Other papers examine the relationship between economic and political liberalizations in the context of post-communist countries. For example, Fidrmuc (2003) in a sample of 25 transition countries over 1990-2000 finds a positive relationship between the indices of liberalization and democracy. Liberalization is measured by an average of various reform indicators developed by the European Bank for Reconstruction and Development covering privatization, governance and enterprise restructuring, price liberalization, trade and foreign exchange, competition policy, and banking and securities markets. Democracy is measured by an average of the indicators of political rights and civil liberties reported by the Freedom House. In a similar vein, Dethier, Ghanem, and Zoli (1999) also find that political freedom and civil liberties facilitated economic liberalization in the 25 post-communist countries between 1992 and 1997. Milner and Mukerjee (2009) find evidence that democracy fosters trade and capital account liberalization, but also that the impact of openness of democracy is quite weak in developing countries. Grosjean and Senik (forthcoming) using a survey conducted in 2006 by the European Bank for Reconstruction and Development and the World Bank in 28 post-transition countries find a significant effect of democracy (measured by the Freedom House democracy score) on market liberalization, but no evidence of a feedback effect. In addition to the statistical analysis, some papers (Bates and Krueger, 1993) have focused on case studies. This approach takes into account the complexity and the country specificity of the interaction between democracy and economic reforms.

To summarize, while there are many theoretical predictions about the relationships between political and economic liberalizations, empirical evidence on the subject is limited to reforms

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Arrangements and Exchange Restrictions together with historical data taken from Eichengreen and Bordo (2003).

[9] Mulligan, Gill and Sala-i-Martin (2004) do not look specifically at reforms, but analyze the effect of democracy on public spending and taxes. They do not find any significant relationship between democracy and total government consumption, education or social spending; but find that democracies are associated with flatter income taxes (or less income redistribution).

in particular sectors, in particular international trade and finance, micro-reforms, or specific countries over a short period.

Our study is the first one to combine a comprehensive coverage of reforms in different sectors, a significant coverage of countries and a long time period. In particular, the dataset used in this paper spans six sectors, and both developing and developed countries from the 1960 up until 2004.

III. Data

A. Data on reforms

Our analysis is based on a completely new and extensive dataset, compiled by the Research Department of the IMF, describing the degree of regulation for a sample of 150 industrial and developing countries. The new dataset thus has significant advantages over existing data sources, which cover a narrower set of reforms and countries. Reform indicators cover six sectors, including both financial and real sectors. Financial sector reform indicators include reforms pertaining to domestic financial markets and the external capital account, while real sector structural reform indicators include measures of product and agriculture markets, trade, and current account reforms. Each indicator contains different sub-indices summarizing different dimensions of the regulatory environment in each sector. The sub-indices are then aggregated into indices and normalized between 0 and 1. We construct all the measures of reform in each sector so that higher values represent greater degrees of liberalization.

Table 1 presents a brief definition and sources of the reform indicators used in this paper. IMF (2008) describes all data sources and full details of the construction of the indicators.

a. Financial sector reforms in the domestic financial market

The dataset contains two measures of financial sector reforms, one for the domestic financial sector and the other regarding the extent of capital account liberalization. The *domestic financial sector liberalization* indicator in turn includes measures of securities markets and banking sector reforms. The *securities markets* subindex assesses the quality of the market framework, including the existence of an independent regulator and the extent of legal restrictions on the development of domestic bond and equity markets. The *banking* subindex captures reductions or removal of interest rate controls (floors or ceilings), credit controls (directed credit and subsidized lending), competition restrictions (limits on branches and entry barriers in the banking market, including licensing requirements or limits on foreign banks), and public ownership of banks. The banking index also captures a measure of the quality of banking supervision and regulation, including the power and independence of bank supervisors, the adoption of Basel capital standards, and the presence of a framework for bank inspections.

b. Capital account liberalization

The second measure of reform in the financial sector pertains to the extent of the *external capital account liberalization*. The index contains information on a broad set of restrictions including, for example, controls on external borrowing between residents and non-residents, as well as approval requirements for foreign direct investment (FDI).

c. Product market reforms

Turning to the real sector, the product market indicator covers the degree of liberalization in the telecommunication and electricity markets, including the extent of competition in the provision of these services, the presence of an independent regulatory authority, and privatization.

d. Agricultural market reforms

The agricultural sector indicator captures intervention in the market for the main agricultural export commodity in each country. It measures the extent of public intervention in the market going from total monopoly or monopsony in production, transportation or marketing (i.e., the presence of marketing boards), the presence of administered prices, public ownership of relevant producers or concession requirement to free market.

e. Trade reforms

Trade reforms are captured by using two different indicators: one based on tariffs and the other measuring the extent of current account liberalization. The indicator based on tariff liberalization is meant to capture distortions in international trade and is measured by average tariffs.

f. Current account liberalization reforms

The second indicator for measuring reform in the trade sector broadly measures the extent of *current account liberalization*. It captures the extent to which a government is compliant with its obligations under the IMF's Article VIII to free from government restriction the proceeds from international trade in goods and services.

Additional details on the sources and specifics of each indicator can be found in IMF (2008) and Table 1.

A. Aggregation and normalization

For each of our six sectors, we construct an aggregate index by averaging the sub-indices for that particular sector (for the cases in which we do have multiple sub-indices, like product market or the financial sector). Each sectoral indicator is then normalized between 0 and 1, where 1 indicates a higher degree of liberalization. "Reform" in any sector is then defined as an annual change in the index. Table 2 reports the pair wise correlations between different types of reforms. Financial sector, trade, current, and capital account reforms are strongly correlated among themselves, and less so with agricultural and product market reforms (with

the exception of the financial sector reform which is strongly correlated to product market reforms). Overall the correlations indicate that once the process of reform in a country starts, it probably spreads over to several sectors.[10] We run most of our regressions at the sector-country and year level; however as one of our robustness checks we also aggregate the six reform indicators using a principal component analysis.

B. Other data

Democracy is measured using the standard, well-established measure of democracy taken from the Polity IV database. In particular, we use the combined polity2 index ranging from -10 to 10 (-10=high autocracy; 10=high democracy).[11] We normalize the index so that 1 indicates the most democratic country and 0 the least democratic regime.

We also include in our specifications the following controls:

- **Initial level of regulation** (as measured by the lagged level of the regulation index): this variable can be a proxy for important incentives in favor and against the implementation of structural reforms. Excessive government regulation and/or market failures may be perceived as more costly when the economy is least reformed. At the same time, the beneficiaries of existing large rents may oppose reforms.

- **Economic crisis**: According to a widely held view, economic crises foster economic reforms by making evident the cost of stagnation and backwardness. The opposite view maintains that it is easier to implement reforms during periods of economic growth when potential losers can find other opportunities in a booming economy or when countries become richer and have more resources to compensate the losers. In order to test this hypothesis, we use several measures of crisis: a dummy equal to 1 if the country is experiencing inflation larger than 40 percent in that year, a measure for recession (as summarized by a dummy indicating negative growth in per-capita GDP), terms of trade shocks, and banking and debt crisis.[12]

- **Public expenditures/GDP and real devaluation**: Compensation schemes can offset costs associated with reforms. A large government may compensate losers from reforms than a very lean government with a small budget. We use public expenditures/GDP as a proxy of the size of social safety nets. As an alternative

[10] This paper does not consider the issue of sequencing among different types of reforms. For an analysis of sequencing see IMF (2008), showing that trade reforms tend to precede financial and capital account reforms.
[11] We also check our results using the *Freedom House Index* and the index proposed by Przeworski, Alvarez, Cheibub, and Limongi (1993). For an exhaustive discussion of these indices, see Przeworski, Alvarez, Cheibub, and Limongi (2000) or Acemoglu and Robinson (2006). Note that the trend toward more democratic regimes has not been linear. Significant retrenchment of democracy has not only been observed in isolated countries but also in several regions of the world. The examples include the general decrease in democracy in Asia in the 1950s and 1960s, the marked decline in Latin America in 1960s and 1970s, and the prolonged stasis in Africa since the 1960s (Acemoglu and Robinson, 2006).
[12] The data on banking and debt crises come from Reinhart and Rogoff (2008).

measure of compensation, we also control for real devaluation, which could promote exports and therefore help compensate losers from reforms.[13]

- **Human capital and effectiveness of bureaucracy** could also facilitate reforms (Besley and Personn, 2007). We use enrollment in tertiary education from Barro and Lee (2001) as a measure of human capital and bureaucratic quality from the International Country Risk Guide.[14]

- **Reforms in neighboring countries or in trading partners** may affect the adoption of domestic reforms through peer pressure and imitational effects. We use the weighted average of reforms in neighboring countries, where the weights are given by two concepts of distance defined by geography and trade.[15]

- **The ideology of the ruling government and the form of government** may determine the adoption of reforms.[16] We capture the ideological orientation of the executive with the indicator *left*, which is equal to 1 if the executive belongs to a party of the left and 0 if it belongs to a right-wing, centrist or other party. The form of government is proxied by the variable *presidential*, which takes the value of 1 if the system is directly presidential and 0 if the president is elected by the assembly or parliamentary. The source for these two variables is the Database of Political Institutions from the World Bank.[17]

Table A1 provides the summary statistics for the key variables used in the empirical analysis.

