CONVERGENCE OF BANK REGULATIONS ON INTERNATIONAL NORMS IN THE SOUTHERN MEDITERRANEAN

IMPACT ON BANK PERFORMANCE AND GROWTH

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INTRODUCTION

International standards and norms on banking regulations have, once again, leaped to the forefront of the policy discussion in developed nations due to the recent crisis in the world's financial markets. This discussion is far from new, nor does it apply exclusively to the world's most advanced economies. A sound and well-enforced regulatory regime can help developing nations to channel financial resources more efficiently into investments. For open economies, it can also act as a buffer, an important stability factor in today's shaky market situation.

Against this backdrop, this study examines the impact of banking sector regulations on bank efficiency and economic growth in four Southern Mediterranean countries (referred to collectively as "South-MED") – Algeria, Egypt, Morocco and Tunisia – while exploring the level of convergence of regulatory practices and efficiency to EU Mediterranean[1] standards.

In particular, the study first compares the banking sector and its regulations in Algeria, Egypt, Morocco and Tunisia, to international standards using measures on the adequacy of regulatory and supervisory practices. Second, banking efficiency and the level of convergence to best practices are examined using Data Envelopment Analysis (DEA) and complemented by Meta Frontier Analysis and the β-convergence and σ-convergence methodologies. Third, the impact of the regulatory environment on the efficiency of banks is investigated using the developed measures of regulatory and supervisory practices. In addition to the regulatory details, the performance analysis also considers the legal and institutional characteristics of the South-MED countries. Fourth, the study

[1] The European Mediterranean countries considered in the study are Cyprus, Spain, Greece, Italy, Malta and Portugal (referred to as "EU-MED").

explores how compliance with these standards and norms may influence the growth potential of each country.

Chapter 1 provides a descriptive analysis of the banking sectors of the South-MED countries covered in the study. Chapter 2 then develops measures of regulatory adequacy in a number of areas and provides comparisons with the EU-MED. Chapter 3 summarises the analysis of efficiency and convergence between the South-MED and EU-MED. Chapter 4 analyses empirically the determinants of the efficiency scores, paying special attention to the regulatory adequacy measures developed. Chapter 5 provides a similar analysis for economic growth. The final chapter concludes and puts forth the main policy recommendations.

1. OVERVIEW OF THE NATIONAL BANKING SECTORS IN NORTH AFRICA

1.1 Introduction

A well-functioning financial system is instrumental in attaining balanced and sustainable development. Such a system increases the availability of funding by mobilising idle savings, facilitating transactions and attracting foreign investments. It can also improve the allocation of financial resources by enhancing risk management, transparency and corporate governance practices, reinforcing property and creditor rights. Developed financial systems are crucial in providing funding to more opaque borrowers, such as the first-time and low-income borrowers or small and medium-sized enterprises (SMEs), which represent a significant proportion of economic activity but often lack the internal sources to grow.[2] In short, financial development can serve to ameliorate the distribution of opportunities and improve income equality.[3]

The emerging consensus in the academic literature is that financial development is possible as long as certain conditions are present to ensure that financial intermediaries serve the financial needs of the citizens and the private sector. These conditions include an adequate and operational regulatory structure, a well-defined supervisory authority, legal systems that reinforce property and creditor rights, restrained control of government over the financial system and macroeconomic stability.

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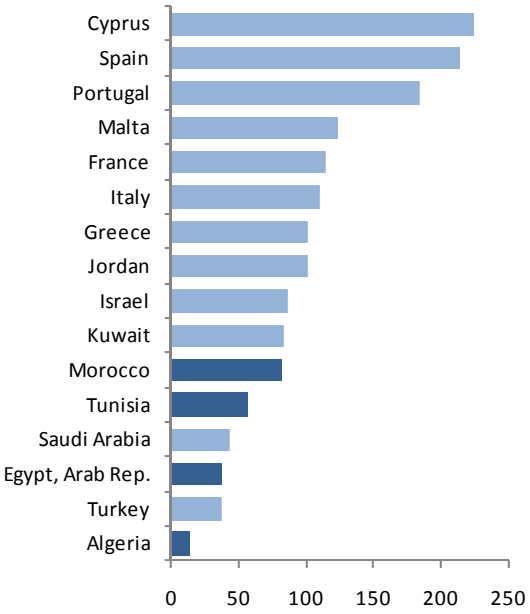
[2] See Levine (1997 and 2004) and Demirgüç-Kunt & Levine (2008) for a review of the literature on financial development and growth.

[3] Although alternative theories exist, financial development is often thought to improve income equality by enabling a more just capital accumulation or skills development (Banerjee & Newman, 1993; Galor & Zeira, 1993). See Liang (2006) for empirical support and a recent review of the relevant literature.

Although the four countries covered in this study have embarked upon wide-ranging financial reforms, financial development has remained relatively limited. With mainly bank-driven financial systems, the surveyed countries are 'under-banked', i.e. the availability of credit to households and businesses is limited. In Algeria and Egypt, these shortcomings are quite severe, with bank loans to private enterprises representing less than one-half of the country's GDP (see Figure 1.1).

Figure 1.1 Private credit in the Mediterranean and Middle East (% of GDP, 2008)



Source: Beck & Demirgüç-Kunt (2009).

This section provides a descriptive analysis of the financial systems of the four South-MED countries. The role of the public sector and the changing regulatory and legal framework are assessed qualitatively to highlight the main shortcomings of the banking system. Apart from legal sources and international assessments, the discussion relies on quantitative measures of the banking sector in each country, ranging from structure of banking, details on aggregate balance sheets and indicators of financial soundness.

1.2 Algeria

Algeria's banking system is characterised by an exceptionally strong and persistent presence of the public sector. The public banks direct the country's vast domestic savings to the state-owned enterprises operating in the country's hydrocarbon sector, which produces the country's chief exports. The Algerian government has expressed interest in liberalising the sector, although these promises are not backed by realistic policies to attract foreign investment. Moreover, although the banks appear to be well-capitalised, the loan quality is very low, especially in the portfolios of public banks, requiring constant restructuring. Access to banking services is limited, with over 25,000 inhabitants per branch, or more than twice the regional average (Table 1.1).

Table 1.1 Structure of the Algerian economy and banking system

	2005	2006	2007	2008	2009
GDP per capita ($)	3,137	3,470	3,904	4,940	4,027
GDP per capita growth (%)	3.37	-0.70	1.20	2.22	0.52
Inflation (%)	1.64	2.33	3.56	4.86	5.74
Deposit rate	1.94	1.75	1.75	1.75	1.75
Lending rate	8.00	8.00	8.00	8.00	8.00
Commercial bank assets (% of GDP)	56	61	69	66	72
Top-3 banks (% share)	48	54	56	57	57
Number of commercial banks	19	18	19	21	21
… of which: public	6	6	6	6	6
Number of branches	1,183	1,227	1,278	1,287	1,301
… of which: public	1,063	1,097	1,126	1,093	1,057
Inhabitants per branch	27,772	27,181	26,489	26,699	26,772

Sources: IMF and Bank of Algeria.

Prior to the 1990s, as in most centrally planned countries, Algeria had a financial system that could only be described as "financially repressed". A set of regulations, laws and other non-market restrictions prevented the intermediaries from functioning at their full capacities. The government had full administrative control over the banking sector as a whole, setting credit and deposit interest rates, directing the allocation of credit and having ownership stakes in practically all credit institutions. The banking system had the single aim of providing liquidity for the execution of the objectives of the plan. The directed allocation of credit and high liquidity levels led to an unrestrained monetary expansion.

The sector was partially liberalised in 1990 with the entry into force of the Monetary and Credit Law (Law No. 90-10). The law was designed as a first step to replace the state's direct control over the banking sector, facilitating entry and liberalising interest rates, first the deposit rate and then the credit rate in 1994. Between the years 1995-2007, several private banks were formed, almost all foreign-owned subsidiaries of prominent international banks.[4] Although the government has repeatedly renewed its commitment to liberalising the sector, the private banks' role remains limited in terms of the mobilisation and allocation of resources, except for loans to the private sector where public banks' predominance is lower (Table 1.2).

Several reasons may explain the deficient growth of the privately owned banks in Algeria. First and foremost, the public authorities have been historically hesitant to open the banking sector to competition, since this may divert financing from public entities. As an example, Algeria's ability to attract foreign direct investment (FDI) flows has been severely hampered by the recent Supplementary Budget Law of 2009 (Ordinance No. 09-01, Art. 58). This law requires—among other things—that the majority stake must belong to a domestic partner for all new incoming FDI flows.[5] This new requirement will continue to hamper the privatisation of public banks, which puts in question the government's willingness to liberalise the market.

Second, Algeria has traditionally been seen as a risky country, mainly due to political risks.[6] The recent financial crisis appears to have reduced the investors' risk appetite, which is often cited as the main reason behind

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[4] The most notable private banks include Calyon-Algeria (France), Société Générale (France), BNP Paribas El Djazair (France), Natixis (France), Gulf Bank Algeria (Kuwait), Arab Banking Corporation (Bahrain), Citibank (US), HSBC (UK), Al Baraka Bank (Bahrain) and Fransabank El Djazair (Lebanon).

[5] Other elements of Ordinance No. 09-01, Art. 58 that relate to the FDI inflows include i) a requirement to obtain approval from the National Investment Development Agency (ANDI) for all new investments, and ii) the rights granted to the state and public enterprises to have a "pre-emptive purchase right for all sales by or to foreign investors" (see IMF, 2010a).

[6] According to *Euromoney* magazine's recent bi-annual survey, Algeria ranked in 101st place worldwide among 185 countries in September 2010, the lowest among the four Southern Mediterranean countries.

the cancellation of privatisation of Crédit Populaire d'Algérie (CPA), one of the largest public banks in Algeria.

Table 1.2 Market shares of Algerian public banks

	2005	2006	2007	2008	2009
Total assets	91.4%	91.7%	92.2%	90.8%	..
Private sector loans	85.4%	83.3%	79.4%	77.0%	76.7%
Public sector loans	99.9%	99.9%	99.8%	99.8%	99.9%
Total deposits	93.3%	92.9%	93.1%	92.2%	..
Branches	89.4%	88.1%	84.9%	81.2%	..

