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Determinants of Financial Development across the Mediterranean

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Abstract

Casual observation shows that that the financial systems in the southern and eastern Mediterranean are unable (or unwilling) to divert the financial resources that are available to them as funding opportunities to private enterprises. Using a sample of both northern and southern Mediterranean countries for the years 1985 to 2009, this study empirically assesses the reasons underlying such conditions. The results show that strong legal institutions, good democratic governance and adequate implementation of financial reforms can have a substantial positive impact on financial development only when they are present collectively. Moreover, inflation appears to undermine banking development, but less so when the capital account is open. Government debt growth appears to weaken credit growth, which confirms that public debt 'crowds out' private debt. Lastly, capital inflows appear to primarily have an income effect, increasing income and thereby national savings, and thus increasing the availability of credit.

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1. Introduction

A well-developed financial system is instrumental in attaining sustainable and balanced growth. Such a system increases the availability of funding by mobilising idle savings, facilitating transactions and attracting foreign investments. Such markets can achieve improved allocation of financial resources and enhanced risk management, transparency and corporate governance practices. Moreover, developed financial systems can ease the availability of some credit to more opaque businesses, such as first-time or low-income (and low collateral) borrowers or small- and medium-sized enterprises (SMEs). In short, financial development can serve to improve not only the growth prospects but also the distribution of economic opportunities.

The Mediterranean is a particularly interesting region to study in light of the extent of variation in financial development both across countries and, perhaps more intriguingly, across different measures. As depicted in Figure 1.1, while private credit (panel a) is relatively scarce in some of the southern and eastern Mediterranean countries (SEMCs or MED-11),[1] namely in Algeria, Egypt and Turkey, the same is not true when the comparison is done on the basis of bank deposits (panel b). In Egypt, for example, banks provided private credit worth only 38% of GDP in 2009, which remains relatively small when compared with other countries and even among the SEMCs. Yet, the Egyptian banks have ample sources of funding, with bank deposits representing nearly 75% of GDP, surpassing France.

The ample availability of liquidity relative to the amount of credit supplied applies to most banking systems in the SEMCs, where the ratio of private loans to deposits is typically very low (Figure 1.2). Although the ratio is lower in most developing regions, the conditions for the SEMCs and the variance across the Mediterranean countries is noteworthy. Most spectacularly, the ratio of loans to deposits in Algeria and Egypt is less than a quarter and less than half, respectively – lower than all the regional averages, including that for sub-Saharan Africa.

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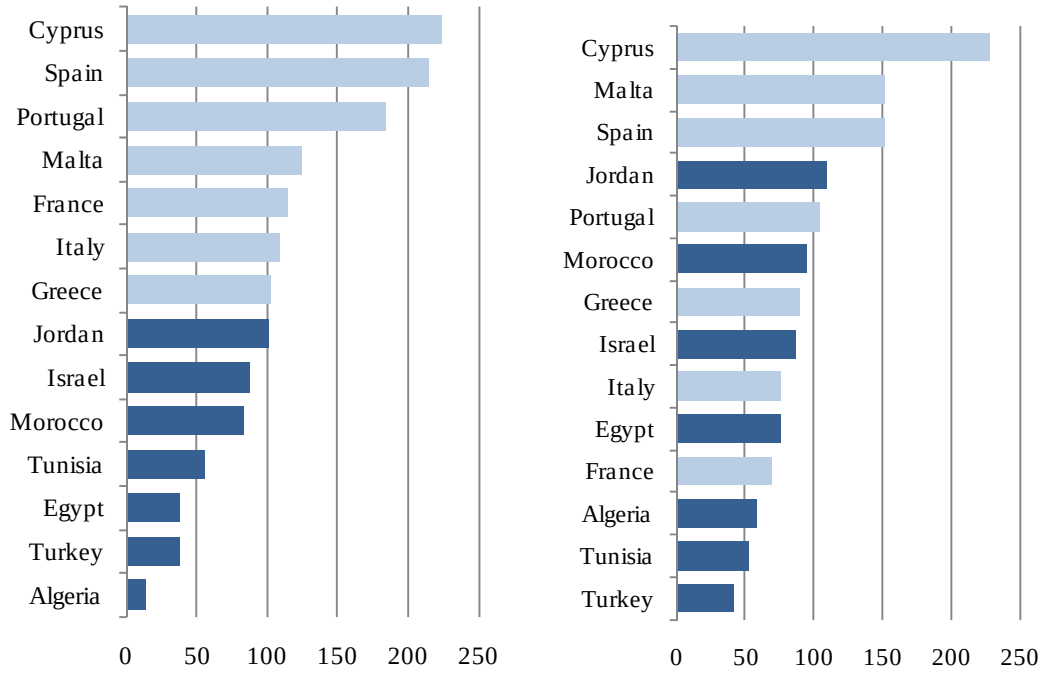
[1] For the purposes of this study and the MEDPRO project, the 11 southern and eastern Mediterranean countries are Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, the Palestinian Authority, Syria, Tunisia and Turkey. Due to data limitations, in many cases only a subset of these countries is covered in analytical discussions. In particular, data for Libya are missing in all cases and some indicators are missing for Lebanon, the Palestinian Authority and Syria.

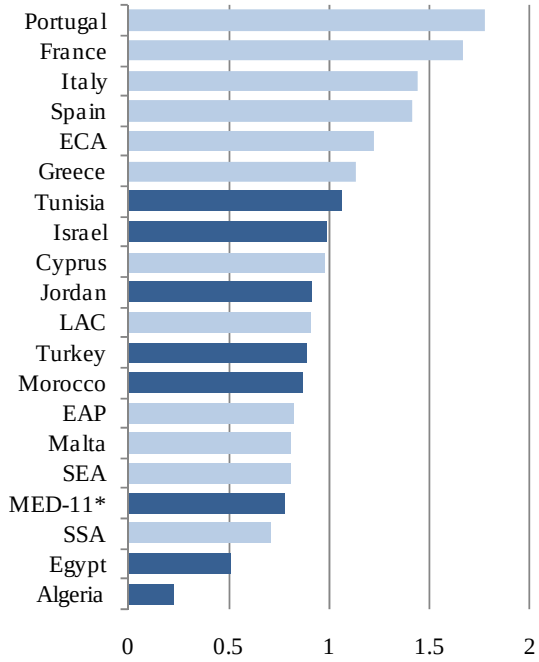
Figure 1.1. Banking sector development in the Mediterranean, 2009

Panel a. Credit to private sector (% of GDP) *Panel b. Deposits (% of GDP)*



Source: Beck and Demirgüç-Kunt (2009).

Figure 1.2. Ratio of private credit to deposits around the globe, 2009



* Among the 11 SEMCs, data on bank credit and deposits were unavailable for Lebanon, Libya, the Palestinian Authority or Syria.

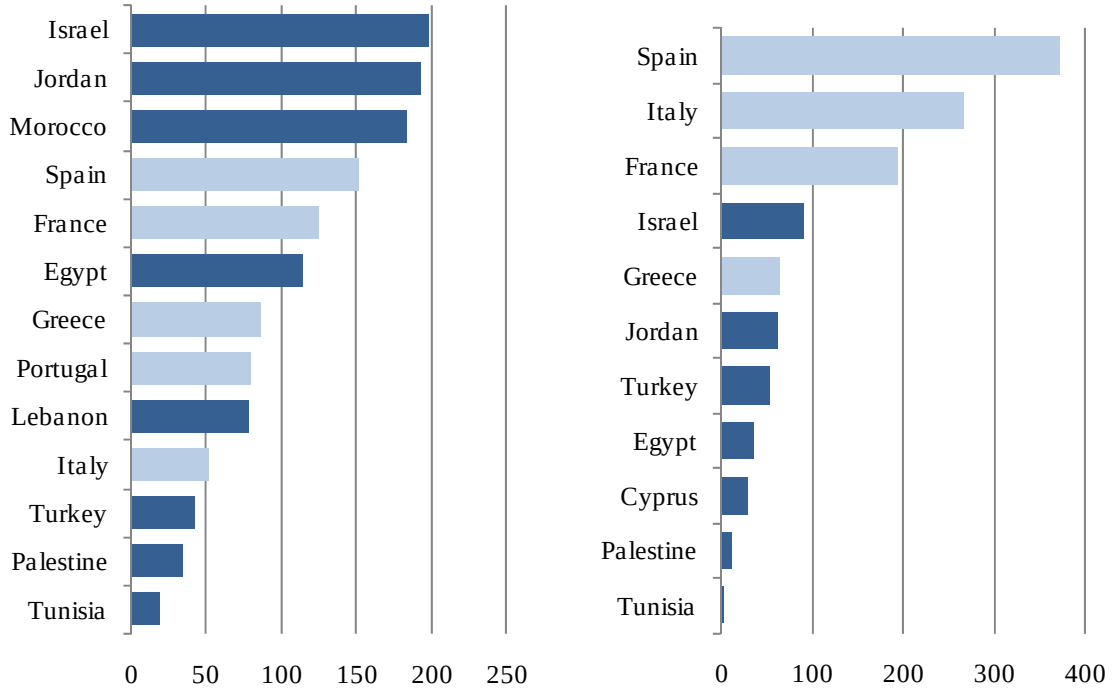
Notes: All figures on country groups are based on plain averages. ECA refers to Europe and Central Asia; LAC refers to Latin America and Caribbean; EAP refers to Eastern Asia and Pacific; SEA refers to Southeast Asia; SSA refers to Sub-Saharan Africa.

Source: Beck and Demirgüç-Kunt (2009).

A similar picture also emerges when considering stock market development. While the size of the market is big in some of the southern Mediterranean countries, the same is not the case when the amount of trading activity is considered. In particular, the stock market capitalisation of Israel, Jordan and Morocco exceeds any other Mediterranean country for which 2009 data are available (Figure 1.3, panel a). Still, the total value traded is much larger for the EU member states than for almost all of the southern Mediterranean countries, except Israel (panel b). Some discrepancies are present even within the SEMCs. For example, with a market capitalisation of around 114% of the country's GDP in 2009, Egypt's stock market could produce less trading activity than the Istanbul Stock Exchange, which had a capitalisation of merely 42% of GDP.

Figure 1.3. Stock market development in the Mediterranean, 2009

a) Market capitalisation (% of GDP) *b) Total value traded (% of GDP)*



Source: Beck and Demirgüç-Kunt (2009).

These observations imply that the financial systems in the southern Mediterranean are unable (or unwilling) to divert the financial resources available to them as funding opportunities to private enterprises. In an attempt to explain the potential reasons behind these shortcomings, this study provides an in-depth analysis of the determinants of financial development in the Mediterranean. The sample comprises the SEMCs and EU–MED countries,[2] covering the mid- to late 1980s to 2009.

The results show that one common factor (or a set of factors) can enhance financial development across different measures. Strong legal institutions, good democratic governance and adequate implementation of financial reforms – all at the same time – appear to have a substantial positive impact on financial development. Beyond this simple common point, the determinants of well-developed financial systems are divergent across different measures. For credit market development, there is good evidence that the growth of public debt tends to lower credit growth significantly and persistently, implying a clear confirmation of the 'crowding-out' hypothesis. External flows, in the form of official aid and portfolio investments, may also be beneficial for credit growth.

