

A New Database of Financial Reforms

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This paper introduces a new database of financial reforms covering 91 economies over 1973–2005. It describes the content of the database, the information sources utilized, and the coding rules used to create an index of financial reform. It also compares the database with other measures of financial liberalization, provides descriptive statistics, and discusses some possible applications. The database provides a multifaceted measure of reform, covering seven aspects of financial sector policy. Along each dimension the database provides a graded (rather than a binary) score, and allows for reversals. [JEL N20, G18, G28, P11]

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The past decade has seen a rapid increase in the empirical literature investigating the links between financial development and macro-economic outcomes. In his comprehensive survey of the literature, Levine (2005) draws three broad conclusions from these studies. First, countries with more developed financial sectors grow faster. Through careful use of instrumental variables and sophisticated econometric methods, the evidence suggests that simultaneity bias is not driving this conclusion; finance does seem to have a positive causal effect on growth. Second, the degree to which

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a country's financial system is bank-based or market-based does not matter much. This does not necessarily imply that institutional structure does not matter for growth; rather, different institutional structures may be optimal for different countries at different times. Third, industry- and firm-level evidence suggests that one mechanism through which finance influences growth is by easing external financing constraints on firms thereby improving the allocation of capital.

This research raises the question of what can countries do to improve the efficiency of their domestic financial systems. Influential work by McKinnon (1973) and Shaw (1973) suggests that reducing the role of the state in the financial system should be a point of departure. Indeed, until the 1980s the financial sector was probably one of the sectors where state intervention was most visible both in developing and developed countries. In many countries, banks were owned or controlled by the government, the interest rates they charged were subject to ceilings or other forms of regulation, and the allocation of credit was similarly constrained and regulated. Explicit or implicit taxation also weighed on the volume of financial intermediation. Entry restrictions and barriers to foreign capital flows limited competition. Since then, many countries have liberalized and deregulated their financial sector, although the process is by no means complete. In some countries, the IMF and the World Bank have played a major role in advising the authorities about the reform process.

During the financial liberalization process, a number of countries have experienced financial crises, characterized by various combinations of banking sector insolvency, reversal of foreign capital inflows, sharp currency depreciation, and difficulties in financing government deficits (see Demirgüç-Kunt and Detragiache, 1998; Kaminsky and Reinhart, 1999). The question of whether crises have been fostered by the liberalization process, perhaps because of inadequate sequencing of reforms or lack of sufficient supervisory infrastructure, has been often discussed in policy circles and research papers (see Demirgüç-Kunt and Detragiache, 1999). The recent subprime crisis in the United States has once again raised the question of whether financial deregulation hinders financial stability.

A limitation of studies trying to understand both the determinants and the effects of financial liberalization has been the lack of a comprehensive data set documenting actual policy changes. This paper introduces a database of financial reforms, covering 91 economies over the period 1973–2005,¹ that will hopefully help researchers answer some of these questions.² The new database recognizes the multifaceted nature of financial reform and records financial policy changes along seven different dimensions: credit

¹An earlier version of the database, covering 36 countries over the period 1973–96 and slightly different categories of reform was used by Abiad and Mody (2005) to investigate how political and economic factors shaped the financial liberalization process.

²The database is available online at <http://www.imf.org/external/pubs/ft/wp/2008/data/wp08266.zip>.

controls and reserve requirements, interest rate controls, entry barriers, state ownership, policies on securities markets, banking regulations, and restrictions on the financial account. Liberalization scores for each category are then combined in a graded index that is normalized between zero and one. This contrasts with most existing measures, which code financial liberalization using binary dummy variables. Hence, the database provides a much better measure of the magnitude and timing of financial policy changes than was previously possible. In addition, since the data set extends through 2005, the period following the major financial crises of the 1990s is included in the sample, so that questions related to the effects of the crisis on the liberalization process can be explored.

Because of the complex nature of the policy changes in question and the difficulty in retrieving information, especially for countries that have not been the object of specific case studies, the database remains a work in progress, and would benefit from feedback on both its construction and on the coding of specific countries. Government intervention in the financial sector occurs in a myriad of ways, so the coding rules employed may not always accurately capture the extent to which the government still influences credit allocation. We have relied heavily on experts' assessments of the true extent of financial reform whenever possible, but feedback from those who know these countries in-depth is always welcome. And although the country coverage is already wider than that of existing liberalization measures, and covers all regions and a wide range of income levels, the database would be even more valuable if coverage could further be increased to include more countries and recent years.

I. Construction of the Database

In the database, we distinguish between seven different dimensions of financial sector policy. These dimensions, and the questions used to guide the coding, are listed below (see Appendix I for more details):

- *Credit controls and excessively high reserve requirements.* Many countries required or still require that a minimum amount of bank lending be to certain “priority” sectors (for example, agricultural firms, selected manufacturing sectors, or small-scale enterprises) for purposes of industrial policy, or to the government for purposes of financing budget deficits. Occasionally these directed credits are required to be extended at subsidized rates. Less frequently, governments set ceilings on overall credit extended by banks, or on credit to specific sectors. Finally, governments may impose excessively high reserve requirements, beyond what can be reasonably expected for prudential purposes, and reserves may not be remunerated at market rates of return. One extreme example was Argentina’s Deposit Nationalization Law of 1973, which forced banks to deposit all financial savings with the central bank, effectively

imposing a 100 percent reserve requirement (Bisat, Johnston, and Sundararajan, 1992). In coding the database we use 20 percent as a threshold for determining whether reserve requirements are excessive or not. The questions used to guide the coding of this dimension are the following: Are there minimum amounts of credit that must be channeled to certain sectors, or are there ceilings on credit to other sectors? Are directed credits required to carry subsidized rates? Is there a ceiling on the overall rate of expansion of credit? How high are reserve requirements?