Source: Bank of Algeria.

Table 1.3 Assets and liabilities of Algerian banks (billions of Algerian Dinars)

	2004	2005	2006	2007	2008	2009	2010*
Assets	3,893	4,210	5,229	6,511	7,287	7,327	7,510
Reserves	281	198	274	445	370	340	617
Balances with foreign institutions	77	91	84	108	142	58	55
Balances with state	803	876	1,015	941	678	810	805
…of which: Treasury deposits	15	14	84	46	52	83	64
… of which: Deposits at CCP	11	4	12	7	5	15	10
… of which: Treasury bills	669	644	818	793	491	541	552
of which: Other	109	215	102	95	130	171	180
Loans	1,534	1,779	1,904	2,204	2,614	3,085	3,185
… of which: Public enterprises	858	882	847	989	1,202	1,485	1,570
… of which: Public authorities	0	0	1	0	0	1	1
…of which: Private enterprises	675	896	1,056	1,213	1,411	1,598	1,613
… of which: Private banks	2	1	0	2	1	1	1
Other assets	1,198	1,265	1,953	2,813	3,482	3,034	2,891

Liabilities	3,893	4,210	5,229	6,511	7,287	7,327	7,510
Capital	142	152	161	171	184	302	300
Reserves	25	20	24	28	169	170	173
Liabilities to non-residents	116	84	115	90	134	46	54
Deposits	2,705	2,961	3,517	4,322	4,938	4,732	4,880
… of which: Sight: Public enterprises	697	774	1,164	1,832	2,056	1,427	1,511
… of which: Sight: Private enterprises	274	321	442	563	721	904	910
… of which: Sight: Other banks	157	129	144	166	170	173	165
… of which: Term: Public enterprises	254	366	365	351	394	499	509
… of which: Term: Private enterprises	1,189	1,233	1,271	1,396	1,573	1,723	1,779
… of which: Term: Other banks	134	138	130	14	24	7	8
… of which: Central government	67	99	144	218	400	445	444
Funds by state	49	55	34	29	16	15	14
Other liabilities	790	840	1,236	1,654	1,446	1,618	1,645

* March 2010 figures.

Source: Bank of Algeria.

The predominance of state-owned banks leads to a number of problems. First, by providing funding primarily to the public sector, the present structure severely restricts the diversification opportunities for the Algerian economy. According to recent figures, the share of loans to the private sector represent only one-fifth of total banking assets (Table 1.3). A large proportion of the total assets are held in loans to public enterprises, mostly in the hydro-carbons sector, and balances with the state. Although a more effective financial intermediation and diversification of the economy are the key aims of the authorities, progress has been limited in channelling the domestic savings into the real economy, especially to non-hydrocarbon businesses and private enterprises (IMF, 2010a).

A second problem arises from the allocation of credit to inefficiently run public undertakings: in particular, the state-dominated banking sector has been characterised by exorbitant levels of non-performing loans (NPLs), especially for loans to public enterprises (Table 1.4). Owing to their

limited role, the public banks lack the institutional framework and experience to promote efficient intermediation. Over the past years, this fundamental weakness has repeatedly threatened the viability of the quality of public banks portfolios, calling for a frequent clean-up of the balance sheets via government loan purchases. The government implemented such a buy-back program in 2008, when the NPL rate in public banks had dropped from 24% of total loans in 2007 to 20%. Despite these policies, the NPL rates continue to remain high for the publicly-owned banks, not only for their loans to state-owned enterprises but also for the credit they extended to private-sector businesses. In turn, foreign-owned private banks, which have almost no exposures to the public sector businesses, have relatively low NPL rates, except in recent years due to the financial crisis.

Table 1.4 The Algerian banking system: Key financial soundness indicators

	2005	**2006**	**2007**	**2008**
Regulatory capital (as % of RWA)	12%	15%	13%	17%
…of which: public banks	12%	14%	12%	16%
…of which: private banks	19%	22%	18%	20%
NPLs* (as % of total loans)	19%	18%	22%	18%
…of which: public banks; all loans	20%	19%	24%	20%
…of which: public banks; private loans	10%	12%	19%	16%
…of which: private banks; all loans	3%	3%	9%	7%
Return on equity	8%	19%	25%	25%
…of which: public banks	6%	17%	24%	25%
…of which: private banks	5%	23%	28%	26%

* Non-performing loans (NPLs) include loans in arrears with 100% provisioning requirement. The figures include all public and private bank, including the branches of foreign institutions.

Source: IMF (2010a).

In recent years, Algerian authorities have launched a number of additional initiatives aimed at increasing the banking system's lending capacity, increasing the minimum capital requirements for banks, and reducing the level of non-performing loans (NPLs) through financial restructuring of public enterprises. The 1990 Monetary and Credit Law

foresaw the gradual implementation of the capital requirements set by the 1988 Basel Capital Accord. After several revisions, the minimum capital adequacy ratio of 8% was established in 1999 and has been maintained ever since. Reserve requirements were first implemented in 1994 (Instruction No. 73-94), gradually raised from a minimum of 2.5% of deposits to 8% by 2008.

A deposit insurance scheme was introduced in 1997 (Law no. 97-04), providing a guarantee of up to 600,000 Algerian dinars (approximately €6,200 at end-2010 conversion rates) per depositor with no co-insurance or legally set delays for making payments. The scheme became operational with the creation of Société de Garantie des Dépôts Bancaires (SGDB) in 2003. Under the current regulations, the scheme is funded by an annual premium charged on each bank, which is set at 1% of deposits.[7] The scheme was put to use for the first time in 2004, to reimburse depositors of the now-defunct El-Khalifa Bank, which was a private bank that was founded in 1998. As noted in the World Bank (2004) assessment, there has been some concern that the scheme lacked functional and financial independence, which could result in discretionary decisions on its use.

Turning to legal and informational infrastructure for getting credit, the World Bank's Doing Business (2010) ranking clearly shows that Algeria lags behind others, putting it in 135th position out of a total of 183 countries. The finding is not surprising. Algeria is behind many countries in terms of creditors' rights and information-sharing capacity. In particular, there are no private credit bureaus and the public credit registry's coverage is largely insufficient. Secured creditors' ability to make claims on collateral is ill-defined, severely undermining their rights and more generally the legal framework for credit.

To conclude, Algeria's banking system is dominated by six public banks, which continue to collect over 90% of the domestic deposits and divert a significant proportion to the mostly inefficient public enterprises concentrated in the hydrocarbon sector. Under current conditions, the Algerian financial sector is not providing the necessary funding for its private sector to successfully diversify its economy in the near- to mid-

[7] Order No. 03-10 for Money and Credit.

term, in line with the aims set in its 2009 Action Plan[8] and the EU-Algeria National Indicative Plan (NIP) for 2011-2013.[9] In addition to hampering growth opportunities, directed credit undermines credit quality and real intermediation. Algeria has ample fiscal space due to its immense hydrocarbon receipts and can continue to engage in risky loans and their restructuration at regular intervals. However, these strategies should be used to resuscitate private sector growth and not to support the ailing public enterprises. In conjunction with steps to liberalise the economy, the government should improve the pre-conditions for easing the flow of credit information and improve creditors' rights. Doing otherwise may hamper credit growth for the traditionally opaque firms, such as small- and medium-sized enterprises (SMEs), and may prolong the realisation of the benefits from a well-developed financial sector. The use of an explicit deposit insurance scheme when a substantial proportion of the banking sector is publicly-owned should also be assessed.

1.3 Egypt

Egypt's banking regulations have undergone significant reforms in recent years. A new banking law (Law no. 88) enacted in 2003 unified all Egyptian banking regulations, reinforcing the independence and regulatory role of the Central Bank of Egypt (CBE), aligning the prudential standards with the Basel II Accord as well as strengthening loan classification rules, remedial powers of regulator, risk-based focus on supervision and capital requirements. More recent reforms have sought to address reducing the state-owned stakes in joint-venture and public banks, enhancing credit conditions and increasing access to banking.

The pervasiveness of state ownership is one of the key challenges of the Egyptian banking system. The government-controlled banks account for nearly two-thirds of the banking activity. This has undermined competition by obstructing entry and contributes to inefficiencies, as is evident from the country's high non-performing-loans. By 2006, the reported stock of NPLs amounted to nearly a quarter of gross loans, mainly

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[8] The 2009 Action Plan is available in French at http://www.premier-ministre.gov.dz/images/stories/dossier/Plan_action_2009_fr.pdf.

[9] The 2011-2013 EU-Algeria National Indicative Plan (NIP) is available at http://ec.europa.eu/world/enp/pdf/country/2011_enpi_nip_algeria_en.pdf.

held in public banks' portfolios. This has resulted in a set of programmes initiated by the Central Bank of Egypt to settle these loans by cash injections (funded by privatisation receipts), settlements and investment sales. Although the private banks have been increasing their network in recent years, most of the branches remain in urban areas. Access to banking remains low, as in Algeria, with over 24,000 habitants per branch (see Table 1.5).

Table 1.5 Structure of Egyptian economy and banking system

	2004-05	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2009-10**
GDP per capita ($)	1,283	1,506	1,771	2,160	2,450	1,283
GDP per capita growth (%)	2.38	4.90	3.74	4.89	2.62	2.38
Inflation (%)	8.80	4.20	10.95	11.70	16.24	8.80
Deposit rate (%)	7.23	6.02	6.10	6.58	6.49	7.23
Lending rate (%)	13.14	12.60	12.51	12.33	11.98	13.14
Bank assets (% of GDP)	131	123	126	121	105	101
Top-3 banks (% share)	58	59	57	55	..	..
Public banks (% of total assets)	..	..	..	67	..	..
Number of commercial banks	52	43	41	40	39	39
… of which: public	7	7	6	6	5	5
Number of branches	2,841	2,944	3,056	3,297	3,443	3,490
… of which: public	2,185	2,222	2,074	2,089	2,088	2,080
Inhabitants per branch	25,308	25,000	25,360	23,992	24,252	24,212

Note: Deposit rates correspond to interest rates for three-month time deposits.