[2] The EU-MED countries sampled in the study are seven EU member states with a shore on the Mediterranean (except Slovenia), comprising Cyprus, France, Greece, Italy, Malta, Portugal and Spain.

For deposits, inflation has a negative impact on deposits; however, having an open capital account could offset these effects. These results show that, notwithstanding their effects on macroeconomic stability, the availability of currency-linked savings products could prevent losses in deposits when inflationary pressures are present. Once again, external official aid and portfolio investment inflows increase deposits, possibly through their impact on the incomes of households and firms.

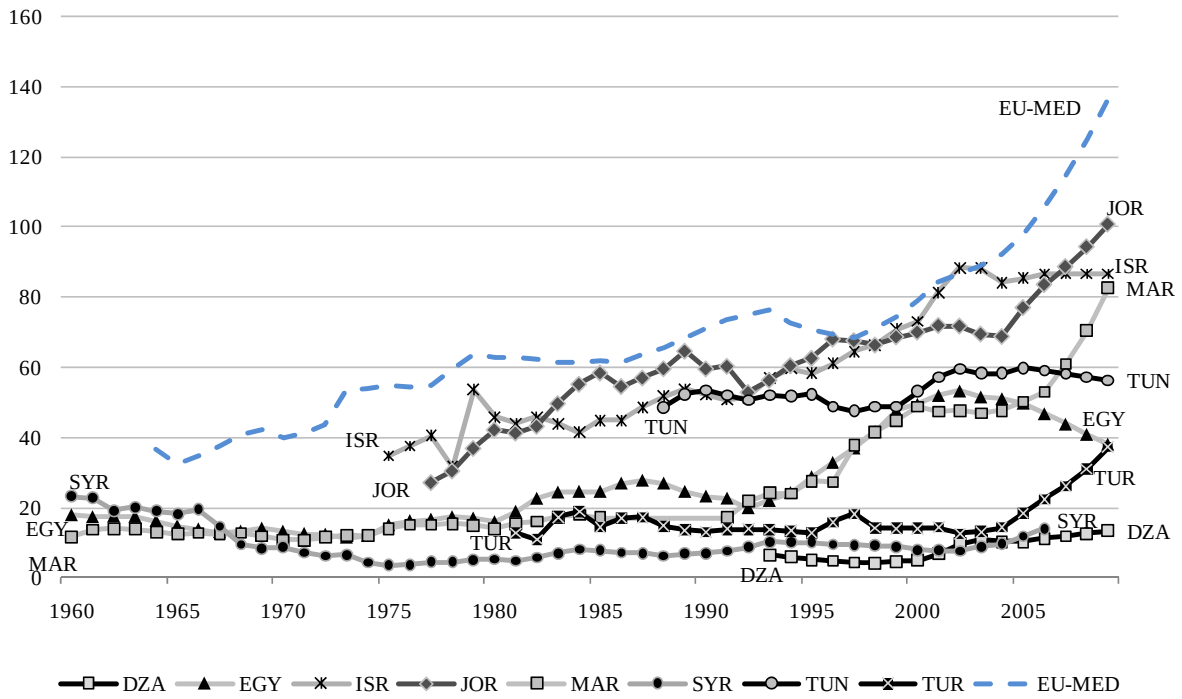
For the indicators of stock market development, the results are more mixed and limited. Beyond the positive impact of the interactive term on good institutions, democratic governance and financial reforms, stock market capitalisation appears to be weakly improved by official transfers, once again potentially an income effect. As for stock market value traded, the interactive term appears to have a more significant impact than on other measures.

2. Evolution of financial development and reforms

2.1. Banking development

To a large extent, the Mediterranean region has made substantial progress in financial development over the past few decades. Figure 2.1 confirms that credit to the private sector has grown substantially in most of the southern Mediterranean countries. Nevertheless, the share of credit in national income has remained consistently lower than the aggregate EU–MED figures in many SEMCs. The relative unavailability of credit is particularly noteworthy in Egypt, Turkey, Syria and Algeria.

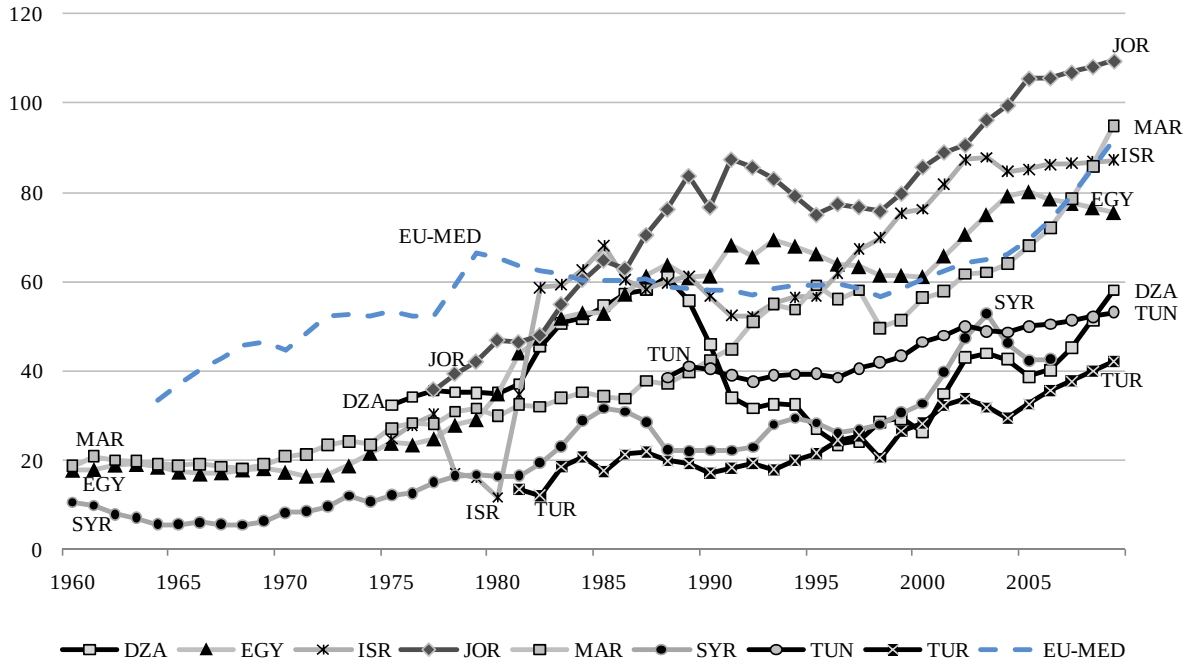
Figure 2.1. Bank credit to private sector, 1960–2009 (% of GDP),



Note: The pre-1993 data on Algeria (DZA) has been omitted due to the inclusion of loans to public enterprises.
Source: Beck and Demirgüç-Kunt (2009).

While credit may not always be available at the aggregate level in some SEMCs, banks appear to have no trouble in getting deposit funding in some of these countries. As depicted in Figure 2.2, in some of the SEMCs, including Egypt, Israel, Jordan and Morocco, the ratio of deposits to GDP is greater or comparable with the EU–MED countries.

Figure 2.2. Bank deposits, 1960–2009 (% of GDP)



Source: Beck and Demirgüç-Kunt (2009).

Historically, many reasons may explain these discrepancies. In Israel, the inflation rates remained exceptionally high in the late 1970s and early 1980s, with annual change in the consumer price index (CPI) climbing persistently from an already high 34% in 1977 to nearly 400% in the mid-1980s and finally settling down to about 20% in the late 1980s and early 1990s. The early inflationary period in Israel also overlaps with the introduction of dollar-linked deposit accounts (i.e. the so-called 'PATAM' accounts), seen as one of the main factors contributing to high inflationary expectations in the following years (Fischer, 1987; Yashiv, 1994). Over the years, as demand for domestic currency was replaced with demand for currency-indexed assets, inflation actually helped total bank deposits to pick up. Meanwhile, credit to private enterprises remained relatively dormant and even decreased slightly as a share of GDP during the same period.

Similarly, Turkey's persistent record with inflation throughout the 1980s and 1990s seems to have had a limited impact on bank deposits. When compared with Israel, Turkey's inflationary period lasted longer, with annual growth in CPI remaining above 50% between 1979 and 2001. As in Israel, however, the period overlapped with a gradual opening of the capital account and an increasing demand for (and availability of) currency-linked assets. The foreign currency deposits accounted for approximately half of the total deposits in Turkey during the 1990s, reaching a staggering 60% in the aftermath of the 2001 crisis (Bahmani-Oskooee and Domac, 2003). As the depositors shifted their money from the Lira-denominated accounts to currency-linked accounts to protect themselves, the total amount of bank liabilities changed little over this period.

In Algeria, the share of deposits was quite high prior to the 1990s and fell substantially afterwards. This could be largely attributable to monetary overhang, which is a characteristic of centrally planned economies. The liberalisation that took place in the late 1980s and 1990s was possibly the main factor that put an end to the excess liquidity in Algeria.[3] Yet, the rise of inflation in the early 1990s could also be an added reason for the decline in deposits.[4] Unlike Israel or Turkey, currency convertibility

[3] Algeria's banking sector was partly liberalised in 1990 with the entry into force of the Monetary and Credit Law (Law No. 90-10), which abolished the interest rate controls. Other parts of the economy were also liberalised over the late 1980s and early 1990s.

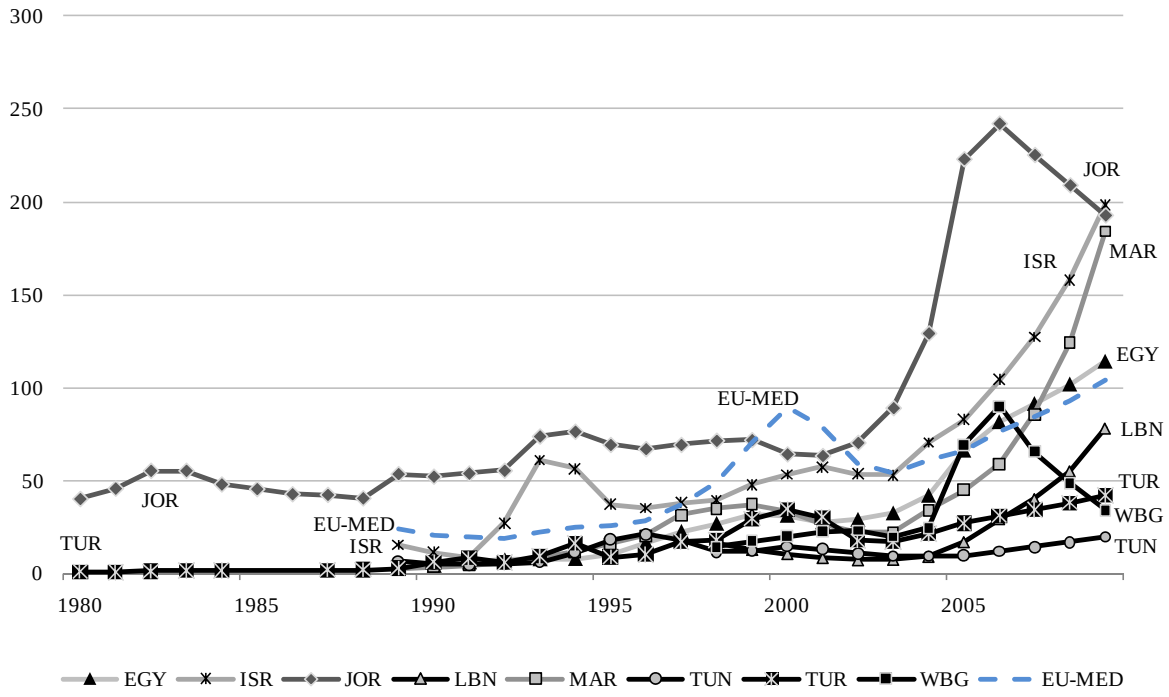
[4] The annual change in CPI grew from approximately 10% in 1989 to over 30% in 1992, only to stabilise at around 2 to 4% in late 1990s.

was by and large prohibited until the late 1990s in Algeria, which prevented banks from offering currency-indexed deposit accounts during the inflationary period.