IV. Empirical strategy

The unit of analysis is a sector-country-year observation (there are 6 sectors, 150 countries, and 45 years); the resulting dataset is a panel of 20,123 observations. We define reform as a change over time in the index of regulation for each of the six sectors, s, in country c at time t:

$$reform_{s,c,t} \equiv Index_{s,c,t} - Index_{s,c,t-1},$$

Our baseline specification is as follows:

[13] For instance, some important reforms happened together with large devaluation and in the context of IMF-supported programs.
[14] The measure of bureaucratic quality from ICRG is scored between 0-6. High scores indicate "autonomy from political pressure" and "strength and expertise to govern without drastic changes in policy or interruptions in government services"; also existence of an "established mechanism for recruiting and training."
[15] The source for geographic distance is http://www.cepii.fr/anglaisgraph/bdd/distances.htm and for bilateral trade flows, the IMF's Direction of Trade Statistics.
[16] Alesina and Roubini (1992) argue that right-wing governments are normally considered more inclined to market-oriented reforms; Persson and Tabellini (2002) finds that a presidential system facilitates reforms as they are more able to overcome the resistance of small interest groups.
[17] We also included in the regressions additional political variables such as number of executive constraints, the presence of legislative or executive elections, the number of years left in the current term for the executive and the presence of an absolute majority in the legislature by the party of the executive. The results are robust to the inclusion of these additional political variables.

$$reform_{s,c,t} = \alpha\, Index_{s,c,t-1} + \beta\, democracy_{c,t-1} + \phi\, X_{c,t-1} + \delta_s + \gamma_c + \chi_t + \delta_s\gamma_c + \delta_s\chi_t + \varepsilon_{s,c,t} \quad (1)$$

where δ_s, γ_c and χ_t are sector, country, and year fixed effects, respectively, and X_{ct-1} are country-specific and time-varying controls to be described below. $\delta_s\gamma_c$ and $\delta_s\chi_t$ represent the interactions between country and sector; and sector and time fixed effects respectively. We also control for the lagged level of the index to identify the existence of convergence toward some possible country specific levels of regulation.

The dependent variable (reform) is highly persistent; for this reason the error terms in specification (1) may also exhibit serial correlation.[18] We allow for first-order serial correlation in the error terms: $\varepsilon_{ct} = \rho\varepsilon_{ct-1} + u_{ct}$.[19] In specifications (2) and (4), we allow the serial correlation coefficient in the error term to be country-sector specific.[20] In specification (3), we allow the serial correlation coefficient to be country specific. In Table 7b we also test the robustness of our results by clustering the error terms at the country level.

Our first specification includes only sector, country, and time fixed effects (Table 3, column 1). The coefficient on the lagged level of the index is negative and significant at the 1 percent level, indicating convergence toward country specific levels of regulation. The coefficient on the lagged level of democracy is significant at the 1 percent level. The magnitude of the estimated effect implies that a one standard deviation increase in the democracy index explains 7 percent variability in reforms. In addition, moving to a complete democracy in the long-run is associated with a 0.22 $\left(=-\frac{\beta}{\alpha}\right)$ increase in the index of reform (using the coefficients of column 1).

We then add country-sector specific effects, and sector-year specific effects and both of them (column 2, 3 and 4 respectively). The interactions between country and sector fixed effects take into account that reforms are inherently different across countries, e.g., trade sector reforms in India have different characteristics than banking reforms in Brazil (Specification 2). The interactions between sector and year effects account for the possibility of global reform waves across all countries (Specification 3). Specification 4 is the most demanding because it includes all the individual fixed effects and possible two-way interactions. Notice that we cannot control for country-time effects, since the main variable of interest, which is democracy, tends to be country-time varying. The results are very similar across specifications. The magnitude of the coefficients on the democracy variable ranges from 0.02 to 0.03 in columns 2-4.

The results in Table 3 show that the correlation between (past) democracy level and the adoption of reforms is not driven by country or sector-fixed characteristics or by the fact that there was a worldwide movement toward reforms and democracy, or any interactions between country-sector and sector-time fixed characteristics.

If the correlation between economic reforms and democracy is not due to spurious correlation owing to a common trend, could it be driven by other country-time varying omitted variables? The next subsection checks whether this correlation is robust to the

[18] Note, however, that the reform variables do not have a unit root being bounded between zero and one.
[19] The Durbin-Watson statistics is 1.94 indicating that there is little evidence of serial correlation in the error terms.
[20] Note that specifications (2)–(4) reduce slightly the estimation sample because one observation per country is used to calculate the correlation coefficient of the error terms.

inclusion of several variables, which (current theories suggest) may explain both economic reforms and democracy, i.e., the possible bias deriving from country-sector-time varying omitted variables.

A. Additional controls

Reforms may be triggered by a wide range of factors other than democracy. Following the theoretical literature reviewed above, in Table 4 we control for the following possible determinants of reforms: a measure of crisis (a dummy equal to 1 if the country experiences inflation larger than 40 percent) [21], public expenditure/GDP and real devaluation, human capital and bureaucratic quality, reforms in neighbors, and political variables (columns 1-5).

In many countries, difficult fiscal situations were associated with monetization of deficit and high inflation. For this reason, we take hyperinflation (defined as inflation larger than 40 percent) as an indicator of (unresolved) fiscal crisis. Not surprisingly, episodes of hyperinflation appear to reduce the probability of reforming (Column 1), although the effect is small and significant only at the 10% level. Moreover, when we include all the controls in column (6), only initial structural conditions and democracy appear to be significant in explaining reforms[22]. Bureaucratic quality and public expenditure/GDP also appear to matter but with coefficients which are low and only significant at the 10% level.

Of all the variables, reforms in neighboring countries appear to spur domestic reforms.[23] This result, which extends the results of IMF (2004) on OECD countries, is also in line with Buera, Monge, and Primiceri (2008), who find a spillover effect from beliefs in neighboring countries. The inclusion of these variables does not decrease the significance of democracy in explaining the adoption of reforms.

B. Endogeneity

Another source of bias derives from the fact that reforms themselves may have an effect on democracy. In order to deal with this issue we have two approaches: 1) we use instrumental variables, and 2) we check if reforms cause democracy (in the final section of the paper).

While an ideal source of exogenous variation of democracy is difficult to find, we use democracy in neighboring countries as an instrument where we introduce the concept of political distance to define the neighbors. The idea behind this instrument is that democracy in political allies has influence on domestic democracy but no direct impact on a country's

[21] We include alternative measures of crisis in Table 7b.

[22] For each column in Table 4, we also estimate the basic specification (Table 3, column 4) on the restricted sample with fewer observations (not shown) to analyze the effect of adding controls on a consistent sample. The results shown in Table 4 do not appear to be driven by sample selection. We also include additional controls viz. dummies for WTO, EU, and OECD accessions (=1 in years following the accession); and for the existence of an IMF program. Democracy continues to have a positive and statistical effect on reforms, after controlling for these. Accession to EU and OECD; and the existence of an IMF program are significant in explaining reforms; however, they are not significant when included with all the controls in column (6) of Table 4 (results are available upon request).

[23] The controls are described in the data section. Note also that the different control variables reduce substantially the sample size.

ability to reform. For instance, the political alliance between the U.S. and Western Europe had surely an effect on democracy in Western Europe but not a direct effect on the reform level in Europe. [24]

Table 5A shows the regressions using lagged democracy in political neighbors as an instrumental variable. As expected, the first-stage *F* statistics confirm the relevance of democracy in neighbors in promoting the democratic process in the domestic economy (the first stage of our IV regression is presented in Table 5B). The results in our second stage show that, consistent with the OLS specification, there is evidence for a strong and positive effect of democracy on reforms. Notice that the estimated effect is not statistically significant in the specification which includes all the controls (column 1c). The magnitude of the estimated effect is, however, not significantly different from Column 1b, which uses a larger sample and a restricted set of controls suggesting that the statistical insignificance in specification 1c is likely to be driven by the large standard errors from the smaller sample. The regression in column 1d, where the sample is the same as column 1c but without the inclusion of controls, indeed confirms that this is the case.

