

Financial Institutions and Markets across Countries and over Time

Data and Analysis

Thorsten Beck
Asli Demirgüç-Kunt
Ross Levine

The World Bank
Development Research Group
Finance and Private Sector Team
May 2009



Abstract

This paper introduces the updated and expanded version of the Financial Development and Structure Database and presents recent trends in structure and development of financial institutions and markets across countries. The authors add indicators on banking structure and financial globalization. They find a deepening of both financial markets and institutions, a trend concentrated in high-income countries and more pronounced for markets than for banks. Similarly, the recent increase in cross-border

lending and debt issues has been concentrated in high-income countries, while low and lower-middle income countries have experienced an increase in remittance flows. Low net interest margins, rising profitability and declining stability in high-income countries' banking sectors characterize the recent financial sector boom in high income countries leading up to the global financial crisis of 2007.

This paper—a product of the Finance and Private Sector Team, Development Research Group—is part of a larger effort in the department to understand financial development. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The author may be contacted at ademirguckunt@worldbank.org.

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors of the World Bank or the governments they represent.

Financial Institutions and Markets across Countries and over Time – Data and Analysis

**Thorsten Beck
Asli Demirgüç-Kunt
Ross Levine**

Beck: CentER, Department of Economics, Tilburg University and CEPR; Demirgüç-Kunt: The World Bank; Levine: Brown University. We gratefully acknowledge excellent research assistance by Ed Al-Hussainy who has not only diligently updated the database but also done most of the work for this paper. This paper's findings, interpretations, and conclusions are entirely those of the authors and do not necessarily represent the views of the World Bank, its Executive Directors, or the countries they represent.

I. Introduction

With the on-set of the financial crisis of 2007/8, the financial sector is yet again at the top of the agenda of policy makers. While a large literature has established the importance of financial sector development for growth and equity of economies, an overleveraged and fragile financial system can also bring about major crises as economies across the globe are currently experiencing.¹ As proper measurement is at the core of any proper analysis of causes and design of solutions, indicators measuring the size, activity, efficiency and stability of the financial system are important for analysts, researchers and policy makers alike.

This paper introduces the updated and expanded version of the Financial Development and Structure Database and presents recent trends in structure and development of financial institutions and markets across countries. This database provides statistics on the size, activity, efficiency and stability of banks, nonbanks, equity markets, and bond markets across a broad spectrum of countries and through time. It also contains several indicators of financial globalization, including statistics on international bond issues, international loans, off-shore deposits and remittance flows. The database draws on a wide array of primary sources to cover different dimensions of the financial system. The database and further details on its construction are available at the following web-site:

<http://econ.worldbank.org/programs/finance>

This paper also presents financial system trends across the globe over the past decades. We show that financial systems across the world deepened over the past decades along many dimensions; standard indicators of financial intermediary and market development have increased over the past decades. However, progress has been uneven across income groups and regions. Specifically, the deepening has been concentrated in high-income, while there has been no significant deepening in middle- and low-income countries. While our data end in 2007 and can thus not capture the recent crisis fully, indicators of banking efficiency, profitability and stability match the trends in the boom period leading up to the recent global financial crisis, especially in high-income countries. Specifically, while net interest margins decreased – pushing banks to look for other income sources; profitability, especially return on equity, went up and stability down, as measured by the z-score, with

¹ For an overview over the extensive literature on the finance and growth relationship, see Levine (2005) and Beck (2009). For more recent evidence on the relationship between finance, income equity and poverty reduction, see Beck, Demircuc-Kunt and Levine (2007) and World Bank (2007).

the latter down to a historic low in 2007. We also show that integration into global financial markets has increased over the past years, as measured by international bond issues, international loans, off-shore deposits and remittance flows. However, the increase in international lending and bond issues has been concentrated in high-income countries, while low- and lower-middle income countries have benefitted from higher remittance flows. While off-shore deposits from low-income countries relative to domestic deposits are relatively high compared to middle- and high-income countries, reflecting the lack of trust in domestic banking systems, this ratio has halved over the past 12 years.

We also build on the recent literature on market- vs. bank-based financial systems by analyzing trends in the relative importance of financial markets and financial institutions over the past 20 years. We find a trend towards market-based financial systems, especially in high-income countries; while both market and bank finance has deepened over recent years, the deepening was stronger for markets than for banks. Where there has been a somewhat less pronounced trend towards markets in the developing world, it is mostly driven by a rise in market capitalization (less than in trading), while banking credit across the developing world has shown less of a clear trend.

Unlike at its first publication in 1999, when the Database of Financial Development and Structure was the only cross-country database published by the World Bank, the current version is complementary to several other efforts of the World Bank to improve measurement and thus quantitative analysis of financial systems across the world. First, Beck, Demirguc-Kunt and Martinez Peria (2007) and Honohan (2008) provide indicators of access to and use of financial services across a broad cross-section of countries, while Beck, Demirguc-Kunt and Martinez Peria (2008) and World Bank (2007) provide indicators of barriers to banking access in developing and developed countries.² Second, IFC's Doing Business Database contains several indicators measuring the efficiency of financial infrastructure, including enforcement of contracts, creditor rights, collateral registration and credit registries, while IFC's Enterprise Surveys provide firm-level information on financing patterns and obstacles.³ Third, Barth, Caprio and Levine (2008) present indicators on the regulation and supervision of banks for a broad cross-section of countries for the years 1997, 2001 and 2005, and Demirguc-Kunt et al. (2007) present indicators on the coverage and structure of deposit insurance schemes across a large number of countries. Fourth, Beck et al. (2008) uses information from

² World Bank (2007) provides an overview of different indicators related to the breadth or penetration of financial systems.

different databases, including the one presented here, to benchmark countries' financial systems over time.

This database contains a select number of financial system indicators that are readily available for a large number of countries over extended periods of time. This necessarily implies exclusion of certain indicators that are available only for a small number of countries (such as detailed stock market liquidity or primary bond indicators) or are available only for one or few points in time, such as most access indicators. Compared to the original version of database – as described in Beck, Demirguc-Kunt and Levine (2000) -, we left out several indicators that were rarely used in the literature and can be easily constructed as ratios of other variables and several indicators where it is difficult to access raw data across a large number of countries and a longer time period. Finally, we would like to note that our data are on the yearly frequency and can thus do not capture short-term trends.

The remainder of the paper is organized as follows. Section II presents and discusses indicators of the size of financial systems. Section III introduces indicators of the structure, efficiency and stability of commercial banks. In section IV we define indicators of the size and activity of capital markets and insurance sectors, while section V presents several indicators of financial globalization. Section VI discusses recent trends in financial structure, i.e. the degree to which financial systems are market- or bank-based, while section VII offers concluding remarks. Table 1 provides an overview over the different variables includes as well as the respective periods of coverage.

II. The Size of the Financial System

This section presents several basic indicators of the size of the financial system. Here, we focus on banks and bank-like financial institutions, equity markets and private bond markets. The indicators on financial intermediary development are based on raw data from the International Financial Statistics (IFS) from the IMF, the equity market indicators on raw data from the Emerging Market Database and the bond market indicators on raw data from the BIS.

³ To access these two databases, please see: www.doingbusiness.org and www.enterprisesurveys.org.

Liquid Liabilities to GDP is a traditional indicator of financial depth, already used by King and Levine (1993) in their seminal paper on finance and growth. It equals currency plus demand and interest-bearing liabilities of banks and other financial intermediaries divided by GDP. This is the broadest available indicator of financial intermediation, since it includes all banks, bank-like and non-bank financial institutions.⁴ There is a wide cross-country variation in Liquid Liabilities to GDP, as shown in Figure 1, ranging from 395% in Luxembourg to less than one percent in Sudan. However, there is an even larger variation in the absolute size of financial system, as illustrated by **Liquid Liabilities in USD** (Figure 2). On the one extreme, there are financial systems with trillions of USD, such as Japan or the U.S., on the other extreme there are small and poor countries with financial systems smaller than the size of one small bank in developed countries. In Sudan, for example, total liquid liabilities are barely 40 million U.S. dollars, while they are 73 million U.S. in Guinea-Bissau.

Currency outside Banking System to Base Money is an indicator of monetization of the economy, as it shows which share of base money is not held in the form of deposits with the banking system. Not surprisingly, low-income countries had the highest ratio of Currency outside Banking System to Base Money with a median of 39% in 2007, while upper-middle income countries had the lowest ratio, with a median of 26% (Figure 3). The ratio has decreased over the past decades, from 40% in 1980 to 30% in 2007 (Figure 4). The level and change in currency outside the banking sector is often used as basis for estimations of the size of the informal sector (Schneider and Ernste, 2000).

Financial Systems Deposits to GDP is the ratio of all checking, savings and time deposits in banks and bank-like financial institutions to economic activity and is a stock indicator of deposit resources available to the financial sector for its lending activities. The ratio varies positively with the income level of countries (Figure 3). The median across countries has shown an increasing trend since 1980 when it stood at 27%, reaching 51% in 2007. The database also contains an indicator limited to deposits of deposit monetary institutions – **Bank Deposit to GDP**.

⁴ The International Financial Statistics (IFS) of the IMF distinguishes between three groups of financial institutions. The first group comprises the central bank and other institutions that perform functions of the monetary authorities. The second group, deposit money banks, comprises all financial institutions that have “liabilities in the form of deposits transferable by check or otherwise usable in making payments” [IMF 1984, 29]. The third group – other financial institutions - comprises other banklike institutions and nonbank financial institutions. These are institutions that serve as financial intermediaries, while not incurring liabilities usable as means of payment.

While the previous indicators measure the liability side of the financial intermediaries' balance sheets, indicators of the asset side capture one of the most important functions of financial intermediaries – credit allocation. **Private Credit by Deposit Money Banks and Other Financial Institutions to GDP** is defined as claims on the private sector by deposit money banks and other financial institutions divided by GDP. It is a standard indicator of the finance and growth literature; countries with higher levels of Private Credit to GDP have been shown to grow faster and experience faster rates of poverty reduction (Beck, Levine and Loayza, 2000; Beck, Demirguc-Kunt and Levine, 2007). A somewhat narrower indicator – limited to deposit money banks – is **Private Credit by Deposit Money Banks to GDP**. Private Credit by Deposit Money Banks and Other Financial Institutions to GDP varies positively with countries' level of economic development (Figure 3). While it has experienced a global downward trend between 1982 and 1996, it has been rising since then (Figure 4). Behind this global trend, however, are divergent trends across income groups (Figure 5). While financial intermediary development has been increasing in high-income countries, almost doubling between 1980 and 2007, from 28% to 47%, there is no clear trend in the other income groups, except since 2004 when financial intermediary development went up in all income groups. This is different from Liquid Liabilities to GDP and Financial System Deposits to GDP, where the increase over time has been more uniform across countries (graphs available on request).

To gauge the size of equity markets, we include **Stock Market Capitalization to GDP**, which equals the value of listed shares divided by GDP. It indicates the size of the stock market relative to the size of the economy. It varies positively with the level of economic development (Figure 3) and has trended upwards over the past three decades, with steep increases since 2003 (Figure 4). This increase has been equally strong across all income groups (graph available on request). It is important to note that this indicator is only included for countries with stock exchanges; a large number of countries, especially smaller and poorer countries have not set up any stock exchanges. Specifically, we have data for 102 countries with stock exchanges in our database.

As indicator of the importance of private bond markets, we include **Private Bond Market Capitalization to GDP**, which equals the total amount of outstanding domestic debt securities issued by private or public domestic entities divided by GDP. Given the limited underlying raw data, this indicator is available only for 42 countries and since 1990. This indicator varies positively with the level of economic development and has steadily increased over the past two decades, from a median

of 14% in 1990 to 29% in 2007. Both high- and middle-income countries have seen deepening of private bond markets; unfortunately, we do not have data available for low-income countries; but reports on Africa show an uptick in private bond issue activity in the years up to 2008 (Beck, Fuchs and Uy, 2009).

In summary, there has been a deepening of financial systems across the world, with much of the deepening, however, concentrated in high-income countries. This deepening has taken place in banking as much as in stock and bond markets. In section VI, we will explore whether this deepening has been stronger for banks or for markets across different income groups and geographic regions.

III. The Banking System – Size, Structure, Efficiency and Stability

The banking system still constitutes the largest part of the financial system in most countries, especially in emerging and developing markets. We have therefore included an array of indicators, measuring the size, structure, efficiency and stability of banks across countries and over time.

In addition to the indicators discussed in the previous section, the database includes several other indicators of the size of financial intermediaries. Specifically, based on raw data from the IFS, the following three indicators measure the size of the three types of financial institutions relative to GDP:

- **Central Bank Assets to GDP**
- **Deposit Money Banks Assets to GDP**
- **Other Financial Institutions Assets to GDP**

These measures give evidence of the importance of the financial services performed by the three types of financial institutions relative to the size of the economy. The assets include claims on the whole nonfinancial real sector, including government, public enterprises and the private sector. The sum of these three measures would indicate the total claims that financial intermediaries have on nonfinancial domestic sectors, relative to GDP, and thus constitute a comprehensive measure of financial intermediation.

Further, we include a measure of the relative importance of commercial vis-à-vis the central bank, **Deposit Money vs. Central Bank Assets**. Countries where deposit money banks have a larger role in financial intermediation than central banks can be considered as having higher levels of financial development. Both King and Levine (1993) and Beck, Levine, and Loayza (2000) show a positive relationship between Deposit Money vs. Central Bank Assets and economic growth.

Total claims of deposit money banks on the non-financial economy, both in relation to GDP and in relation to deposit money plus central bank claims, increase with the level of economic development, whereas there is no clear correlation of total claims of central banks or other financial institutions relative to GDP with the level of economic development (Figure 6). Note that in the case of other financial institutions, variation across countries might be driven as much by data availability as by the actual size of these institutions. While Deposit Money Bank Assets to GDP and Deposit Money vs. Central Bank Assets have increased over time, there is not a clear time trend in the other two indicators (Figure 7).

We include several indicators of intermediation efficiency. First, **Bank Credit to Bank Deposits** is the ratio of claims on the private sector to deposits in deposit money banks. It thus gauges the extent to which banks intermediate society's savings into private sector credits. It shows a large variation in 2007 between 21% in Congo and 307% in Denmark. It increases not only with the level of economic development (Figure 8) but also with the level of financial development. Financially less developed countries thus do not only attract relatively less deposits into banks, but also intermediate a smaller share of these deposits into private sector credits.⁵ Figure 9 shows that there has not been a clear trend over time in the credit-to-deposit ratio in the median country. Behind this overall lack of trend, however, is variation across income groups, with slight increases in the ratio in the median high- and middle-income countries and a decrease in the median low-income country (graphs available on request). Obviously, deposits are not the only funding source of banks and credits not the only assets banks can invest in. While a high loan-deposit ratio indicates high intermediation efficiency, a ratio significantly above one also suggests that private sector lending is funded with non-deposit sources, which could result in funding instability as currently experienced by many banks and countries in Central and Eastern Europe.

⁵ For a discussion specific to Africa on this issue, see Honohan and Beck (2007).