2.2. Capital market development

Much like the banking sector, the SEMCs have made substantial improvements in developing their capital markets over the past decades. Figure 2.3 shows that by the late 2000s, Egypt, Israel, Jordan and Morocco achieved larger stock exchanges than the EU–MED countries as a whole, measured in terms of stock market capitalisations as a share of GDP. The next figure (Figure 2.4), however, shows that the activity in the SEMC stock markets was relatively limited. Only Israel, Jordan and Turkey's stock markets showed a level of activity comparable with the EU–MED countries.

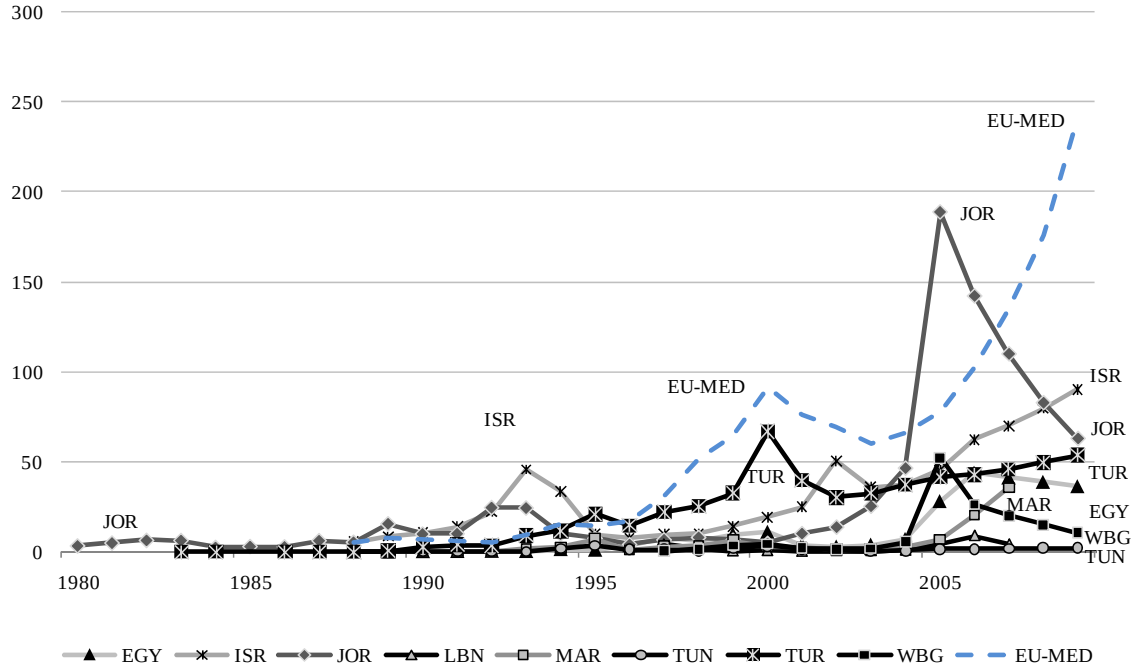
Figure 2.3. Stock market capitalisation, 1980–2009 (% of GDP)



Source: Beck and Demirgüç-Kunt (2009).

Several reasons can be put forward to explain these observations. In most of the region's stock markets, the trading activity takes place in a few shares. Development of the stock markets have been severely hindered by poverty and inadequate market infrastructure, in particular the absence of credible and strong legal institutions. Some countries have only recently implemented laws to introduce stock markets. For example, Algeria only introduced the legal framework for share trading in 1999 and has not developed much equity trading. In other countries, only a few countries are listed on the market. Public ownership of utility companies and other enterprises has deprived the market of an important source of new issues (Creane et al., 2004). In other cases, the capital markets are used only as the basis for public funding.

Figure 2.4. Stock market value traded, 1980–2009 (% of GDP)



Source: Beck and Demirgüç-Kunt (2009).

2.3. Financial reforms and evolution of institutions

Although other factors may be at play, the persistent growth of private credit in some of these countries overlaps with substantial policy changes in recent decades. Indeed, the Mediterranean region is one of the leading areas of the world where extensive financial reforms have taken place. This is clearly shown in an overview of the financial reform index, constructed by Abiad et al. (2008) for a large number of countries around the globe,[5] which provides evidence that the Mediterranean region, especially the EU–MED countries, have recorded the largest gains in financial reforms over the past three decades (Table 2.1). For most of the countries in the region, the reform momentum was the strongest between the mid-1980s and the mid-1990s (Figure 2.5).

Table 2.1. Evolution of financial reforms index, 1973–2005 (normalised scores)

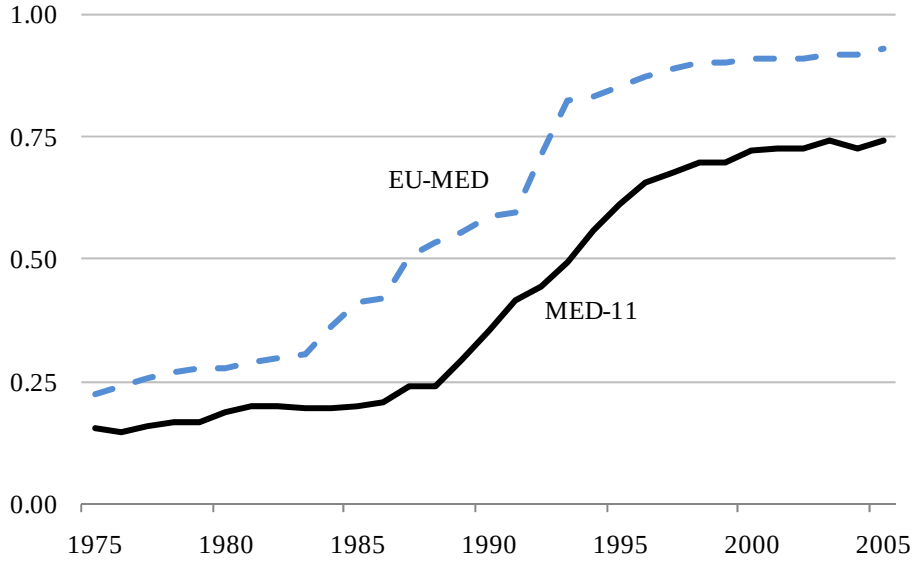
	1973	2005	Difference (1973 to 2005)
MED	0.18	0.82	0.64
EU-MED	*0.22*	*0.93*	*0.71*
SEMC	*0.15*	*0.74*	*0.59*
LAC	0.11	0.75	0.64
ADV	0.36	0.94	0.58
EMA	0.17	0.69	0.52
SSA	0.17	0.68	0.52

Note: MED refers to the Mediterranean countries covered in the study, i.e. the SEMCs and EU–MED; LAM refers to Latin America; ADV refers to Advanced countries; EMA refers to Emerging Asia; SSA refers to Sub-Saharan Africa.

Source: Abiad et al. (2008).

[5] The financial reform index is a normalised measure built by aggregating the extent of reforms in seven policy areas, comprising i) credit controls and ceilings; ii) interest rate controls; iii) entry barriers; iv) privatisation; v) capital markets; vi) banking regulation; and vii) international capital restrictions. For more details on the construction of the sub-indexes, see Abiad et al. (2008), Appendix I, pp. 14-19.

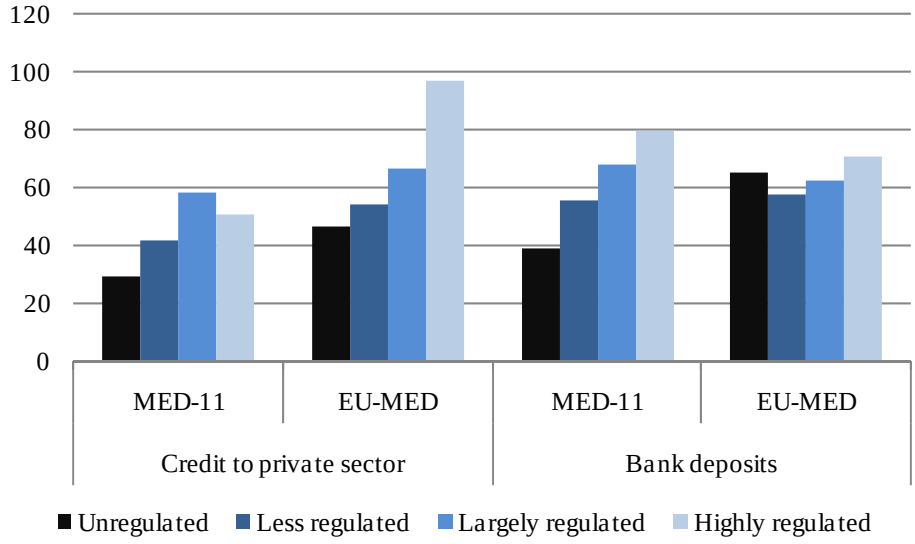
Figure 2.5. Evolution of financial reforms index in the Mediterranean, normalised scores



Source: Abiad et al. (2008).

The reforms appear to have had a positive impact on financial development in the region. For example, private credit and bank deposits are substantially higher in more regulated markets, especially among the SEMCs (Figure 2.6).[6] The same also appears to be the case for stock markets. Although the variation in data is limited, both stock market capitalisation and stock market total value traded seems to be greater in more liberalised markets (Figure 2.7).

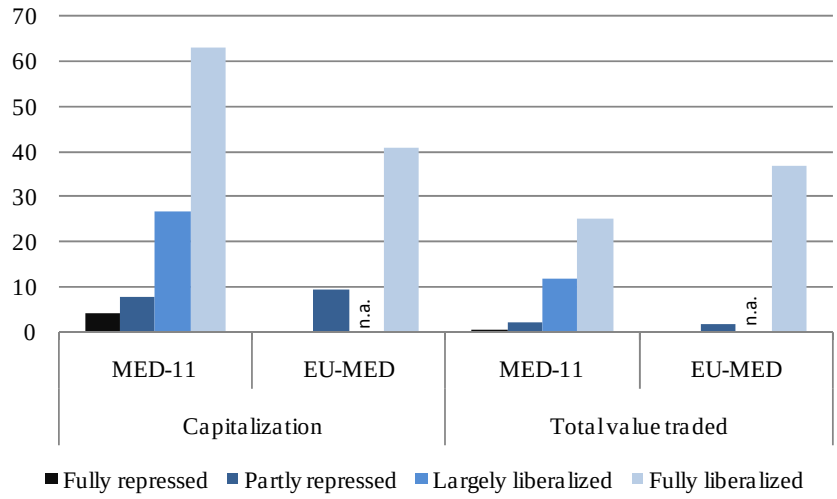
Figure 2.6. Banking sector development and banking reforms (% of GDP)



Sources: Abiad et al. (2008); Beck et al. (2009).