C. Regressions by sector

Does democracy have a differential effect across sectors? Alternatively, are the results presented above driven by a particular sector? We explore this possibility by looking at the impact of democracy on different sectors. The results in Table 6 show that, with the exception of product markets (electricity/telecommunication), democracy promotes reforms in all other sectors, with the estimated effect being statistically significant at the one percent level in all sectors. The fact that democracy is not significant in explaining reforms in electricity/telecommunications may be due to the fact that global waves (which are captured by year effects) drive the adoptions of reforms in these sectors.

We prefer the general specification that encompasses all sectors in order to maximize the number of observations so that we can control for country, reform, and year fixed effects and (most importantly) their interactions as shown in Table 3.

D. Other robustness checks

In Table 7a, we carry out several robustness checks.[25] In columns 1a–1b and 2a–2b, the sample is restricted to communist and developing countries respectively (we estimate two regressions for each subsample with and without the inclusion of controls). In columns 3a-3b, we use a zero-one definition of democracy (as in Giavazzi and Tabellini, 2005), where democracy=1 if polity2 has positive values. Using a zero-one definition of democracy does not change our results (the results are weaker when we include all the controls, but this is

[24] The idea underlying this instrument is based on Persson and Tabellini (2009), who use democracy in neighboring countries as a proxy for democratic capital. In addition, building on this concept, we also tried different measures of distance, including geographical distance between countries and commercial distance defined as the (inverse of) trading flows between countries. While these measures are highly correlated, they confirm the result of political distance reported here.

[25] For each specification with controls in Table 7a, we also estimated the basic specification (Table 3, column 4) without any controls on the restricted sample (not shown). We do this to analyze the effect of adding controls on a consistent sample. The results in Table 7a are not driven by sample selection.

driven by the fact that the sample size is much smaller, in column 3c we indeed show that the impact of democracy on reform on the restricted sample but without the inclusion of controls is also not significant). Table 7b shows that the results are also robust to different standard error corrections (instead of explicitly allowing for an AR(1) term in the model, the standard errors are clustered at the country-reform level) (column 1). Reforms in trading partners (column 2) and reforms in other sectors (column 3) also do not alter our main conclusion, and the results are also robust to a variety of crisis definitions (negative per-capita GDP growth, banking and debt crises and terms-of-trade shocks-columns 4 to 7). We also find very similar results when we follow Giavazzi and Tabellini (2005) and include a political reform variable defined as a dummy taking the value of 1 in the years after democratization (where democratization is defined as the event of becoming a democracy, given that a country was not a democracy in the previous year)[26].

By including the lagged level of reform, the specifications so far have assumed that there is (conditional) convergence in the reform adoption.[27] However, unlike growth regressions, there is no theoretical reason why we should expect convergence in the level of regulation. In order to test if our results depend on this assumption, we replicate the specification in Table 3 without the lagged reform index using the following specification:

$$\Delta Index_{s,c,t} = \beta democracy_{c,t-1} + \phi X_{c,t-1} + \delta_s + \gamma_c + \chi_t + \delta_s\gamma_c + \delta_s\chi_t + \varepsilon_{s,c,t} \quad (2)$$

Column (9) in Table 7b reports the results from estimating Equation (2). The estimated coefficient on lagged (democracy) is positive and statistically significant at the 1 percent level. The magnitude of the estimated coefficient (β= 0.011) is smaller than in Table 3.[28] This coefficient, however, is not exactly comparable to the coefficient in the previous regressions in Table 3 given that the magnitude of the estimated coefficient on democracy in this regression can be interpreted only as the effect of democracy on the *rate* of adoption of structural reforms rather than on the steady-state *level*.[29]

Finally, in Table 8, we find some evidence for non-linear effects of democracy on reforms: the more democratic the country is initially, the easier it is to reform.[30]

E. The feedback effect

In this section, we check whether economic reforms could foster the democratic process in a country. Giavazzi and Tabellini (2005) find evidence of a possible feedback effect from economic liberalization (when looking only at the trade sector) and the democratic process. We test for the possibility of a feedback effect from reforms to democracy by estimating the following regression

$$\Delta democracy_{c,t} = \alpha democracy_{c,t-1} + \beta reforms_{s,c,t-1} + \delta_s + \gamma_c + \chi_t + \varepsilon_{c,t} \quad (3)$$

[26] Results are reported in column 8.

[27] Note, however, that we assume a country specific long run level of reforms by putting country fixed effects.

[28] This is consistent with a positive correlation between (lagged) democracy and the lagged reform index, and a negative relationship between reform and the lagged reform index.

[29] Note that unlike Equation (1), the specification in Equation (2) has the drawback that the steady state level of the index is undefined; hence the long-run effect of democracy on the reform index cannot be estimated. In effect , we are assuming that a certain level of democracy is associated only with a rate of growth of the reform index. Column (9) in Table 7b repeats only the final specification in Table 3 without the lagged reform index. The estimated coefficient on lagged democracy is identical when we replicate columns (1)-(3) in Table 3 without the lagged reform index (results available upon request).

[30] We also explore whether democracy affects the probability of reversal in reforms (defined as a decrease in the level of index) and do not find any evidence for this hypothesis.

Overall, we find that democracy promotes reform, while we do not find any evidence that reforms promote the democratic process (Table 9a).[31] Our results therefore do not support a reverse causality story.[32] We also repeat the same exercise reform by reform and find little evidence of feedback for most reforms with the exception of reforms in domestic financial sector and current account. Reforms in these sectors seem to reduce the probability of democratization. The results are qualitatively similar to Giavazzi and Tabellini (2005), who argue that for trade reforms, "causality is *more* likely to run from political to economic liberalizations rather than vice versa".

F. Factor analysis

In this section, we implement a different approach from the panel analysis presented above. To take into account the possibility that the reform process is one unique process common to all sectors, we undertake a factor analysis of our measures of reforms in the six sectors. In particular, we extract the first principal component from the whole dataset with all the data on reforms for each sector.[33] The results are reported in Table 10. The impact of democracy seems to be relevant for the overall tendency of a country to reform (the coefficient on the lagged level of democracy is significant at the 1 percent level): moving to a complete democracy in the long-run is associated with a 0.03 increase in the index of reform (the magnitude doubles when we instrument for lagged democracy using lagged democracy in neighboring countries). On the other hand, we do not find any evidence of a feedback effect from the impact of the overall tendency of a country to reform on democracy.

V. Conclusions

The question of whether democratic countries favor economic reforms is central to the political economy literature. Political economists study why apparently welfare-enhancing reforms are postponed or adopted with long delays and the presence (or the absence) of democracy is one of the main causes investigated. Unfortunately, despite the vast theoretical literature and limited empirical evidence (restricted to some set of countries, to some reforms and to some periods), the answer to this question has been tentative because of data limitations, which has also limited the techniques that can be used.

This paper answers this question using a novel dataset on structural reforms, which encompasses several sectors and many countries for several years. This dataset allows us to control for a set of possible omitted variables, including country and reform fixed effects, possible two-way interactions between the fixed effects and waves of reforms.

The main conclusions of the papers are that 1) democracy and economic reforms are positively correlated (after controlling for country and reform-specific characteristics, any

[31] For robustness, we also estimate Equation (3) with longer lags; but do not evidence for any feedback effects (results available on request).

[32] Since income is considered an important determinant of democratization, we also test robustness to including per capita income in the regressions (results available upon request). Including the lagged level of the index, rather than the change as in Table 9a, also does not alter the findings in Table 9a.

[33] The variable is then normalized between 0 and 1 to make the results comparable to the remaining part of the paper.

interaction between country and reform characteristics, and global reform waves); 2) this correlation is robust even after we control for standard factors, which are usually correlated with reforms and democracy, including bureaucratic quality and education, and political stability; 3) the correlation is also robust to the variables that are usually associated with reforms (but not necessarily with democracy) such as crises, neighboring country effects, and compensation schemes; and 4) there is no evidence that economic reforms pave the way for political reforms.

The strong correlation between (lagged) democracy and the adoption of economic reforms, even controlling for many possible omitted factors as well as the finding that past economic reforms are not associated with the adoption of democracy, point to the fact there is probably a causal link from democracy to reforms.

These strong results call for an effort to study the precise mechanisms through which democracy has an impact on economic reforms.

References

Abiad, Abdul and Ashoka Mody, 2005, "Financial Reform: What Shakes It? What Shapes It?" *American Economic Review,* Vol. 95, pp. 66–88.

Abiad, Abdul, Enrica Detragiache, and Thierry Tressel, 2008, "Do Financial Reforms Boost the Development of Financial Systems? Evidence from a New Database on Financial Reforms," IMF Working Paper 08/266 (Washington: International Monetary Fund).