- *Interest rate controls.* One of the most common forms of financial repression, interest rate controls were used even in some developed countries until recently (for instance, the United States had in place interest rate controls, known as Regulation Q, from the 1930s to the early 1980s). In the most restrictive case the government specifies both lending and deposit rates by fiat, or equivalently, sets ceilings or floors tight enough to be binding in most circumstances. An intermediate regime allows interest rates to fluctuate within a band. Interest rates are considered fully liberalized when all ceilings, floors or bands are eliminated. To guide the coding of this dimension, one needs to determine, for deposit and lending rates separately, whether interest rates are administratively set, including whether the government directly controls interest rates, or whether floors, ceilings, or interest rate bands exist.
- *Entry barriers.* To maintain control over credit allocation, government may restrict the entry into the financial system of new domestic banks or of other potential competitors, for example foreign banks or nonbank financial intermediaries. Entry barriers may take the form of outright restrictions on the participation of foreign banks; restrictions on the scope of banks' activities; restrictions on the geographic area where banks can operate; or excessively restrictive licensing requirements.³
- *State ownership in the banking sector.* Ownership of banks is the most direct form of control a government can have over credit allocation. Although often the result of a conscious policy decision by the authorities (for example, in India beginning in 1969), state ownership can also be the result of nationalization following a banking crisis (for example, Mexico in 1982 or Indonesia in 1998). In coding the database, we look at the share of banking sector assets controlled by state-owned banks. Thresholds of 50, 25, and 10 percent are used to delineate the grades between full repression and full liberalization. Surprisingly, there is still no comprehensive panel database on state ownership of the banking sector. We have had to rely on various reports (including IMF staff

³On the latter, judgment needs to be exercised as some prudence is necessarily required in the granting of licenses, so whenever possible we relied on other scholars' assessments as to whether a country's licensing regime was excessively strict or not.

reports and Financial Sector Assessment Programs) and the World Bank's privatization database to code this dimension.

- *Financial account restrictions.* Restrictions on international financial transactions were often imposed to give the government greater control over the flow of credit within the economy, as well as greater control over the exchange rate. These restrictions included multiple exchange rates for various transactions, as well as transactions taxes or outright restrictions on inflows and/or outflows specifically regarding financial credits. There are several existing measures of financial account openness that currently exist, and that have a wider country coverage, which are surveyed in Edison and others (2004).
- *Prudential regulations and supervision of the banking sector.* Of the seven dimensions, this is the only one where a greater degree of government intervention is coded as a reform. To code this dimension, we ask the following questions: Does a country adopt risk-based capital adequacy ratios based on the Basel I capital accord? Is the banking supervisory agency independent from the executive's influence and does it have sufficient legal power? Are certain financial institutions exempt from supervisory oversight? How effective are on-site and off-site examinations of banks?
- *Securities market policy.* Here we code the different policies governments use to either restrict or encourage development of securities markets. These include the auctioning of government securities, establishment of debt and equity markets, and policies to encourage development of these markets, such as tax incentives or development of depository and settlement systems. Also included here are policies on the openness of securities markets to foreign investors.

An earlier version of this database, used in Abiad and Mody (2005), had six rather than seven dimensions. It excluded securities market policy and prudential regulations, but following Williamson and Mahar (1998), it included a measure of operational restrictions—including government control over managerial and staff appointments, or other restrictions on banks' operating procedures (for example, on advertising and branch opening). Because the nature of these restrictions differed substantially from country to country, it was difficult to create a coding rule that could facilitate cross-country comparability. So this dimension was dropped, although certain elements were folded into other dimensions (for example, restrictions on the scope of banks' activities or geographic restrictions on bank branching were included under entry barriers).

Along each dimension, a country is given a final score on a graded scale from zero to three, with zero corresponding to the highest degree of repression and three indicating full liberalization.⁴ In answering the questions

⁴A raw score was first assigned to each dimension, on different scale. Next, each raw score was normalized between 0 and 3 according to a rule.

and in assigning scores, it is inevitable that some degree of judgment is exercised. To minimize the degree of discretion, a set of coding rules was used, which can be found in Appendix I. Policy changes, then, denote shifts in a country's score on this scale in a given year. In some cases, such as when all state-owned banks are privatized all at once, or when controls on all interest rates are simultaneously abolished, policy changes will correspond to jumps of more than one unit along that dimension. Reversals, such as the imposition of capital controls or interest rate controls, are recorded as shifts from a higher to a lower score. Given its detailed construction, the database thus allows a much more precise determination of the magnitude and timing of various events in the financial liberalization process.

Identifying the various policy changes included in our database was facilitated by the available surveys of financial liberalization experiences. These include Williamson and Mahar (1998), Fanelli and Medhora (1998), Johnston and Sundararajan (1999), De Brouwer and Puppavesa (1999), and Caprio, Honohan, and Stiglitz (2001).⁵ Other resources, including central bank bulletins and websites, IMF country reports, books, and journal articles, were also utilized heavily. In particular, IMF reports turned out to contain a wealth of information on financial sector reforms. The primary (publicly available) sources are identified in the working paper version of this article (Abiad, Detragiache, and Tresselt, 2008).