[6] The banking regulatory index, which is from Abiad et al. (2008), is constructed by aggregating indicators on whether i) the country has adopted Basel I standards; ii) the regulatory authority is independent; iii) on- and off-site examinations are effective; and iv) the regulations and supervision cover all banks without exception.

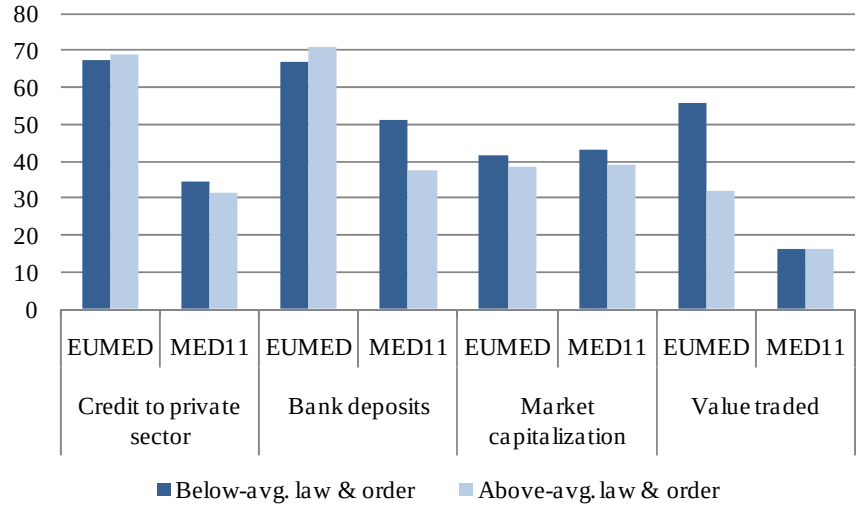
Figure 2.7. Stock market development and capital market reforms (% of GDP)



Sources: Abiad et al. (2008); Beck et al. (2009).

It is important to highlight, however, that financial reforms are not the only factors that could have had led to financial development in the region. In particular, most of the 11 SEMCs have made some improvement in putting in place strong legal institutions over the past years. However, as the events leading to the Arab Spring have clearly shown, such developments mean little unless complementary progress is also achieved in democratic governance, limiting the power of the executive branch and leading to an even distribution of power. Indeed, none of financial development indicators seem to respond to the extent to which law and order is enforced in the 11 SEMCs or EU–MED countries (Figure 2.8).[7]

Figure 2.8. Financial development and law and order (% of GDP)



Source: PRS Group; Beck et al. (2009).

[7] The Law and Order index, provided by PRS Group, measures the strength and impartiality of the legal system as well as the popular observance of the law. For example, a country suffers a low rating if the law is routinely ignored without effective sanctions.

3. Literature review

The economics literature has identified a number of determinants that contribute to a more developed financial system. Among these determinants, the institutional and regulatory preconditions are perhaps the most studied factors underlying a well-functioning financial system. Starting with the seminal contribution of La Porta et al. (1997), many studies have found that financial development is stronger when institutions that protect and match the needs of investors are present.[8,9] The empirical evidence shows that reinforcing the rights of creditors and contract enforcement tend to deepen financial markets (Levine et al., 2000; Demirgüç-Kunt et al., 2004; Law and Azman-Saini, 2008). The availability of information on borrowers also improves the availability of credit and enhances the efficiency of financial institutions, especially in less developed systems (Barth et al., 2004; Demirgüç-Kunt et al., 2004; Detragiache et al., 2005; Djankov et al., 2007).[10] Lastly, institutional quality, in particular the extent to which institutional checks and balances exist, are also found to be crucial in determining the success of financial reforms and mitigating the likelihood of crises (Barth et al., 2004; Acemoglu and Johnson, 2005; Demetriades and Andrianova, 2005; Tressel and Detragiache, 2008).

While institutions are at the top of the list of the most often cited determinants of financial development, an emerging strand of literature argues that political pressure by interest groups may also have an impact, possibly by shaping the institutions and regulatory framework. According to Pagano and Volpin (2001), countries with closed and static political regimes tend to resist the availability of external financing, since the ensuing competition would threaten the entrenched powers of the political elite.[11] Rajan and Zingales (2003) illustrate that these pressures may weaken as economies open up to international trade and finance, resulting in the subsequent development of financial systems. Using a firm-level dataset of a large number of Pakistani firms, Khwaja and Mian (2005) confirm that despite higher default rates, politically-connected firms receive more funds.

Political instability and civil unrest may also curtail financial development. Mauro (1995) uses a cross-country sample to show that corruption has a significant and robust impact in lowering investment. Detragiache et al. (2005) find that both political instability and corruption may have a detrimental effect on financial development among their sample of low-income countries. Political stability was also found by Aggarwal and Goodell (2009) to be an important factor for a preference for market financing – as opposed to bank-based financing. More recently, Roe and Siegel (2013) showed that political stability has a robust positive impact on financial development; when inequality – the main driver of political instability – is rampant, investor-protection institutions are less effective.

Public ownership in the banking sector can also have an impact on financial development. On the one hand, Gerschenkron (1962) suggests that the government can help kick-start lending in under-

[8] See Demirgüç-Kunt and Levine (2008) for an extensive review of the literature.

[9] A related stream of the literature highlights that, as important as they may be, the current institutions are determined by less adaptable forces, such as natural and geographical endowments, which may shape the way that the initial institutions were founded (Acemoglu et al., 2001; Acemoglu et al., 2002). Going along with such an explanation, Beck et al. (2003) find that environments less hospitable for European settlers have produced more "extractive" institutions, as opposed to those that that would promote self-sufficiency and the wider availability of financial resources.

[10] Certain regulatory arrangements could also be detrimental to the development and the performance of financial markets. Most notably, Barth et al. (1999; 2004) provide evidence showing that regulations that restrict the activities of banks could be more prone to banking crises and may hinder market deepening. Similarly, Cull et al. (2005) find that excessively generous deposit guarantee systems tend to undermine financial development and stability, especially in countries with inadequately developed legal and regulatory systems.

[11] Several channels have been identified through which the interest groups may operate. Perotti and Volpin (2004) provide evidence that greater political accountability is associated with higher entry in sectors that are more dependent on external financing. Similarly, Perotti and von Thadden (2006) show that the political actors in countries weakened by a high rate of inflation tend to support more "corporatist" financial systems, i.e. with limited minority shareholder rights and less developed capital markets. Based on a similar reasoning, Perotti and Schwienbacher (2009) provide evidence that countries that have experienced wealth distribution shocks were less likely to develop private pension schemes.

developed systems by fostering the development of necessary institutions, such as laws, contracts and courts, and by subsidising private banks or taking part in the risk through credit guarantees. On the other hand, Shleifer and Vishny (1994) and Shleifer (1998) argue that governments do not have the necessary incentives or the resources to ensure efficient investments, often supporting politically attractive projects. Several studies confirm the latter view, suggesting that state-owned banks tend to have an inefficient allocation of credit, creating significant systemic risks and generating potential for political capture and corruption (La Porta et al., 2002; Barth et al., 2004). In particular, Dinc (2005) provides convincing evidence on the use of public banks as a political tool by showing that credit to the private sector tends to increase during election years. There is some indication, however, that the results depend on the sample of countries analysed. In particular, Detragiache et al. (2005) show that state-owned banks tend to have higher efficiencies and are better at mobilising deposits in developing countries.

Turning to macroeconomic factors, a well-functioning financial system requires an environment of economic stability and certainty. In theory, higher inflation reduces real returns and in doing so reduces likely lenders and increases likely borrowers, effectively exacerbating the market imperfections (Huybens and Smith, 1999). Indeed, countries with endemic inflation problems have experienced significantly lower levels of banking and stock market development, especially at low-to-moderate levels of inflation (Boyd et al., 2001). Many other studies have substantiated these results by including inflation as an explanatory variable. Demirgüç-Kunt and Detragiache (2005) have also shown that a high inflation environment is more prone to banking crises.

Fiscal policy is also of paramount importance for the development of the financial sector. Aside from the potential for inflation, heavily indebted governments may engage in financial repression to use the financial sector as an 'easy' source of funding (Bencivenga and Smith, 1992; Roubini and Sala-i-Martin, 1992; Roubini and Sala-i-Martin, 1995). There is considerable evidence that excessive public debt may crowd-out private investment, especially in emerging economies with less developed financial systems (Caballero and Krishnamurthy, 2004; Christensen, 2005). In addition to financial crowding-out, the safe returns from a large public debt may make banks become too complacent and undermine their efficiencies. Hauner (2008; 2009) confirms the so-called "lazy-bank" view, which argues that financial systems become less efficient in countries that run substantial fiscal deficits.

Financial development can also be determined by a country's openness to financial inflows.[12] A downside of increased foreign capital flows is the increased risk of capital and current account crises. Although Eichengreen and Hausmann (1999) find some evidence to the contrary, Domac and Martinez Peria (2003) show that the likelihood of a banking crisis in developing countries is greater with flexible exchange regimes. Financial development is a key factor in ensuring that external shocks do not reverberate within the domestic economy by triggering a financial crisis. Using a sample of 11 MENA countries, Ben Naceur et al. (2008) show that policies that prioritise the efficient allocation of domestic resources, such as achieving a well-developed stock market, could be beneficial before liberalising the financial systems. In explaining why capital account liberalisation does not seem to have a clear growth-augmenting role in most developing countries, Prasad and Rajan (2008) suggest that the subpar development of institutions may be to blame. Similarly, Chinn and Ito (2006) show that financial opening can only be beneficial when appropriate legal systems and institutions are in place.

Perhaps a more important flow into developing countries is the remittances and official aid from other countries. Although remittances represent a significant portion of the capital inflows in many developing countries, especially within the MENA region,[13] their impact on financial development has been under-explored.[14] In theory, to the extent that they are stored in deposit accounts, remittances

[12] Most developing countries have inadequate domestic savings, making foreign funding an important source of growth. Research has indicated that well-developed financial systems are more effective in turning external capital flows into growth-generating activity (Bailliu, 2000; Hermes and Lensink, 2003).

[13] Remittances make up a very large portion of the economies of some of the labour-supplying countries. They accounted for a quarter of the GDP of Jordan and Lebanon (23% and 24%, respectively) and approximately 9% of the region's total GDP in 2007, according to World Bank (2008).