Second, the **net interest margin** equals the accounting value of a bank's net interest revenue as a share of its total earning assets, while **overhead cost** equals the accounting value of a bank's overhead costs as share of its total assets. Unlike the previous banking system indicators, these two variables are constructed from raw bank-level data from the BankScope database; both measures are constructed as unweighted averages across all banks of a country for a given year.⁶ Higher levels of net interest margins and overhead costs indicate lower levels of banking efficiency, as banks incur higher costs and there is a higher wedge between lending and deposit interest rates.⁷ Poorer countries have typically higher net interest margins and overhead costs (Figure 8). Net interest margins have shown a decreasing trend over time in the median country, from 4.4% in 1995 to 3.1% in 2007, while overhead costs first increased then rapidly decreased after 2002 (Figure 9). There are different patterns across different income groups; while net interest margins have been low and relatively stable in high-income countries, with somewhat of a slight decrease in the last years, there has been a significant downward trend in net interest margins in upper-middle countries. Net interest margins in the median low and lower-middle income countries, on the other hand, have shown a decreasing trend only in recent years (Figure 10). Overhead costs have shown a decreasing trend across all income groups (graphs not reported).

The final indicator of banking efficiency is the **cost-income ratio** that measures the overhead costs relative to gross revenues, with higher ratios thus indicating lower levels of cost efficiency. As in the case of net interest margins and overhead costs, data on cost-income ratios are based on bank-level data. Banks in richer countries have typically lower cost-income ratios (Figure 8). There has not been much change in the cost-income ratio over time (Figure 9).

We also include an indicator of banking market structure; **Concentration** equals the ratio of the three largest banks' assets to total banking sector assets. This indicator is based on bank-level data from BankScope, which raises measurement concerns. Since the bank coverage is not 100% in BankScope, variation across countries and time might be driven by differences in coverage rather than differences in market structure. There is no clear correlation between concentration and income levels

⁶ Unfortunately the coverage of BankScope is less than 100% of most countries' banking sector. This poses relatively few problems in the case of the efficiency measures, but more so in the case of the measures of market structure, as discussed below.

⁷ We denote with spreads the difference between ex-ante contracted loan and deposit interest rates, while margins are the actually received interest (and non-interest) revenue on loans minus the interest costs on deposits (minus non-interest

of countries; the median country in upper-middle income category has the lowest concentration ratio, while the median country in the low-income category has the highest ratio (Figure 8). There has been little variation in concentration ratios over time, with no clear trend (Figure 9). While concentration is often seen as indicator of competitiveness of a banking system, recent evidence has shown a very low correlation with other measures of banking competitiveness (Claessens and Laeven, 2004). Nevertheless, in the absence of more detailed banking level data, concentration ratios are still the most readily available market structure indicator across countries and over time.⁸

We include two indicators of profitability, **Return on Assets** and **Return on Equity**. As the previous measures, they are computed as unweighted averages across all banks in a given year. While banks in the median country in high and middle-income country have a return on equity around 15%, with little variation between high, upper-middle, and lower-middle income countries, the median return on equity was over 20% in 2007 in low-income countries (Figure 11). Return on Equity shows quite some variation over time, declining from 12% in 1995 to 8% in 2002, before rising again to over 15% in 2007 (Figure 12). While returns on equity in high and middle-income countries have converged over time, returns on equity in the median low-income country have been volatile with a decreasing trend over time (Figure 13). Returns on Assets on the other hand, have been first decreasing, then increasing, a trend that is similar across median countries of all income groups.

Finally, we include an indicator of banking stability. The **z-score** is the ratio of return on assets plus capital-asset-ratio to the standard deviation of return on assets. If profits are assumed to follow a normal distribution, it can be shown that the z-score is the inverse of the probability of insolvency. Specifically, z indicates the number of standard deviations that a bank's return on assets has to drop below its expected value before equity is depleted and the bank is insolvent (see Roy, 1952, Hannan and Henwick, 1988, Boyd, Graham and Hewitt, 1993 and De Nicolo, 2000). Thus, a higher z-score indicates that the bank is more stable. There is little variation in bank stability, as measured by the z-score, across different income groups, while there is significant variation over time (Figures 11 and 12) The z-score has been continuously falling over the past 13 years, from 8.9 to

charges on deposits). The main difference between spreads and margins are lost interest revenue on non-performing loans, so that spreads are normally higher than margins.

⁸ The original version of this database also contained indicators of foreign and government ownership of banks. However, the ownership information provided by Bankscope has been shown to be inaccurate in many cases, so that we do not include these indicators here. Ownership information on a less than annual frequency can be obtained from Barth, Caprio and Levine (2008).

around 6.6 in 2007 (Figure 12). Behind this aggregate trend, however, there are differences across income groups: while the z-score has been decreasing in high- and upper-middle income countries since 2005, there has been no clear trend in low and lower-middle income countries (Figure 14). Considering the 12 year period, however, z-scores are lower in 2007 than 1995 in the median high-income and lower-middle-income countries, but similar in low and upper-middle income countries. Considering correlation across countries in 2007, we find a positive but weak correlation between profitability, as measured by ROA and ROE, and stability, as measured by the z-score.

The banking trends documented over the recent years through 2007 match well the boom period leading up to the global financial crisis that started in 2007, especially in high-income countries, with low and even further declining net interest margins (forcing banks to look for alternative income sources), rising profitability, as proxied by higher returns on assets and equity and declining stability, as obvious by lower z-scores. Given increasing returns on assets, the lower z-scores in the years leading up to 2007 can be explained either by lower capital – likely in the context of the transition towards Basel II in many high- and middle-income countries – or due to higher volatility of returns. It is interesting to note that low and lower-middle income countries have not shown similar banking trends over the past years, but have also not seen the same degree of financial deepening as high-income countries and documented in section II. *In hindsight*, these recent trends of low banking margins, search for higher profits, and declining stability in high-income countries illustrate the circumstances surrounding the financial sector boom that resulted in the 2007 financial crisis.

IV. Capital Markets and Insurance Sector

We include several indicators of capital market development and the size of the insurance sector. The equity market indicators are based on raw data from the Emerging Market Database; the bond market indicators are based on raw data from the BIS banking statistics and the insurance data are based on raw data from Swiss Re.

Take first equity market indicators. As discussed above, **Stock market capitalization to GDP** equals the value of listed shares divided by GDP. It indicates the size of the stock market relative to the size of the economy. **Stock market total value traded to GDP** equals total shares traded on the stock market exchange divided by GDP. It measures the activity of the stock market

trading volume as share of national output and should reflect the degree of liquidity that stock markets provide to the economy. **Stock market turnover ratio** equals the ratio of the value of total shares traded and market capitalization. It measures the activity or liquidity of a stock market relative to its size. A small but active stock market will have a high turnover ratio whereas a large but less liquid stock market will have a low turnover ratio. Finally, the number of **listed firms to population** is the share of listed companies divided by total population. All four indicators increase with the income level, with high-income countries having significantly larger and more liquid stock exchanges with many more firms listed than middle and low-income countries (Figure 15). Both stock market capitalization and value traded have been increasing over the past 12 years, while the ratio of listed firms to population does not show a clear trend over time (Figure 16). The turnover ratio, finally, has shown some increase over the past five years, but not as pronounced as the ratios of capitalization and trading to economic activity. It is thus rather the price effect of existing stocks than listing of new enterprises or more liquid markets that have driven the stock market development over the past decades. This is an important observation, as cross-country comparisons have shown that it is the liquidity of a stock market rather than its size that matters for economic growth (Levine and Zervos, 1998; Beck and Levine, 2004).

As indicators of the size of the domestic bond market we use the **private and public bond market capitalization to GDP**, which equals the total amount of outstanding domestic debt securities issued by private or public domestic entities divided by GDP. These two indicators thus measure the size of the market for public and private bonds relative to the real economy. While private bond market capitalization is positively correlated with income levels of countries, there is no such clear correlation for public bond markets (Figure 17). There has been an upward trend in both indicators over the past 12 years, although much less so than in stock markets (Figure 16). This is not surprising, as bonds are typically traded around the nominal value, unlike shares whose prices can be a multiple of the original book value.

We also include two indicators of the size of the insurance sector. Specifically, **life insurance penetration** is measured by life insurance premiums to GDP and **nonlife insurance penetration** by measured by nonlife insurance premiums to GDP. Both indicators measure total premium revenue in life and nonlife insurance business lines relative to economic activity. Both indicators increase in the income level of country; this correlation is significantly stronger for life than for non-life insurance

(Figure 18). This is not surprising as life insurance is typically considered much more income-elastic than non-life insurance business lines, such as motor vehicle or business insurance policies.⁹ Both life and non-life insurance have seen an upward trend over the past years, more so for life than for non-life insurance business lines (Figure 19).

V. Indicators of financial globalization

We include several indicators of the degree to which a country's financial system is interlinked with international financial markets. All of these indicators are outcome variables, unlike the numerous de jure indicators of capital account or equity market liberalization, used by a large literature. We include only a very select number of indicators that are not included in other datasets.¹⁰

First, we include the stock and flow of international debt issues as share of GDP. Specifically, **International Debt to GDP** measures the stock of outstanding international bonds relative to a country's economic activity, while **International debt issues to GDP** measures the net flow of international bond issues relative to a country's economic activity. Figure 20 shows that International Debt to GDP increases in the income level. Similarly, over the period 2003 to 2007, high-income countries were the group with the highest issues of international debt relative to GDP. We average in this case, as there is a large over-time variation within countries. In 2007, for instance, low-income countries were the group with the highest international debt issues to GDP, which was driven by international bond issues by a few countries, such as Gabon and Ghana, which were large relative to economic activity in these countries. While debt issues have been relatively stable as ratio to GDP, the outstanding debt amount has been increasing constantly over the past 12 years, reaching 12% of GDP in 2007 (Figure 21). The increase in international debt issues, however, has been driven mostly by high-income countries, whereas there have been fewer gains in middle- or low-income countries (graphs available on request).

⁹ For an in-depth study of the determinants of cross-country determinants of life insurance consumption, see Beck and Webb (2003). For an exploration of the relationship between insurance sector development and economic growth, see Arena (2008).

¹⁰ See, for example, Lane and Milesi-Ferretti (2008) on international asset and liability positions across countries; Chinn and Ito on de-jure measures of capital account openness, and Bekaert and Harvey (2000) on equity market liberalization

International loans from non-resident banks to GDP is equal to loans of BIS reporting banks to a specific country relative to economic activity.¹¹ **Off-shore deposit to domestic deposits** is the ratio of deposits held by a country's nationals in off-shore banks relative to deposits in domestic banks. International loans increase in income level, while off-shore deposits to domestic deposits are highest for low-income countries and decrease in the income level of countries. This can be partly explained by the lack of confidence that households and enterprises have in low income countries have in domestic banking systems, a phenomenon especially pronounced for countries in Sub-Saharan Africa (Honohan and Beck, 2007). There have been no clear trends over time in either international loans nor in off-shore deposits (Figure 21). Behind this lack of trends, however, is significant variation across income groups. While international loans have been increasing in high-income countries, they have been relatively stable in middle- and low-income countries. While off-shore deposits relative to domestic deposits have been low and stable in high- and middle-income countries, they have halved in low-income countries between 1997 and 2007, from 4.9% to 2.4%.

Finally, **Remittance Inflows to GDP** measures the flow of official remittance flows relative to economic activity. With the increasing importance of migration flows, remittance flows have become an important source of capital inflows in many developing countries. In some countries, such as Tonga, Tajikistan, and Moldova remittance inflows surpass 30% of GDP, while they constitute 94% of GDP in Liberia. On average, however, the lower-middle income countries are the group with the highest ratio of remittances to GDP. Remittance flows have increased significantly over the past decades, from less than 1% in 1995 to almost 2% in 2007. This trend is driven by the doubling of remittance flows to low- and lower-middle income countries, while remittance flows to upper-middle and high-income countries have not shown a clear trend in recent years. These remittance patterns also reflect increasing migration flows from the developing to the developed world over the past years. These statistics, however, are most likely an underestimate of remittance flows, as they exclude informal flows, captured by the omitted category in balance of payments statistics.¹²

¹¹ BIS reporting banks include banks residing in the G10 countries, Australia, Austria, the Bahamas, Bahrain, Bermuda, Brazil, the Cayman Islands, Chile, Chinese Taipei, Denmark, Finland, Greece, Guernsey, Hong Kong SAR, India, Ireland, Isle of Man, Jersey, Korea, Luxembourg, Macao SAR, Malaysia, Mexico, the Netherlands Antilles, Norway, Panama, Portugal, Singapore, Spain and Turkey.

¹² According to estimates, at least a third of remittances is sent through informal channels (Freund and Spatafora, 2008; Celent, 2002).

In summary, the trend towards globalization in financial services has been uneven across income groups. While this globalization trend has been especially pronounced in international lending and bond issues in high-income countries, low- and lower-middle income countries have benefitted from increased remittance flows. It remains to be seen whether this trends will continue or reverse with the current global financial crisis.

VI. Financial Structure over Time

Up to now, we have focused on the development of different parts of the financial system over time and across different income groups of the world. What is the relative development of markets vs. banks over the past 25 years? Previous work has shown a large cross-country variation in the importance of markets vs. banks (Demirguc-Kunt and Levine, 2001). While cross-country comparisons at the aggregate, industry and firm-level have not shown a significant association of financial structure with country-level, industry or firm growth, this work has been mostly based on cross-sectional comparisons and thus not include the recent period after 2000.¹³ Independent of its growth effect, analyzing the relative importance of markets and institutions is interesting to better understand the process of financial intermediation (Boot and Marinc, 2008).

Following Beck and Levine (2002), we focus on two indicators of financial structure: **Structure-Size** equals Stock Market Capitalization to GDP divided by Bank Credit to GDP, while **Structure-Activity** equals Stock Market Value Traded to GDP divided by Bank Credit to GDP. In both cases, higher values indicating a more market-based financial system. The difference between these two indicators is that Structure-Size focuses on the total shares outstanding in the economy's stock exchanges, while Structure-Activity focuses on the liquidity of the exchanges. We will combine discussion of variation across income groups and region, on the one hand, and variation over time, on the other hands, by plotting average values for five 5-year periods between 1983 and 2007. Figures 22 and 23 show that the importance of stock markets relative to bank systems has increased relative to the banking systems over the past 25 years across all income groups, though more so in low-income countries than in other income groups. While the Structure-Size measure does not vary as much across income groups, Structure-Activity clearly indicates a much more important role for capital markets than banks in high-income countries as compared to the other income groups.

Focusing on Structure-Activity also suggests a much stronger tendency towards markets in high-income countries than Structure Size. While low-income countries have also seen a monotonic increase in Structure-Activity over the past 25 years, there has not really been a clear trend in middle-income countries. Considering differences across regions in the developing world, we find a clear increase in Structure Size for Eastern Europe and Central Asia, Middle East and North Africa and Sub-Saharan Africa, while there has been more variation for other regions (Figures 24 and 25). East Asia and Pacific went first through a decline before increasing again, while Latin America has actually seen a decrease. The South Asia region has not really shown any clear trend over the past 20 years. Structure-Activity shows a similarly increasing trend towards markets for Sub-Saharan Africa and Middle East and North Africa, while there has not been much variation in Eastern Europe and Central Asia. There has been a clear decline in Latin America, no clear trend in South Asia and only a recent trend towards markets in East Asia.