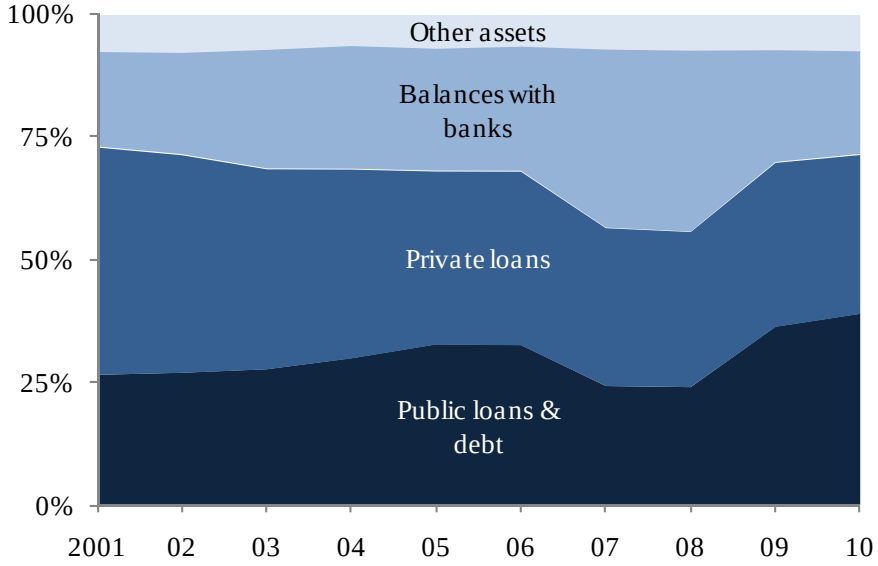
Sources: IMF, Central Bank of Egypt and Beck & Demirgüç-Kunt (2009).

Under the reform programme initiated in 2004, a number of publicly-owned banks with high non-performing loans have been eliminated by sales, purchases and mergers. In 2006, the country's fifth largest bank, Bank of Alexandria, was successfully privatised with its acquisition by the Italian Sanpaolo IMI group. These measures have reduced the share of the publicly-owned banks. Nevertheless, the state continues to maintain a significant proportion of the banking system, either directly, as is the case of the top-two banks, which are public, representing over one-quarter of total assets, or indirectly via partial stakes, as is the case in a number of

specialised banks and joint-venture stakes held by public banks. There are concerns over the future roles of the remaining state banks, as the private banks continue their growth and expansion into underserved sectors, (World Bank, 2008).

The state's influence in banking is not limited to its direct or indirect ownership. More broadly, the level of government debt held by banks has been very high in Egypt, accounting for an increasingly greater share in the banks' balance sheets. As of October 2010, the share of public debt and loans represents around 40% of the total assets of Egyptian banks, up from less than a quarter in 2001 (Figure 1.2).

Figure 1.2 Assets of Egyptian banks



Source: Central Bank of Egypt.

One chief underlying reason for banks' increasing willingness to hold more public debt than private credit is the attractive yields offered by the treasury bonds, crowding out credit to other segments.[10] The aggregate

[10] Since 2004, the Egyptian Treasury bills have often had yields exceeding 9%, significantly above the overnight and short-term (3-month) deposit rates, which

information on the banks' balance sheets gives details on the activities of Egyptian banks (Table 1.6). More specifically, public debt held by the banks has increased substantially in recent years and has surpassed the total outstanding private loans as of October 2010. Meanwhile, customer deposits represent nearly two-thirds of the total balance sheet.

There is some evidence that the policies implemented since the early 2000s to diminish NPLs have also made banks more reluctant to lend to the private sector, especially to more risky lines of business. Deficiencies in the availability of credit-worthiness information and managerial skills of most small- and medium-sized enterprises (SMEs) have also contributed to greater-than-normal risks in the real sector. Outstanding bank credits are by-and-large concentrated in the blue-chip corporations, with retail and SME sectors remaining relatively underserved due to inherent risks. Facilitating bank intermediation remains one of the key challenges in Egypt and has been the main aim of the recent reform initiatives (IMF, 2010b).

In recent years, Egypt has made significant strides in the field of credit information-sharing. The Central Bank of Egypt, which supervises the Egyptian banking system, has operated a public credit registry (PCR) since 1957. In 2002, an online system was adopted, permitting banks to extract and transmit information electronically. In 2004, the coverage of the registry was improved by lowering the threshold for reporting credit to E£30,000 (approximately €4,000) (Emerging Markets Group, 2006). In the same year, the CBE required the larger credit institutions to report any credit card delinquencies (defined as 90 days past due and/or with legal proceedings) in an effort to compile a "Negative List Database"; however, the database is not distributed directly by the public registry. Legal amendments introduced in 2006 allowed the public registry to share information with the country's first private credit bureau, I-score, founded by a consortium of the country's main banks in 2005. Other banks, non-bank financial institutions and utility companies have also been invited to join the private credit bureau in 2008. With these changes, the private database is expected to cover a large majority of the lending portfolio of all banks.

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remain around 6 to 7%. These conditions allow the Egyptian banks to earn handsome amounts by simply collecting deposits and investing them in public debt.

Table 1.6 Assets and liabilities of Egyptian banks (billions of Egyptian pounds)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010*
Assets	428.4	495.5	577.9	633.4	703.6	761.6	937.9	1,083.3	1,092.0	1,220.7
Cash	3.5	4.5	5.6	5.4	6.6	6.8	7.7	10.3	11.1	12.4
Public debt	71.1	87.7	111.3	137.4	170.7	194.0	176.1	201.9	332.6	405.9
Balances with domestic banks	67.0	83.2	110.9	116.3	125.0	121.7	217.4	278.2	173.5	200.7
Balances with foreign banks	16.3	20.0	29.8	43.3	51.2	72.6	124.4	122.8	77.1	57.4
Loans	241.5	266.1	284.7	296.2	308.2	324.0	353.7	401.4	430.0	466.0
… of which: Public	42.3	45.5	48.2	51.6	59.3	53.6	50.9	57.8	63.6	69.2
… of which: Private	199.2	220.6	236.5	244.6	248.9	270.4	302.9	343.6	366.3	396.8
Other assets	29.0	33.9	35.7	34.8	42.0	42.5	58.6	68.8	67.7	78.2
Liabilities	428.4	495.5	577.9	633.4	703.6	761.6	937.9	1,083.3	1,092.0	1,220.7
Capital	12.0	12.5	18.2	20.3	22.9	27.1	33.0	37.6	41.6	46.6
Reserves	10.2	11.2	11.8	11.5	12.4	13.4	12.6	19.8	21.4	28.5
Provisions	31.2	35.9	40.1	44.6	49.5	55.0	53.5	62.3	69.7	70.4
Long-term loans & bonds	11.9	14.1	14.9	15.0	14.3	17.5	26.4	22.3	22.0	21.7
Liabilities to domestic banks	28.2	35.1	35.6	29.9	22.7	21.5	82.6	98.7	31.0	53.9
Obligations to foreign banks	11.5	11.8	16.2	10.3	12.3	8.8	10.0	13.3	18.2	20.3
Deposits	291.2	340.9	403.1	461.7	519.6	568.8	650.0	747.2	809.7	892.5
… of which: Public	..	..	..	..	108.7	108.2	107.1	126.3	139.9	151.9
… of which: Private	..	..	..	..	410.7	460.9	546.7	624.7	676.4	744.1
Other liabilities	32.2	34.0	38.0	40.1	49.9	49.5	69.9	82.1	78.4	86.8

* October 2010 figures.

Source: Central Bank of Egypt.

Despite significant improvements in credit information-sharing, barely any progress has been noted in improving the legal and institutional framework for credit. A number of notable weaknesses exist in loan enforcement and collateral foreclosure practices, including an incomplete definition of secured transactions that are allowable as collateral. Administrative costs for registering land titles and mortgages remain high, which make collateralisation difficult. Out-of-court enforcement remains largely unavailable, except for secured claims over securities. In particular, collection of unsecured debt or secured real estate transactions is only possible through complex and lengthy court proceedings. The CBE has sought to address these challenges through the creation of an NPL Management Unit, the launch of a conciliation and arbitration mechanism, and regulatory changes in the real estate finance law. However, these moves are unlikely to be as efficient as a full-scale revision of the legal and institutional framework for credit.

The introduction of an explicit deposit insurance scheme was foreseen under the second phase of the banking sector regulation reform initiated in 2008. Information obtained from the authorities and the CBE's website shows that the scheme aims to protect small depositors. Other details on the scheme, such as the type of funding, risk-responsiveness of premiums and potential government backing are not available. At this moment, no timeline has been provided on when the scheme will become operational.

Other reforms on the agenda that are currently at play include the comprehensive implementation of the Basel II standards along with supplementary prudential measures to limit excessive risk in the financial sector. To that extent, there is some scope for cooperation with the EU for capacity-building purposes. The authorities have also expressed an interest in encouraging banks to publish more detailed information, where cooperation opportunities also exist.

Table 1.7 Egyptian banking system: Key financial soundness indicators

	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	*2009*
Regulatory capital (as % of RWA)	10.2%	11.0%	11.1%	11.4%	13.7%	14.7%	14.8%	14.7%	15.1%
NPLs (as % of total loans)	15.6%	20.2%	24.2%	23.6%	26.5%	18.2%	19.3%	14.8%	13.4%
Provisions (as % of classified loans)	69.4%	62.3%	57.0%	60.2%	51.0%	76.2%	74.6%	92.1%	100.4%
Return on assets	0.8%	0.5%	0.5%	0.5%	0.6%	0.8%	0.9%	0.8%	0.8%
Return on equity	13.7%	8.9%	8.9%	9.8%	10.2%	14.3%	15.6%	14.1%	13.0%

Sources: IMF, Global Financial Stability Reports, 2005-2010.