Acemoglou, Daron and James A. Robinson, 2006, *Economic Origins of Dictatorship and Democracy,* (Cambridge University Press).

Acemoglu, Daron, Simon Johnson, James A. Robinson, and Pierre Yared, 2008, "Income and Democracy," *American Economic Review,* Vol. 98, No. 3, pp. 808-842.

Alesina, Alberto, and Nouriel Rubini, 1992, "Political Cycles in OECD Economies," *Review of Economic Studies*, October, Vol.59, pp.663–88.

Alberto, Alesina, Silvia Ardagna, and Francesco Trebbi, 2005, *IMF Staff Papers,* Vol. 53: Special Issue, pp. 1–29 (2005 Mundell Fleming lecture)

Amin and Djankov, 2009, "Democracy and Reforms," *CEPR Discussion Paper* No. 7151.

Banerji, A. and Ghanem, H, 1997, "Does the Type of Political Regime Matter for Trade and Labor Market Policies?," *World Bank Economic Review,* Vol. 11, 171-194.

Barro, Robert. J., and Jong-Wha Lee, 2001, "International Data on Educational Attainment: Updates and Implications," *Oxford Economic Paper* No. 53, pp. 541–63.

Bassanini Andrea and Romain Duval, 2006, "Employment Patterns in OECD Countries, Reassessing the Role of Policies and Institutions," *OECD Economics Department Working Papers* No. 486.

Bates, Robert H. and Anne O. Krueger, 1993, *Political and Economic Interactions in Economic Policy Reform: Evidence from Eight Countries*, Basil Blackwell Limited, Cambridge, USA.

Besley, Timothy J. and Torsten Personn, 2007, "The Origins of State Capacity: Property Rights, Taxation, and Politics", *CEPR Discussion* Paper No. 6370.

Buera, Paco, Alex Monge, Giorgio Primiceri, 2008, "Learning the Wealth of Nations" Cambridge, MA: NBER working paper No. 14595.

Clemens, Michael A., and Jeffrey G. Williamson, 2004, "Why Did the Tariff-Growth Correlation Reverse after 1950?" *Journal of Economic Growth*, Vol. 9, No. 1, pp. 5-46.

Daveri, Francesco, Guido Tabellini, Samuel Bentolila and Harry Huizinga, 2000, "Unemployment, Growth and Taxation in Industrial Countries", *Economic Policy*, Vol. 15, No. 30, pp. 47-104.

Debreu, G., 1951, "The Coefficient of Resource Utilization," *Econometrica,* Vol. 19, pp. 273-92.

Dethier, Jean-Jacques, Ghanem, Hafez and Zoli, Edda, 1999, "Does Democracy Facilitate the Economic Transition? An Empirical Study of Central and Eastern Europe and the Former Soviet Union". World Bank Policy Research Working Paper No. 2194.

Dixon, W. J. and T. Boswell, 1996, "Dependency, Disarticulation and Denominator Effects: Another Look at Foreign Capital Penetration", *American Journal of Sociology,* Volume 102, No. 2, September, pp. 543-62.

Drazen, A. and William Easterly, 2001, "Do Crises Induce Reform? Simple Empirical Tests of Conventional Wisdom," *Economics and Politics*, Vol. 13, No. 2, pp. 129-157.

Eichengreen, B. and M. Bordo, 2003, "Crises Now and Then: What Lessons from the Last Era of Financial Globalization?" in Paul Mizen (ed.), *Monetary History, Exchange Rate and Financial Markets: Essays in Honor of Charles Goodhard,* Cheltenham: Edward Elgar, vol. 2. pp. 52-91

Eichengreen, B. and D. Leblang, 2008, "Democracy and Globalization", *Economics and Politics,* vol. 20 (3), 289-334.

Färe, R., S. Grosskopf, and C. A. K. Lovell, 1994, *Production Frontiers* (Cambridge: Cambridge University Press).

Farrell, M. J., 1957, "The Measurement of Productive Efficiency," *Journal of the Royal Statistical Society*, pp. 253–81.

Fernandez, Raquel and Dani Rodrik, 1991. "Resistance to reform: Status Quo bias in the Presence of Individual Specific Uncertainty," *American Economic Review*, December, Vol. 81, No.55, pp. 1146–55.

Fidrmuc, Ian, 2003, "Economic Reform, Democracy and Growth during Post-communist Transition," *European Journal of Political Economy* Vol. 19, No. 3, September, pp. 583-604.

Giavazzi, Francesco; and Guido Tabellini, 2005, "Economic and Political Liberalizations," *Journal of Monetary Economics,* Vol. 52, pp. 1297–1330.

Grosjean and Senik (forthcoming), "Democracy, Market Liberalization and Political Preferences", *Review of Economics and Statistics*.

Haggard, Stephan, 1990, *Pathways from Periphery. The Politics of growth in the Newly Industrializing Countries,* (Ithaca: Cornell University Press).

Huntington, Samuel P., 1968, *Political Order in Changing Societies,* (New Haven: Yale University Press).

International Monetary Fund, 2004, *World Economic Outlook: Fostering Structural Reforms, April 2004,* (Washington).

———, 2008, "Structural Reforms and Economic Performance in Advanced and Developing Countries*", IMF Occasional Paper*, forthcoming, (Washington).

Lora, Eduardo, 1998, "What makes reforms likely? Timing and Sequencing of Structural Reforms in Latin America," IADB Working Paper No. W-424.

Koopmans, T. C., 1951, "An Analysis of Production as an Efficient Combination of Activities," in *Activity Analysis of Production and Allocation,* ed. by T. C. Koopmans (New York: Wiley).

Milner, H.V. and B. Mukherjee, 2009, "Democratization and Economic Globalization," *Annual Review of Political Science,* pp. 163-181.

Milner, H.V. and Kubota, K., 2005, "Why Move to Free Trade? Democracy and Trade Policy in Developing Countries", *International Organization*, Vol. 59, pp. 107-143.

Mulligan C. B., R. Gil and X. Sala-i-Martin, 2004, "Do Democracies Have Different Public Policies than Non-democracies?" *Journal of Economic Perspectives,* (March).

Olper, Alessandro, Jan Falkowski, and Johan Swinnen, 2009, "Political Reforms and Public Policies: Evidence from Agricultural Protection," LICOS Discussion Paper No. 251/2009.

McGuire, Martin C. and Mancur Olson, 1996, "The Economics of Autocracy and Majority Rule: The Invisible Hand and the Use of Force," *Journal of Economic Literature,* Vol. 34, pp. 72–96.

Persson, T. and Guido Tabellini, 2002, *Political Economics: Explaining Economic Policy*, MIT Press.

———, 2009, "Democratic Capital: The Nexus of Political and Economic Change", *American Economic Journal: Macroeconomics* 1, pp. 88-126.

Polity IV. *Political regime characteristics and transitions, 1800–2002* [Data Project]. College Park: University of Maryland, 2002 _http://www.cidcm.umd.edu/inscr/polity/_.

Przeworski, A., and Limongi, F., 1993, "Political Regimes and Economic Growth," *Journal of Economic Perspectives* Vol. 7, pp. 51–70.

———, F., 2000, *Democracy and Development: Political Regimes and Well-Being in the World, 1950–1990*, (Cambridge (UK), Cambridge University Press).

Quinn, Dennis P., 1997, "The Correlates of Change in International Financial Regulation," *American Political Science Review*, Vol. 91, pp. 531–51.

———, 2000, "Democracy and International Financial Liberalization", mimeo, Georgetown University.

Quinn, Dennis P., and A. Maria Toyoda, forthcoming, "Does Capital Account Liberalization Lead to Economic Growth?," *Review of Financial Studies*.

Rajan, Raghuram, and Luigi Zingales, 2003, "The Great Reversals: The Politics of Financial Development in the Twentieth Century," *Journal of Financial Economics,* Vol. 69, pp. 5–50.

Reinhart, C. and K. Rogoff, "This Time is Different: a Panoramic View of Eight Centuries of Financial Crises", NBER Working Paper No. 13882.

Rodrik , Dani, 1999, "Democracies Pay Higher Wages," *Quarterly Journal of Economics*, Vol. 114, No. 3, pp. 707–38.

Sala-i-Martin, X. 2006, "The World Distribution of Income, Falling Poverty and ... Convergence, Period," *Quarterly Journal of Economics,* Vol. 121, No. 2, pp. 351-97.

Schwarz, Gerhard, 1992, "Democracy and Market-Oriented Reform: A Love-Hate Relationship?" *Economic Education Bulletin* 32.

Seiford, L. M., and R.M. Thrall, 1990, "Recent Developments in DEA: The Mathematical Programming Approach to Frontier Analysis," *Journal of Econometrics,* Vol. 46, pp. 7-38.