[14] In turn, there is a rich and growing literature on the impact of remittances on growth, poverty, human capital

may expand access to finance and provide unbanked recipients information about other banking products. Billmeier and Massa (2009) show that remittances contribute significantly to stock market development, especially in countries without a sizeable natural-resource endowment. Aggarwal et al. (2011) provide further support, providing strong evidence that remittances improve bank deposits and, to a slightly lesser extent, credit to the private sector, after accounting for a variety of sources for endogeneity and reverse-causality.

Lastly, trade flows can also have an impact on financial development. As noted above in the discussion on political economy, several studies have given support to the idea that an open economy may weaken the incentives and the political power of interest groups to resist financial deepening (Rajan and Zingales, 2003; Braun and Raddatz, 2008). Alternatively, increasing exporting opportunities may serve to boost the demand for external funding. The present evidence shows that such a relation is particularly strong in countries with predominantly high-tech manufacturing activities (Do and Levchenko, 2004; Do and Levchenko, 2007). At the same time, the opposite seems to hold for the less developed economies, where industries that are dependent on external financing are less predominant (Kim et al., 2011).

4. Econometric analysis of the determinants of financial development

4.1. Empirical specification

This study examines the impact of a variety of macroeconomic, democratic, legal and other institutional variables on financial development (FD) in the Mediterranean countries. The econometric model, which closely follows the treatments of Chinn and Ito (2006) and Hauner (2009), is specified as follows:

$$\frac{FD_{i,t}}{FD_{i,t-s}} - 1 = \alpha_0 + \gamma FD_{i,t-s} + \beta' X_{i,t-s} + \varepsilon_{i,t}\,, \qquad (1)$$

where X is a vector of control variables and s is the number of lag years. To avoid problems of endogeneity and remove the impact of short-term cyclicality, the model is specified as a growth rate over level regressions with non-overlapping periods, each comprising of $s+1$ years. Equation (1) then identifies the growth of the level of financial development as a function of the initial level of financial development and other time-variant explanatory variables. The specification uses five-year non-overlapping periods for bank-related FD variables while three-year non-overlapping periods are used for stock market indicators due to the unavailability of time series data for most countries in the sample.

The estimations are based on random-effect panel regressions, using alternately time dummies. Hausman tests on the orthogonality of the fixed error terms with the covariates were also run to ensure the appropriateness of the random-effects specification (as opposed to a fixed-effect specification).

4.2. Data

The measures of financial development are extracted from the dataset of Beck et al. (2009). For banking development measures, the dataset includes most of the SEMCs (with the exceptions being Lebanon, Libya and the Palestinian Authority), as well as seven EU–MED countries for the years 1985 to 2009. For the measures on capital market development, the dataset covers all the EU–MED

development and investment (Cox-Edwards and Ureta, 2003; Adams and Page, 2005; Acosta et al., 2007; Woodruff and Zenteno, 2007; Freund and Spatafora, 2008; Mundaca, 2009). For the MENA region, Amoroso et al. (2004) highlight the need for policies that route the remittance flows to aid local development, recommending strategic partnerships between the banking systems in both receiving and sending countries. Giuliano and Ruiz-Arranz (2009) find that remittances serve as a good substitute for financing investments in underdeveloped financial systems, but stop short of assessing its impact on banking and stock market development.

countries and the SEMCs (except Algeria and Syria) for the years 1989 to 2009. Table 4.1 provides an overview of the variables used in the study.

Table 4.1. Descriptive statistics

Variable	Source	N	Mean	S.Dev.	Min	Max
Credit to private sector (% GDP)	Beck et al. (2009)	633	51.73	36.58	3.57	224.20
Bank deposits (% GDP)	Beck et al. (2009)	655	57.57	32.21	5.56	228.53
Stock market cap. (% GDP)	Beck et al. (2009)	327	40.20	39.80	0.29	242.02
Stock market turnover (% GDP)	Beck et al. (2009)	330	26.12	46.10	0.00	372.27
Log real GDP per capita ($)	WDI	743	8.25	1.10	6.07	10.07
Total trade (% GDP)	WDI	866	54.42	39.48	0.00	194.76
Financial openness index	Chinn-Ito (2008)	640	-0.18	1.54	-1.84	2.48
Inflation (% growth in deflator)	WDI	726	11.56	24.05	-9.42	390.68
Growth of government debt (%)	Jaimovich and Panizza (2010)	430	3.03	12.35	-72.87	141.38
Legal & democratic quality index	PRS	415	24.98	13.49	1.11	54.76
Financial reform index	Abiad et al. (2008)	396	10.01	6.33	0.00	21.00
Net FDI (% GDP)	IFS	675	1.33	3.37	-10.09	28.96
Net portfolio investments (% GDP)	IFS	672	-0.21	5.62	-73.55	18.88
Official aid & grants (% GDP)	IFS	557	1.35	2.94	-3.26	20.20
Remittances (% GDP)	IFS	557	2.76	6.60	-52.51	29.92
Other net investments (% GDP)	IFS	641	2.25	7.04	-39.85	89.22

4.2.1. Measures of financial development

Six measures of financial development are used in this study. The amount of *bank credit to the private sector* (as a % of GDP) represents the general level of development in the banking sector. The share of *bank deposits* (as a % of GDP) provides the extent of access and deposit mobilisation the financial system offers. *Technical growth rate* (TGR) is measured as the average distance between national frontiers and the meta-frontier. *Meta-efficiency* is the distance of a bank from the meta-frontier, which is defined by the product of country cost efficiency and TGR. *Stock market capitalisation* (as a % of GDP) is included to provide an estimate of the size of the equity market while *stock market total value traded* (as a % of GDP) is used as a measure of the extent of activities in the domestic equity markets.

4.2.2. Independent variables

A number of explanatory variables were used as determinants of financial development. A *lagged financial development* variable was included in each regression. *GDP per capita* (in constant US dollars) was included to control for wealth effects in our regressions. Several studies highlight that per-capita income could serve as a good proxy for the general development and sophistication of institutions (La Porta et al., 1997; La Porta et al., 1998; Beck et al., 2003; Djankov et al., 2007). *Inflation*, measured as the annual growth of the GDP deflator, is included because inflation is found to be an important determinant of banking sector development and equity market activity (Boyd et al., 2001).

As noted in the discussion above on the evolution of banking development measures, the availability of currency-linked financial products could sweep and possibly reverse some of these negative effects of inflation. To control for the potential offsetting impact of a liberalised economy, an index of *financial openness* as well as an *interactive term* between inflation and financial openness, were introduced. The financial openness index, developed by Chinn and Ito (2002; 2008), measures the extent of capital controls based on information from the IMF's *Annual Report on Exchange Arrangements and Exchange Restrictions.*

As noted by a number of empirical contributions, fiscal balances could also be an important factor in financial development. The heavy presence of government in the domestic debt markets could crowd-out private investment and may hinder the development of the financial sector (Caballero and Krishnamurthy, 2004; Christensen, 2005; Hauner, 2009). The *growth in government debt* (as a share of GDP) was used to assess the impact of fiscal pressures on financial development.[15] The data come from a database constructed by Jaimovich and Panizza (2010), which gathers information on central government debt from a number of alternative sources, including most notably the IMF's International Financial Statistics (IFS), the World Bank's World Development Indicators (WDI), official websites and publications.

Most studies on financial development, as already reviewed above, find that legal institutions and democratic governance are important factors that improve the development of financial systems. To assess both aspects together, a composite index on *legal quality and democratic accountability* was constructed, using four indicators from the International Country Risk Guide (ICRG), published by the PRS Group. First, an index for the quality of legal institutions was built, equalling the first principal components of bureaucratic quality, control of corruption, and law and order.[16] The resulting index was then multiplied by the ICRG index on democratic accountability. The multiplication implies that the resulting index treats both legal quality and democratic accountability as complements.

Supervisory reform index, based on Abiad et al. (2008), provides a measure of the extent to which the banking sector is regulated. The index measures whether i) the country has adopted risk-based capital measures as foreseen under the Basel I capital accord; ii) the supervisory agency is independent from executives' influence; iii) there are exemptions provided to specific institutions (i.e. public banks); and iv) the on- and off-site examinations are adequately and effectively conducted. A greater value implies a more regulated market. Since the capital market could be impacted by a broader set of reform initiatives and because of a lack of variation in the capital market index (also based on Abiad et al., 2008), for the stock market development variables, the broader *financial reform index*, as discussed above, was used.

An interactive term on the last two variables was also included to control for the potential for complementarities.

Lastly, capital flow variables, controlling for net foreign direct investment (FDI), net portfolio investment, official aid and grants, remittances and other net investment, were included one by one. All of these were obtained from the most recent version of the IMF's International Financial Statistics database.

5. Results

The results for the financial development variables are reported in Tables 5.1 to 5.5. In each table, the first six columns provide the results with period dummies, while the latter six provide the results without period dummies. Following the base regressions in columns I and VII, capital inflow variables are added sequentially. Hausman specification tests confirm the validity of the random-effect specifications in most of the cases.

[15] More specifically, Jaimovich and Panizza's (2010) database was used to estimate the amount of new public debt (as a % of GDP) as a proxy for added fiscal pressures each year.

[16] See http://www.prsgroup.com/ICRG_Methodology.aspx for more on methodology on the construction of these indexes and others.