Although the Egyptian government has been actively engaged in a variety of regulatory reforms in recent years, some of the endemic problems in the banking sector continue to exist and may well remain unaddressed in the upcoming years. Indeed, despite the privatisation move, by the end of 2008, the market share of institutions that were wholly- or majority-owned by the state remained over half of the total banking assets (Table 1.5). Although the NPL rates have dropped considerably, they still represent 13.4% of gross loans by the end of 2009. Additionally, a significant amount of untapped financial liquidity continues to remain dormant within the banking system. The aggregate loan-to-deposit ratio – dropping to 53% in 2009 – points to a clear under-leveraging in the sector, which has become a more acute problem in recent years, especially after the recent set of reforms aimed at improving the banks' balance sheets. The remainder of the banking assets are held in safe and higher-yield government debt, with treasury bills held representing nearly one-third of total assets.

These points underscore the present trade-offs between the level of public debt, restrictiveness of prudential regulations, extent of information sharing, adequacy of corporate governance practices and credit availability. Although the government has pursued an ambitious reform agenda in some of these areas, a comprehensive assessment is necessary to ensure that the post-reform conditions are consistent with the country's long-term development strategy of facilitating endemic growth in the private-sector.

1.4 Morocco

Morocco has one of the largest banking sectors in the Southern Mediterranean, with the total assets of commercial banks representing over 120% of the country's GDP. Commercial banks play a crucial role in the country's financial system and have increasingly developed links with other financial intermediaries in the rapidly expanding insurance, securities, leasing and factoring sectors. The banking system is relatively concentrated, with the market share of the top three banks remaining around two-thirds of the total bank assets. In 2009, the sector consisted of a total of 13 privately-owned banks, seven of which are majority-owned by foreign shareholders, and six publicly-owned banks. In addition to these depositary institutions, there are six offshore banks and 12 microfinance institutions, which are not included in the figures below.

The central bank, Bank Al-Maghrib (BAM), was created in 1959 (under its prior name, Banque du Maroc) to issue banknotes and coins, safeguard the stability of the currency and to preserve the soundness of the banking system. More specifically, the by-laws of BAM stipulate that the chief role of the body is "to ensure the well-functioning of the banking system and the implementation of the laws and regulations relating to the surveillance and control of the activities of credit institutions and related institutions".[11] The head of the body, the Governor, is elected by the Sovereign; the head of the supervisory unit within BAM is named by the Governor of BAM, with an undefined tenure – possibly for life.

Macroeconomic conditions have improved in recent years, thanks to increased foreign direct investment (FDI) and remittance inflows as well as tourism receipts. Fiscal conditions have also recovered due to structural reforms and fiscal consolidation efforts.[12] Since Morocco has a pegged currency, fixed at a basket of currencies consisting of the euro and the US dollar, and a partially closed capital account, the capital inflows have contributed to increase domestic liquidity and, in parallel, banks' liquid

[11] As translated from Article 9 of Law no. 76-03 on the status of Bank Al-Maghrib.

[12] The fiscal conditions have deteriorated in 2008-10 due to a jump in subsidies and lower tax revenues. These conditions are not expected to threaten the long-term conditions (IMF, 2010c).

assets.[13] The central bank (Bank Al-Maghrib-BAM) has increased the banks' required reserves and used its deposit facility regularly to absorb excess liquidity and to keep price stability under control.

Table 1.8 Structure of the Moroccan economy and banking system

	2001	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
GDP per capita ($)	1,308	1,385	1,688	1,905	1,967	2,142	2,427	2,827	2,865
GDP per capita Growth (%)	..	2.1%	5.1%	3.5%	1.7%	6.4%	1.5%	4.1%	4.3%
Inflation (%)	..	2.8%	1.2%	1.5%	1.0%	3.3%	2.0%	3.9%	1.0%
Deposit Rate	..	4.5%	3.8%	3.6%	3.5%	3.7%	3.7%	3.9%	3.8%
Lending Rate	..	13.1%	12.6%	11.5%	11.5%	..	..	..	..
Bank assets (% of GDP)	85%	86%	86%	88%	96%	102%	117%	120%	121%
Top-3 banks (% of total assets)	..	51%	54%	64%	64%	64%	63%	65%	66%
Number of banks	19	18	18	17	16	16	16	18	19
of which: public	7	7	6	6	5	5	5	5	6
of which: foreign	7	5	5	5	5	5	5	7	7
Public banks (% of total assets)	..	..	..	..	..	29%	27%	26%	25%
Foreign banks (% of total assets)	..	..	..	..	..	22%	22%	21%	21%
Branches	1,805	1,878	1,948	2,033	2,223	2,447	2,748	3,138	3,538
Inhabitants per branch	15,974	15,540	15,154	14,677	13,559	12,463	11,230	9,952	8,913

Note: Deposit rate is determined based on the 3-months TD rate and the lending rate is determined by the maximum export credit.

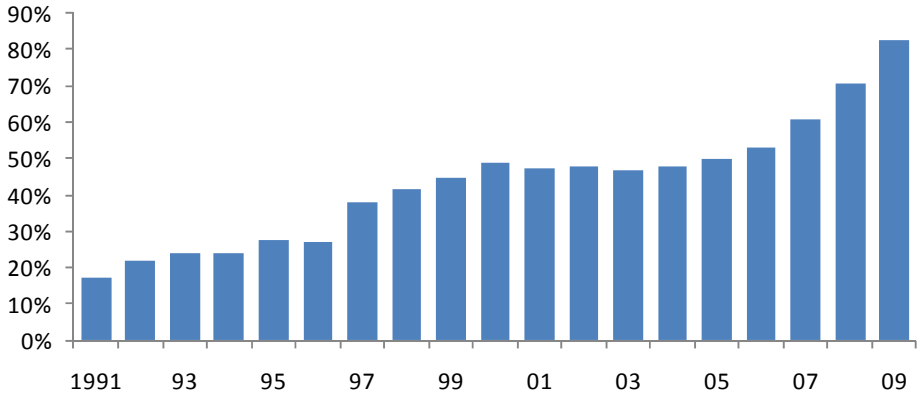
Sources: IMF and Bank al-Maghrib.

[13] There are several outward capital controls in place in Morocco; inward controls have been lifted in recent years. For currency transactions, exporters can deposit up to 50% of foreign exchange receipts in the foreign exchange accounts. For capital inflows, commercial banks may only borrow abroad to finance foreign trade or investment transactions or for covering currency risks for customers. Also, outward direct investments of resident firms and citizens are subject to approval.

The Moroccan banking sector has undergone significant changes following the reform process of early 1990s. The process aimed to establish a financial sector that serves the market economy, mobilising savings and optimally allocating investments. The requirements for private banks to hold development bank bonds were largely abolished by the banking law of 1993. Interest rate subsidies and controls were completely eliminated in the years that followed, with the exception of sight deposits and small savings deposits, which continue to be non-remunerated. The more recent 2006 banking law has reinforced the autonomy and roles of the country's regulatory authority, Bank al-Maghrib (BAM), enlarged its control to the entire banking sector, enhanced deposit insurance schemes and broadened its supervisory authority.

Despite the excess liquidity, credit to the private sector remained flat in the first half of the 2000s, remaining around 50% of GDP (Figure 1.3). A number of underlying factors can be put forward to explain the unresponsiveness of credit conditions to the overall availability of liquidity. The Moroccan economy is made up of a large number of small firms operating in the informal sector with opaque information on creditworthiness. Additionally, the banks had a large portfolio of non-performing loans (NPLs), which undermined their appetite for risk. Lastly, the handsome interest earnings from holding excess reserves also competed with any real lending activity that the banks might undertake.

Figure 1.3 Private sector credit in Morocco (as % of GDP)



Source: Beck & Demirgüç-Kunt (2009).

Private credit growth picked up substantially in the second half of the decade, representing over 80% of the GDP by the end of 2009. These developments are partly explained by dropping NPL ratios, which might have contributed to an increasing risk appetite for banks (Table 1.9). Moreover, BAM encouraged lending by strengthening credit information standards and risk management capacity of banks, most notably by setting up a credit bureau in 2009. The resources of public credit guarantee schemes have also been expanded substantially, reaching $370 million (0.4% of GDP) in outstanding guarantees in 2009, compared to $251 million in 2007.[14] Lastly, the rising asset prices, notably in the real estate markets (reaching 20% in some cities in 2007), have created a wealth effect and increased collateral values, lifting both the demand and supply of credit (Allain & Oulidi, 2009).

Table 1.9 Moroccan banking system: Key financial soundness indicators, 2001-09

	2001	*02*	*03*	*04*	*05*	*06*	*07*	*08*	*09*
Regulatory capital (as % of RWA)	12.6	12.2	9.3	10.5	11.5	12.3	10.6	11.2	11.7
NPLs (as % of total loans)	17	17	18	19	16	11	8	6	6
Provisions (as % of NPL)	53	55	55	59	67	71	75	75	74
Return on equity	10.2	1.9	-2.1	10.9	6.3	17.4	20.6	16.7	17.0
Return on assets	0.9	0.3	-0.2	0.8	0.5	1.3	1.5	1.2	1.3

Source: Bank al-Maghrib.

The aggregate balance sheet for the Moroccan banking sector highlights some of the issues discussed (Table 1.10). Unlike their counterparts in Algeria and Egypt, public debt represents a small proportion of the portfolios of Moroccan banks. This is especially the case since 2008, when the ratio of public debt and public loans to total assets dipped below 10%.

[14] It is not entirely clear to what extent Morocco's credit guarantee scheme serves smaller firms. According to 2009 figures, the average value of guarantees currently stand at $155,000, or 60 times per capita income, which are much larger than regional and global averages (Saadani et al., 2010).