Wacziarg, Romain, and Karen Horn Welch, 2008, "Trade Liberalization and Growth: New Evidence," *World Bank Economic Review,* Vol. 22, No. 2, pp. 187-231.

Tables

Table 1. Reform Indicators

	Financial sector
	The index of domestic financial liberalization is an average of six subindices, five related to banking and one related to the securities market.
Banking	The banking subindex is an average of the following 5 indicators: (i) interest rate controls, such as floors or ceilings; (ii) credit controls, such as directed credit and subsidized lending; (iii) competition restrictions, such as limits on branches and entry barriers in the banking sector, including licensing requirements or limits on foreign banks; (iv) the degree of state ownership; and (v) the quality of banking supervision and regulation, including power of independence of bank supervisors, adoption of Basel capital standards, and a framework for bank inspections.
Securities market	The sixth subindex relates to *securities markets* and covers policies to develop domestic bond and equity markets, including (i) the creation of basic frameworks such as the auctioning of T-bills, or the establishment of a security commission; (ii) policies to further establish securities markets such as tax exemptions, introduction of medium- and long-term government bonds to establish a benchmark for the yield curve, or the introduction of a primary dealer system; (iii) policies to develop derivative markets or to create an institutional investor's base; and (iv) policies to permit access to the domestic stock market by nonresidents. The subindices are aggregated with equal weights. Each subindex is coded from zero (fully repressed) to three (fully liberalized).
Data sources	Abiad and others (2008), following the methodology in Abiad and Mody (2005), based on various IMF reports and working papers, central bank websites, and others.
Coverage	1973–2005; Minimum and maximum number of countries in any year are 72 and 91 respectively.
	Capital account
	Qualitative indicators of restrictions on financial credits and personal capital transactions of residents and financial credits to nonresidents, as well as the use of multiple exchange rates. Index coded from zero (fully repressed) to three (fully liberalized).
Data sources	Abiad and others (2008), following the methodology in Abiad and Mody (2005), based on various IMF reports and working papers, central bank websites, and others.
Coverage	1973–2005; Minimum and maximum number of countries in any year are 72 and 91 respectively.
	Product markets
	The electricity indicators capture (i) the degree of unbundling of generation, transmission, and distribution; (ii) whether a regulator other than government has been established; and (iii) whether the wholesale market has been liberalized; and (iv) privatization. Each subindex is coded from 0 to 1 or from 0 to 2.
Electricity	The telecommunication indicator captures (i) the degree of competition in local services; (ii) whether a regulator other than government has been established; (iii) the degree of liberalization of interconnection changes; and (iv) privatization. Each subindex is coded from 0 to 1 or from 0 to 2.
Telecommunication	Electricity: Based on various existing studies and datasets as well as national legislation and other official documents.
Data sources	Telecommunication: Based on IMF commodities data, various existing studies and datasets, and national legislation and other official documents.
Coverage	1960–2003; Minimum and maximum number of countries in any year are 106 and 108 respectively.

	Agriculture market
	The index captures intervention in the market for the main agricultural export commodity in each country. The index can take four values (i) zero (public monopoly or monopsony in production, transportation, or marketing, e.g., export marketing boards); (ii) one-third (administered prices); (iii) two-thirds (public ownership of relevant producers or concession requirements); and (iv) one (no public intervention).
Data sources	Based on IMF commodities data, various existing studies and datasets, and national legislation and other official documents.
Coverage	1960–2003; Minimum and maximum number of countries in any year are 96 and 104 respectively.
	Trade
	Trade liberalization is defined by looking at average tariff rates, with missing values extrapolated using implicit weighted tariff rates. Index normalized to be between zero and unity: zero means the tariff rates are 60 percent or higher, while unity means the tariff rates are zero.
Data sources	Various sources, including IMF, World Bank, WTO, UN, Clemens and Willamson, 2004.
Coverage	1960-2005; Minimum and maximum # of countries in any year are 47 and 142 respectively.
	Current account
	Current account liberalization is defined with an indicator describing how compliant a government is with its obligations under the IMF's Article VIII to free from government restriction the proceeds from international trade in goods and services. The index represents the sum of two subcomponents, dealing with restrictions on trade in visibles, as well as in invisibles (financial and other services). It distinguishes between restrictions on residents (receipts for exports) and on nonresidents (payments for imports). Although the index measures restrictions on the proceeds from transactions, rather than on the underlying transactions, many countries in practice use restrictions on trade proceeds as a type of trade restriction. The index is scored between zero and 8 in half-integer units, with 8 indicating full compliance.
Data sources	Based on the methodology in Quinn (1997) and Quinn and Toyoda (2007), drawing on information contained in the Fund's AREAER database (Annual Reports on Exchange Arrangements and Exchange Restrictions).
Coverage	1960–2005; Minimum and maximum number of countries in any year are 50 and 65 respectively.

This table presents brief description of the reform indicators used in the paper. For a full description of all variables, data and sources refer to IMF (2008).

Table 2. Correlation between Reform Indicators

	Agriculture	Prod. Mkt	Trade	Cap. Acc.	Curr. Acc.	Finance
Agriculture	1					
Prod. Mkt	0.30***	1				
Trade	0.32***	0.35***	1			
Cap. Acc.	0.40***	0.46***	0.57***	1		
Curr. Acc.	0.42***	0.47***	0.63***	0.77***	1	
Finance	0.44***	0.63***	0.62***	0.73***	0.71***	1

*** denotes statistical significance at the 1 percent level.

Table 3. Reforms and Democracy

Dependent variable: reform in country, sector, year				
	(1)	(2)	(3)	(4)
Lagged democracy	0.016***	0.017***	0.033***	0.017***
Lagged level of index	-0.073***	-0.124***	-0.047***	-0.131***
Country FE	Y	Y	Y	Y
Sector FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Country*Sector FE		Y		Y
Sector*Year FE			Y	Y
Observations	20,123	19,521	20,071	19,521

Note. The estimators are within estimators and allow for first-order autoregressive disturbance term. ***, ** and * denote statistical significance at 1, 5 and 10 percent respectively.

Table 4. Reforms and Democracy: Robustness to Controls

Dependent variable: reform in (country, sector, year)						
	(1)	(2)	(3)	(4)	(5)	(6)
Lagged democracy	0.011***	0.014**	0.048***	0.011***	0.014***	0.045***
Lagged level of index	-0.149***	-0.205***	-0.401***	-0.135***	-0.173***	-0.412***
Lagged crisis (inflation>40)	-0.005*					-0.003
Lagged real devaluation		0.007				-0.009
Lagged public expenditure to GDP		0.000				-0.001*
Lagged bureaucratic quality			0.003			0.006*
Lagged tertiary enrollment			0.006			-0.003
Lagged reforms in geographical neighbor				0.055***		0.044
Lagged dummy for left					0.003	-0.004
Lagged dummy for presidential					-0.001	0.006
Observations	16,648	9,627	5,564	17,804	14,175	4,784

Note. The estimators are within estimators and allow for first-order autoregressive disturbance term. All regressions control for country sector, year fixed effects and country*sector and sector*year interactions. ***, ** and * denote statistical significance at 1, 5 and 10 percent respectively.

Table 5a. Reforms and Democracy: Instrumental Variables Second Stage

Dependent variable: reform in (country, sector, year)				
	(1a)	(1b)	(1c)	(1d)
Lagged democracy	0.078***	0.151***	0.19	0.141
Lagged level of index	-0.135***	-0.180***	-0.281***	-0.281***
Lagged crisis (inflation>40)		-0.005	-0.01	
Lagged real devaluation		0.008	0.003	
Lagged public expenditure to GDP		0.000	-0.001	
Lagged bureaucratic quality			0.004	
Lagged tertiary enrollment			0.023	
Lagged reforms in geographical neighbors		0.056	0.053	
Lagged dummy for left		-0.001	-0.001	
Lagged dummy for presidential		0.029**	0.049	
Observations	18,970	10,007	5,244	5,244
First stage F-stat	764.59	229.09	36.47	50.77
p-value of F test	0.000	0.000	0.000	0.000

Note. Lagged democracy is instrumented by (lagged) democracy in neighboring countries. All regressions control for country sector, year fixed effects and country*sector and sector*year interactions. ***, ** and * denote statistical significance at 1, 5 and 10 percent respectively.