Table 5.1. Determinants of bank credit to the private sector

	I	II	III	IV	V	VI	VII	VIII	XI	X	XI	XII
Lag of dependent variable	-0.100*	-0.103*	-0.098*	-0.080	-0.101*	-0.118**	-0.097**	-0.096**	-0.092**	-0.089**	-0.094**	-0.110**
	(0.052)	(0.053)	(0.051)	(0.051)	(0.053)	(0.053)	(0.046)	(0.042)	(0.041)	(0.042)	(0.042)	(0.044)
Log GDP per capita ($)	0.284	0.075	-0.035	-0.221	0.125	0.197	0.755	0.531	0.253	0.212	0.123	0.429
	(1.333)	(1.433)	(1.319)	(1.301)	(1.639)	(1.325)	(1.446)	(1.208)	(1.145)	(1.176)	(1.421)	(1.161)
Trade openness (total trade/GDP)	0.015	0.018	0.020	-0.059	0.020	0.019	0.036	0.019	0.024	-0.020	0.031	0.023
	(0.033)	(0.034)	(0.032)	(0.047)	(0.043)	(0.033)	(0.042)	(0.033)	(0.031)	(0.045)	(0.040)	(0.032)
Financial openness	-0.975	-0.838	-0.783	-1.277	-0.906	-0.669	-1.772*	-1.113	-0.938	-1.249	-0.932	-0.869
	(1.013)	(1.073)	(0.999)	(0.982)	(1.103)	(1.035)	(0.955)	(0.957)	(0.910)	(0.924)	(0.996)	(0.953)
Inflation (%)	-0.189	-0.186	-0.171	-0.254*	-0.189	-0.169	-0.275**	-0.243*	-0.224*	-0.296**	-0.235*	-0.234*
	(0.140)	(0.142)	(0.138)	(0.138)	(0.142)	(0.140)	(0.126)	(0.132)	(0.128)	(0.136)	(0.133)	(0.131)
Interaction (Infl. X Fin. open.)	0.260	0.252	0.208	0.373	0.258	0.181	0.421	0.357	0.297	0.445	0.332	0.315
	(0.362)	(0.366)	(0.356)	(0.351)	(0.367)	(0.365)	(0.337)	(0.346)	(0.337)	(0.347)	(0.349)	(0.344)
Growth in public debt (% GDP)	-0.334***	-0.335***	-0.336***	-0.347***	-0.336***	-0.350***	-0.442***	-0.400***	-0.404***	-0.430***	-0.398***	-0.410***
	(0.126)	(0.127)	(0.123)	(0.121)	(0.127)	(0.125)	(0.116)	(0.119)	(0.115)	(0.119)	(0.118)	(0.118)
Legal & democratic quality	-0.194	-0.059	0.019	-0.198	-0.150	-0.191	-1.004	-0.801	-0.660	-0.897	-0.683	-0.746
	(1.121)	(1.177)	(1.106)	(1.076)	(1.165)	(1.113)	(0.837)	(0.853)	(0.826)	(0.837)	(0.878)	(0.840)
Supervisory reform	-1.263	-1.324	-1.840	-2.164	-1.305	-1.033	0.300	-0.038	-0.512	-0.093	-0.230	0.015
	(2.015)	(2.041)	(2.004)	(1.980)	(2.055)	(2.009)	(1.683)	(1.808)	(1.773)	(1.775)	(1.845)	(1.787)
Interaction (Legal/dem. x Reform)	0.106**	0.103**	0.105**	0.122***	0.106**	0.098**	0.121**	0.102**	0.100**	0.111**	0.100**	0.097**
	(0.049)	(0.050)	(0.048)	(0.047)	(0.049)	(0.049)	(0.048)	(0.049)	(0.046)	(0.047)	(0.048)	(0.047)
Net FDI (% GDP)		-0.133						0.010				
		(0.312)						(0.294)				
Net portfolio inv. (% GDP)			0.707						0.715*			
			(0.432)						(0.425)			
Official aid & grants (% GDP)				0.754**						0.425		
				(0.361)						(0.337)		
Remittances (% GDP)					-0.053						-0.141	
					(0.311)						(0.288)	
Other net investments (% GDP)						0.302						0.233
						(0.243)						(0.231)
Period dummies	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
Observations	54	54	54	54	54	54	54	54	54	54	54	54
R2 within	0.49	0.50	0.51	0.52	0.50	0.50	0.50	0.47	0.49	0.48	0.49	0.46
R2 between	0.41	0.41	0.45	0.55	0.39	0.40	0.19	0.27	0.29	0.30	0.24	0.27
R2 overall	0.44	0.44	0.47	0.50	0.44	0.46	0.38	0.39	0.42	0.41	0.39	0.40
Wald-test	30.23	29.78	34.21	37.22	29.51	32.20	34.20	26.30	30.90	28.89	26.69	27.96
… p-value	0.01	0.03	0.02	0.00	0.01	0.01	0.00	0.01	0.00	0.00	0.01	0.00
Hausman test	13.32	6.79	8.77	12.64	10.29	7.33	4.00	5.69	-3.25	13.08	11.07	1.37
… p-value	0.50	0.96	0.89	0.63	0.80	0.95	0.95	0.89	1.00	0.29	0.44	1.00

*, **, and *** stand for significance at 10%, 5% and 1%, respectively

Note: All estimates are based on random-effects (RE) panel regression, with standard errors in parentheses. Each period is comprised of five years. The dataset covers the years 1985 to 2009. The constant terms and period coefficients were omitted to save space.

Table 5.2. Determinants of bank deposits

	I	II	III	IV	V	VI	VII	VIII	XI	X	XI	XII
Lag of dependent variable	-0.035	-0.035	-0.036	-0.055	-0.054	-0.035	-0.072*	-0.045	-0.042	-0.049	-0.055	-0.043
	(0.037)	(0.038)	(0.034)	(0.036)	(0.038)	(0.037)	(0.043)	(0.036)	(0.033)	(0.035)	(0.036)	(0.035)
Log GDP per capita ($)	1.104	1.092	0.812	0.490	1.735*	1.128	1.076	1.004	0.729	0.772	1.435	0.936
	(0.852)	(0.886)	(0.806)	(0.858)	(0.926)	(0.864)	(1.139)	(0.798)	(0.748)	(0.801)	(0.888)	(0.782)
Trade openness (total trade/GDP)	0.018	0.018	0.024	-0.026	-0.005	0.018	0.027	0.017	0.025	0.002	0.003	0.019
	(0.021)	(0.022)	(0.020)	(0.028)	(0.025)	(0.021)	(0.037)	(0.022)	(0.021)	(0.029)	(0.026)	(0.022)
Financial openness	-0.781	-0.775	-0.584	-0.672	-0.972	-0.766	-1.024	-0.673	-0.475	-0.635	-0.806	-0.611
	(0.676)	(0.691)	(0.638)	(0.648)	(0.675)	(0.685)	(0.704)	(0.686)	(0.651)	(0.677)	(0.689)	(0.687)
Inflation (%)	-0.175*	-0.175*	-0.158*	-0.203**	-0.157*	-0.173*	-0.215**	-0.180*	-0.164*	-0.200**	-0.178*	-0.184**
	(0.092)	(0.093)	(0.086)	(0.089)	(0.091)	(0.093)	(0.089)	(0.093)	(0.088)	(0.094)	(0.092)	(0.093)
Interaction (Infl. X Fin. open.)	0.427*	0.427*	0.377*	0.451*	0.392	0.420*	0.481**	0.395	0.342	0.420*	0.393	0.400
	(0.242)	(0.245)	(0.228)	(0.232)	(0.239)	(0.246)	(0.244)	(0.248)	(0.236)	(0.247)	(0.245)	(0.247)
Growth in public debt (% GDP)	-0.067	-0.067	-0.068	-0.071	-0.051	-0.071	-0.147*	-0.122	-0.126*	-0.134*	-0.119	-0.129*
	(0.076)	(0.077)	(0.071)	(0.073)	(0.075)	(0.078)	(0.078)	(0.077)	(0.073)	(0.077)	(0.076)	(0.078)
Legal quality and democ. acct.	-1.810**	-1.804**	-1.592**	-1.484**	-1.881***	-1.833**	-2.114***	-2.055***	-1.910***	-2.037***	-2.155***	-2.035***
	(0.725)	(0.741)	(0.685)	(0.708)	(0.714)	(0.737)	(0.604)	(0.604)	(0.576)	(0.600)	(0.605)	(0.604)
Supervisory reform	-1.686	-1.687	-2.244*	-2.447*	-1.602	-1.617	0.368	0.050	-0.357	0.020	0.265	0.157
	(1.284)	(1.299)	(1.222)	(1.273)	(1.262)	(1.315)	(1.152)	(1.200)	(1.151)	(1.191)	(1.194)	(1.209)
Interaction (Legal/dem. x Reform)	0.063**	0.063**	0.064**	0.081***	0.069**	0.061**	0.067**	0.053*	0.050*	0.056*	0.055*	0.047
	(0.029)	(0.030)	(0.027)	(0.029)	(0.029)	(0.030)	(0.033)	(0.031)	(0.029)	(0.031)	(0.030)	(0.032)
Net FDI (% GDP)		-0.013						0.076				
		(0.202)						(0.208)				
Net portfolio inv. (% GDP)			0.709***						0.666**			
			(0.270)						(0.290)			
Official aid & grants (% GDP)				0.534**						0.211		
				(0.237)						(0.239)		
Remittances (% GDP)					0.294						0.215	
					(0.185)						(0.193)	
Other net investments (% GDP)						0.045						0.059
						(0.141)						(0.141)
Period dummies	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
Observations	58	58	58	58	58	58	58	58	58	58	58	58
R2 within	0.52	0.52	0.56	0.55	0.53	0.52	0.41	0.38	0.42	0.37	0.38	0.37
R2 between	0.28	0.28	0.46	0.44	0.38	0.27	0.17	0.25	0.40	0.31	0.30	0.23
R2 overall	0.46	0.46	0.54	0.52	0.49	0.46	0.31	0.33	0.40	0.34	0.35	0.33
Wald-test	36.45	35.61	48.34	44.98	40.29	35.79	28.81	22.83	30.49	23.79	24.48	22.90
… p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.01	0.02
Hausman test	14.98	14.75	19.03	12.68	9.76	13.97	2.43	2.72	0.87	8.95	7.52	7.87
… p-value	0.38	0.47	0.21	0.63	0.84	0.53	0.99	0.99	1.00	0.63	0.76	0.73

*, **, and *** stand for significance at 10%, 5% and 1%, respectively

Note: All estimates are based on random-effects (RE) panel regression, with standard errors in parentheses. Each period is comprised of five years. The dataset covers the years 1985 to 2009. The constant terms and period coefficients were omitted to save space.

Table 5.3. Determinants of bank meta-efficiency and technical growth rate

	Meta-Efficiency						**Technical Growth Rate**					
	I (RE)	**II (FE)**	**III (RE)**	**IV (RE)**	**V (RE)**	**VI (FE)**	**I (RE)**	**II (FE)**	**III (RE)**	**IV (RE)**	**V (RE)**	**VI (FE)**
Lag of dependent variable	-22.022**	-19.875	-20.267*	-26.855***	-21.692**	-16.207	-30.488***	-32.555**	-29.013***	-36.499***	-31.027***	-28.293
	(10.231)	(12.936)	(10.534)	(9.876)	(9.982)	(15.702)	(10.473)	(12.864)	(10.814)	(9.967)	(10.215)	(15.814)
Log GDP per capita ($)	-0.946	7.194	-0.525	-0.996	-2.516	6.863	-0.907	8.675	-0.527	-0.945	-2.601	8.431
	(1.124)	(15.808)	(1.244)	(1.052)	(1.546)	(16.745)	(1.207)	(17.148)	(1.338)	(1.106)	(1.658)	(18.075)
Trade openness	-0.014	-0.391*	-0.015	0.054	0.042	-0.406	-0.024	-0.409*	-0.025	0.054	0.036	-0.439
	(0.041)	(0.187)	(0.042)	(0.051)	(0.056)	(0.274)	(0.044)	(0.205)	(0.045)	(0.053)	(0.060)	(0.304)
Financial openness	1.317	5.286***	1.194	1.711*	2.069*	5.998**	1.380	5.207***	1.260	1.864*	2.181*	6.087*
	(0.952)	(1.470)	(0.971)	(0.912)	(1.065)	(2.556)	(1.016)	(1.600)	(1.043)	(0.956)	(1.134)	(2.815)
Inflation (%)	0.911*	2.284**	0.889*	0.823*	0.954*	2.210**	0.823	2.467**	0.794	0.732	0.851*	2.404**
	(0.504)	(0.746)	(0.509)	(0.474)	(0.493)	(0.784)	(0.521)	(0.804)	(0.529)	(0.479)	(0.508)	(0.845)
Interaction (Infl. X Fin. open.)	-0.796	-3.625	-0.664	-0.359	-1.116	-3.223	-0.721	-4.538*	-0.578	-0.256	-1.031	-4.117
	(1.146)	(2.087)	(1.166)	(1.095)	(1.140)	(2.187)	(1.177)	(2.231)	(1.210)	(1.099)	(1.167)	(2.325)
Growth in public debt	0.331	0.110	0.396	0.388	0.255	0.164	0.239	-0.042	0.297	0.300	0.146	0.016
	(0.252)	(0.277)	(0.266)	(0.238)	(0.252)	(0.290)	(0.271)	(0.293)	(0.287)	(0.250)	(0.272)	(0.306)
Legal quality and democ. acct.	2.269*	0.636	2.056*	2.526**	2.472**	0.746	2.470*	0.999	2.294*	2.745**	2.737**	1.099
	(1.262)	(1.747)	(1.298)	(1.188)	(1.239)	(1.879)	(1.307)	(1.889)	(1.347)	(1.204)	(1.287)	(2.024)
Supervisory reform	2.551	-3.392	1.956	2.237	2.239	-4.016	2.499	-3.699	1.982	2.111	2.268	-4.428
	(2.496)	(3.119)	(2.619)	(2.341)	(2.444)	(3.445)	(2.605)	(3.383)	(2.740)	(2.394)	(2.544)	(3.731)
Interaction(Leg/dem. x Reform)	-0.082	-0.054	-0.079	-0.086	-0.077	-0.050	-0.083	-0.067	-0.080	-0.087	-0.079	-0.063
	(0.057)	(0.077)	(0.057)	(0.053)	(0.055)	(0.084)	(0.059)	(0.083)	(0.060)	(0.055)	(0.058)	(0.090)
Net FDI (% GDP)		-0.418						-0.450				
		(0.329)						(0.358)				
Net portfolio inv. (% GDP)			-0.246						-0.225			
			(0.300)						(0.323)			
Official aid & grants (% GDP)				-0.619**						-0.734**		
				(0.310)						(0.328)		
Remittances (% GDP)					-0.435						-0.470	
					(0.302)						(0.324)	