Figures 26 to 31 show the trends in the underlying stock market and bank development indicators. There has been a clear increase in Stock Market Capitalization to GDP across all income groups, while Stock Market Value Traded to GDP has increased significantly in high-income countries, while there have been little changes in the other income groups. While stock markets thus became larger throughout the world, they have not become more liquid outside the high-income world. While South Asia and Sub-Saharan Africa do not show a clear trend in Stock Market Capitalization to GDP, the other regions have shown a monotonic increase over the past 20 years. Stock market liquidity, on the other hand, has been increasing in Middle East & North Africa, but has not shown a clear trend in the other regions. Bank Credit to GDP has been also increasing in high-income countries, while there is no clear trend in other income groups. Latin America, Middle East & North Africa and South Asia have also seen a trend towards more Bank Credit to GDP over the past 20 years, while there has been no clear trend in other regions.

In summary, there has been a trend towards markets only in high-income countries, but not in other income groups of the world. Some geographic regions have seen a trend towards markets, but not as pronounced as in high-income countries. This trend has been mostly driven by gains in market capitalization and less in market liquidity; while banking sector credit has mostly shown no clear trend.

¹³ See Beck and Levine (2002), Demirguc-Kunt and Maksimovic (2002) and Levine (2003).

VI. Concluding Remarks

This paper introduced the expanded and updated version of the Financial Structure Database and documented recent trends in the development of financial institutions and markets. There is an increasing awareness that any sound financial sector analysis and policy advice have to be based on appropriate data capturing the different dimensions of financial sector development. This database is one of many efforts at the World Bank to provide such data.

This paper has also shown how financial sector indicators can be used for cross-country comparisons over time. We found a general deepening of financial markets and institutions over time, which is more pronounced in the high-income countries and more pronounced for markets than for banks. Other income groups and regions of the world have made progress as well, although not to the same extent. This is reason for concern, as cross-country comparisons have shown that financial sector development has a stronger impact on growth in low- and middle- than in high-income countries (Aghion et al., 2005). We also found an increasing trend towards globalization in financial service provision; it remains to be seen whether this trend will continue during and after the current global financial crisis.

References

- Aghion, Philippe, Peter Howitt, and David Mayer-Foulkes (2005). "The Effect of Financial Development on Convergence: Theory and Evidence." *Quarterly Journal of Economics* 120, 173-222.
- Arena, Marco (2008): Does Insurance Market Activity Promote Economic Growth? A Cross-Country Study for Industrialized and Developing Countries." *Journal of Risk and Insurance* 75, 921-46.
- Bank for International Settlement (several years). Quarterly Review on International Banking and Financial Market Development.
- Barth, Jim, Gerard Caprio and Ross Levine (2008): Bank Regulations are Changing: For Better or for Worse? World Bank Policy Research Working Paper 2725.
- Beck, Thorsten (2009): "The Econometrics of Finance and Growth", in: Terence Mills and Kerry Patterson (Eds.): *Palgrave Handbook of Econometrics, Vol. 2*, Palgrave Macmillan.
- Beck, Thorsten, Asli Demirgüç-Kunt and Ross Levine (2000): "A New Database on Financial Development and Structure" , *World Bank Economic Review* 14, 597-605.
- Beck, Thorsten, Asli Demirgüç-Kunt and Ross Levine (2007): "Finance, Inequality, and the Poor" (joint with Asli Demirgüç-Kunt and Ross Levine), *Journal of Economic Growth* 12, 27-49.
- Beck, Thorsten, Asli Demirgüç-Kunt and Sole Martinez Peria (2007): "Reaching Out: Access to and Use of Banking Services Across Countries", *Journal of Financial Economics*, 85, 234-66.
- Beck, Thorsten, Asli Demirgüç-Kunt and Sole Martinez Peria (2008): "Banking Services for Everyone? Barriers to Bank Access and Use around the World", *World Bank Economic Review* 22, 397 - 430.
- Beck, Thorsten, and Ross Levine (2002): "Industry Growth and Capital Allocation: Does Having a Market- or Bank-Based System Matter?" *Journal of Financial Economics* 64, 147-180.
- Beck, Thorsten, and Ross Levine (2004): "Stock Markets, Banks, and Growth: Panel Evidence." *Journal of Banking and Finance* 28, 423-442.
- Beck, Thorsten, Ross Levine, Ross and Norman Loayza (2000). " Finance and the Sources of Growth", *Journal of Financial Economics* 58, 261-300.
- Beck, Thorsten, Michael Fuchs and Marilou Uy (2009): "Finance in Africa: Achievements and Challenges." World Bank mimeo.
- Beck. Thorsten, Erik Feyen, Alain Ize and Florencia Moizeszowicz (2008): "Benchmarking Financial Development." World Bank Policy Research Working Paper 4638.
- Beck, Thorsten and Ian Webb (2003): "Economic, Demographic, and Institutional Determinants of

- Life Insurance Consumption across Countries”, *World Bank Economic Review* 17, 51-88.
- Bekaert, Geert and Campbell R. Harvey (2000): “Foreign Speculators and Emerging Equity Markets,” *Journal of Finance* 55, 565–613.
- Boot, Arnoud and Matej Marinc (2008): “The Evolving Landscape of Banking.” *Industrial and Corporate Change* 17, 1173-1203.
- Boyd, John H., Stanley L. Graham and R. Shawn Hewitt (1993). “Bank Holding Company mergers with Nonbank Financial Firms: Effects on the risk of failure.” *Journal of Banking and Finance* 17, 43-63.
- Chinn, Menzie and Hiro Ito (2006): “What Matters for Financial Development? Capital Controls, Institutions and Interactions,” *Journal of Development Economics* 81, 163-92.
- Claessens, Stijn, and Luc Laeven (2004): “What Drives Bank Competition? Some International Evidence.” *Journal of Money, Credit, and Banking* 36: 563-83.
- De Nicolo, Gianni (2000). Size, Charter Value and Risk in Banking: An International Perspective. International Finance Discussion Papers No. 689, Washington, DC: Board of Governors of the Federal Reserve System.
- Demirgüç-Kunt, Asli and Ross Levine (2001): “Bank-based and Market-based Financial Systems: Cross-Country Comparisons.” In: Demirgüç-Kunt, Asli and Ross Levine (Eds.): *Financial Structure and Economic Growth: A Cross-Country Comparison of Banks, Markets, and Development*, Cambridge, MA: MIT Press.
- Demirgüç-Kunt, Asli, and Vojislav Maksimovic (2002): “Funding Growth in Bank-Based and Market-Based Financial Systems: Evidence from Firm Level Data.” *Journal of Financial Economics* 65(3): 337-63.
- Demirguc-Kunt, Asli, Baybars Karacaovali and Luc Laeven (2005): “Deposit Insurance Around the World: A Comprehensive Database.” World Bank Policy Research Working Paper 3628.
- Freund, Caroline L. and Nikola Spatafora (2008): “Remittances: Transaction Costs, Determinants, and Informal Flows.” *Journal of Development Economics* 86, 356-366.
- Hannan, Timothy H. and Gerald A. Hanweck (1988). Bank Insolvency Risk and the Market for Large Certificates of Deposit. *Journal of Money, Credit and Banking* 20, 203-11.
- Honohan, Patrick (2008): “Cross-Country Variation in Household Access to Financial Services.” *Journal of Banking and Finance* 32: 2493-2500.
- Honohan, Patrick and Thorsten Beck (2007): *Making Finance Work for Africa*. The World Bank
- International Monetary Fund (1984): “A Guide to Money and Banking Statistics in International Financial Statistics”. Washington, D.C.

- King, Robert G. and Ross Levine (1993): "Finance and Growth: Schumpeter Might Be Right," *Quarterly Journal of Economics* 108, 717-38.
- Lane, Philip and Gian Maria Milesi-Ferretti (2008): The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970-2004." *Journal of International Economics* 73, 223-50.
- Levine, Ross E. 2002. "Bank-Based or Market-Based Financial Systems: Which is Better?" *Journal of Financial Intermediation* 11, 1-30.
- Levine, R. 2005. Finance and Growth: Theory and Evidence. In: Aghion, P and Durlauf, S. (eds.), *Handbook of Economic Growth*. Elsevier Science. The Netherlands.
- Levine, Ross and Zervos, Sara. "Stock Markets, Banks, and Economic Growth," *American Economic Review*, June 1998, 88, pp. 537-558.
- Roy, Andrew D. (1952). Safety First and the Holding of Assets. *Econometrica* 20, 431-449.
- Schneider, Friedrich and Dominik Ernste (2000): "Shadow Economies: Size, Causes and Consequences." *Journal of Economic Literature* 38, 77-114.
- Swiss Re (several years), SIGMA, Zurich, Switzerland.
- World Bank (2007): "Finance for All: Policies and Pitfalls in Expanding Access"

Table 1: Coverage of different variables

Variable	Coverage
DEPOSIT MONEY vs. CENTRAL BANK ASSETS	1960-2007
LIQUID LIABILITIES / GDP	1960-2007
CENTRAL BANK ASSETS / GDP	1960-2007
DEPOSIT MONEY BANK ASSETS / GDP	1960-2007
OTHER FINANCIAL INSTITUTIONS ASSETS / GDP	1960-2007
PRIVATE CREDIT BY DEPOSIT MONEY BANKS / GDP	1960-2007
PRIVATE CREDIT BY DEPOSIT MONEY BANKS AND OTHER FINANCIAL INSTITUTIONS / GDP	1960-2007
BANK DEPOSITS / GDP	1960-2007
FINANCIAL SYSTEM DEPOSITS / GDP	1960-2007
BANK CREDIT / BANK DEPOSITS	1960-2007
CURRENCY OUTSIDE BANKING SYSTEM / BASE MONEY	1960-2007
LIQUID LIABILITIES (IN MIL. 2000 USD)	1960-2007
OVERHEAD COSTS	1987-2007
NET INTEREST MARGIN	1987-2007
BANK CONCENTRATION	1987-2007
BANK ROA	1987-2007
BANK ROE	1987-2007
BANK COST-INCOME RATIO	1987-2007
BANK Z-SCORE	1987-2007
LIFE INSURANCE PENETRATION	1960-2007
NONLIFE INSURANCE PENETRATION	1987-2007
STOCK MARKET CAPITALIZATION / GDP	1976-2007
STOCK MARKET TOTAL VALUE TRADED / GDP	1975-2007
STOCK MARKET TURNOVER RATIO	1976-2007
NO. OF LISTED COMPANIES PER 10K POPULATION	1975-2007
PRIVATE BOND MARKET CAPITALIZATION / GDP	1990-2007
PUBLIC BOND MARKET CAPITALIZATION / GDP	1990-2007
INTERNATIONAL DEBT ISSUES / GDP	1988-2007
LOANS FROM NON-RESIDENT BANKS (NET) / GDP	1993-2007
LOANS FROM NON-RESIDENT BANKS (AMT OUTSTANDING) / GDP	1995-2007
OFFSHORE BANK DEPOSITS / DOMESTIC BANK DEPOSITS	1995-2007
REMITTANCE INFLOWS / GDP	1970-2007

List of Figures

Figure 1: Liquid Liabilities to GDP across countries in 2007	22
Figure 2: Liquid Liabilities (log of mil. 2000 USD) across countries in 2007	22
Figure 3: Financial System Size Indicators – Median Values by Income Group in 2007.....	23
Figure 4: Financial System Size Indicators – Median Values Over Time (1980-2007)	24
Figure 5: Private Credit to GDP - Median Values By Income Group Over Time (1980-2007)	24
Figure 6: Financial Intermediation Size Indicators – Median Values by Income Group in 2007	25
Figure 7: Financial Intermediation Size Indicators– Median Values Over Time (1980-2007)	26
Figure 8: Financial Intermediation Efficiency Indicators– Median Values by Income Group in 2007	27
Figure 9: Financial Intermediation Efficiency Indicators– Median Values Over Time (1995-2007)	28
Figure 10: Net Interest Margin - Median Values By Income Group Over Time (1995-2007)	28
Figure 11: Banking Stability and Profitability Indicators– Median Values by Income Group in 2007.....	30
Figure 12: Banking Stability and Profitability Indicators – Median Values Over Time (1995-2007)	30
Figure 13: Bank Return on Equity - Median Values By Income Group Over Time (1995-2007)	31
Figure 14: Bank Z-Score - Median Values By Income Group Over Time (1995-2007)	31
Figure 15: Stock Market Indicators– Median Values by Income Group in 2007	33
Figure 16: Stock, Bond, and Insurance Market Indicators - Median Values Over Time (1995-2007).....	34
Figure 17: Bond Market Indicators– Median Values by Income Group in 2007.....	35
Figure 18: Insurance Market Indicators– Median Values by Income Group in 2007	35
Figure 19: Insurance Market Indicators - Median Values Over Time (1995-2007).....	36
Figure 20: Financial Globalization Indicators – Mean Values for 2003-07, by Income Group	36
Figure 21: Financial Globalization Indicators - Median Values Over Time (1995-2007).....	37
Figure 22: Financial Structure Size - Median Values by Income Group Over Time (1983-2007)	38
Figure 23: Financial Structure Activity - Median Values by Income Group Over Time (1983-2007).....	38
Figure 24: Financial Structure Size - Median Values by Region Over Time (1983-2007).....	39
Figure 25: Financial Structure Activity - Median Values by Region Over Time (1983-2007)	40
Figure 26: Stock Market Capitalization - Median Values by Income Group Over Time (1983-2007)	40
Figure 27: Stock Market Value Traded - Median Values by Income Group Over Time (1983-2007).....	41
Figure 28: Private Credit by Deposit Money Banks - Median Values by Income Group Over Time (1983-2007).....	41
Figure 29: Stock Market Capitalization - Median Values by Region Over Time (1983-2007).....	42
Figure 30: Stock Market Value Traded - Median Values by Region Over Time (1983-2007)	42
Figure 31: Private Credit by Deposit Money Banks - Median Values by Region Over Time (1983-2007)	43