Table 5b. Reforms and Democracy: Instrumental Variables First Stage

Dependent variable: reform in (country, sector, year)				
	(1a)	(1b)	(1c)	(1d)
Lagged democracy in neighboring countries	0.014***	0.009***	0.005***	0.006***
Lagged level of index	0.022	-0.016	-0.008	-0.005
Lagged crisis (inflation>40)		-0.015	0.013	
Lagged real devaluation		-0.011	0.020**	
Lagged public expenditure to GDP		0.001	-0.002	
Lagged bureaucratic quality			-0.003	
Lagged tertiary enrollment			-0.199***	
Lagged reforms in geographical neighbors		0.052	0.198***	
Lagged dummy for left		0.001	-0.009*	
Lagged dummy for presidential		-0.226***	-0.238***	
Observations	18,970	10,007	5,252	5,252

Note. All regressions control for country sector, year fixed effects and country*sector and sector*year interactions. ***, ** and * denote statistical significance at 1, 5 and 10 percent respectively.

Table 6. Reforms and Democracy: By Reform

Dependent variable: reform in (country, year)						
	(1)	(2)	(3)	(4)	(5)	(6)
	Finance	Cap. Acc.	Prod. Mkt	Agricult.	Trade	Curr. Acc.
Lagged democracy	0.067***	0.182***	-0.026	0.202***	0.075***	0.179***
Lagged level of index	-0.379***	-0.521***	-0.278***	-0.558***	-0.420***	-0.554***
Lagged crisis (inflation>40)	0.019*	-0.042*	0.006	-0.016	0.002	0.021
Lagged real devaluation	-0.007	0.024	-0.01	-0.039*	0.006	-0.012
Lagged public expenditure to GDP	0.002	0.002	0.001	0.000	-0.003***	-0.001
Lagged bureaucratic quality	0.014***	0.022*	0.014*	-0.01	0.012**	0.021**
Lagged tertiary enrollment	-0.038	0.057	0.109	-0.145	-0.007	0.053
Lagged reforms in geographical neighbors	-0.01	0.257*	-0.188	-0.147	0.228**	0.013
Lagged dummy for left	-0.003	-0.008	-0.006	-0.005	-0.001	0.000
Lagged dummy for presidential	0.037*	0.026	0.041	0.042	0.046**	-0.005
Observations	786	786	888	807	857	660

Note. The estimators are within estimators and allow for first-order autoregressive disturbance term. All regressions control for country and year fixed effects. ***, ** and * denote statistical significance at 1, 5 and 10 percent respectively.

Table 7a. Reforms and Democracy: Robustness Checks

Dependent variable: reform in (country, sector, year)							
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(3c)
Lagged democracy	0.007**	0.070***	0.014***	0.063***			
Lagged level of index	-0.130***	-0.463***	-0.149***	-0.565***	-0.135***	-0.495***	-0.497***
Democracy dummy (polty2>0)					0.010***	0.013	0.013
Lagged crisis (inflation>40)		-0.002		-0.002		-0.002	0.009
Lagged real devaluation		-0.006		-0.009		-0.009	
Lagged public expenditure to GDP		0.000		-0.001		-0.001	
Lagged bureaucratic quality		0.009**		0.007		0.010**	
Lagged tertiary enrollment		-0.022		0.024		0.011	
Lagged reforms in geographical neighbors		0.063		0.012		0.025	
Lagged dummy for left		-0.005		-0.003		-0.004	
Lagged dummy for presidential		0.010		0.023		-0.007	
Observations	16,816	4,347	15,188	3,338	19,521	4,784	4,784

Note. In Columns 1a-1b and 2a-2b, the sample is restricted to communist and developing countries respectively. In Columns 3a-3b, we use a zero-one definition of democracy (as in Giavazzi and Tabellini, 2005), where democracy=1 if polity2 has positive values. The estimators are within estimators and allow for first-order autoregressive disturbance term. All regressions control for country and year fixed effects and country*sector and sector*year interactions. ***, ** and * denote statistical significance at 1, 5 and 10 percent respectively.

Table 7b. Reforms and Democracy: Additional Robustness Checks

Dependent variable: reform in (country, sector, year)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Lagged democracy	0.016***	0.065***	0.062***	0.061***	0.066***	0.066***	0.069***		0.011***
Lagged level of index	-0.125***	-0.495***	-0.510***	-0.479***	-0.494***	-0.523***	-0.520***	-0.128***	
Lagged crisis (inflation>40)		-0.003	-0.001						
Lagged real devaluation		-0.009	-0.008	-0.007	-0.009	-0.011	-0.010		
Lagged public expenditure to GDP		-0.001	-0.001	0.000	-0.001	-0.001	-0.001		
Lagged bureaucratic quality		0.010**	0.009**	0.010***	0.010**	0.007*	0.008**		
Lagged tertiary enrollment		0.006	0.011	0.000	0.007	0.010	0.010		
Lagged reforms in geographical neighbors		0.038	0.029	0.036	0.026	0.063	0.058		
Lagged dummy for left		-0.004	-0.004	-0.005	-0.005	-0.007	-0.008		
Lagged dummy for presidential		0.000	0.002	0.001	0.002	-0.001	0.003		
Lagged reform in trade neighbors		-0.043							
Lagged average reform in other sectors			0.122***						
Lagged crisis (growth<0)				-0.007**					
Terms of trade shocks					-0.004				
Lagged crisis (debt)						0.010			
Lagged crisis (bank)							-0.016***		
Political reform - Giavazzi and Tabellini (2005)								0.015***	
Observations	20,123	4,784	4,784	4,769	4,784	4,265	4,265	21,292	19,521

Note. The estimators are within estimators and allow for first-order autoregressive disturbance term. In Column (1), instead of explicitly allowing for an AR(1) term in the model, the standard errors are clustered at the country-reform level. In Column (8), political reform is a dummy variable taking a value of 1 in the years after democratization. Democratization is defined as the event of becoming a democracy, given that a country was not a democracy in the previous year. All regressions control for country and year fixed effects and country*sector and sector*year interactions. ***, ** and * denote statistical significance at 1, 5 and 10 percent respectively.

Table 8. Reforms and Democracy: Flexible Functional Form

Dependent variable: reform in (country, sector, year)				
	(1)	(2)	(3)	(4)
Lagged democracy (polity2<0.15)	0.014	0.011	-0.005	0.014
Lagged democracy (0.15<=polity2<0.75)	0.012**	0.009	0.036***	0.01
Lagged democracy (polity2>=0.75)	0.015***	0.016***	0.038***	0.016***
Lagged level of index	-0.073***	-0.129***	-0.036***	-0.135***
Country FE	Y	Y	Y	Y
Sector FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Country*Sector FE		Y		Y
Sector*Year FE			Y	Y
Observations	20,123	19,521	19,980	19,521

Note. The estimators are within estimators and allow for first-order autoregressive disturbance term. ***, ** and * denote statistical significance at 1, 5 and 10 percent respectively.

Table 9a. Reforms and Democracy: Feedback Effects

Dependent variable: change in democracy (country, year)				
	(1)	(2)	(3)	(4)
Lagged democracy	-0.135***	-0.157***	-0.112***	-0.157***
Lagged reform in (country, sector, year)	-0.009	-0.011	0.004	-0.010
Country FE	Y	Y	Y	Y
Sector FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Observations	19,043	18,441	19,262	18,441

Note. The estimators are within estimators and allow for first-order autoregressive disturbance term. ***, ** and * denote statistical significance at 1, 5 and 10 percent respectively.

Table 9b. Reform and democracy: Feedback Effects

Dependent variable: change in democracy (country, year)						
	(1)	(2)	(3)	(4)	(5)	(6)
	Finance	Cap. Acc.	Prod. Mkt	Agricult.	Trade	Curr. Acc.
Lagged democracy	-0.177***	-0.177***	-0.161***	-0.167***	-0.181***	-0.167***
Lagged reform in (country, year)	-0.088**	-0.016	-0.018	0.017	0.011	-0.038*
Country FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Observations	3,015	3,913	3,195	2,160	2,431	2,160

Note. The estimators are within estimators and allow for first-order autoregressive disturbance term. ***, ** and * denote statistical significance at 1, 5 and 10 percent respectively.

Table 10. Reforms and Democracy: Principal Component

	Dependent variable: change in reform index (country, year)		Dependent variable: change in democracy (country, year)
	(1)	(2)	(3)
	OLS	IV	
Lagged democracy	0.001***	0.006***	-0.218***
Lagged level of index (country, year)	-0.029***	-0.096***	
Lagged reform in (country, year)			-1.775
Country FE	Y	Y	Y
Year FE	Y	Y	Y
Observations	1,418	1,418	1,303
First stage F-stat		41	
p-value of F-stat		0.000	

Note. The estimators are within estimators and allow for first-order autoregressive disturbance term. ***, ** and * denote statistical significance at 1, 5 and 10 percent respectively. In Column (2), lagged democracy is instrumented by (lagged) democracy in neighboring countries.