A few examples can give a sense of how the coding was done. Consider for example the liberalization of interest rates. In some cases, coding is straightforward: for instance, Pinto (1996, p. 100) states that “until 1987, interest rates were traditionally set by the Portuguese authorities. The process of gradual liberalization of interest rates started in January 1987, when the interest rate ceiling on demand deposits of individuals was removed.” Based on this information, interest rates on deposits were coded as fully liberalized in Portugal in 1987. Pinto (1996, p. 101) also notes that full liberalization on lending rates was achieved in 1988 (“in September 1988 the ceiling on the lending rate was also freed”). In some other cases, judgment calls are inevitable. In the case of China, interest rates on bank loans are coded as partially liberalized in 2002 based on the following information from García-Herrero and Santabárbara (2004, p. 16): “Most recently the ceiling on banks' lending rates was lifted in several occasions. In particular, in 2002 banks were permitted to charge borrowers up to 1.3 times the central lending rate. In January 2004, it was raised again to 1.7.” Interest rates on loans were coded as fully liberalized in 2004, and deposit rates partially liberalized in 2002 based on the following information from Goodfriend and Prasad (2006, pp. 21–22): “On Oct. 29, 2004, the ceiling on lending rates was scrapped altogether (except for urban and rural credit cooperatives). Along with the

⁵A recent paper by Schindler (2009) codes financial account restrictions using the IMF's *Annual Report on Exchange Rate Restrictions* for a sample of 91 countries over the period 1995–2005. Other existing indices of financial account restrictions are reviewed in Schindler (2009).

liberalization of lending rates, banks were given more freedom to make *downward* adjustments to deposit rates.”

Coding of the competition dimension sometimes required some country-specific knowledge. For example, in Spain, the banking system is dominated by savings banks. So, while barriers on branching restrictions were lifted in the early 1980s for commercial banks, we coded it as liberalized in 1992 only, when savings banks were allowed to open up branches anywhere in the country. The case of China is even more complex. In the light of restrictions for a subset of commercial banks, we coded it as nonliberalized.⁶

II. Comparison to Other Databases

Recent papers have constructed alternative measures of financial liberalization. Edison and Warnock (2003) calculate the proportion of total stock market capitalization that is available to foreign investors, for 29 emerging markets from 1989 to 2000. It is in the spirit of our measure inasmuch as it provides a graded index of liberalization over time. However, it is not a broad-based measure of financial sector liberalization, being narrowly focused on capital controls in portfolio equity investment.

Closer in scope to our measure is the index constructed by Williamson and Mahar (1998) who recorded financial reforms in 34 economies over 1973–96, over six graded dimensions (credit controls, interest rate controls, entry barriers, regulations, privatization, and international capital flows).

Kaminsky and Schmukler (2003) also constructed a graded index of financial reforms. This data set has three components: domestic financial sector liberalization, especially of interest rate and credit controls; financial account liberalization; and the openness of the equity market to foreign investment. As with our approach, each component takes discrete values, being classified as “fully liberalized,” “partially liberalized,” or “repressed.” Although the building blocks of the Kaminsky-Schmukler database are similar to ours, their measure puts more weight on liberalization of capital flows, whereas ours emphasizes reforms in the domestic financial sector. The time coverage of the Kaminsky-Schmukler data set is slightly shorter (1973–99), and their sample of countries is considerably smaller, covering 28 countries (14 developed and 14 developing countries) compared with 91 countries in our database.

Two data sets—Bandiera and others (2000) and Laeven (2003)—characterize financial liberalization along six dimensions. However, the country coverage in each case is much smaller, with 8 and 13 countries covered, respectively. Moreover, in both of these data sets each liberalization

⁶According to García-Herrero, Gavila, and Santabárbara (2005), “Joint-stock commercial banks (JSCB) are partially owned by local governments and state owned enterprises, and sometimes by the private sector. They are generally allowed to operate at the national level. City commercial banks are not allowed to operate at the national or regional scale unlike the JSCBs, which is their major competitive disadvantage.”

component is not graded, but is a binary variable. Despite the differences in the construction of these data sets, they all show the same broad patterns of financial sector reform as does our index.

Finally, Schindler (2009) has recently constructed a data set covering the same 91 countries we cover, and providing disaggregated information on capital controls by asset category, by the direction of flows, and by the residency status of the transactor. These data, however, are available only for 1995–2005, a much shorter time period than that covered by our data.

III. Descriptive Statistics

The financial reform database covers a diverse range of economies, both in terms of regions and levels of economic development. Of the 91 economies in the data set (Table 1), 16 are from South Asia and East Asia, 17 are from Latin America and the Caribbean, 14 are from sub-Saharan Africa, 5 are from the Middle East or North Africa, 15 are Western European countries, 9 are former Soviet Union countries, and the rest include a few other European countries plus Australia, Canada, New Zealand, and the United States.

The database covers a period of over 30 years, mainly from 1975 to 2005. Summary statistics for the aggregate index and each of its component are in Table 2. According to our somewhat subjective classification system, in our sample period financial systems were on average most liberalized in the areas of interest rate controls, bank entry, and financial account restrictions, but bank supervision and regulation lagged behind.