Figure 1: Liquid Liabilities to GDP across countries in 2007

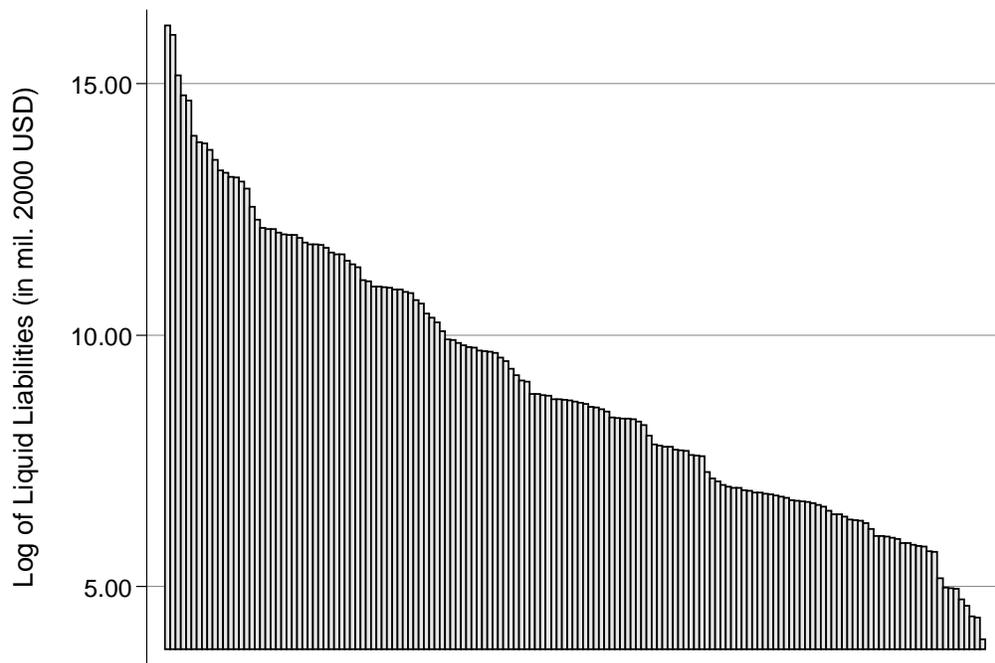


Figure 2: Liquid Liabilities (log of mil. 2000 USD) across countries in 2007

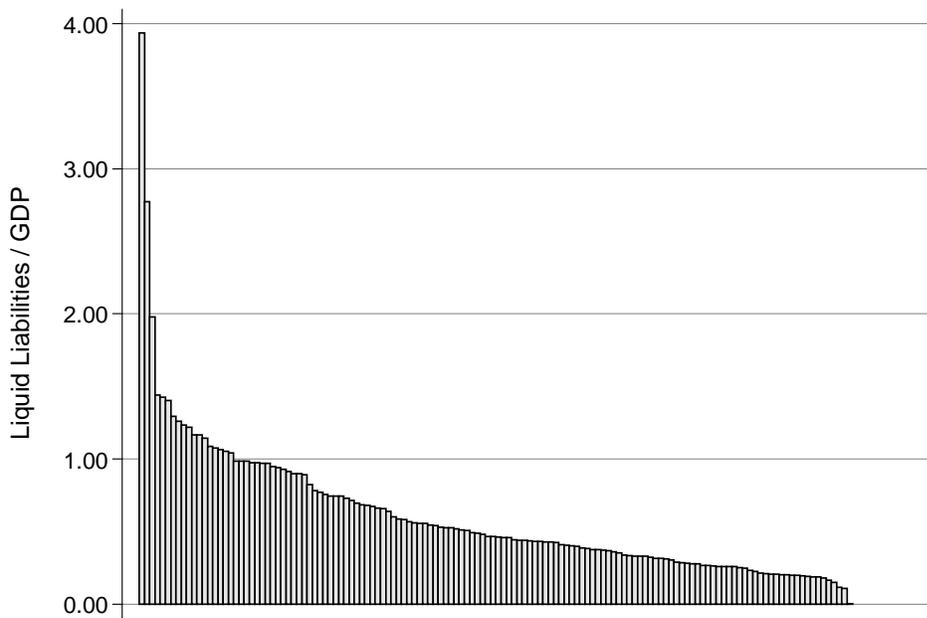


Figure 3: Financial System Size Indicators – Median Values by Income Group in 2007

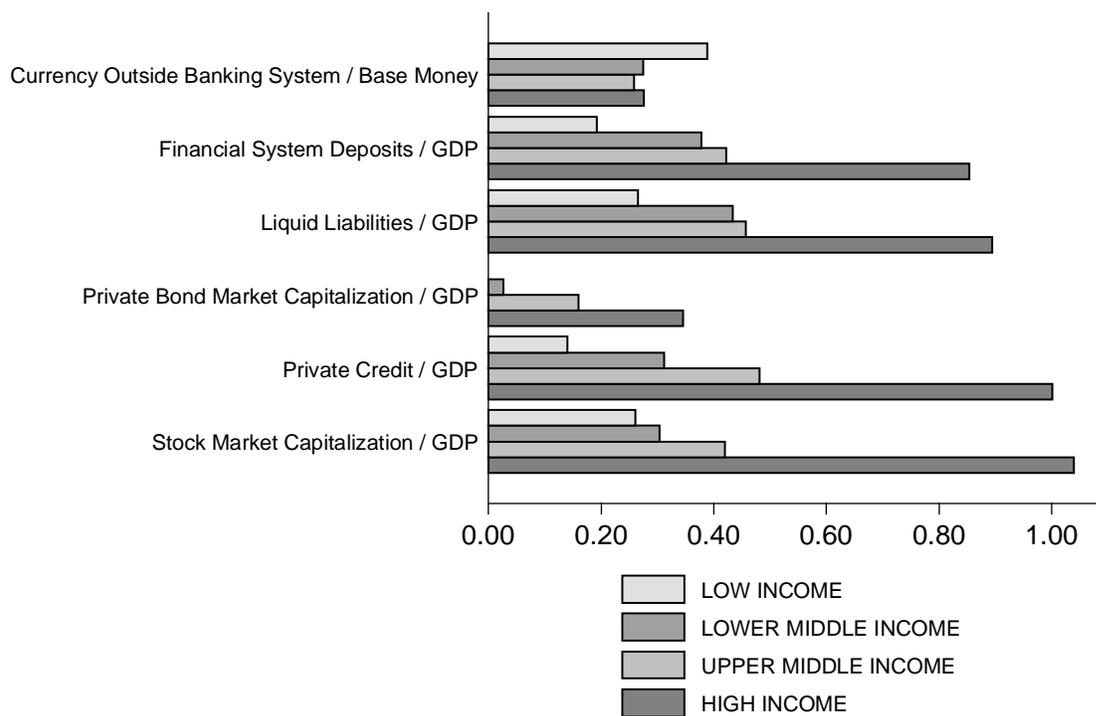


Figure 4: Financial System Size Indicators – Median Values Over Time (1980-2007)

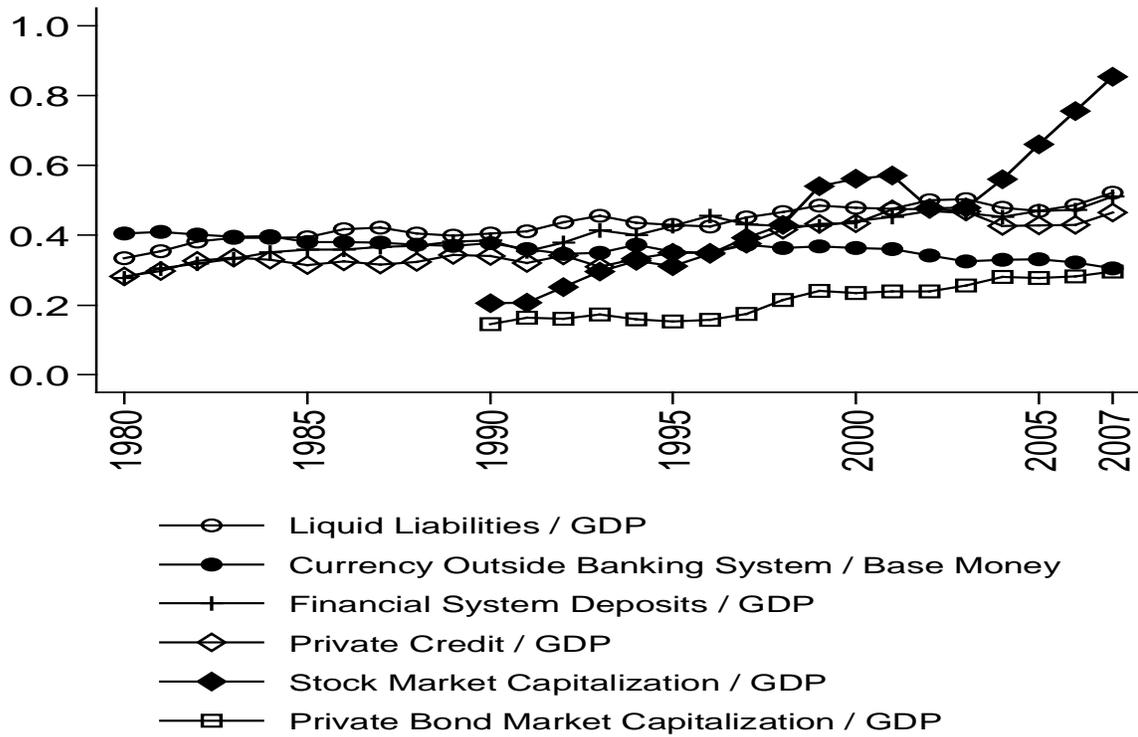


Figure 5: Private Credit to GDP - Median Values By Income Group Over Time (1980-2007)

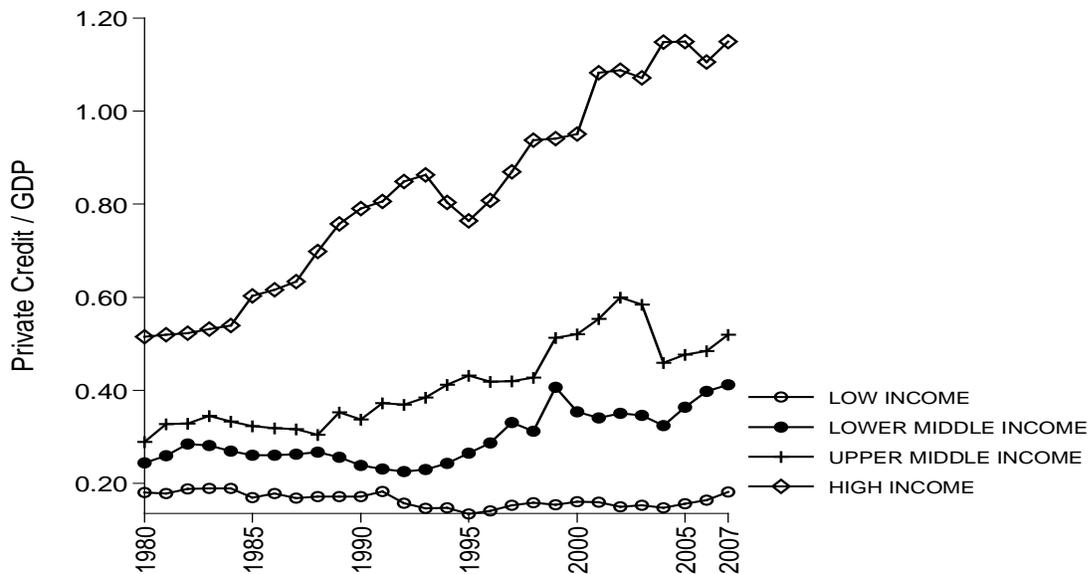


Figure 6: Financial Intermediation Size Indicators – Median Values by Income Group in 2007

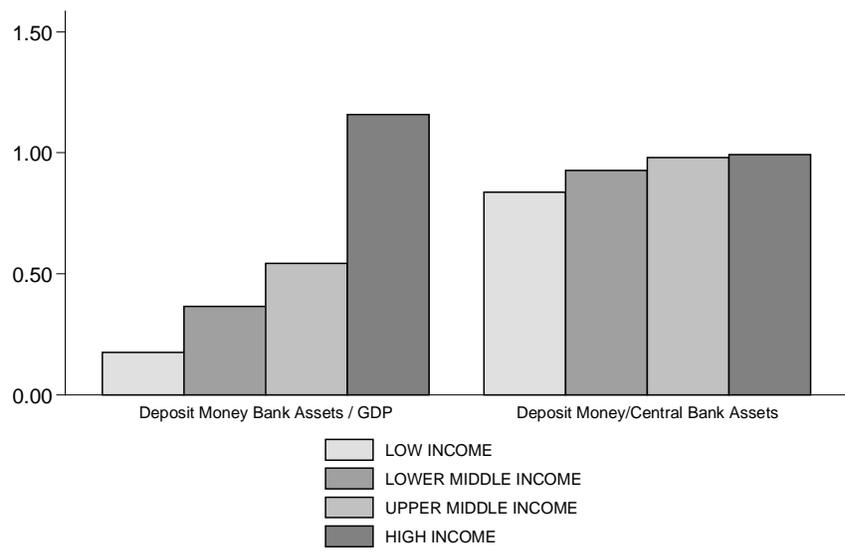
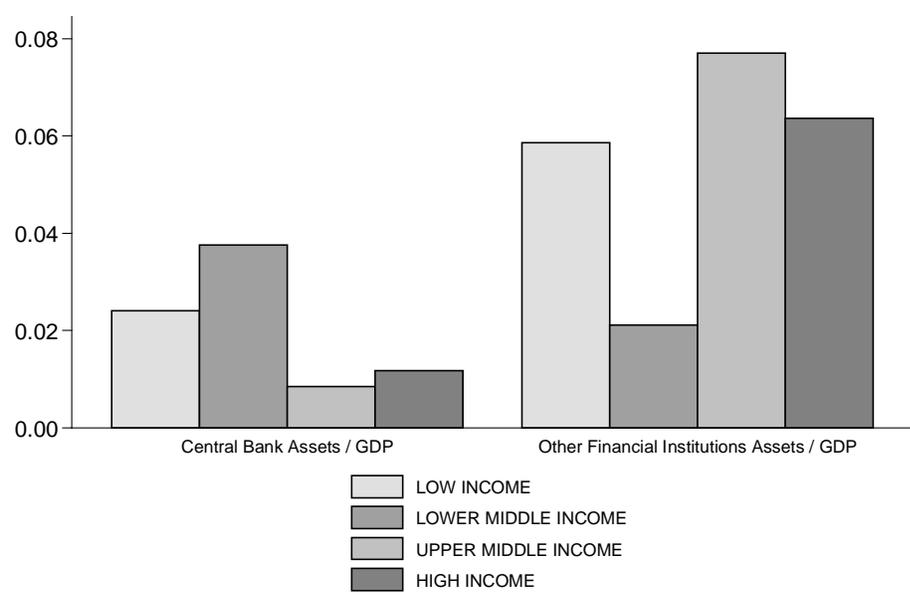


Figure 7: Financial Intermediation Size Indicators– Median Values Over Time (1980-2007)