Table 5.3 (cont'd)

Other net investments (% GDP)						0.332						0.381
						(0.499)						(0.550)
Constant	7.597	-23.012	5.020	5.824	17.873	-23.250	13.317	-24.800	10.879	11.676	24.616*	-25.423
	(11.391)	(134.985)	(11.906)	(10.697)	(13.205)	(143.769)	(12.339)	(146.622)	(12.974)	(11.331)	(14.331)	(155.288)
Period Dummies	N0	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
Observations	32	32	32	32	32	32	32	32	32	32	32	32
R2 within	0.538	0.821	0.542	0.583	0.546	0.800	0.590	0.829	0.586	0.645	0.594	0.811
R2 between	0.599	0.0516	0.639	0.803	0.788	0.0971	0.571	0.0361	0.610	0.778	0.764	0.0814
R2 overall	0.543	0.00810	0.557	0.618	0.585	0.00228	0.567	0.0157	0.577	0.654	0.608	0.00589
F-test (p-value)		0.0122				0.0196		0.00977				0.0153
Wald test (p-value)	0.00553		0.00859	0.000654	0.00297		0.00217	0.00540	0.00413	8.65e-05	0.00109	
Hausman test (p-value)	0.427	0.00321	0.186	0.105	0.243	2.58e-08	1	0.00921	1	0.346	0.983	0.000335

*, **, and *** stand for significance at 10%, 5%, and 1%, respectively

Note: All estimates are based on fixed or random-effects (RE) panel regression depending on the Hausman test, with standard errors in parentheses. Each period is comprised of five years. The dataset covers the years 1985 to 2009.

Table 5.4. Determinants of stock market capitalisation

	I	II	III	IV	V	VI	VII	VIII	XI	X	XI	XII
Lag of dependent variable	-0.084	-0.072	-0.082	-0.175	-0.156	-0.138	-0.212	-0.208	-0.213	-0.275*	-0.251*	-0.253*
	(0.152)	(0.149)	(0.153)	(0.152)	(0.159)	(0.152)	(0.147)	(0.147)	(0.149)	(0.147)	(0.150)	(0.146)
Log GDP per capita ($)	-4.116	-2.667	-3.965	-5.315	-0.724	-4.475	-6.758**	-5.739	-6.810**	-7.943**	-4.575	-7.228**
	(3.558)	(3.614)	(3.638)	(3.484)	(5.267)	(3.498)	(3.412)	(3.562)	(3.463)	(3.396)	(4.595)	(3.364)
Trade openness (total trade/GDP)	-0.106	-0.124	-0.110	-0.179	-0.145	-0.074	-0.083	-0.095	-0.081	-0.145	-0.096	-0.060
	(0.122)	(0.120)	(0.124)	(0.136)	(0.148)	(0.121)	(0.130)	(0.131)	(0.133)	(0.146)	(0.154)	(0.129)
Financial openness	2.153	2.772	2.087	2.394	2.138	2.600	2.767	3.194	2.791	3.112	2.990	3.218
	(2.510)	(2.499)	(2.546)	(2.446)	(2.538)	(2.477)	(2.703)	(2.737)	(2.733)	(2.640)	(2.698)	(2.669)
Inflation (%)	-0.434	-0.311	-0.448	-0.527	-0.504	-0.397	-0.310	-0.226	-0.301	-0.387	-0.349	-0.232
	(0.400)	(0.401)	(0.408)	(0.392)	(0.407)	(0.393)	(0.426)	(0.434)	(0.433)	(0.418)	(0.427)	(0.421)
Interaction (Infl. X Fin. open.)	1.863*	1.625	1.896*	2.069**	2.093**	1.779*	1.574	1.415	1.556	1.738	1.712	1.387
	(1.017)	(1.011)	(1.034)	(0.992)	(1.041)	(0.999)	(1.083)	(1.095)	(1.101)	(1.059)	(1.091)	(1.070)
Growth in public debt (% GDP)	-0.315	-0.447	-0.325	-0.059	-0.325	-0.315	-0.417	-0.518	-0.414	-0.131	-0.365	-0.395
	(0.309)	(0.315)	(0.314)	(0.322)	(0.314)	(0.303)	(0.316)	(0.332)	(0.320)	(0.343)	(0.315)	(0.311)
Legal quality and democ. acct.	-0.657	-0.838	-0.643	-1.120	-1.025	-0.564	-0.386	-0.516	-0.388	-0.912	-0.775	-0.343
	(0.906)	(0.899)	(0.916)	(0.906)	(0.956)	(0.891)	(0.967)	(0.976)	(0.976)	(0.976)	(1.026)	(0.950)
Financial reform	-2.012	-2.446*	-2.055	-2.756**	-2.920**	-2.230*	-1.313	-1.634	-1.307	-2.029	-2.060	-1.485
	(1.327)	(1.333)	(1.350)	(1.327)	(1.458)	(1.309)	(1.267)	(1.307)	(1.279)	(1.284)	(1.327)	(1.249)
Interaction (Legal/dem. x Reform)	1.224	1.566	1.215	1.974*	1.726	1.245	1.176	1.422	1.178	1.948	1.668	1.233
	(1.120)	(1.122)	(1.131)	(1.136)	(1.170)	(1.099)	(1.214)	(1.239)	(1.225)	(1.237)	(1.261)	(1.193)
Net FDI (% GDP)		2.533						1.707				
		(1.562)						(1.711)				
Net portfolio inv. (% GDP)			-0.216						0.120			
			(0.825)						(0.853)			
Official aid & grants (% GDP)				1.744*						1.592		
				(0.949)						(1.012)		
Remittances (% GDP)					1.043						0.724	
					(1.075)						(1.010)	
Other net investments (% GDP)						-1.105*						-1.169*
						(0.647)						(0.678)
Period dummies	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
Observations	66	66	66	65	65	66	66	66	66	65	65	66
R2 within	0.48	0.50	0.48	0.51	0.49	0.49	0.32	0.32	0.31	0.35	0.35	0.32
R2 between	0.65	0.69	0.64	0.75	0.69	0.76	0.56	0.59	0.57	0.64	0.57	0.69
R2 overall	0.51	0.53	0.51	0.55	0.53	0.54	0.35	0.36	0.35	0.40	0.37	0.38
Wald-test	51.41	55.72	50.52	58.17	53.13	56.30	29.52	30.51	29.01	34.69	31.59	33.54
… p-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hausman test	8.26	8.30	10.56	7.23	10.21	6.14	7.54	7.26	8.77	6.33	9.84	5.75
… p-value	0.91	0.94	0.84	0.97	0.86	0.99	0.67	0.78	0.64	0.85	0.55	0.89

*, **, and *** stand for significance at 10%, 5%, and 1%, respectively

Note: All estimates are based on random-effects (RE) panel regression, with standard errors in parentheses. Periods are comprised of three years due to limited number of observations in all regressions. The dataset covers the years 1989 to 2009. The constant terms and period coefficients were omitted to save space.