Table 1.10 Assets and liabilities of Moroccan banks (millions of Moroccan Dirham)

	2003	2004	2005	2006	2007	2008	2009	2010*
Assets	409,576	442,487	507,702	591,284	720,313	828,100	888,566	925,571
Balances with non-residents	15,862	19,693	28,038	30,618	32,299	28,856	28,599	23,602
Balances with central bank	38,637	47,753	48,987	53,206	65,932	61,097	42,829	32,184
Loans	232,305	249,594	289,345	352,198	455,729	561,907	630,504	680,125
…of which: Government	4,451	4,984	6,723	6,549	6,177	12,252	16,108	16,175
… of which: Non-bank private	224,369	241,513	271,983	329,483	429,208	534,061	589,555	637,144
Negotiable debt securities	88,811	85,437	99,278	101,240	103,610	101,275	97,041	98,311
… of which: Government	78,568	73,752	83,558	88,838	89,344	78,875	69,990	68,906
… of which: Non-Bank Private	2,430	3,513	6,545	7,130	6,329	12,726	14,795	14,446
Money market funds	0	0	548	4,084	1,280	1,316	1,756	2,634
Shares and other equity	13,435	18,084	16,246	21,328	25,161	35,404	45,977	45,407
Fixed assets	11,494	12,736	13,485	13,727	14,795	15,770	16,806	17,853
Other assets	9,033	9,190	11,775	14,883	21,507	22,475	25,054	25,456
Liabilities	409,576	442,487	507,702	591,284	720,313	828,100	888,566	925,571
Liabilities to non-residents	13,785	11,430	12,022	12,847	12,372	13,472	12,282	19,290
Liabilities to public & fin. inst.	17,685	17,042	28,466	36,816	48,918	57,887	74,031	84,917
Non-bank private deposits	279,474	302,863	347,158	403,273	474,915	524,672	542,820	549,676
… of which: Sight deposits	151,868	170,767	199,490	233,667	291,721	306,617	323,302	326,329
… of which: Term & saving accounts	127,607	132,096	147,668	169,606	183,194	218,055	219,518	223,348
Money market funds	0	0	15,323	22,107	30,546	39,202	50,893	59,899
Negotiable debt securities	9,592	7,559	5,672	6,873	12,236	29,223	36,031	35,956
Shares and other equity	36,271	37,074	38,986	47,137	57,041	66,266	73,212	78,966
Other liabilities	34,263	42,256	41,824	37,006	45,865	38,766	39,553	40,299

* October 2010 figures.
Source: Bank al-Maghrib.

In fact, the total outstanding public debt has declined over the last 8 years while the total assets have increased by more than two-fold. On the liability-side, the funding is mostly through customer deposits, which have represented roughly 60% of the total liabilities. The banks increasingly use the money market for their funding, although their share in total liabilities remains small.

The 2000s have also witnessed the opening of a number of microfinance institutions. The 1999 microcredit law allowed these institutions to borrow funds from the domestic financial market and offer credit without being restricted by rate caps.[15] Within several years, Morocco became a regional leader in the microfinance sector, currently supervised by BAM (after the introduction of the new banking law in 2006). By 2008, the Moroccan microfinance sector provided funding to over 1.2 million active borrowers and a total loan portfolio of over $700 million, representing approximately 1% of loans to the private sector.[16]

The government's limited role in the banking sector is another aspect that sets Morocco apart from its neighbours. This has not always been the case as the Moroccan government maintained a substantial proportion of banking under its control in late 1990s and early 2000s. In recent years, however, considerable progress has been made in restructuring public banks, sale of public shares and the full compliance of remaining public banks with regulatory requirements by 2007. The state-owned banks continue to represent a significant proportion of total activities, but their market shares have declined substantially, down to 25% of total assets in 2009 from 40% in 2002 (Table 1.8).

The government's involvement is not strictly restricted to its direct control over the banking sector. The Moroccan government, like its neighbours, has used the domestic banking sector to fund the public budget. In the 1980s and 1990s, all banks were required to hold a substantial proportion of their portfolio in treasury bonds. The banks were

[15] Currently, microcredit institutions are not allowed to take retail deposits.

[16] Partly owing to their rapid expansion and diminishing asset quality in recent years, the Moroccan microcredit institutions have been hit hard by the 2007-09 financial crisis, facing unprecedented levels of non-performing and problem loans. In consequence, the sector has shrunk by 6% in 2008 and is likely to face consolidation in the upcoming years (MIX, 2009).

also required to hold bonds issued by the various development banks, which were publicly owned. By late 1990s, most of these requirements were dropped. As a consequence, the government securities now account for a much smaller proportion of the banks' balance sheets, dropping from 20% of total assets in 2003 to about 7% in October 2010 (Table 1.10).

As noted in the IMF's (2008) revised assessment, Morocco's banking supervision complies with the majority of the Basel Core Principles for Effective Banking Supervision (BCP).[17] Morocco has required all banks to apply the standardised approach to risk under Basel II since 2007, earlier than all other countries in the region.[18] BAM has published several guidelines for the implementation of the second and third pillars of Basel II, in line with the Basel Committee's recommendations. Minimum capital adequacy levels have been shifted to 10% of risk-weighted assets (RWA) in 2008 with an intention to raise them further to 12% in the upcoming years.

Morocco is also a leader in other areas of regulation in the region. The country is one of the two South-MED countries covered in this study (apart from Algeria) to have an explicit deposit insurance scheme. Created in 2006, the scheme is funded by the banks and compensates depositors for lost funds up to 80,000 Moroccan Dirhams (DH) (approximately €7,200 as of end-2010) per depositor.[19] If the fund is insufficient to pay out all eligible deposits, proportional haircuts are applied to the legal protection. The funds may also be used to provide emergency credit to problem banks, which has been identified as a potential source of conflict by the IMF in its most recent FSAP update, even though the fund has never been used for that purpose in practice (IMF, 2008).

As another regional 'first', a private credit bureau became operational in October 2009. The bureau is developed and operated by Experian, which is a global leader in credit information services. The setup of private credit

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[17] In the IMF's (2008) assessment, the country's regulatory structure was compliant or largely compliant with 21 of the 25 BCP principles.

[18] The tier 1 requirements have been defined by Regulation No. 24/G/2006 on the prudential capital requirements for credit institutions on individual and consolidated bases. Upon receiving interest from several banks on the use of internal model-based approach to risk, BAM has started work on preparing the guiding principles with a preliminary implementation date of 2011-12.

[19] The coverage was raised from 50,000 DH by the 2006 banking law.

bureaus was heralded by a series of regulatory arrangements in 2007, delegating the credit information exchange functions to the private sector and effectively abolishing the similar functions of the public credit registers.[20] According to the legal framework for private credit bureaus, BAM acts as an intermediary in the flow of information. All regulated credit institutions, including microcredit institutions, are required by law (i.e. mandatory reporting) to provide positive and negative information about the creditors to BAM. The full data files are then passed over to the credit bureau.[21]

Despite the absence of formal agreements (i.e. MoUs) or participation (i.e. observer in European Committee of European Banking Supervisors – CEBS), the Moroccan authorities have also been relatively eager to cooperate with their EU counterparts on select matters. Cooperation on assisting publicly-owned institutions was in place in early 2000s. Moreover, BAM has shown its intention to engage in cooperation on the implementation of the internal ratings approach under Basel II and the upcoming Basel III agreements.

To summarise, Moroccan authorities have successfully implemented the reform programmes over the last decade to modernise the financial services sector. Today, the country is exemplary for its banking regulations, deposit guarantee scheme, information-sharing infrastructure and in the microfinance sector. The main challenge the country will face in the upcoming years will be the potential for instability from external markets as capital flows and exchange rate policies are liberalised, as intended by

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[20] Regulations 27/G/2007 and 28/G/2007 of BAM. For more information on the fundamental aspects of the private credit bureaus in Morocco, see the document entitled "Enjeux et Modes Opératoires de la Délégation de la Centrale des Risques de Bank Al-Magrhip", 26 November 2007 (available at http://www.bkam.ma/wps/wcm/resources/file/eb455a459c84942/Dpliant%20Dlgation%20de%20la%20gestion%20du%20Service%20Central%20des%20Risques.pdf).

[21] As noted in Madeddu (2010, pp. 22-23), this innovative "delegated model" implemented by BAM is attractive as it i) prevents market segmentation through the formation of credit bureaus that have data from only some creditors (i.e. 'vertical informational silos'); ii) can facilitate entry by other private information providers; iii) prevents lenders' reluctance to share data directly with the private bureaus; and iv) supplements the central bank's supervisory role by creditor information.

the authorities. Although the IMF's (2008) stress tests have revealed that the banking sector is resistant to credit, liquidity and interest risks, there are vulnerabilities arising from concentration risks and exposure to the real estate sector. More broadly, the authorities have to ensure that the recent jump in private credit does not lead to a resurgence of non-performing loans.

1.5 Tunisia

Following Morocco, Tunisia's banking system is the most developed in the region, with total assets representing nearly 97% of GDP in 2009. The banking system dominates the financial markets, with the capital and insurance markets representing a very small proportion of the overall financial activities.[22] The banking sector is comprised of 18 commercial banks, three of which remain publicly-controlled, i.e. with majority state-ownership.[23] The system is relatively dispersed, with the market share of the largest three banks accounting for about one-third of the total assets of commercial banks.

The banking system is supervised by an organ of the central bank, Banque Central de Tunisie (BCT), although the control over the state-owned institutions is exercise in part by the Ministry of Finance. The head of the supervisory body is appointed by the Governor of the central bank with an undetermined tenure.

The macroeconomic conditions have remained relatively stable in the past decade. Following structural reforms, fiscal and external vulnerabilities were significantly reduced. Real GDP growth in this period remained at around 5% while inflation remained less than 6% for most of the decade. Despite these positive aspects, unemployment remains high, at around 13 to 14%. The conditions are particularly dire among the youth, with 30% of those aged 15-24 remaining unemployed. Indeed, the high unemployment rates are blamed as one of the principal causes (in addition

[22] The market capitalisation and turnover of the Tunis Stock Exchange remains at 15% and 4%, according to the 2009 year-end figures.

[23] Other credit institutions, including development banks and microfinance institutions, are not included in the figures and constitute a negligible proportion of the financial system.

to low levels of accountability) of the protests and fall of the Ben Ali government at the beginning of 2011.