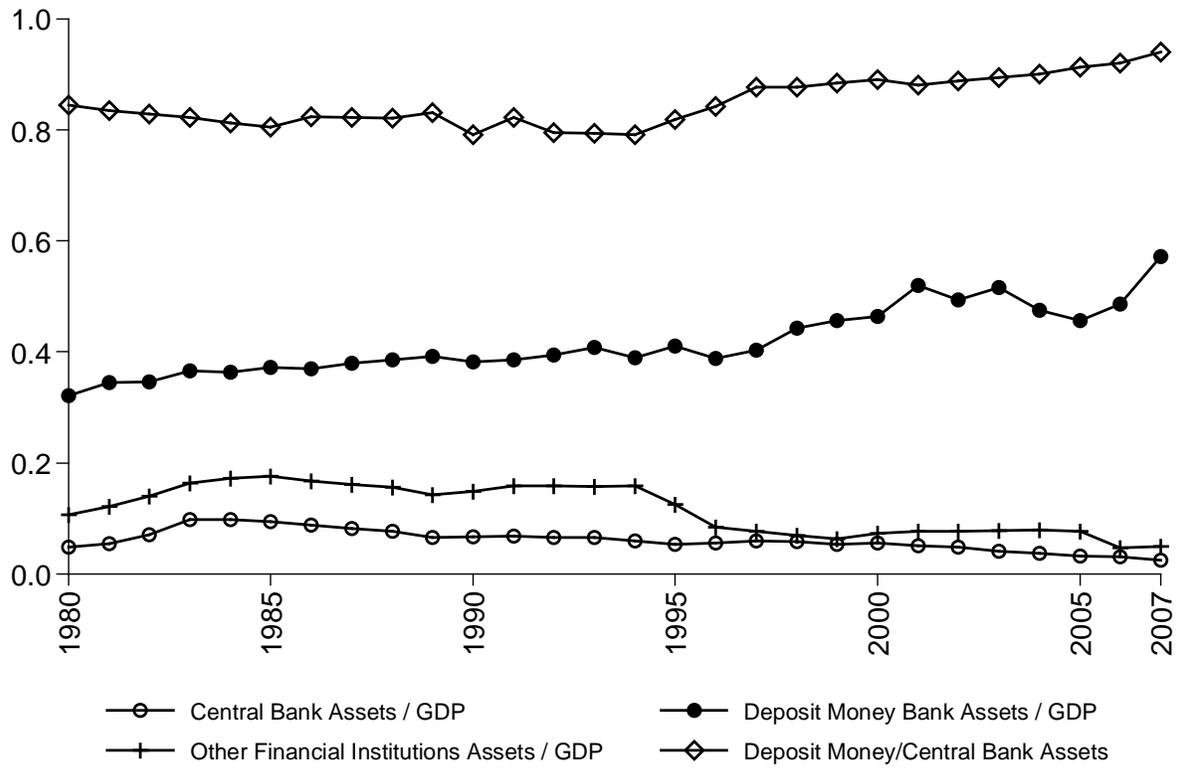


Figure 8: Financial Intermediation Efficiency Indicators– Median Values by Income Group in 2007

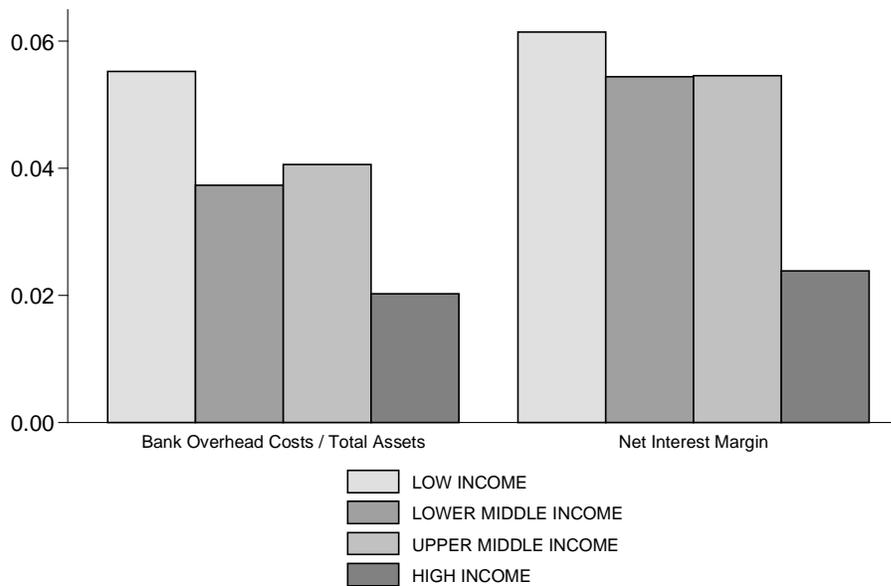
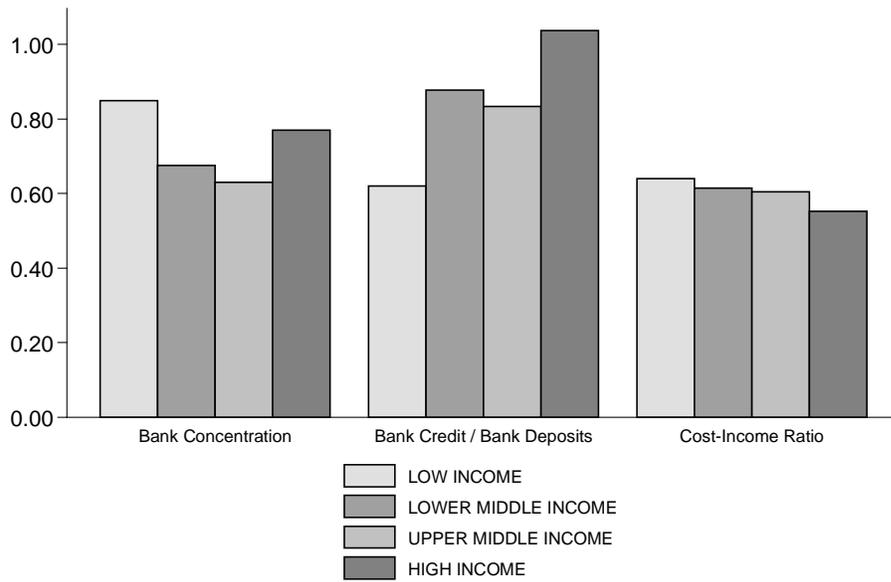


Figure 9: Financial Intermediation Efficiency Indicators– Median Values Over Time (1995-2007)

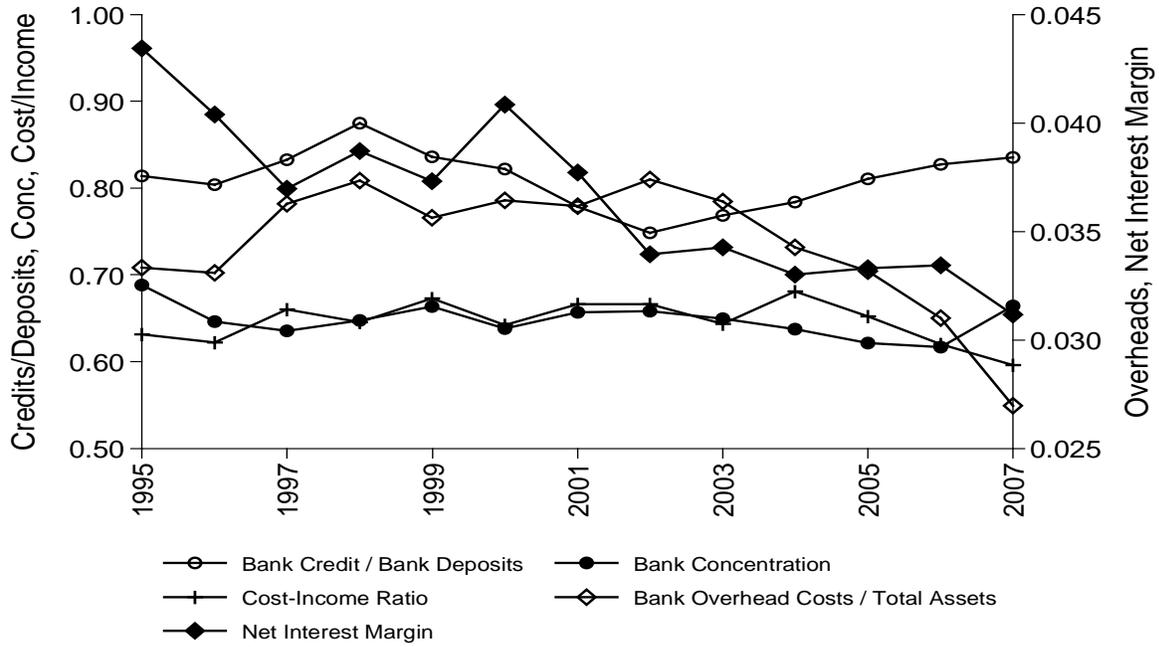


Figure 10: Net Interest Margin - Median Values By Income Group Over Time (1995-2007)

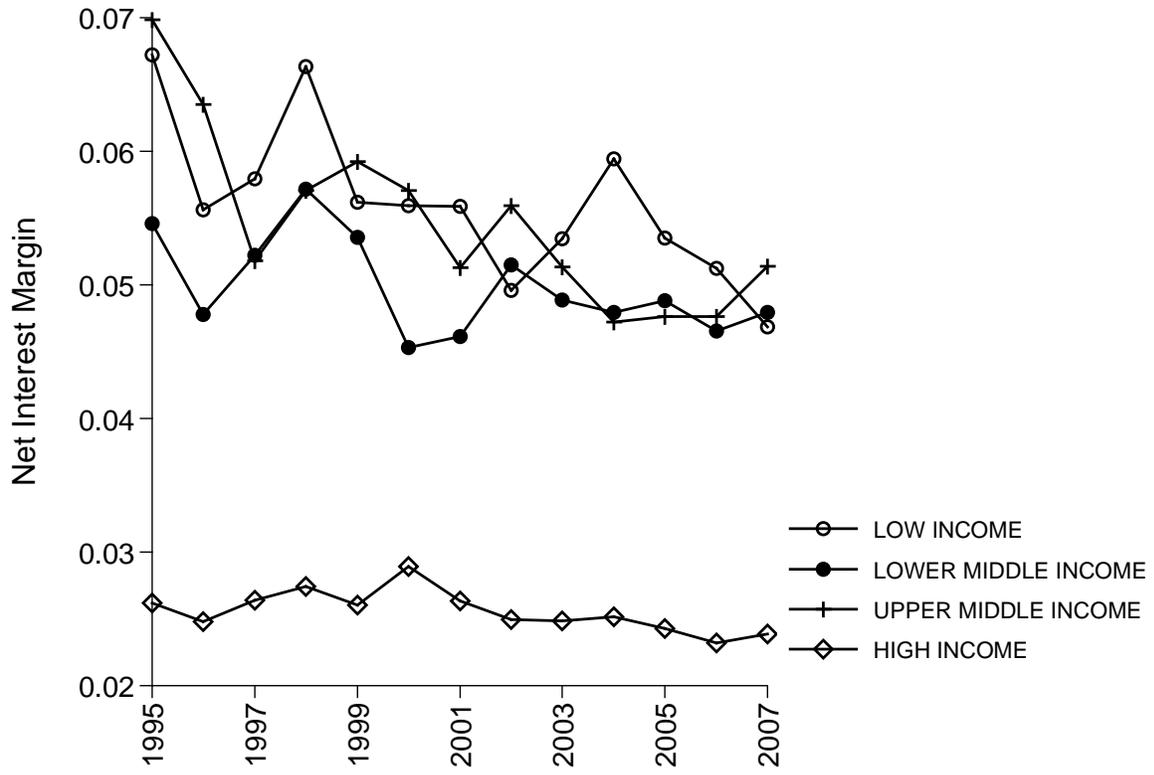


Figure 11: Banking Stability and Profitability Indicators– Median Values by Income Group in 2007

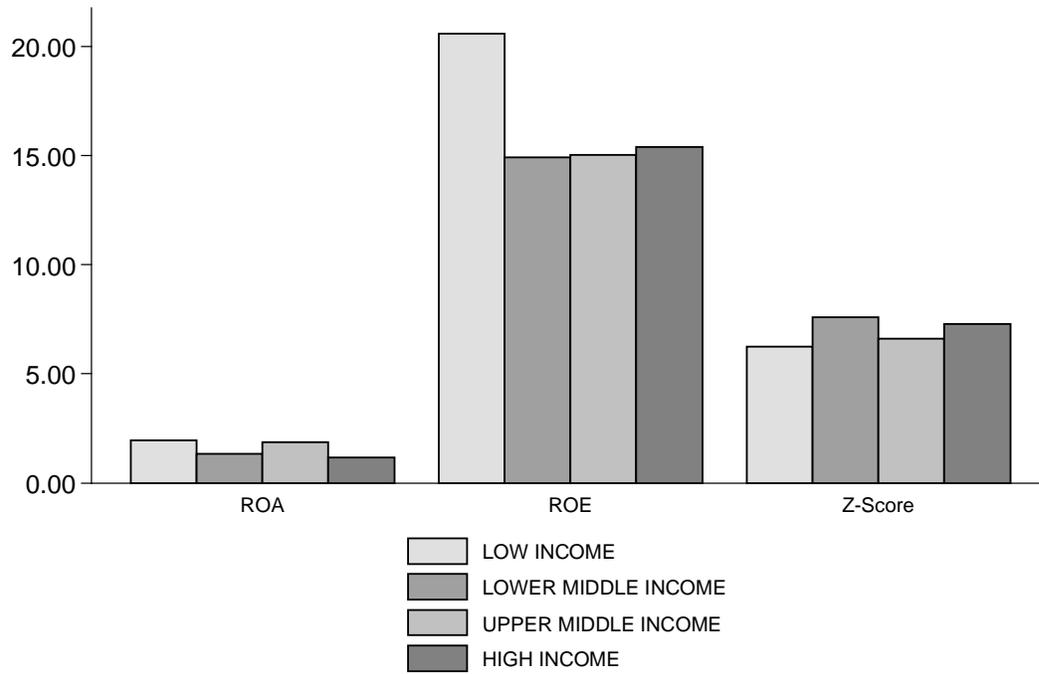


Figure 12: Banking Stability and Profitability Indicators – Median Values Over Time (1995-2007)

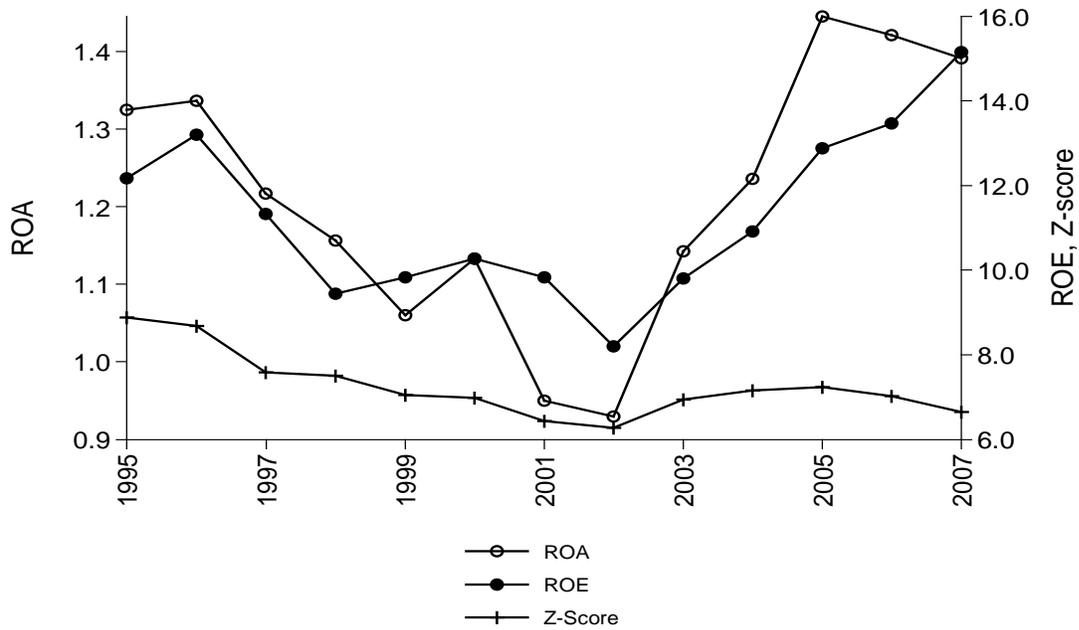


Figure 13: Bank Return on Equity - Median Values By Income Group Over Time (1995-2007)