Appendix Tables

Table 1. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Change in reform index	20,123	0.01	0.08	-1	1
Lagged democracy	20,123	0.59	0.37	0	1
Lagged reform_index	20,123	0.40	0.37	0	1
Lagged crisis (inflation>40)	5,252	0.10	0.30	0	1
Lagged real devaluation	5,252	0.01	0.17	-1.00	1.30
Lagged public expenditure as a percent of GDP	5,252	15.06	5.18	2.98	34.39
Lagged bureaucratic quality	5,252	2.54	1.14	0	4
Lagged tertiary enrollment	5,252	0.27	0.22	0.00	0.97
Lagged reforms in geographical neighbor	5,252	0.02	0.03	-0.21	0.22
Lagged dummy for left	5,252	0.33	0.47	0	1
Lagged dummy for presidential	5,252	0.55	0.50	0	1
Lagged democracy in political neighbors	18,970	1.25	5.12	-9	10
Lagged crisis (growth<0)	5,234	0.26	0.44	0	1
Terms of trade shocks	5,252	-0.01	0.14	-0.70	0.47
Lagged crisis (debt)	4,679	0.01	0.12	0	1
Lagged crisis (bank)	4,679	0.05	0.22	0	1
Political reform (Giavazzi and Tabellini, 2005)	21,919	0.28	0.45	0	1
Lagged reform in trade neighbors	5,252	0.01	0.03	-0.21	0.39
Change in reform index (principal component)	1,418	0.02	0.04	-0.18	0.31
Lagged reform index (principal component)	1,418	0.50	0.25	0	1.00

The summary statistics correspond to samples used in Tables 4, 5, 8a and 8b.

Table 2A. Country Codes in Figure 2

Code	Country	Code	Country	Code	Country
AFG	Afghanistan	GHA	Ghana	NLD	Netherlands
AGO	Angola	GIN	Guinea	NOR	Norway
ALB	Albania	GMB	Gambia	NPL	Nepal
ARE	UAE	GNB	Guinea-Bissau	NZL	New Zealand
ARG	Argentina	GNQ	Equat Guinea	OMN	Oman
ARM	Armenia	GRC	Greece	PAK	Pakistan
AUS	Australia	GTM	Guatemala	PAN	Panama
AUT	Austria	GUY	Guyana	PHL	Philippines
AZE	Azerbaijan	HND	Honduras	PNG	Papua New G.
BDI	Burundi	HRV	Croatia	POL	Poland
BEL	Belgium	HTI	Haiti	PRT	Portugal
BEN	Benin	HUN	Hungary	PRY	Paraguay
BFA	Burkina Faso	IDN	Indonesia	QAT	Qatar
BGD	Bangladesh	IND	India	ROM	Romania
BGR	Bulgaria	IRL	Ireland	RUS	Russia
BHR	Bahrain	IRN	Iran	RWA	Rwanda
BLR	Belarus	IRQ	Iraq	SAU	Saudi Arabia
BOL	Bolivia	ISR	Israel	SDN	Sudan
BRA	Brazil	ITA	Italy	SEN	Senegal
BTN	Bhutan	JAM	Jamaica	SGP	Singapore
BWA	Botswana	JOR	Jordan	SLB	Solomon Is
CAF	CAR	JPN	Japan	SLE	Sierra Leone
CAN	Canada	KAZ	Kazakhstan	SLV	El Salvador
CHE	Switzerland	KEN	Kenya	SOM	Somalia
CHL	Chile	KGZ	Kyrgyz Rep	SVK	Slovak Rep
CHN	China	KHM	Cambodia	SVN	Slovenia
CIV	Cote D'Ivoire	KOR	Korea	SWE	Sweden
CMR	Cameroon	KWT	Kuwait	SYR	Syria
COG	Congo	LAO	Lao	TCD	Chad
COL	Colombia	LBR	Liberia	TGO	Togo
COM	Comoros	LBY	Libya	THA	Thailand
CRI	Costa Rica	LKA	Sri Lanka	TJK	Tajikistan
CUB	Cuba	LSO	Lesotho	TKM	Turkmenistan
CYP	Cyprus	LTU	Lithuania	TTO	Trinidad Tob
CZE	Czech Rep	LVA	Latvia	TUN	Tunisia
DEU	Germany	MAR	Morocco	TUR	Turkey
DJI	Djibouti	MDA	Moldova	TWN	Taiwan
DNK	Denmark	MDG	Madagascar	TZA	Tanzania
DOM	Dominican Rep	MEX	Mexico	UGA	Uganda
DZA	Algeria	MKD	Macedonia	UKR	Ukraine
ECU	Ecuador	MLI	Mali	URY	Uruguay
EGY	Egypt	MMR	Myanmar	USA	US
ERI	Eritrea	MNG	Mongolia	UZB	Uzbekistan
ESP	Spain	MOZ	Mozambique	VEN	Venezuela
EST	Estonia	MRT	Mauritania	VNM	Viet Nam
ETH	Ethiopia	MUS	Mauritius	YEM	Yemen
FIN	Finland	MWI	Malawi	ZAF	South Africa
FJI	Fiji	MYS	Malaysia	ZAR	Zaire
FRA	France	NAM	Namibia	ZMB	Zambia
GAB	Gabon	NER	Niger	ZWE	Zimbabwe
GBR	UK	NGA	Nigeria		
GEO	Georgia	NIC	Nicaragua		

Table A3. Country Groups in Figure 2

Finance			Capital			Capital		
Country	**Code**	**Group**	**Country**	**Code**	**Group**	**Country**	**Code**	**Group**
Burkina Faso	BFA	1	Belarus	BLR	1	Bolivia	BOL	14
Kyrgyz Rep	KGZ	1	China	CHN	1	India	IND	14
Indonesia	IDN	2	Viet Nam	VNM	1	Thailand	THA	14
Turkey	TUR	2	Egypt	EGY	2	Chile	CHL	15
Colombia	COL	3	Morocco	MAR	2	Jamaica	JAM	15
Paraguay	PRY	3	Cameroon	CMR	3	Poland	POL	15
Ukraine	UKR	3	Kazakhstan	KAZ	3	Taiwan	TWN	15
Madagascar	MDG	4	Burkina Faso	BFA	4	South Africa	ZAF	15
El Salvador	SLV	4	Tunisia	TUN	4	Australia	AUS	16
Bulgaria	BGR	5	Jordan	JOR	5	Austria	AUT	16
Dominican Rep	DOM	5	Kenya	KEN	5	Belgium	BEL	16
Nicaragua	NIC	5	Singapore	SGP	5	Canada	CAN	16
Senegal	SEN	5	Ghana	GHA	6	Switzerland	CHE	16
Korea	KOR	6	Tanzania	TZA	6	Czech Rep	CZE	16
Romania	ROM	6	Albania	ALB	7	Germany	DEU	16
Argentina	ARG	7	Georgia	GEO	7	Denmark	DNK	16
Philippines	PHL	7	Mozambique	MOZ	8	Spain	ESP	16
India	IND	8	Nepal	NPL	8	Finland	FIN	16
Jamaica	JAM	8	Bangladesh	BGD	9	UK	GBR	16
Bolivia	BOL	9	Ecuador	ECU	9	Greece	GRC	16
Chile	CHL	9	Russia	RUS	9	Hungary	HUN	16
Austria	AUT	10	Ukraine	UKR	9	Ireland	IRL	16
Czech Rep	CZE	10	Indonesia	IDN	10	Israel	ISR	16
Finland	FIN	10	Madagascar	MDG	10	Italy	ITA	16
Greece	GRC	10	Colombia	COL	11	Japan	JPN	16
Lithuania	LTU	10	Paraguay	PRY	11	Lithuania	LTU	16
Portugal	PRT	10	El Salvador	SLV	11	Netherlands	NLD	16
Norway	NOR	11	Turkey	TUR	11	Norway	NOR	16
Israel	ISR	11	Venezuela	VEN	11	New Zealand	NZL	16
Japan	JPN	11	Argentina	ARG	12	Portugal	PRT	16
Germany	DEU	12	Brazil	BRA	12	Sweden	SWE	16
Hungary	HUN	12	Guatemala	GTM	12	Uruguay	URY	16
Italy	ITA	12	Philippines	PHL	12	US	USA	16
Belgium	BEL	13	Senegal	SEN	12			
Switzerland	CHE	13	Bulgaria	BGR	13			
Denmark	DNK	13	Korea	KOR	13			
Netherlands	NLD	13	Latvia	LVA	13			
New Zealand	NZL	13	Mexico	MEX	13			
Sweden	SWE	13	Nicaragua	NIC	13			
Australia	AUS	14						
Canada	CAN	14						
Spain	ESP	14						
UK	GBR	14						
Ireland	IRL	14						
US	USA	14						

Table A3. Country Groups in Figure 2 contd.