Starting with late 1990s and early 2000s, the Tunisian authorities have embarked on an ambitious financial reform. In addition to attempts to strengthen the credit culture, the authorities have also revised the laws on the central bank and credit institutions in the 2000s.[24] The prudential rules, first adopted in 1991, were revised in 2001, setting the standards on capital requirements, reserve requirements, liquidity requirements, risk management and relations with affiliates.[25] In the same year, new laws were enacted to give the BCT a number of surveillance powers on monetary and on-site supervision.[26]

Table 1.11 Structure of Tunisian economy and banking system

	2000	2004	2009
GDP per capita ($)	2,036	2,845	3,852
GDP per capita growth (%)	..	5.1%	1.9%
Inflation (%)	..	3.6%	3.7%
Commercial bank assets (% of GDP)	89%	89%	97%
Top-3 banks (% of total assets)	..	..	34%
Number of commercial banks	13	16	18
… of which: public	5	3	3
Public banks (% of total assets)	49%	44%	32%
Branches	..	..	1,209
Inhabitants per branch	..	..	8,541

Sources: IMF and Banque Central de Tunisie (BCT).

Although recent privatisation efforts have reduced direct state-ownership, public banks continue to play a predominant role in the banking sector, representing just under one-third of total assets in 2009. The

[24] Law no. 58-90 of 1958 on the creation and organisation of the Banque Centrale de Tunisie (BCT) was amended in 2006 (Law No. 2006-26) and in 2007 (Law No. 2007-69). The law on credit institutions (Law no. 2001-65) was amended in 2006 (Law No. 2006-19).

[25] Regulation No. 91-24 of 1991 on prudential regulations concerning banks was revised in 2001 by Regulation 2001-04.

[26] BCT's supervisory powers are defined by Law No. 2001-65 and its amendment Law No. 2006-19.

three banks that remain majority-owned by the state are among the largest four banks in the country. The largest one, which also happens to be the second largest bank in Tunisia, Société Tunisienne de Banque (STB), accounts for around one-third of all loans to the tourism sectors. The second largest public bank, Banque National Agricole (BNA), provides more than half of the loans to the agriculture and fisheries sectors. The third public bank, Banque de l'Habitat (BH), provides nearly one-fifth of the real estate loans, which represent a substantial proportion of total outstanding credit.

One of the key characteristics of Tunisia's banking system is the persistently low quality of assets, emanating from problem loans. In 1997, the authorities launched a plan to tackle the problem though restructuring. As noted in IMF (2002 and 2007), the authorities allowed banks in the early 2000s to create asset management companies as their subsidiaries in order to purchase and pool NPLs. The problem loans to public enterprises were similarly restructured, this time backed with government guarantees. In 2001, reporting requirements were toughened, requiring banks to obtain detailed financial statements certified by external auditors or rating agencies for large exposures.[27] Starting in 2004, the BCT forced banks to allocate their net incomes and withhold dividends, if necessary, to cover any under-provisions. Two public banks with extensive problem loans were privatised in the same year, even though the government continues to hold significant minority stakes. Legal reforms to facilitate recovery were also implemented in recent years in an attempt to streamline sale of assets and restrict undue delays in recovery of claims. More recently, the authorities increased the provisioning requirements and expanded the tax deductibility of provisions.

[27] Detailed information requirements for large exposures were set by Regulation No. 2001-12.

Table 1.12 Assets and liabilities of Tunisian banks (millions of Tunisian Dinar – TD)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010*
Assets	23,745	26,278	27,015	28,185	31,138	33,954	36,470	41,377	46,682	51,892	53,840
Cash	146	144	139	139	138	136	201	241	235	259	276
Deposits at BCT	302	605	530	558	764	1,058	1,341	1,920	3,204	3,689	2,824
Foreign assets	928	808	957	853	906	1,281	1,393	1,996	1,755	2,160	2,258
Claims on state	1,620	1,487	1,559	1,664	2,145	2,271	2,609	2,817	2,501	3,060	3,014
Private credit	14,538	16,241	17,122	18,141	19,981	21,561	23,149	25,465	29,322	32,191	34,715
Securities	746	797	1,020	1,120	1,232	1,415	1,539	1,650	1,803	2,128	2,252
Other assets	5,465	6,195	5,688	5,711	5,972	6,232	6,237	7,287	7,863	8,404	8,501
Liabilities	23,745	26,278	27,015	28,185	31,138	33,954	36,470	41,377	46,682	51,892	53,840
Sight deposits	3,583	3,959	3,697	3,919	4,265	4,721	5,422	6,271	7,000	8,263	8,795
Other deposits	8,365	9,293	10,119	10,868	12,151	13,273	14,674	16,539	19,278	21,427	22,261
Foreign liabilities	2,783	2,886	3,280	3,180	3,695	4,194	4,331	4,899	5,147	5,819	5,804
Liab. to BCT	454	870	504	444	93	4	123	17	18	2	53
Special resources	849	945	1,080	993	1,033	1,105	1,135	1,092	1,139	1,163	1,177
Equity	2,841	2,881	3,076	3,431	4,014	4,486	4,928	5,471	6,258	7,064	7,225
Other liabilities	4,870	5,444	5,260	5,350	5,888	6,170	5,857	7,089	7,842	8,153	8,525

* May 2010 figures.

Source: Banque Central de Tunisie (BCT).

Despite regulators' attempts and a generally good performance of the Tunisian economy in recent years, the NPLs have remained relatively high. As shown in Table 1.13, over the last decade the ratio of NPLs to gross loans has remained around 15 to 20% for most years in both publicly-owned and privately-owned banks. The NPL ratios have declined in recent years in line with the objectives set by authorities to reduce them below 15% by the end of 2009 (see Table 1.13). These developments are, at least in part, due to the improved risk assessment practices on the part of banks through the increased availability of borrower information, reforms to facilitate the sale of collateral, privatisation of public banks as well as the new tax and regulatory arrangements on provisioning. Nevertheless, the NPLs continue to be a problem in the country's banking sector, representing over 13% of gross loans.

Table 1.13 Tunisian banking system, financial soundness indicators (%)

	2000	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
Reg. capital (as % of RWA)	11.3	11.1	10.2	9.3	11.6	12.4	11.8	11.6	11.7	12.4
Private banks	10.6	10.5	10.3	8.4	12.4	13.5	12.1	9.7	11.0	11.6
Public banks	11.8	11.8	10.1	10.8	10.1	10.0	9.3	9.9	9.6	10.9
NPLs* (as % of total loans)	21.6	19.2	20.9	24.2	23.6	20.9	19.3	17.6	15.5	13.2
Private banks	15.4	16.1	18.1	21.6	20.4	20.0	19.0	18.1	15.3	12.5
Public banks	26.8	22.8	24.3	26.7	27.4	22.1	19.7	17.3	15.9	14.1
Provisions (as % of NPL)	49.2	47.4	43.9	44.1	45.1	46.8	49.0	53.2	56.8	58.3
Private banks	54.7	47.7	44.9	39.9	43.5	45.9	48.4	52.0	55.0	59.2
Public banks	46.6	47.1	42.9	46.2	47.6	49.1	50.2	55.0	58.1	57.1
RoA	1.3	1.1	0.7	0.5	0.5	0.6	0.7	0.9	1.0	1.0
RoE	14.5	13.2	7.6	4.6	4.8	5.9	7.0	10.1	11.2	11.7

Sources: IMF (2007 and 2010d).

Aside from politically-connected lending, several reasons can be put forward to explain the persistence of problem loans in Tunisia's banking system.

First, some of the recent jumps in problem loans in the existing loan portfolio can be explained by the external economic environment and events. For example, the global slowdown and the recession in the tourism sector following the September 11, 2001 events and the April 2002 terrorist

attack in Djerba have severely affected the asset quality of the banking system. This pushed the NPL ratios up by 4 to 5% between 2001 and 2003.

Second, NPL ratios often have a lagged policy response when the stock of older NPLs does not improve significantly over time. According to IMF (2009), although the new NPLs remain low, the asset quality of the existing stock of loans has not improved over the last few years. This was largely due to the perverse incentives provided by the prior restructuring efforts, giving banks no incentives to opt for a deeper restructuring (i.e. full write-offs) or a thorough assessment of the debt-repayment capacity of borrowers.

Third and last, most of the recent policies to address credit quality problems are backward-looking and do not have a direct impact on reducing NPLs before they arise. This includes a majority of the regulatory arsenal put forth by the authorities to address the high level of NPLs, such as the use of provisions or the legal reforms, which have only an *ex-post* impact. Indeed, these measures can only mitigate the transaction costs and legal uncertainties once the loans are deemed problematic. More forward-looking risk assessment measures are needed to minimise NPLs before they arise. These include the adoption of Basel II standards, more regular stress-testing, developing CAMEL-type[28] regulatory assessment tools and enhancing the credit information environment by developing a private credit bureau (IMF, 2010d).[29]

The (previous) presidential programme of 2010-14 identifies the strengthening of the financial sector as a key policy objective. Perhaps most importantly, the authorities have shown their willingness to implement the Basel II framework, although no clear timeline has been set for the adoption of the international standards. A deposit insurance scheme is also under preparation under the programme. Other aims include the consolidation of the banking institutions, increasing banks' impact on the economy, restructuring the public sector and promoting Tunisia as a regional

[28] CAMEL-type regulatory tools combine ratios on capital adequacy, **A**sset quality, **M**anagement, **E**arnings, and **L**iquidity to develop a composite rating score that is used to assess the soundness of financial institutions.

[29] According to the Tunisian authorities, an Early Warning System that permits the BCT to rapidly intervene in banks in difficulty is being created.

banking services hub. The relevance of the programme in the aftermath of the events of January 2011 remains to be seen.

Despite the absence of formal arrangements with EU supervisors, the BCT will take part in a 'twinning project' with the Banque de France to put in place the monetary policy tools for supporting price stability and reinforcing institutional capacities, including transparency of monetary policy actions.