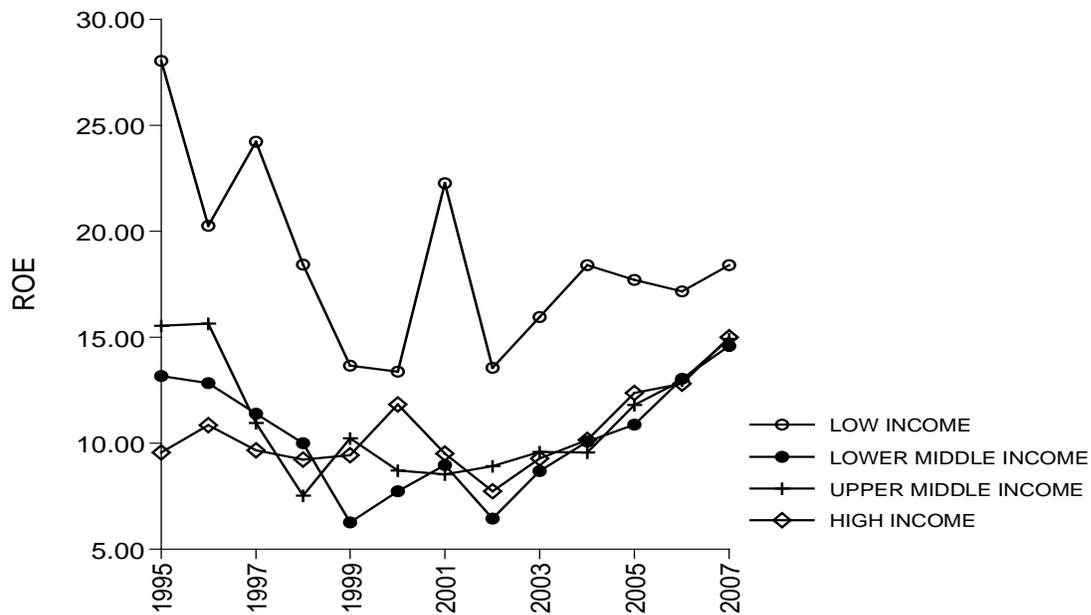


Figure 14: Bank Z-Score - Median Values By Income Group Over Time (1995-2007)

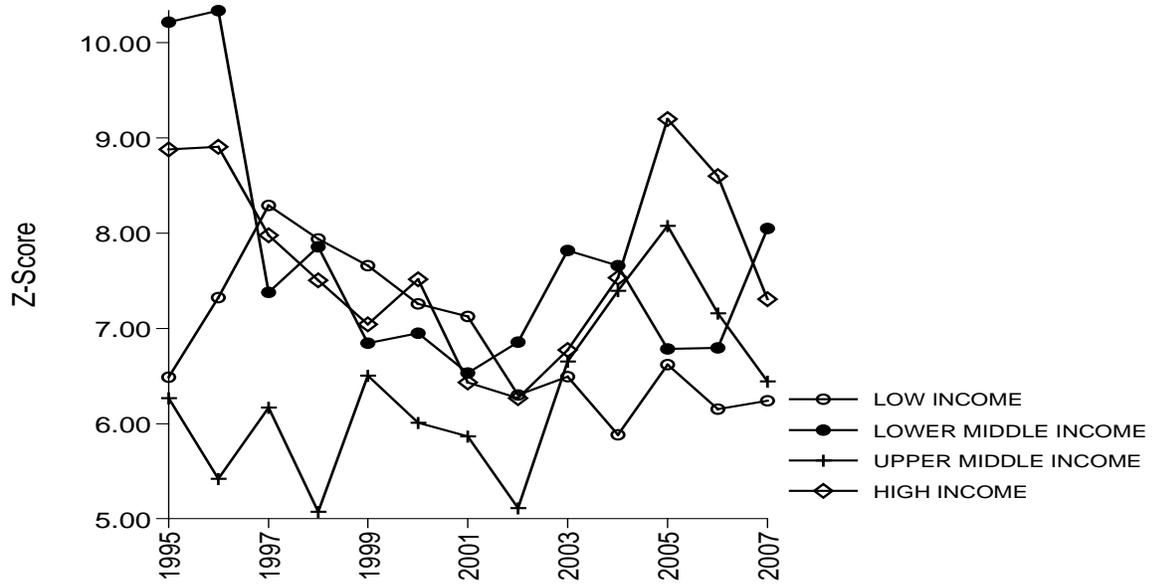


Figure 15: Stock Market Indicators– Median Values by Income Group in 2007

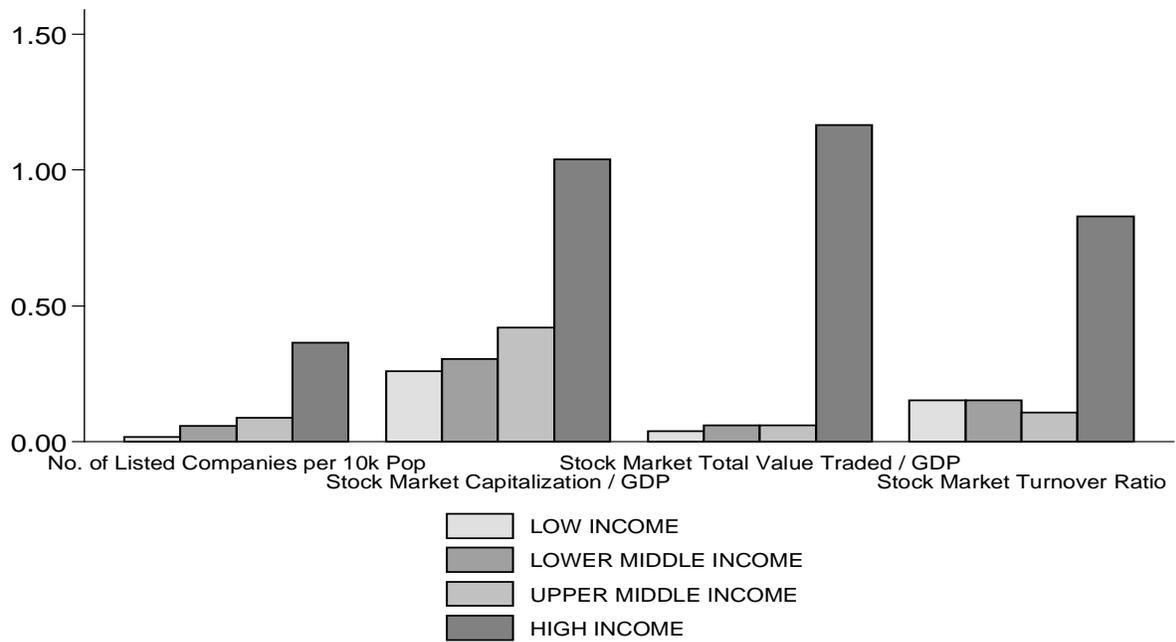


Figure 16: Stock, Bond, and Insurance Market Indicators - Median Values Over Time (1995-2007)

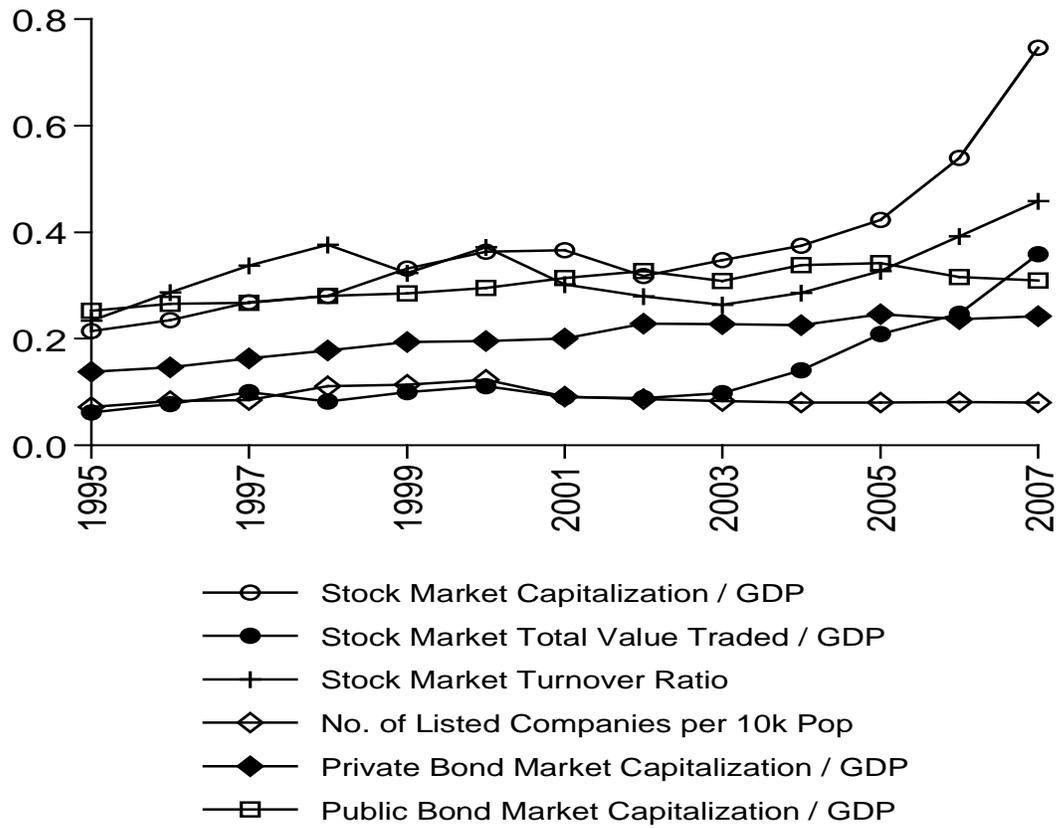


Figure 17: Bond Market Indicators– Median Values by Income Group in 2007

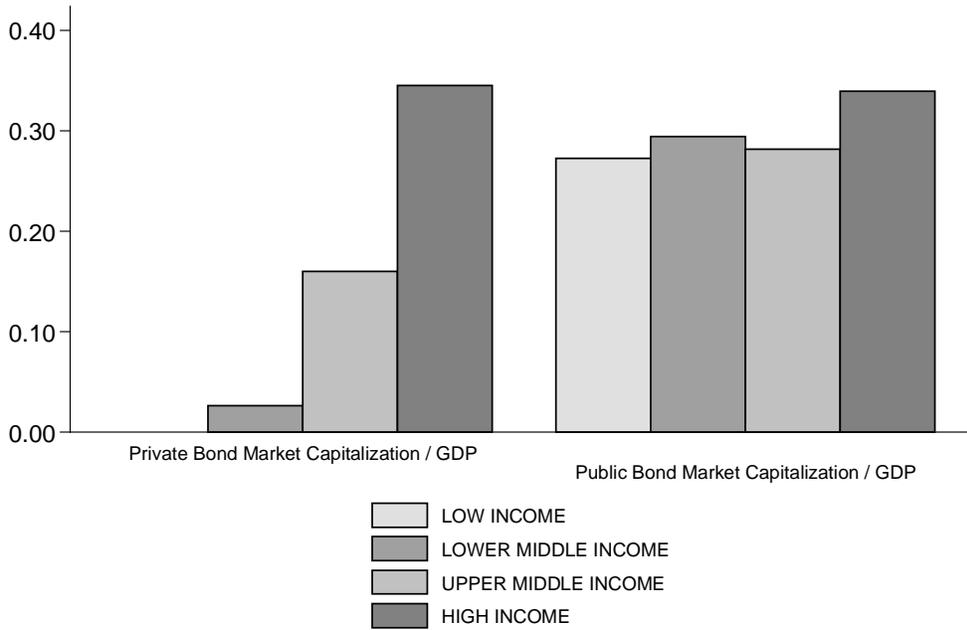


Figure 18: Insurance Market Indicators– Median Values by Income Group in 2007

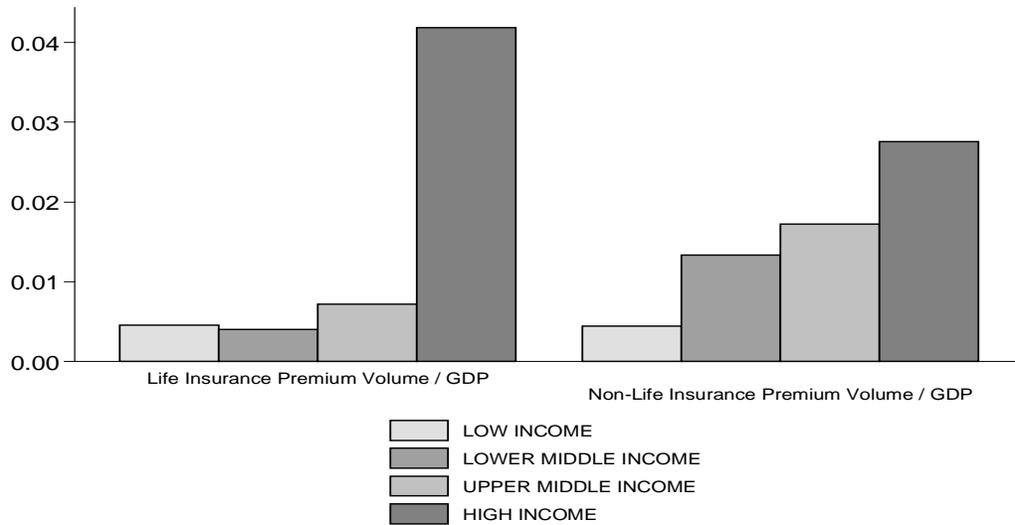


Figure 19: Insurance Market Indicators - Median Values Over Time (1995-2007)