Tables 3a and b report correlations among the seven components of the financial liberalization index. Not surprisingly, most of the components are highly correlated, as countries with more restrictive policies in one area have more restrictive policies in other areas as well (Table 3, panel a). However, annual changes in the component indices are much less correlated, suggesting that liberalization occurred at different times for different dimensions and in different countries (Table 3, panel b).⁷ Among the highest binary correlations are those between interest rate and credit control liberalization, between securities markets reforms and financial account liberalization, and interest rate deregulation and financial account. Interestingly, changes in bank privatization have a very low correlation with the other dimensions of reform.

The seven dimensions of financial liberalization can be aggregated to obtain a single liberalization index for each economy in each year. In Appendix I and in the following analysis we report and use the sum of the individual components, after normalization of the credit control component.⁸ Since each of the seven components can take values between 0 and 3, the sum takes values between 0 and 21.

⁷Similar conclusions emerge if one uses changes over three-year periods.

⁸Specifically, the credit control component was normalized to take values between 0 and 3.

Table 1. Country Coverage of the Financial Reform Database

Albania	Ecuador	Kenya	Russia
Algeria	Egypt	Korea	Senegal
Argentina	El Salvador	Kyrgyz Republic	Singapore
Australia	Estonia	Latvia	South Africa
Austria	Ethiopia	Lithuania	Spain
Azerbaijan	Finland	Madagascar	Sri Lanka
Bangladesh	France	Malaysia	Sweden
Belarus	Georgia	Mexico	Switzerland
Belgium	Germany	Morocco	Taiwan POC
Bolivia	Ghana	Mozambique	Tanzania
Brazil	Greece	Nepal	Thailand
Bulgaria	Guatemala	Netherlands	Tunisia
Burkina-Faso	Hong Kong SAR	New Zealand	Turkey
Cameroon	Hungary	Nicaragua	Uganda
Canada	India	Nigeria	Ukraine
Chile	Indonesia	Norway	United Kingdom
China	Ireland	Pakistan	United States
Colombia	Israel	Paraguay	Uruguay
Costa Rica	Italy	Peru	Uzbekistan
Côte d'Ivoire	Jamaica	Philippines	Venezuela
Czech Republic	Japan	Poland	Vietnam
Denmark	Jordan	Portugal	Zimbabwe
Dominican Republic	Kazakhstan	Romania	

Table 2. Summary Statistics for Financial Liberalization Components and Index

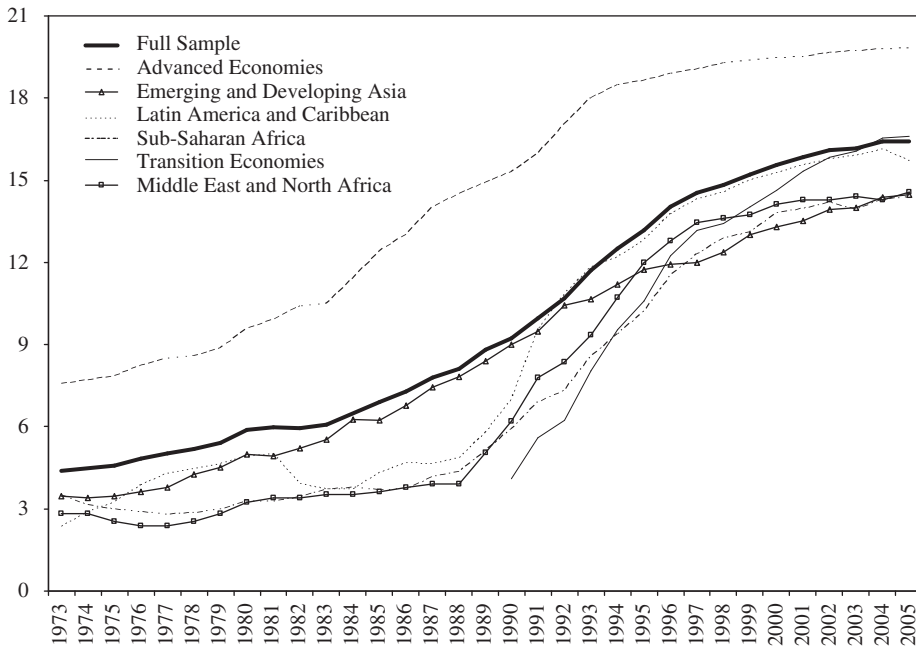
Variables	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Credit controls	2671	1.591	1.111	0	3
Interest rate controls	2671	1.778	1.324	0	3
Entry barriers	2671	1.769	1.179	0	3
Bank regulation and supervision	2671	0.776	0.958	0	3
Privatization	2671	1.248	1.187	0	3
Financial account	2671	1.668	1.135	0	3
Securities market	2671	1.490	1.129	0	3
Financial reform index	2671	10.321	6.333	0	21
Financial reform index (normalized)	2671	0.491	0.302	0	1

According to this aggregate index, financial reforms advanced substantially through much of the sample in the past 30 years (Figure 1). Countries in all income groups and in all regions liberalized, though higher-income economies remained more liberalized than lower-income economies throughout. While trends appear smooth if we consider averages of group of

Table 3. Correlations Among Financial Liberalization Components: Levels and Changes