Table 5.5. Determinants of total value traded in stock market

	I	II	III	IV	V	VI	VII	VIII	XI	X	XI	XII
Lag of dependent variable	-0.702	-0.588	-0.731	-0.651	-0.675	-0.561	-0.768*	-0.695	-0.776*	-0.722	-0.709	-0.605
	(0.454)	(0.465)	(0.464)	(0.462)	(0.455)	(0.466)	(0.454)	(0.462)	(0.460)	(0.459)	(0.454)	(0.462)
Log GDP per capita ($)	-0.470	3.125	0.622	-2.357	15.160	-1.801	-10.368	-6.887	-10.021	-11.200	-2.282	-12.801
	(15.199)	(15.505)	(15.582)	(15.447)	(22.599)	(15.154)	(14.482)	(15.022)	(14.711)	(14.856)	(19.276)	(14.422)
Trade openness (total trade/GDP)	-0.494	-0.539	-0.515	-0.578	-0.826	-0.471	-0.550	-0.593	-0.560	-0.470	-0.673	-0.541
	(0.440)	(0.441)	(0.447)	(0.563)	(0.615)	(0.438)	(0.470)	(0.473)	(0.476)	(0.595)	(0.621)	(0.465)
Financial openness	6.561	8.506	6.246	6.544	4.379	6.781	5.571	7.139	5.504	6.406	5.303	5.888
	(10.006)	(10.134)	(10.124)	(10.194)	(10.428)	(9.952)	(10.660)	(10.823)	(10.759)	(10.746)	(10.825)	(10.549)
Inflation (%)	-1.674	-1.306	-1.756	-1.833	-2.111	-1.653	-1.795	-1.489	-1.838	-1.842	-2.030	-1.630
	(1.684)	(1.712)	(1.711)	(1.729)	(1.743)	(1.675)	(1.765)	(1.801)	(1.793)	(1.794)	(1.796)	(1.750)
Interaction (Infl. X Fin. open.)	5.188	4.406	5.397	5.532	6.431	5.048	5.341	4.731	5.441	5.486	6.033	4.858
	(4.289)	(4.337)	(4.359)	(4.375)	(4.467)	(4.267)	(4.487)	(4.546)	(4.553)	(4.530)	(4.578)	(4.451)
Growth in public debt (% GDP)	0.047	-0.286	-0.034	0.500	0.002	0.162	-0.026	-0.387	-0.045	0.294	0.197	0.127
	(1.343)	(1.373)	(1.370)	(1.471)	(1.371)	(1.338)	(1.335)	(1.397)	(1.350)	(1.500)	(1.339)	(1.325)
Legal quality and democ. acct.	-8.977**	-9.082**	-9.006**	-9.387**	-10.272**	-8.072*	-6.652	-6.844	-6.681	-7.051	-7.737*	-5.667
	(4.254)	(4.245)	(4.291)	(4.342)	(4.432)	(4.293)	(4.476)	(4.490)	(4.518)	(4.531)	(4.626)	(4.479)
Financial reform	-13.076**	-13.907**	-13.444**	-14.645**	-16.72***	-13.465**	-10.465*	-11.466**	-10.511*	-12.587**	-13.218**	-10.807**
	(5.843)	(5.877)	(5.968)	(6.064)	(6.470)	(5.819)	(5.417)	(5.542)	(5.470)	(5.627)	(5.692)	(5.365)
Interaction (Legal/dem. x Reform)	10.406*	10.843**	10.520*	11.167**	11.879**	9.509*	8.674	9.218	8.722	9.439*	9.978*	7.754
	(5.354)	(5.356)	(5.408)	(5.478)	(5.491)	(5.373)	(5.647)	(5.690)	(5.702)	(5.732)	(5.739)	(5.622)
Net FDI (% GDP)		7.676						6.519				
		(6.907)						(7.293)				
Net portfolio inv. (% GDP)			-1.390						-0.722			
			(3.551)						(3.579)			
Official aid & grants (% GDP)				2.113						0.694		
				(4.123)						(4.308)		
Remittances (% GDP)					4.398						2.729	
					(4.404)						(4.157)	
Other net investments (% GDP)						-3.506						-4.297
						(2.816)						(2.906)
Period dummies	YES	YES	YES	YES	YES	YES	NO	NO	NO	NO	NO	NO
Observations	66	66	66	65	65	66	66	66	66	65	65	66
R2 within	0.34	0.36	0.35	0.35	0.36	0.36	0.16	0.17	0.16	0.18	0.19	0.19
R2 between	0.86	0.89	0.83	0.86	0.84	0.87	0.84	0.87	0.83	0.81	0.76	0.87
R2 overall	0.40	0.41	0.40	0.41	0.42	0.42	0.23	0.24	0.23	0.25	0.26	0.26
Wald-test	33.12	34.51	32.71	33.15	34.38	35.03	16.61	17.35	16.36	18.00	18.54	19.15
… p-value	0.00	0.00	0.01	0.01	0.00	0.00	0.08	0.10	0.13	0.08	0.07	0.06
Hausman test	1.66	1.52	2.16	2.40	4.04	2.09	1.63	1.39	2.49	2.37	6.18	1.24
… p-value	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86	1.00

*, **, and *** stand for significance at 10%, 5%, and 1%, respectively.

Note: All estimates are based on random-effects (RE) panel regression, with standard errors in parentheses. Periods are comprised of three years due to limited number of observations in all regressions. The dataset covers the years 1989 to 2009. The constant terms and period coefficients were omitted to save space.

For banking development variables, inflation seems to have a negative impact, although the results appear more significant for bank deposits. Having an open capital account appears to offset these inflationary effects, also significantly so for bank deposits. These results show that, notwithstanding their effects on macroeconomic stability, the availability of currency-linked savings products could prevent losses in deposits when inflationary pressures are present.

The most significant and persistent determinant of private capital seems to be the growth of public debt, implying a clear confirmation of the 'crowding-out' hypothesis. Indeed, increasing public debt by a single percentage point (as a share of GDP) reduces private credit by a third (as a share of GDP). This could be one of the main reasons why private credit is underdeveloped in some of the 11 SEMCs, such as Egypt and Lebanon. Still, some of the EU–MED countries, such as Greece, may also be impacted by these results.

Strong legal institutions, good democratic governance and adequate implementation of financial reforms appear to have a substantial positive impact on both private credit and deposits, but only when they occur at the same time. Indeed, the interactive term *Interaction (Legal/dem. x Reform)* has a positive and significant coefficient in all cases but one (except for column XII in Table 5.2) In turn, partial implementation of strong democratic and legal institutions or supervisory reforms may undermine deposits, which is seen from the coefficient estimates for the non-interactive terms.

External flows, in the form of official aid and portfolio investments, may also be beneficial for credit growth and deposits. This is most likely due to an income effect, whereby capital inflows increase households' incomes and firms' earnings, which are then deposited into bank accounts and become available for lending.

For bank efficiency variables (Table 5.3), the results show that greater capital account openness improves banks' technical growth rate and banks' meta-efficiency. In addition, a better legal system and more democratically-oriented regime should contribute to enhancing the efficiency of banks. Inflation appears to be positively related to banks' efficiency, which is surprising because a more stable macroeconomic environment should result in lower cost efficiency. This result could explain how banks strive to strengthen their cost efficiency when inflation is high and investment is low, so as to compensate for lower revenues stemming from fewer opportunities. External flows, however, in the form of foreign aid, tend to deteriorate efficiency in banks, which is related to less stringent conditions on using this type of funding in an efficient way and also because such funding usually transits through public banks that have more socially-oriented objectives than profitability and efficiency.

For the indicators of stock market development (Table 5.4), the results are more limited. Beyond the positive impact of the interactive term on good institutions, democratic governance and financial reforms, stock market capitalisation appears to be weakly improved by official transfers, once again potentially owing to an income effect. Per-capita incomes appear to have a negative impact (implying 'catching-up' effects as less developed countries develop more quickly than their richer counterparts). Yet, these effects are not present when period dummies are present. Conversely, having an open capital account during inflationary periods also inflates market capitalisation, possibly because of the rapid arbitrage possibilities facing countries with high inflation and real interest rates.

As for the stock market value traded (Table 5.5), the interactive term on legal and democratic quality and reforms is also significant, highlighting once again the importance of having quality legal institutions, democratic governance and the adequate implementation of financial reforms. As is the case for deposits, partial financial reforms (i.e. those without high-quality legal institutions or anti-democratic governance practices) could lead to less activity in the stock market.

6. Conclusion

Using a sample of northern and southern Mediterranean countries for the years 1985 to 2009, this study empirically assesses the reasons why financial sector development is lagging behind in the region.

For banking development variables, inflation seems to have a negative impact, although the results appear to be more significant for bank deposits. Having an open capital account seems to offset these inflationary effects, also significantly so for bank deposits. The most significant and persistent determinant of private capital seems to be the growth of public debt, implying a clear confirmation of the 'crowding-out' hypothesis.

Strong legal institutions, good democratic governance and the adequate implementation of financial reforms appear to have a substantial positive impact on both private credit and deposits, but only when they occur at the same time.

External flows, in the form of official aid and portfolio investments, may also be beneficial for credit growth and deposits. This is most likely due to an income effect, whereby capital inflows increase households' incomes and firms' earnings, which are then deposited into bank accounts and become available for lending.

For bank efficiency variables, the results show that more capital account openness improves banks' technical growth rate and banks' meta-efficiency. In addition, a better legal system and more democratically-oriented regime should contribute to enhancing the efficiency of banks. Inflation appears to be positively related to banks' efficiency, which is surprising because a more stable macroeconomic environment should result in lower cost efficiency.

For the indicators of stock market development, the results are more limited. Beyond the positive impact of the interactive term on good institutions, democratic governance and financial reforms, stock market capitalisation appears to be weakly improved by official transfers, once again potentially stemming from an income effect. Per capita incomes appear to have negative impact.

As for stock market value traded, the interactive term on legal and democratic quality and reforms is also significant, highlighting once again the importance of having quality legal institutions, democratic governance and the adequate implementation of financial reforms. As is the case for deposits, partial financial reforms (i.e. those without high-quality legal institutions or anti-democratic governance practices) could lead to less activity in the stock market.

In a nutshell, better institutions, lower government expenditures and financial sector reforms (in the regulation and supervision) could lead to improvements in the functioning of banks and develop stock markets in the southern Mediterranean countries.

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Data Appendix

To large extent, the data on financial services relies on the Financial Structure Database (FSDB) of Beck and Demirgüç-Kunt (2009). Several adjustments in the data were necessary, however, to ensure the consistency of the dataset.

In Algeria, the pre-1993 figures on credit to private sector are likely to be erroneous in the FSDB due to a misclassification of loans to public enterprises as private sector loans. Indeed, an examination of the IMF's International Financial Statistics (IFS), which the FSDB uses as its source, reveals that the figures reported as private credit in the FSDB also include loans to public enterprises for those years, accounting for a substantial proportion of the total loans. The data could not be amended since the IFS fails to distinguish between loans to private and public enterprises. As a consequence, the pre-1993 figures on credit to private sector were eliminated for Algeria.

About MEDPRO

MEDPRO – Mediterranean Prospects – is a consortium of 17 highly reputed institutions from throughout the Mediterranean funded under the EU's 7th Framework Programme and coordinated by the Centre for European Policy Studies based in Brussels. At its core, MEDPRO explores the key challenges facing the countries in the Southern Mediterranean region in the coming decades. Towards this end, MEDPRO will undertake a prospective analysis, building on scenarios for regional integration and cooperation with the EU up to 2030 and on various impact assessments. A multi-disciplinary approach is taken to the research, which is organised into seven fields of study: geopolitics and governance; demography, health and ageing; management of environment and natural resources; energy and climate change mitigation; economic integration, trade, investment and sectoral analyses; financial services and capital markets; human capital, social protection, inequality and migration. By carrying out this work, MEDPRO aims to deliver a sound scientific underpinning for future policy decisions at both domestic and EU levels.

Title	MEDPRO – Prospective Analysis for the Mediterranean Region
Description	MEDPRO explores the challenges facing the countries in the South Mediterranean region in the coming decades. The project will undertake a comprehensive foresight analysis to provide a sound scientific underpinning for future policy decisions at both domestic and EU levels.
Mediterranean countries covered	Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia and Turkey
Coordinator	Dr. Rym Ayadi, Centre for European Policy Studies (CEPS), rym.ayadi@ceps.eu
Consortium	Centre for European Policy Studies, **CEPS**, Belgium; Center for Social and Economic Research, **CASE**, Poland; Cyprus Center for European and International Affairs, **CCEIA**, Cyprus; Fondazione Eni Enrico Mattei, **FEEM**, Italy; Forum Euro-Méditerranéen des Instituts de Sciences Economiques, **FEMISE**, France; Faculty of Economics and Political Sciences, **FEPS**, Egypt; Istituto Affari Internazionali, **IAI**, Italy; Institute of Communication and Computer Systems, **ICCS/NTUA**, Greece; Institut Europeu de la Mediterrania, **IEMed**, Spain; Institut Marocain des Relations Internationales, **IMRI**, Morocco; Istituto di Studi per l'Integrazione dei Sistemi, **ISIS**, Italy; Institut Tunisien de la Compétitivité et des Etudes Quantitatives, **ITCEQ**, Tunisia; Mediterranean Agronomic Institute of Bari, **MAIB**, Italy; Palestine Economic Policy Research Institute, **MAS**, Palestine; Netherlands Interdisciplinary Demographic Institute, **NIDI**, Netherlands; Universidad Politecnica de Madrid, **UPM**, Spain; Centre for European Economic Research, **ZEW**, Germany
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