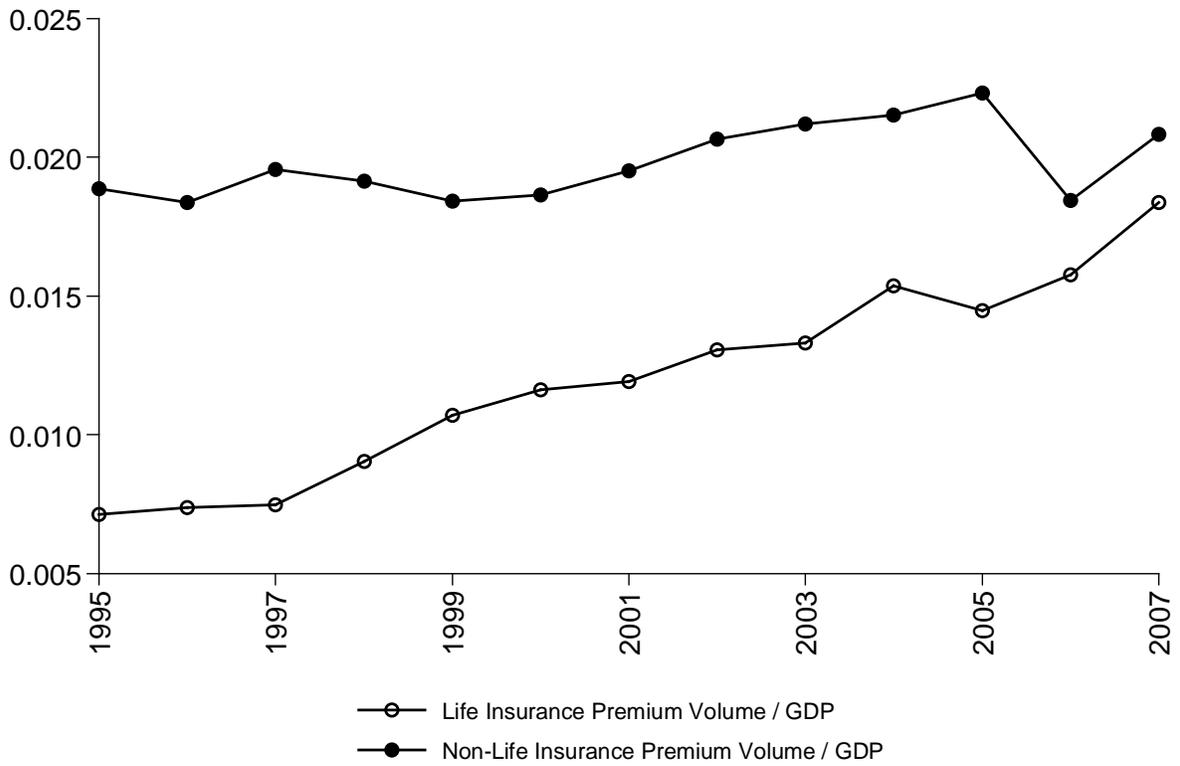


Figure 20: Financial Globalization Indicators – Mean Values for 2003-07, by Income Group

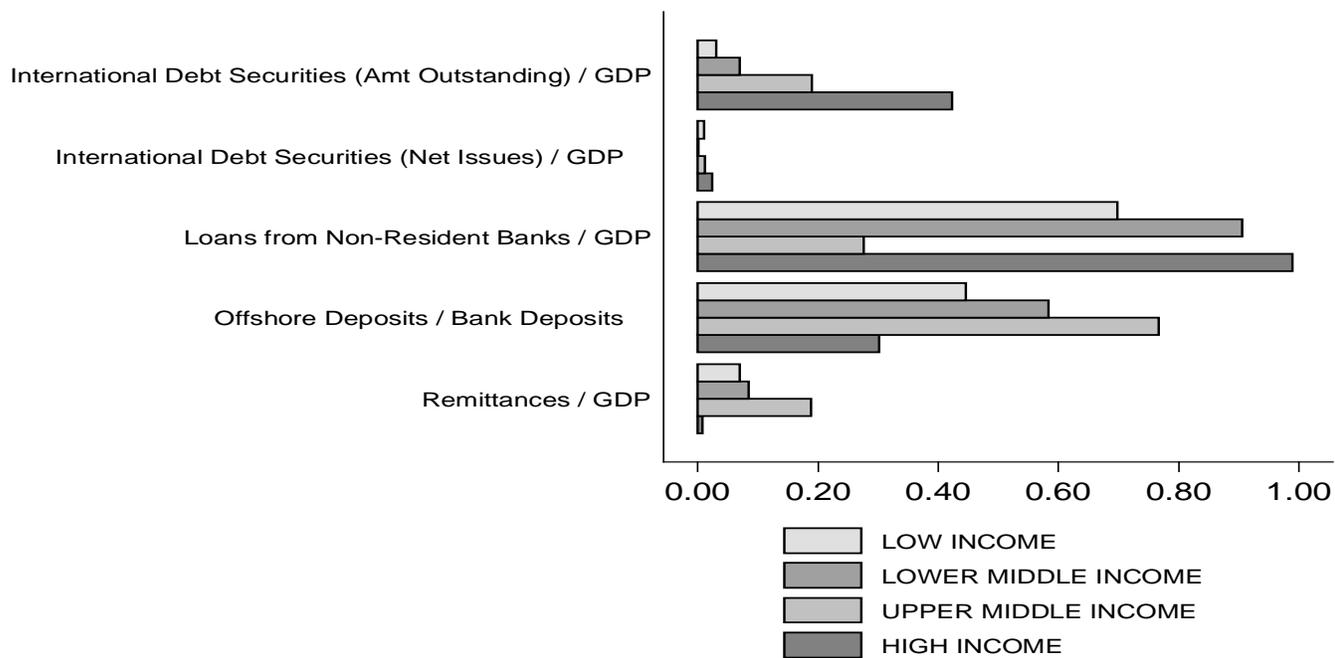


Figure 21: Financial Globalization Indicators - Median Values Over Time (1995-2007)

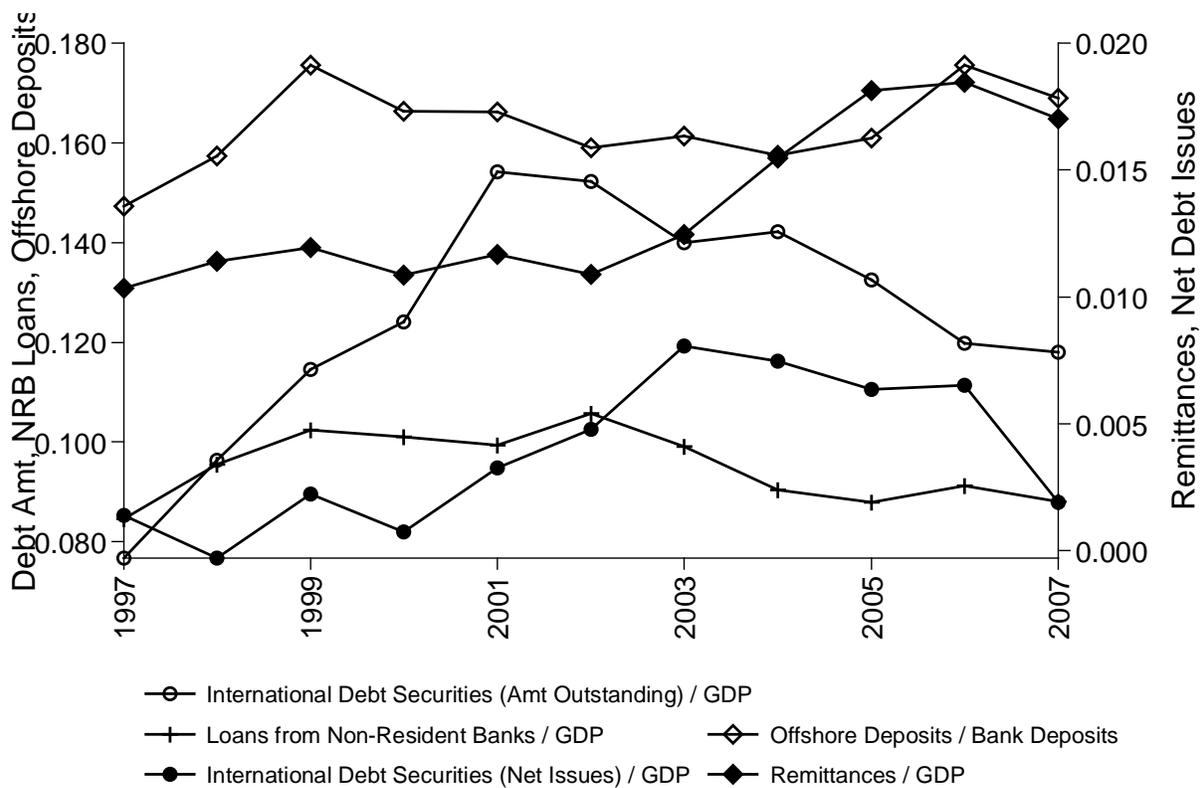


Figure 22: Financial Structure Size - Median Values by Income Group Over Time (1983-2007)

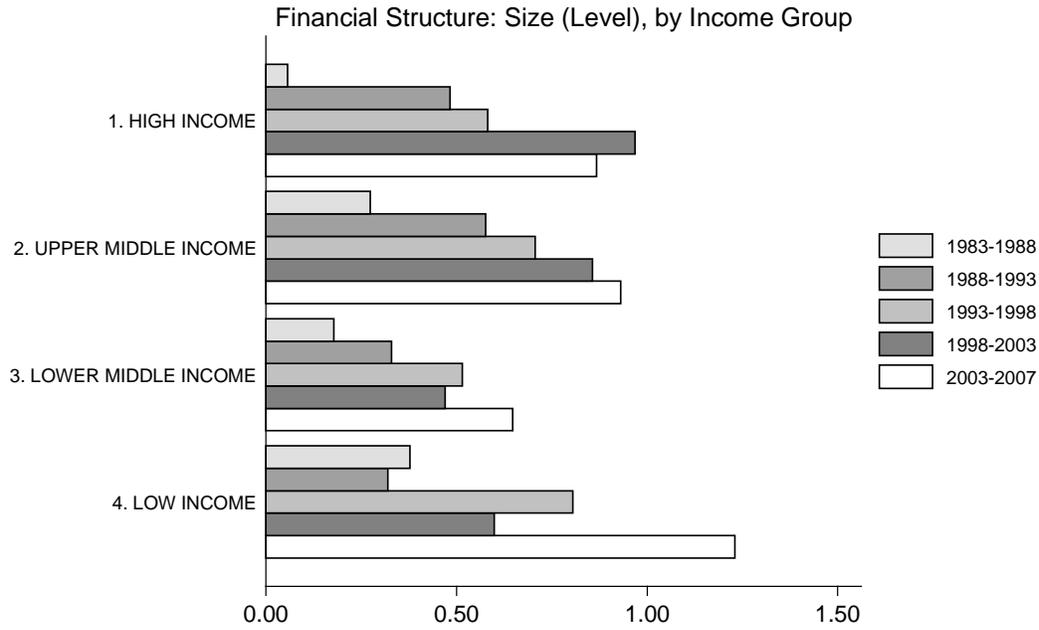


Figure 23: Financial Structure Activity - Median Values by Income Group Over Time (1983-2007)

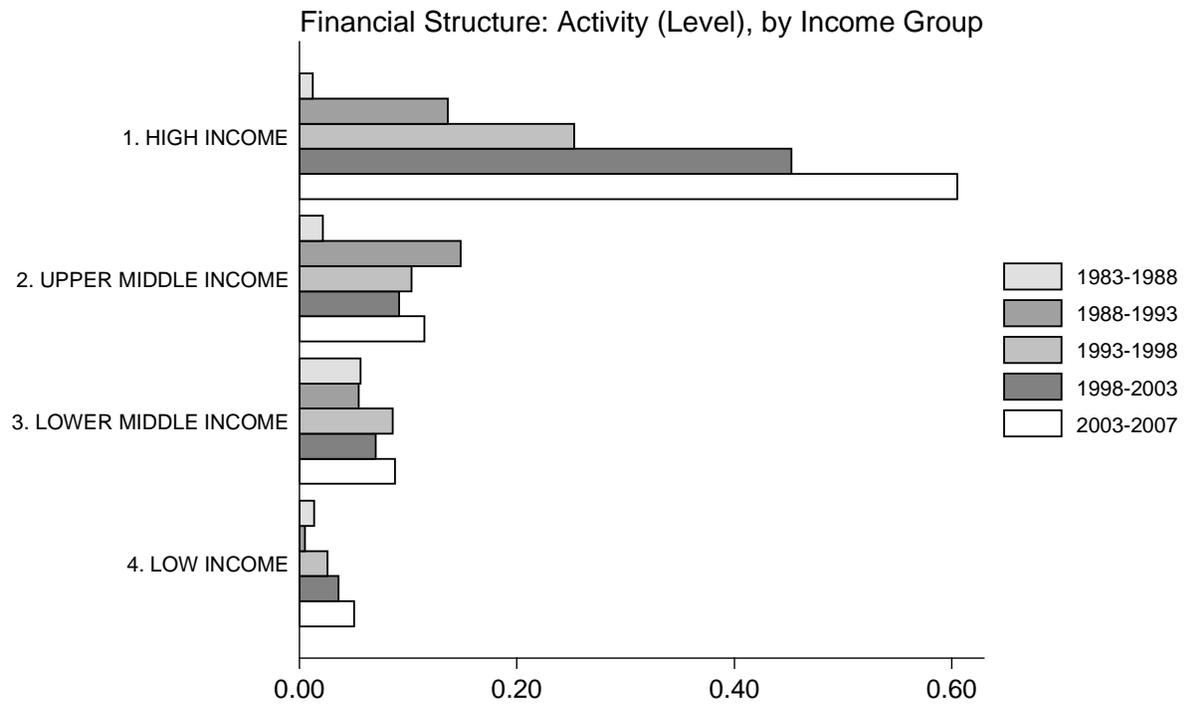


Figure 24: Financial Structure Size - Median Values by Region Over Time (1983-2007)

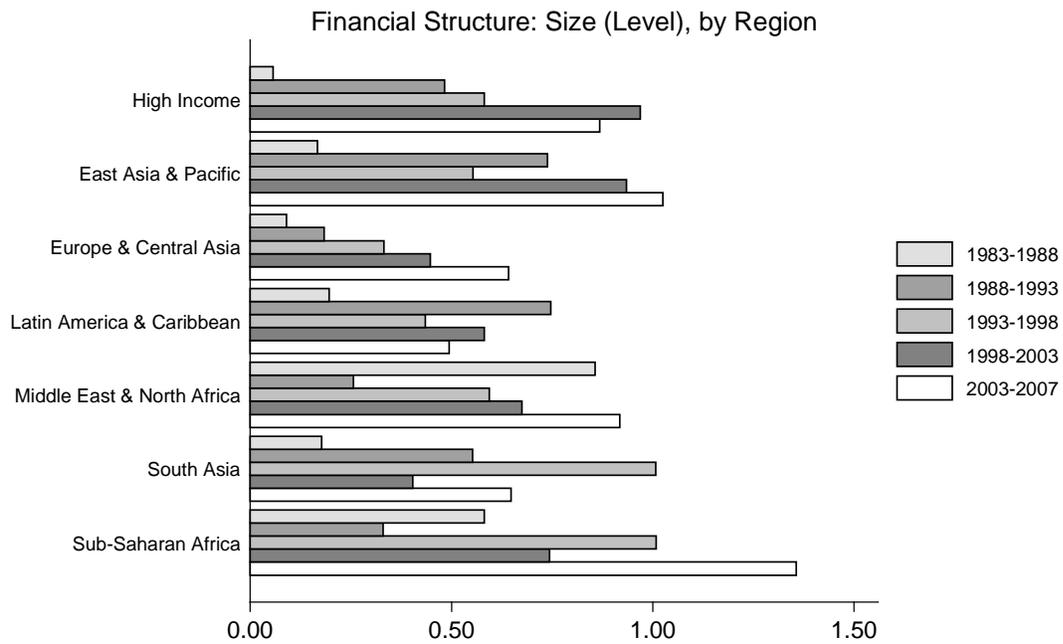


Figure 25: Financial Structure Activity - Median Values by Region Over Time (1983-2007)