	Credit Controls	Interest Rate Controls	Entry Barriers	Bank Regulations	Privatization	Capital Account	Securities Market
Panel a. Levels							
Credit controls	1						
Interest rate controls	0.651	1					
Entry barriers	0.565	0.550	1				
Bank regulations	0.608	0.590	0.565	1			
Privatization	0.494	0.437	0.435	0.481	1		
Capital account	0.587	0.606	0.513	0.578	0.517	1	
Securities market	0.624	0.628	0.545	0.642	0.492	0.676	1
Panel b. Changes							
Credit controls	1						
Interest rate controls	0.148	1					
Entry barriers	0.030	0.041	1				
Bank regulations	0.036	-0.002	0.074	1			
Privatization	0.013	0.043	0.021	0.012	1		
Financial account	0.096	0.106	0.089	0.028	0.069	1	
Securities market	0.098	0.079	0.053	0.023	0.015	0.117	1

Figure 1. Financial Liberalization Index by Country Groups



countries, at the individual country level the reform process was typically characterized by long periods of status quo, or no change in policy.

To examine the pace at which change took place, we classify policy changes for each country-year into five categories. A decrease in the financial liberalization measure by 3 or more points is classified as a large reversal; a decrease of 1 or 2 points as a reversal; an increase by 1 or 2 points as a reform; and an increase of 3 or more points is classified as a large reform. Finally, years in which no policy changes were undertaken are classified as status quo observations.

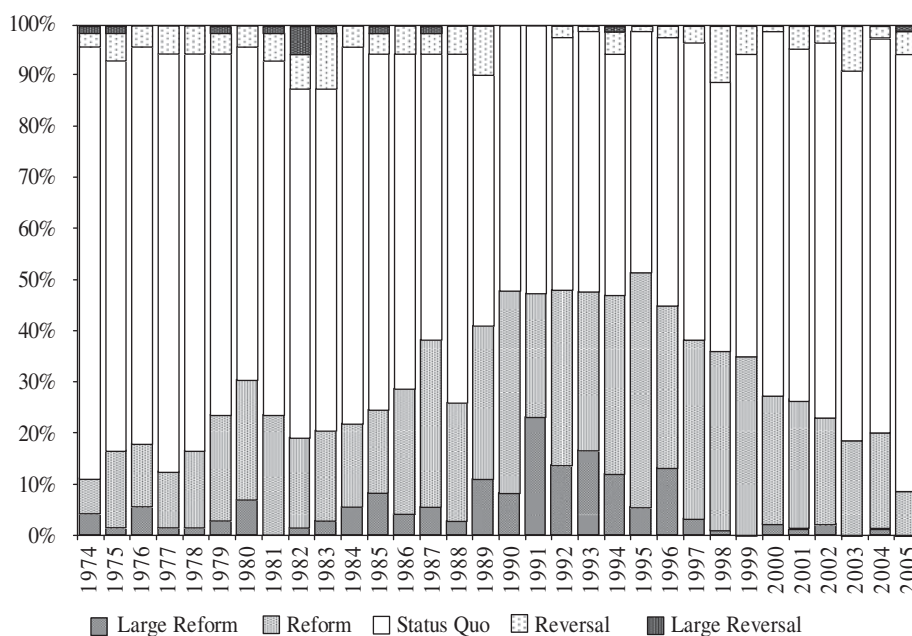
Table 4 shows the distribution of various policy changes in the whole sample, as well as by region. Status quo observations represent the majority of observations—over 65 percent of the whole sample. At about 5 percent of the observations, reversals, especially large ones, are relatively rare, suggesting that, once established, financial reforms are unlikely to be undone. Reforms constitute another 25 percent of the sample, and large reforms account for another 5 percent, so around 30 percent of the sample country/years some change occurred. This underscores how pervasive financial sector reforms have been in recent decades.

Figure 2 shows the distribution of liberalization over the sample period. Changes were relatively rare in the early and late part of the sample, with most reforms concentrated in the first half of the 1990s. This reflects, in part, reforms in transition countries, but also significant changes in Western

Table 4. Distribution of Financial Sector Policy Change, Full Sample and by Country Groups
(In percent)

	Full Sample	Advanced Economies	Emerging and Developing Asia	Latin America and Caribbean	Sub-Saharan Africa	Transition Economies	Middle East and North Africa
Large reversal	0.50	0.14	0.25	1.65	0.45	0.00	0.00
Reversal	4.42	1.70	5.64	7.72	3.57	5.16	3.57
Status quo	65.16	73.15	63.73	59.19	70.09	45.24	69.64
Reform	24.65	20.60	27.21	24.26	21.88	39.29	22.77
Large reform	5.27	4.40	3.18	7.17	4.02	10.32	4.02
Total	100	100	100	100	100	100	100

Figure 2. Distribution of Financial Sector Policy Changes over Time (In percent)



Europe and Latin America. After peaking in 1995, the liberalization process began to slow down, perhaps in part because a number of countries had essentially completed the process.

Individual country data show evidence of regional clustering: countries within certain regions have tended to liberalize their financial sectors at roughly the same time, and in roughly the same way.⁹ For instance, with the exception of early reforms in Argentina and Chile in the 1970s, most of the reforms in Latin America occurred in the late 1980s and early 1990s. The two exceptions, Chile and Argentina, also illustrate that reform is not a steady march forward: both countries reversed policy during the debt crisis of 1982–83.