Product			Agri			Agri		
Country	**Code**	**Group**	**Country**	**Code**	**Group**	**Country**	**Code**	**Group**
Oman	OMN	1	Turkmenistan	TKM	1	India	IND	15
Turkmenistan	TKM	1	Uzbekistan	UZB	1	South Africa	ZAF	15
Azerbaijan	AZE	2	Belarus	BLR	2	Chile	CHL	16
China	CHN	2	China	CHN	2	France	FRA	16
Lao	LAO	2	Egypt	EGY	3	Jamaica	JAM	16
Viet Nam	VNM	2	Pakistan	PAK	3	Poland	POL	16
Kenya	KEN	3	Cameroon	CMR	4	Thailand	THA	16
Chad	TCD	3	Uganda	UGA	4	Bolivia	BOL	17
Togo	TGO	3	Burkina Faso	BFA	5	Slovak Rep	SVK	17
Solomon Is	SLB	4	Tunisia	TUN	5	Australia	AUS	18
Sierra Leone	SLE	4	Kenya	KEN	6	Canada	CAN	18
Benin	BEN	5	Chad	TCD	6	Czech Rep	CZE	19
Guyana	GUY	5	Togo	TGO	6	Japan	JPN	19
Mozambique	MOZ	5	Cote D'Ivoire	CIV	7	Trinidad Tob	TTO	19
Bangladesh	BGD	6	Nigeria	NGA	7	Belgium	BEL	20
Namibia	NAM	6	Georgia	GEO	8	Germany	DEU	20
Honduras	HND	7	Sri Lanka	LKA	8	Denmark	DNK	20
Madagascar	MDG	7	Benin	BEN	9	Spain	ESP	20
Turkey	TUR	7	Guyana	GUY	9	Finland	FIN	20
Mexico	MEX	8	Mali	MLI	9	UK	GBR	20
Philippines	PHL	8	Bangladesh	BGD	10	Greece	GRC	20
France	FRA	9	Mozambique	MOZ	10	Hungary	HUN	20
South Africa	ZAF	9	Namibia	NAM	10	Ireland	IRL	20
Lithuania	LTU	10	Nepal	NPL	10	Lithuania	LTU	20
Trinidad Tob	TTO	10	Colombia	COL	11	Norway	NOR	20
Uruguay	URY	10	Venezuela	VEN	11	Portugal	PRT	20
Czech Rep	CZE	11	Honduras	HND	12	Sweden	SWE	20
Hungary	HUN	11	Moldova	MDA	12	Switzerland	CHE	21
Japan	JPN	11	Malawi	MWI	12	Italy	ITA	21
Australia	AUS	12	Ukraine	UKR	12	Mongolia	MNG	21
Belgium	BEL	12	Indonesia	IDN	13	Netherlands	NLD	21
Canada	CAN	12	Madagascar	MDG	13	New Zealand	NZL	21
Ireland	IRL	12	Argentina	ARG	14	Uruguay	URY	21
New Zealand	NZL	12	Bulgaria	BGR	14	US	USA	21
Portugal	PRT	12	Brazil	BRA	14			
US	USA	12	Guatemala	GTM	14			
Denmark	DNK	13	Mexico	MEX	14			
Finland	FIN	13	Philippines	PHL	14			
Italy	ITA	13						
Norway	NOR	13						
Sweden	SWE	13						
Spain	ESP	14						
UK	GBR	14						
Netherlands	NLD	14						

Table A3 Country Groups in Figure 2 contd.

Labor

Country	Code	Group
Mozambique	MOZ	1
Bangladesh	BGD	1
Croatia	HRV	2
Russia	RUS	2
Indonesia	IDN	3
Malawi	MWI	3
Latvia	LVA	4
Korea	KOR	4
South Africa	ZAF	5
Chile	CHL	5
Italy	ITA	6
Denmark	DNK	6
Ireland	IRL	7
UK	GBR	7
Norway	NOR	8
Cyprus	CYP	8
US	USA	8

Fiscal

Country	Code	Group
Viet Nam	VNM	1
Myanmar	MMR	1
Belarus	BLR	2
Azerbaijan	AZE	2
Algeria	DZA	3
Burkina Fa	BFA	3
Chad	TCD	4
Togo	TGO	4
Iran	IRN	5
Malaysia	MYS	5
Namibia	NAM	6
Benin	BEN	6
Croatia	HRV	7
Moldova	MDA	7
Colombia	COL	8
Ukraine	UKR	8
El Salvador	SLV	8
Russia	RUS	9
Turkey	TUR	9
Venezuela	VEN	10
Paraguay	PRY	10
Madagasca	MDG	10
Malawi	MWI	11
Indonesia	IDN	11
Mexico	MEX	12
Guatemala	GTM	12
Argentina	ARG	12
Romania	ROM	12
Philippines	PHL	12
India	IND	13
Chile	CHL	13
France	FRA	13

Country	Code	Group
South Afric	ZAF	14
Botswana	BWA	14
Bolivia	BOL	14
Thailand	THA	15
Poland	POL	15
Israel	ISR	16
Mauritius	MUS	16
Belgium	BEL	17
Czech Rep	CZE	17
Austria	AUT	18
Portugal	PRT	18
Lithuania	LTU	18
Denmark	DNK	18
Ireland	IRL	19
Hungary	HUN	19
Italy	ITA	19
US	USA	19
Netherland	NLD	19
Germany	DEU	20
New Zealar	NZL	20
Spain	ESP	20
Canada	CAN	20
Greece	GRC	21
Japan	JPN	21
Sweden	SWE	21
Australia	AUS	21
Cyprus	CYP	21
UK	GBR	22
Costa Rica	CRI	22
Norway	NOR	22
Uruguay	URY	23
Finland	FIN	23

Table A3 Country Groups in Figure 2 contd.

Trade

Country	Code	Group
China	CHN	1
Viet Nam	VNM	1
Congo	COG	2
Mauritania	MRT	2
Gabon	GAB	3
Cameroon	CMR	3
Uganda	UGA	4
Kazakhstan	KAZ	4
Jordan	JOR	5
Kenya	KEN	5
Togo	TGO	5
Tanzania	TZA	6
Cambodia	KHM	6
Cote D'Ivoire	CIV	7
Niger	NER	7
Georgia	GEO	8
Sri Lanka	LKA	8
Macedonia	MKD	9
Nepal	NPL	9
Benin	BEN	9
Mozambique	MOZ	9
Ecuador	ECU	10
Mali	MLI	10
Guyana	GUY	10
Malawi	MWI	11
Turkey	TUR	11
Venezuela	VEN	11
Croatia	HRV	11
Colombia	COL	11
Russia	RUS	11
Paraguay	PRY	11
Moldova	MDA	12
Indonesia	IDN	12
Honduras	HND	12
El Salvador	SLV	12
Brazil	BRA	13
Bulgaria	BGR	13
Romania	ROM	13
Korea	KOR	13
Argentina	ARG	13
Dominican Rep	DOM	14
Philippines	PHL	14
Latvia	LVA	15
Nicaragua	NIC	15
Bolivia	BOL	16
Chile	CHL	16
Jamaica	JAM	16
Taiwan	TWN	16
Panama	PAN	16
South Africa	ZAF	17
Slovak Rep	SVK	17
Hungary	HUN	18
Slovenia	SVN	18
Trinidad Tob	TTO	18
Uruguay	URY	18
Cyprus	CYP	19
Costa Rica	CRI	19
Austria	AUT	19
Czech Rep	CZE	19
Israel	ISR	19
Australia	AUS	20
Belgium	BEL	20
Germany	DEU	20
Denmark	DNK	20
Spain	ESP	20
Finland	FIN	20
UK	GBR	20
Greece	GRC	20
Ireland	IRL	20
Italy	ITA	20
Netherlands	NLD	20
Portugal	PRT	20
Sweden	SWE	20
Canada	CAN	20
US	USA	20
New Zealand	NZL	20
Lithuania	LTU	20
Japan	JPN	20
Norway	NOR	20

Current

Country	Code	Group
Indonesia	IDN	1
Turkey	TUR	1
Guatemala	GTM	2
Philippines	PHL	2
France	FRA	3
Jamaica	JAM	3
Australia	AUS	4
Costa Rica	CRI	4
Japan	JPN	4
Austria	AUT	5
Israel	ISR	5
Belgium	BEL	6
Canada	CAN	6
Germany	DEU	6
Denmark	DNK	6
Spain	ESP	6
Finland	FIN	6
UK	GBR	6
Greece	GRC	6
Italy	ITA	6
Netherlands	NLD	6
Norway	NOR	6
New Zealand	NZL	6
Portugal	PRT	6
Sweden	SWE	6
Uruguay	URY	6
US	USA	6
Hong Kong	HKG	6
Peru	PER	6