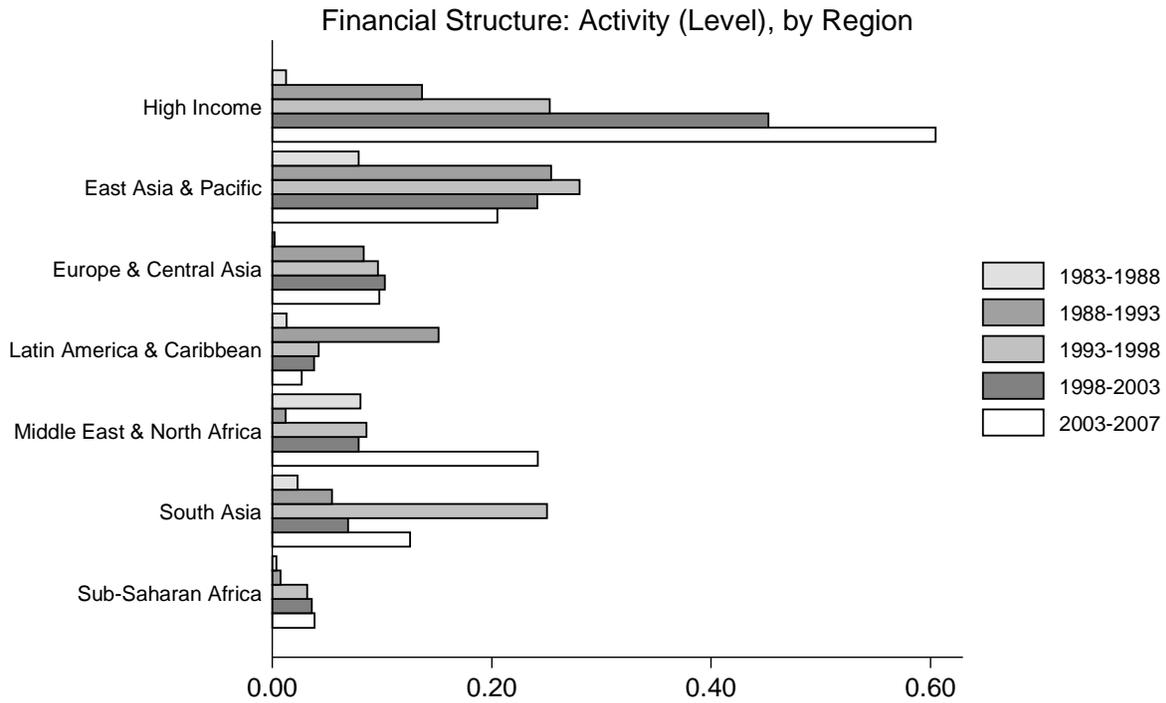


Figure 26: Stock Market Capitalization - Median Values by Income Group Over Time (1983-2007)

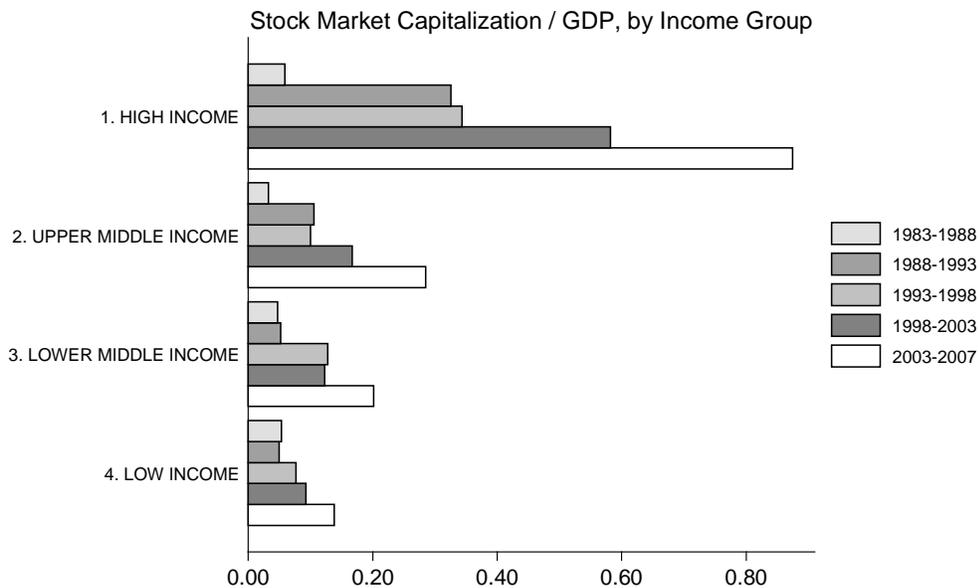


Figure 27: Stock Market Value Traded - Median Values by Income Group Over Time (1983-2007)

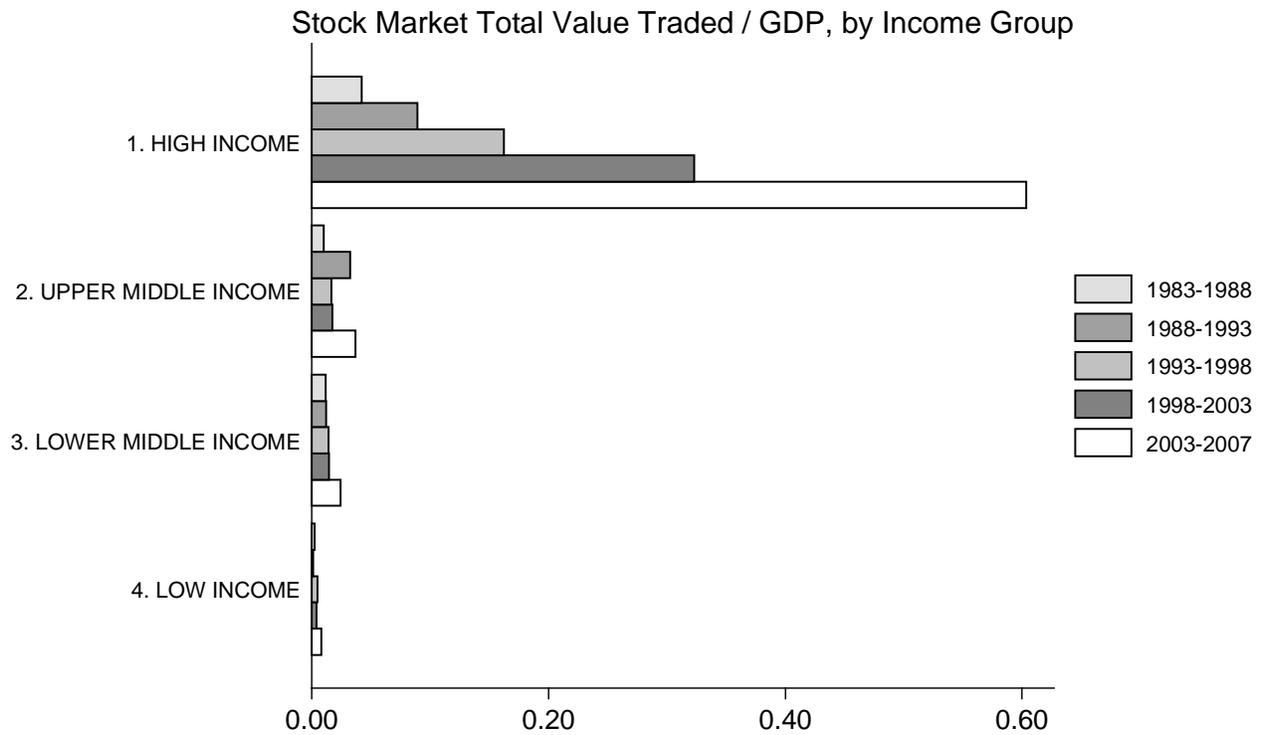


Figure 28: Private Credit by Deposit Money Banks - Median Values by Income Group Over Time (1983-2007)

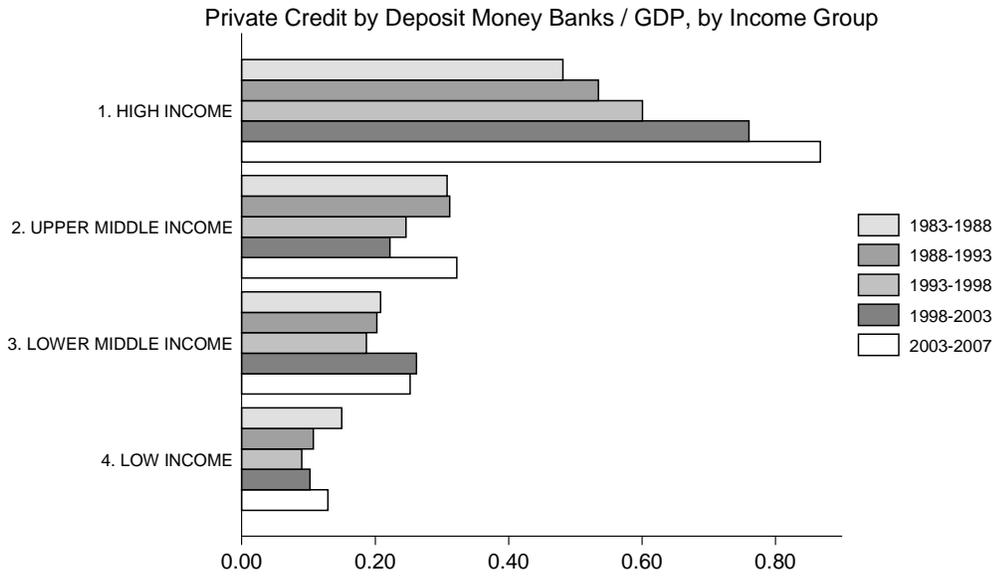


Figure 29: Stock Market Capitalization - Median Values by Region Over Time (1983-2007)

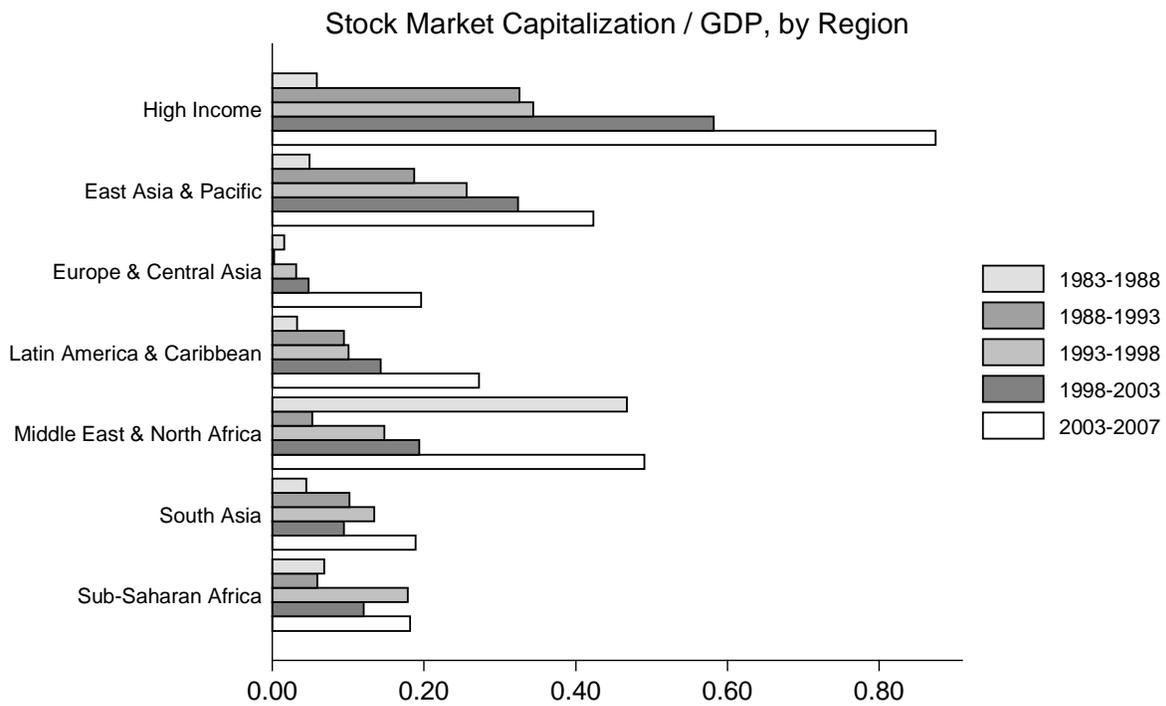


Figure 30: Stock Market Value Traded - Median Values by Region Over Time (1983-2007)

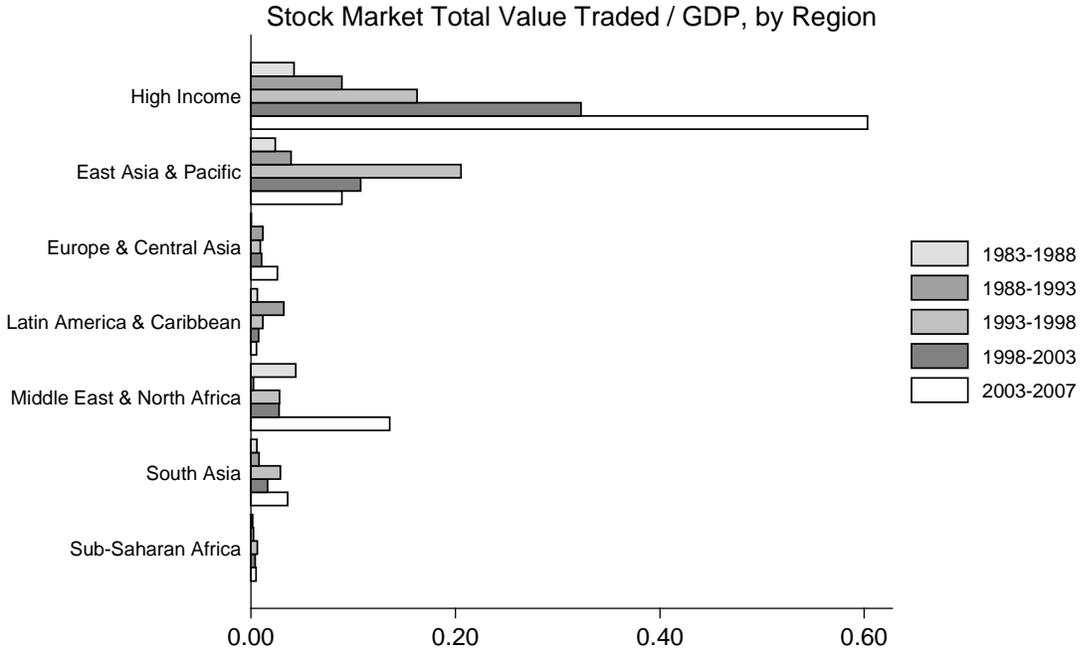


Figure 31: Private Credit by Deposit Money Banks - Median Values by Region Over Time (1983-2007)