The process of financial liberalization in East Asia was much more gradual than in Latin America (Figure 1). Countries opened up their financial sectors in small steps in the early 1980s, with the whole reform process stretching over a decade or more in most cases. Interestingly, and in contrast to the Latin American experience in the 1980s, the 1997 crisis in Asia did not see any sharp reversals of reform; instead, a slight decline in the reform index in 1997 was followed by more gradual reforms. South Asian financial sectors remained very repressed until the mid- to late 1980s; since then reforms have proceeded at a steady pace.

In sub-Saharan Africa, financial liberalization accelerated sharply in the 1990s, and was most intense between 1993 and 1997, even though Kenya and Nigeria experienced policy reversals. After 1998, liberalization slowed down, and some policy reversals occurred in Kenya, Uganda, and Zimbabwe.

The fastest episodes of financial liberalization took place in transition countries. By 2005, these countries were more liberalized than the other regional groupings of developing and emerging countries, though still some distance from the advanced economies. It is an interesting question to what extent accelerated liberalization may be related to the current financial crisis in Eastern and Central Europe. Finally, five Organization for Economic Cooperation and Development (OECD) countries (Canada, Germany, the Netherlands, the United Kingdom, and the United States) already had liberalized financial sectors at the beginning of our sample period. The rest of the OECD countries in our sample started the period with relatively repressed financial systems but caught up and now have largely or fully liberalized financial sectors via a gradual process beginning in the late 1970s and early 1980s. Only New Zealand adopted a one-shot approach, undertaking most of its financial reforms in 1984–86.

Table 5 shows the degree of liberalization attained in each dimension of reform in each region by the end of our sample period. Bank regulation and privatization are the least advanced dimensions in the sample as a whole, and also in most groupings, such as advanced economies, emerging and developing Asia, transition economies, and the Middle East and North Africa. In the latter region, financial account liberalization also lagged

⁹Two OECD members—Korea and Mexico—are included in their regional grouping rather than in the OECD group. The income categories are based on the grouping in the World Bank's 2002 *World Development Indicators*.

Table 5. Degree of Financial Liberalization by Components, Average, 2005

	Full Sample	Advanced Economies	Emerging and Developing Asia	Latin America and Caribbean	Sub-Saharan Africa	Transition Economies	Middle East and North Africa
Credit controls	2.374	2.784	2.154	2.191	2.304	2.292	2.286
Interest rate controls	2.725	3.000	2.615	2.765	2.429	2.611	2.857
Entry barriers	2.725	3.000	2.385	2.706	2.714	2.778	2.429
Bank Regulations	1.978	2.636	1.538	1.706	1.500	2.167	1.857
Privatization	2.000	2.409	1.231	2.000	2.357	2.111	1.143
Financial account	2.363	3.000	2.154	2.412	1.500	2.556	1.857
Securities market	2.253	3.000	2.385	1.941	1.571	2.111	2.143

Note: All components in table vary between 0 and 3.

behind other reforms in 2005. Interestingly, in sub-Saharan Africa, securities market reforms, financial account liberalization, and measures to improve bank regulation remained behind other countries, while the liberalization of entry barriers was quite advanced.

The evidence on reforms of supervision and regulation confirms and complements the stylized facts described by Williamson and Mahar (1998) for a smaller sample of countries, namely that the push for regulatory reforms often came after the first wave of financial reforms. In our larger sample, we find that regulatory and supervisory reforms remain relatively less advanced even many years after the beginning of financial reforms.

IV. Conclusions

The importance of the financial sector to growth and development is now well established. Numerous studies, using various methodologies, have found evidence that greater financial sector development has a positive causal impact on key macroeconomic variables such as growth, productivity, and even poverty. What is less clear from existing research, however, is how best to achieve financial sector development and, more specifically, to what extent financial sector policies can foster financial development. To answer this important question, we have assembled a large cross-country data set on financial sector policies, covering 91 countries over the 1973–2005 period. The multifaceted and graded measure can be used to empirically investigate the effects of reform on financial sector outcomes, such as increased financial intermediation and improved allocative efficiency, and on macroeconomic outcomes such as growth, productivity, and crisis vulnerability. The hope is that this database, and the additional research it generates, can help provide more concrete policy prescriptions that can deliver the gains associated with financial sector development.

APPENDIX 1

Coding Rules for the Financial Liberalization Index¹⁰

To construct an index of financial liberalization, codes were assigned along the eight dimensions below. Each dimension has various subdimensions. Based on the score for each subdimension, each dimension receives a “raw score.” The explanations for each subdimension below indicate how to assign the raw score.

After a raw score is assigned, it is normalized to a 0–3 scale. The normalization is done on the basis of the classifications listed below for each dimension. That is, fully liberalized = 3; partially liberalized = 2; partially repressed = 1; fully repressed = 0.

¹⁰This appendix was prepared by Kruti Barucha. The coding rules used in the index follow closely those of Omori (2004), which extend the approach developed by Abiad and Mody (2005). The main departure from Omori’s coding is the introduction of a new category covering for restrictions on the quantity of credit.

The final scores are used to compute an aggregate index for each country/year by assigning equal weight to each dimension.

For example, if the raw score on credit controls and reserve requirements totals 4 (by assigning a code of 2 for liberal reserve requirements, 1 for lack of directed credit and 1 for lack of subsidized directed credit), this is equivalent to the definition of fully liberalized. So, the normalization would assign a score of 3 on the 0–3 scale.