As the events in the beginning of 2011 amply demonstrate, political stability is a key challenge for the country and the region as a whole. It is therefore questionable to what extent these ambitious aims, especially those relating to the branding of Tunisia's banking sector as a regional centre, can materialise without stable and sustainable political conditions. In addition, the Tunisian authorities have to aim more at devising a forward-looking supervisory and regulatory regime, giving banks the proper incentives and ability to manage risks and limiting moral hazard.

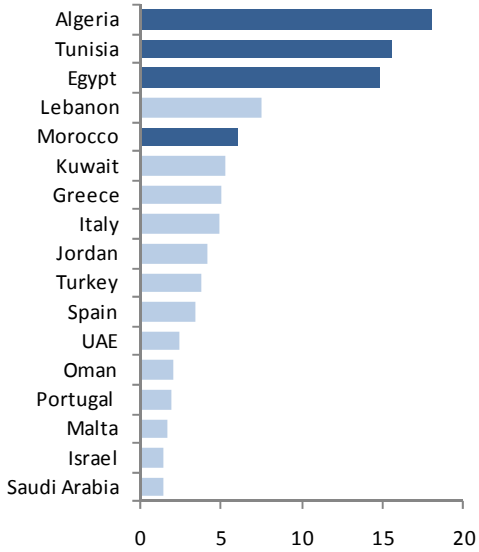
1.6 Summary

The foregoing analysis reveals several common features of the banking sectors of the Southern Mediterranean countries. In recent years, the authorities of the four surveyed countries have engaged in a variety of reforms to modernise their banking systems. These include restructuring and privatisation of public banks, implementation of prudential regulation and risk management frameworks and enhancing supervisory responsibilities. Morocco and Egypt have improved the availability and sharing of credit information. These reforms have led to a persistent growth of credit to the private sector.

The discussion above shows that one potential explanation of financial under-development is the heavy presence of the state, either directly in the form of publicly-owned banks or indirectly in the form of public debt in banks' portfolios. For the latest years for which data are available (2008-09), the market shares of public banks range from a low of one-quarter of total banking assets in Morocco and Tunisia to highs of 67% over 90% Egypt and Algeria, respectively. These ownership structures and the underlying conditions, such as the high returns that government debt earns in Egypt, are likely to crowd out the credit to private enterprises. Indeed, public debt and loans, including loans to public enterprises, account for nearly one-third of the total balance sheets of the Algerian and Egyptian banks, surpassing the share of private credit.

Aside from crowding out private credit and constraining financial development, the state's dominant role in the banking sector appears to have a serious negative impact on credit quality. Indeed, the ratios of non-performing loans to gross loans for the Southern Mediterranean countries are among the highest globally. Owing to the relatively limited role of the state, Morocco is once again an exception, with the lowest NPL ratios among the four countries. Moreover, the four countries have implemented policies to improve the quality of loans, including privatisation improvements in credit information systems, loan repurchase programmes and other plans to clean balance sheets. Nevertheless, the banking systems of the four Southern Mediterranean countries have the worst loan qualities in the region (Figure 1.4).

Figure 1.4 Non-performing bank loans in the Mediterranean and Middle East (% of total loans, 2008)



Note: The 2008 figures on NPLs do not reflect substantial worsening in loan qualities in most countries, notably Greece.

Sources: IMF, *Global Financial Stability Report*, October 2010 and Bank of Algeria.

The persistence of the non-performing assets and underdeveloped financial systems remain leads to questions on the adequacy of the recent regulatory reforms in the banking sector in the four countries covered in this study. As noted above, the prevalence of the publicly-owned banks may be at the root of the problem. However, shortcomings in various legal,

regulatory and supervisory frameworks may also matter. The next section provides a deeper analysis of the regulatory conditions over several dimensions, providing the analytical tools for making cross-country comparisons over time.

2. CONVERGENCE OF BANKING SECTOR REGULATIONS

The previous chapter has shown that all the four countries have faced substantial reforms in their financial sectors in recent years. In this chapter, a number of indices are developed in order to assess and track the evolution of the adequacy of banking regulations using publicly available and comparable surveys on banking regulations for a large sample of countries since the early 2000s. To allow comparability across the Mediterranean, the section develops the measures for a total of 11 Mediterranean countries, including five South-MED countries (Algeria, Egypt, Israel, Morocco and Tunisia); and six EU-MED countries (Cyprus, Spain, Greece, Italy, Malta and Portugal).

The aim of this section is to develop quantitative measures of regulatory development that could serve as an indicator in the empirical exercises that follow. Seven distinct regulatory areas are identified for assessing different dimensions of regulatory adequacy. These cover definition of banking, licensing requirements, capital requirements, independence and power of supervisor, presence of safety nets, disclosure and availability of credit information using distinct data sources. Although these provide a broad view of the extent of regulation, several potential areas (i.e. payment and settlement systems, credit guarantee schemes, financial inclusion, etc.) have been excluded due to the unavailability of comparable information sources for the sampled countries.

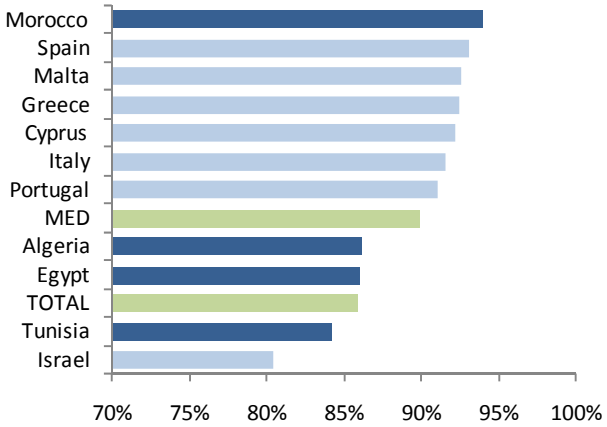
2.1 Methodology

The main source of information for the regulatory adequacy indices are the Bank Regulation and Supervision Surveys (henceforth the 'BRSS')

developed by Barth et al. (2001), later revised in 2003 and 2007.[30] All three surveys are built on official responses to questionnaires that were sent to the national regulatory and supervisory agencies of over 120 countries, most of which were returned.[31] The questions cover a wide variety of areas, including banking activity, entry, capital regulations, supervisory authority, private monitoring, deposit insurance and external governance.

One of the key advantages of the BRSS is that the questionnaires have remained relatively similar over the years, although the later versions cover more areas than the original survey. This particular feature of the datasets allows us to make comparisons by building composite indices based on specific answers over time to track the evolution of the different regulatory and supervisory elements.

Figure 2.1 Average response rates for Bank Regulation and Supervision Surveys (BRSS) of Barth et al.



Note: Response rates are averaged over the three surveys and correspond to the number of questions with complete (i.e. excluding empty or partial) answers divided by the total number of questions for that year.

Source: BRSS.

[30] For the discussion of the results and other aspects of the data, see Barth et al. (2006 and 2008).

[31] The number of countries responding to the survey has increased over time. The original survey of Barth et al. (2001) had 117 country respondents, including a wide diversity of developed, developing and underdeveloped countries. The later revisions achieved greater participation, with 152 in 2003 and 142 country participants in 2007.

A key disadvantage of the Barth et al. (2001) survey is that the number of questions responded to in the 2003 and 2007 revisions vary from one country to another. For the Mediterranean countries, the aggregate response rates are in generally greater than for the entire sample. As noted in Figure 2.1, Morocco's regulatory authorities have been the most responsive to the survey, with nearly a 95% average response rate. In turn, the other three Southern Mediterranean countries – Algeria, Egypt and Tunisia – have achieved the lower response rates, at about 85%, which is below the mean for the Mediterranean countries and comparable with the average rate for the entire sample.

Although the response rates appear high in general, the existence of even a single partial or empty answer renders the construction of a relevant composite index dubious since there is no clear way of scoring for missing responses.[32] Moreover, some countries, such as Tunisia and Algeria, have not responded to all the three surveys, with Tunisia responding only in 2003 and Algeria in 2003 and 2007. To avoid any inconsistencies, all of the indices used in this study are constructed using questions for which there are complete (i.e. non-missing) responses. Moreover, the assessment of regulatory convergence is based on the calculation of regional averages, weighted by the total banking assets of each country. These allow us to make a sounder judgment of whether the regulatory conditions on both coasts of the Mediterranean are converging.

A second disadvantage of Barth et al. (2001) and its revisions was that the questions did not cover all the regulatory and supervisory areas. Two major areas where the surveys lacked depth were the details on deposit insurance guarantee schemes and institutional variables, such as the extent of credit information sharing and creditors' legal rights. In order to cope with this shortcoming, several additional sources were used to supplement the construction of the composite indices, including the deposit insurance database of Demirgüç-Kunt, Karacaovalı and Laeven (2005), IMF and World Bank's Financial Sector Assessment reports, World Bank's Doing Business Indicators and the websites of the national authorities.

In addition to the data from international organisations and national authorities, a questionnaire of the Southern Mediterranean regulatory

[32] Our approach differs from Barth et al. (2006), where empty answers were scored as zero in the construction of the relevant indices.

agencies was also conducted to obtain deeper and more recent information. The questionnaires were of a quantitative and qualitative nature, comprising an aggregate data collection exercise (section I), which was completed by the country experts using official data and a face-to-face interview (section II) with a senior official from the regulatory or supervisory agency. In addition to completing some of the missing elements of the Barth et al. (2001) surveys, the surveys also focused on existing cooperation with the EU authorities as well as self-assessments on foreign entry and competition, quality of audits, issues relating to the application of Basel II standards, credibility of the insurance schemes and other challenges.[33]

The face-to-face interviews and data collection were carried out by country experts Mohammed Yazid Boumghar (Algeria), Jawad Kerdoudi (Morocco) and Moez Labidi (Tunisia). No interviews or data requests were conducted in Egypt. For Tunisia and Morocco, the responses for the face-to-face interviews were low, with a large number of the requested items remaining unanswered. A face-to-face interview could not be held with the Algerian authorities, although a detailed summary of the financial market developments and regulations were provided by the country expert (see Table 2.1).