Credit Controls and Reserve Requirements

1. *Are reserve requirements restrictive?*
 - Coded as 0 if reserve requirement is more than 20 percent.
 - Coded as 1 if reserve requirements are reduced to 10 to 20 percent or complicated regulations to set reserve requirements are simplified as a step toward reducing reserve requirements.
 - Coded as 2 if reserve requirements are less than 10 percent.
2. *Are there minimum amounts of credit that must be channeled to certain sectors?*
 - Coded as 0 if credit allocations are determined by the central bank or mandatory credit allocations to certain sectors exist.
 - Coded as 1 if mandatory credit allocations to certain sectors are eliminated or do not exist.
3. *Are there any credits supplied to certain sectors at subsidized rates?*
 - Coded as 0 when banks have to supply credits at subsidized rates to certain sectors.
 - Coded as 1 when the mandatory requirement of credit allocation at subsidized rates is eliminated or banks do not have to supply credits at subsidized rates.

These three questions' scores are summed as follows: fully liberalized = 4, largely liberalized = 3, partially repressed = 1 or 2, and fully repressed = 0.
4. *Are there any aggregate credit ceilings?*
 - Coded as 0 if ceilings on expansion of bank credit are in place. This includes bank-specific credit ceilings imposed by the central bank.
 - Coded as 1 if no restrictions exist on the expansion of bank credit.

The final subindex is a weighted average of the sum of the first three categories (with a weigh of $\frac{3}{4}$), and of the last category (with a weigh of $\frac{1}{4}$).

Interest Rate Liberalization

Deposit rates and lending rates are separately considered, in coding this measure, in order to look at the type of regulations for each set of rates. They are coded as being government set or subject to a binding ceiling or floor (code = 0), fluctuating within a band (code = 1) or freely floating (code = 2). The coding is based on the matrix in Table A1.

Table A1. Coding Matrix for Interest Rate Liberalization

Lending Rates	Deposit Rates		
	0	1	2
0	FR	PR	PR
1	PR	PR	LL
2	PR	LL	FL

Banking Sector Entry

1. *To what extent does the government allow foreign banks to enter into a domestic market?*

This question is coded to examine whether a country allows the entry of foreign banks into a domestic market; whether branching restrictions of foreign banks are eased; to what degree the equity ownership of domestic banks by nonresidents is allowed.

- Coded as 0 when no entry of foreign banks is allowed; or tight restrictions on the opening of new foreign banks are in place.
 - Coded as 1 when foreign bank entry is allowed, but nonresidents must hold less than 50 percent equity share.
 - Coded as 2 when the majority of share of equity ownership of domestic banks by nonresidents is allowed; or equal treatment is ensured for both foreign banks and domestic banks; or an unlimited number of branching is allowed for foreign banks.
2. *Does the government allow the entry of new domestic banks?*
 - Coded as 0 when the entry of new domestic banks is not allowed or strictly regulated.
 - Coded as 1 when the entry of new domestic banks or other financial institutions is allowed into the domestic market.
 3. *Are there restrictions on branching?*
 - Coded as 0 when branching restrictions are in place.
 - Coded as 1 when there are no branching restrictions or if restrictions are eased.
 4. *Does the government allow banks to engage in a wide range of activities?*
 - Coded as 0 when the range of activities that banks can take consists of only banking activities.
 - Coded as 1 when banks are allowed to become universal banks.

These four questions' scores are summed as follows: fully liberalized = 4 or 5, largely liberalized = 3, partially repressed = 1 or 2, and fully repressed = 0.

Financial Account Transactions

1. *Is the exchange rate system unified?*
 - Coded as 0 when a special exchange rate regime for either capital or current account transactions exists.
 - Coded as 1 when the exchange rate system is unified.
2. *Does a country set restrictions on capital inflow?*
 - Coded as 0 when restrictions exist on capital inflows.
 - Coded as 1 when banks are allowed to borrow from abroad freely without restrictions and there are no tight restrictions on other capital inflows.
3. *Does a country set restrictions on capital outflow?*
 - Coded as 0 when restrictions exist on capital outflows.
 - Coded as 1 when capital outflows are allowed to flow freely or with minimal approval restrictions.

These three questions' scores are summed as follows: fully liberalized = 3, largely liberalized = 2, partially repressed = 1, and fully repressed = 0.

Privatization

Privatization of banks is coded as follows:

- Fully liberalized if no state banks exist or state-owned banks do not consist of any significant portion of banks and/or the percentage of public bank assets is less than 10 percent.
- Largely liberalized if most banks are privately owned and/or the percentage of public bank assets is from 10 to 25 percent.
- Partially repressed if many banks are privately owned but major banks are still state-owned and/or the percentage of public bank assets is 25 to 50 percent.
- Fully repressed if major banks are all-state owned banks and/or the percentage of public bank assets is from 50 to 100 percent.

Securities Markets

1. *Has a country taken measures to develop securities markets?*
 - Coded as 0 if a securities market does not exist.
 - Coded as 1 when a securities market is starting to form with the introduction of auctioning of treasury bills or the establishment of a security commission.
 - Coded as 2 when further measures have been taken to develop securities markets (tax exemptions, introduction of medium and long-term government bonds in order to build the benchmark of a yield curve, policies to develop corporate bond and equity markets, or the introduction of a primary dealer system to develop government security markets).

- Coded as 3 when further policy measures have been taken to develop derivative markets or to broaden the institutional investor base by deregulating portfolio investments and pension funds, or completing the full deregulation of stock exchanges.

2. *Is a country's equity market open to foreign investors?*

- Coded as 0 if no foreign equity ownership is allowed.
- Coded as 1 when foreign equity ownership is allowed but there is less than 50 percent foreign ownership.
- Coded as 2 when a majority equity share of foreign ownership is allowed.

These two questions' scores are summed as follows: fully liberalized = 4 or 5, largely liberalized = 3, partially repressed = 1 or 2, and fully repressed = 0. If information on the second subdimension was not available (which was the case for some low-income countries), the measure was coded using information on securities market development. If information on securities markets only was considered, a 0–3 scale was assigned based on the score on securities markets.

Banking Sector Supervision

1. *Has a country adopted a capital adequacy ratio based on the Basel standard? (0/1)*

- Coded as 0 if the Basel risk-weighted capital adequacy ratio is not implemented. Date of implementation is important, in terms of passing legislation to enforce the Basel requirement of 8 percent capital adequacy ratio (CAR).
- Coded as 1 when Basel CAR is in force. (Note: If the large majority of banks meet the prudential requirement of an 8 percent risk-weighted capital adequacy ratio, but this is not a mandatory ratio as in Basel, the measure is still classified as 1.) Prior to 1993, when the Basel regulations were not in place internationally, this measure takes the value of 0.

2. *Is the banking supervisory agency independent from executives' influence? (0/1/2)*

A banking supervisory agency's independence is ensured when the banking supervisory agency can resolve banks' problems without delays. Delays are often caused by the lack of autonomy of the banking supervisory agency, which is caused by political interference. For example, when the banking supervisory agency has to obtain approval from different agencies such as the ministry of finance in revoking or suspending licenses of banks or liquidating banks' assets, or when the ultimate jurisdiction of the banking supervisory agency is the ministry of finance, it often causes delays in resolving banking problems. In addition to the independence from political interference, the banking supervisory agency also has to be given enough power to resolve banks' problems promptly.¹¹

¹¹According to Omori (2004, p. 13): "Quintyn and Taylor (2002) categorize the independence of banking supervisory agencies into four: regulatory independence, supervisory independence, institutional independence, and budgetary independence. In this dataset,

- Coded as 0 when the banking supervisory agency does not have an adequate legal framework to promptly intervene in banks' activities; and/or when there is the lack of legal framework for the independence of the supervisory agency such as the appointment and removal of the head of the banking supervisory agency; or the ultimate jurisdiction of the banking supervision is under the ministry of finance; or when a frequent turnover of the head of the supervisory agency is experienced.
 - Coded as 1 when the objective supervisory agency is clearly defined and an adequate legal framework to resolve banking problems is provided (the revocation and the suspension of authorization of banks, liquidation of banks, and the removal of banks' executives, and so on) but potential problems remain concerning the independence of the banking supervisory agency (for example, when the ministry of finance may intervene into the banking supervision in such as case that the board of the banking supervisory agency board is chaired by the ministry of finance, although the fixed term of the board is ensured by law); or although clear legal objectives and legal independence are observed, the adequate legal framework for resolving problems is not well articulated.
 - Coded as 2 when a legal framework for the objectives and the resolution of troubled banks is set up and if the banking supervisory agency is legally independent from the executive branch and actually not interfered with by the executive branch.
3. *Does a banking supervisory agency conduct effective supervisions through on-site and off-site examinations? (0/1/2)*
Conducting on-site and off-site examinations of banks is an important way to monitor banks' balance sheets.
- Coded as 0 when a country has no legal framework and practices of on-site and off-site examinations is not provided or when no on-site and off-site examinations are conducted.
 - Coded as 1 when the legal framework of on-site and off-site examinations is set up and the banking supervision agency have conducted examinations but in an ineffective or insufficient manner.
 - Coded as 2 when the banking supervisory agency conducts effective and sophisticated examinations.

independence is measured by combining institutional independence and supervisory independence. In the case of central bank independence, a legal framework of a central bank for developed countries and/or the frequency of turnover of governor of the central bank for developing countries are often used indicators. However, as discussed above, since the banking supervisory agency is not necessarily vested in the central bank, legal documents for banking supervision are less available and obtaining the information for counting the frequency of the turnover of the head of the banking supervisory agency is much more difficult. In this vein, we basically relied on experts or researchers' evaluation in coding the independence of the banking supervisory agency. Lora (1997) also created the indicator based on subjective judgment of the quality of banking supervision."

4. *Does a country's banking supervisory agency cover all financial institutions without exception? (0/1)*

If some kinds of banks are not exclusively supervised by the banking supervisory agency or if offshore intermediaries of banks are excluded from the supervision, the effectiveness of the banking supervision is seriously undermined.

- Coded as 1 when all banks are under supervision by supervisory agencies without exception.
- Coded as 0 if some kind of financial institutions are not exclusively supervised by the banking supervisory agency or are excluded from banking supervisory agency oversight.

These questions' scores are summed as follows: highly regulated = 6, largely regulated = 4 or 5, less regulated = 2 or 3, not regulated = 0 or 1.

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