Table 2.1 Response rates to the CEPS questionnaire (% of questions responded)

	Algeria	**Tunisia**	**Morocco**
Section I – Data request			
1. Supervisory agency	70%	90%	0%
2. Entry & licensing	43%	49%	0%
3.Information disclosure	50%	100%	0%
4. Prudential requirements	22%	67%	0%
5. Crisis management	33%	100%	0%
6. Deposit insurance scheme	71%	n.a.	0%
7. Market infrastructure	63%	100%	0%
TOTAL – Section I	49%	65%	0%

[33] The full set of questions contained in the questionnaire is reproduced in Annex 1.

Section II - Interviews			
1. Supervisory agency	0%	86%	64%
2. Entry & licensing	0%	83%	67%
3.Information disclosure	0%	75%	75%
4. Prudential requirements	0%	100%	79%
5. Crisis management	0%	95%	90%
6. Deposit insurance scheme	0%	n.a.	88%
7. Market infrastructure	0%	75%	13%
8. Final remarks	0%	100%	75%
Total – Section II	0%	90%	72%
Total – Sections I & II	31%	75%	27%

Notes: See Annex for an entire list of questions covered under each area. There were no responses to Sections I and II from the Moroccan and Algerian authorities, respectively. The questionnaires were not sent to the Egyptian authorities. Since a deposit scheme is not in place in Tunisia, the questions under part 6 were not applicable.

Seven composite indices are created using the various data sources identified above, covering:

I. Scope restrictions
II. Entry obstacles
III. Capital requirement stringency
IV. Supervisory authority
V. Deposit insurance
VI. Private monitoring
VII. Credit information and laws

These areas provide a relatively broad coverage of the quality and evolution of banking regulation and supervision. The composite indices were calculated for each country and also for the South-MED (plus Israel) and Euro-MED countries included in our sample.

The following sections revise and compare the evolution of the regulatory conditions in each of the seven areas noted above.

2.2 Area I: Scope Restrictions

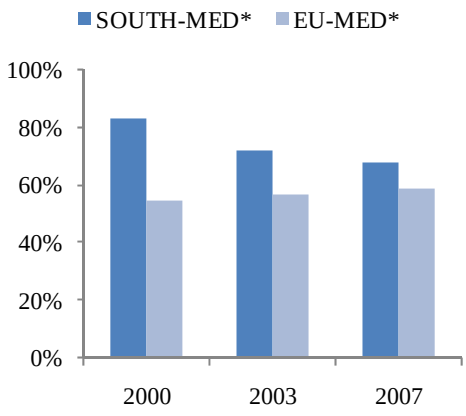
As is evident from the differing business models of financial institutions across the world, financial institutions are growing increasingly complex and offering a wider spectrum of products. Some countries restrict banking

to a narrow range of activities, such as taking deposits and issuing credit with little flexibility in debt and asset management, while others provide more flexibility. The regulations typically restrict the extent to which banks may engage in the business of i) securities underwriting, brokering, dealing, and all aspects of mutual fund industry; ii) insurance underwriting and selling; and iii) real estate investment, development and management.

The composite indicator used in this area to assess the extent of restrictions imposed on banking activity is based on the Banking Activity Restrictiveness Index in BRSs.[34] The surveys provide measures on the degrees of restrictiveness for each one of the above three categories, ranging from unrestricted (1 point) and mostly permitted (2 points), to fully prohibited (4 points). The Banking Activity Restrictiveness Index sums up the scores for each category to come up a measure of the extent to which restrictions are present on banks, with a maximum restrictiveness score of 12 points, where no activity other than narrow banking is allowed.

Table 2.2 Banking activity restrictiveness (% of maximum score)

	2000	2003	2007
Algeria		42	50
Egypt		58	58
Israel	83	83	75
Morocco	83	58	75
Tunisia		67	
*SOUTH-MED**	83	72	68
Cyprus	42	67	67
Spain	50	42	42
Greece	58	67	50
Italy	58	67	75
Malta	58	67	67
Portugal	50	58	75
*EU-MED**	55	57	59



Note: Greater values represent more restrictive rules as percent of maximum of 12 points.

* Regional averages are weighted by total banking assets.

Source: BRSS.

[34] Banking activity restrictiveness index is constructed by summing up the scores for the World Bank Guide (WBG) questions 4.1-4.3, as detailed in Appendix 2 of Barth et al. (2006).

The country-specific results summarised in Table 2.2 show that the regulators in the South-MED impose more restrictions than the EU-MED countries in general. A deeper analysis of the survey results (not included here) shows that on both coasts of the Mediterranean, regulators impose some form of restriction on insurance activities, although at a declining extent over the years. Israel's banks face the least flexibility among the sampled countries, where all real-estate activities and some securities and insurance activities are prohibited. Morocco's banks cannot engage in real-estate investment, except for a brief period around 2003. In turn, Algeria's banks face few restrictions, with complete freedom to engage in securities and real-estate investment activities. Egypt imposes some restrictions on insurance and real-estate, largely comparable with the EU-MED countries. Although it is not possible to judge the changing conditions in Tunisia due to the lack of data for 2000 and 2007, the country remained close to the South-MED averages. Turning to the EU-MED, while the banks in Spain and Greece face fewer restrictions than their neighbours, there appears to be an opposite tendency for the other countries, especially for Cyprus, Italy and Portugal.

The figures show that there is a convergence tendency when the regional weighted-averages are considered. Indeed, while the EU-MED weighted-averages move up gradually over time, the South-MED averages go down, converging on the former. However, there are clear differences within each sub-region. For example, Israel imposes substantial restrictions while Egypt has the most flexible system. As for the EU-MED, Spain's system imposes the least amount of restrictions while Italy has increasingly narrowed the scope of banking activities over the years.

2.3 Area II: Entry obstacles

The competitive conditions in a country depend crucially on the regulatory structures, and conditions hinder or prevent entry into the banking sector by domestic or foreign banks. In some countries, the obstacles may take the form of excessive licensing or entry requirements, which is applicable for domestic and foreign banks together. In others, the governments may restrict foreign entry as part of a conscientious policy choice, either explicitly through setting limits on ownership or more importantly by

rejecting foreign applications in a disproportionate manner.[35] Lastly, a banking sector that is predominantly state-owned may be disadvantageous for the development of privately-owned banks.[36]

Three indicators are utilised to construct the composite index assessing the impact of entry obstacles.

The first indicator that comes to mind for measuring how much the regulatory structure obstructs entry are the legal licensing requirements, which may hamper entry by making the procedures unnecessarily cumbersome. The relevant measure is based on the set of requirements for the licensing application to be considered valid. The index is built on the total number of required documents, including: i) draft by-laws, ii) organisational chart, iii) financial projections, iv) financial information on potential shareholders, v) background of directors, vi) background of management, vii) details of funding sources and viii) market differentiation intended.[37]

Table 2.3 shows that most South-MED countries impose similar levels of stringency in terms of entry requirements with the EU-MED countries. In particular, all of the eight requirements named above are commonplace in almost all of the South-MED. In this respect, the entry requirements in Israel can be clearly distinguished, where potential entrants are only expected to submit financial projections and backgrounds of directors as well as managers. As for the EU-MED, most countries require all or almost

[35] Denials of domestic banks are not considered here as they are more likely to arise from prudential concerns, including funding deficiencies or other financial problems, which are common place for home-grown banks in countries with less developed financial systems that have limited access to external capital.

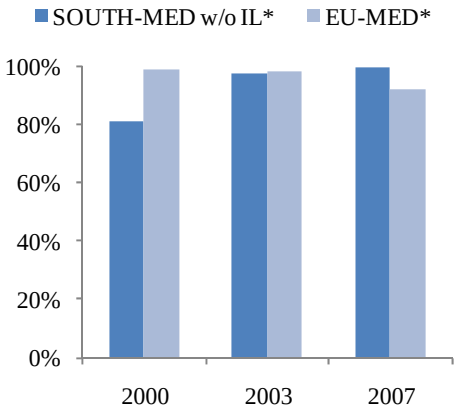
[36] Aside from their potentially negative impact on entry, state-owned banks may fulfil an important developmental role in under-developed regions. Recent evidence shows that in the Middle East and North Africa (MENA) region, public banks compensate for the low private bank involvement in the SME sector, engaging in more risky loan issuance, although they seem to have less than sufficient capacity to manage such risks (Rocha et al., 2010b). See also Andrianova et al. (2010) for recent evidence that government ownership of banks is associated with higher long-run growth rates in developing countries.

[37] The entry into banking requirements index is constructed by summing up the scores for the World Bank Guide (WBG) questions 1.8.1-1.8.8, as detailed in Appendix 2 of Barth et al. (2006).

all of the eight documents. Cyprus has also reduced its requirements in recent years, where potential entrants are required only to submit draft by-laws and the background of managers as well as directors.

Table 2.3 Entry into banking requirements (% of maximum score)

	2000	2003	2007
Algeria		88	100
Egypt	75	100	100
Israel	75	38	38
Morocco	100	100	100
Tunisia		100	
*SOUTH-MED**	78	71	71
Cyprus	100	75	38
Spain	100	88	88
Greece	100	100	100
Italy	100	100	100
Malta	88	88	88
Portugal	100	100	88
*EU-MED**	99	98	92



Note: Greater values represent greater restrictive rules as share of a maximum of 8 points.
* Regional averages are weighted by total banking assets.
Source: BRSS.

These results show that most countries in the Mediterranean require similar documents for licensing. This means that these figures probably gives at best an incomplete picture of the obstacles faced by potential entrants. More realistically, these requirements are most likely used on both sides of the Mediterranean to screen potential entrants, ensuring that they are 'fit and proper' to run a banking business. In contrast, in Israel and Cyprus, the bar is set much lower, possibly to attract foreign and domestic banks to set up their offices on these countries to facilitate entry.

As noted above, the set of licensing requirements do not paint a complete picture of entry obstacles. The second index considers the more discretionary power that the authorities enjoy by granting or rejecting entry. More specifically, the index is based on the fraction of foreign banking licensing applications that have been denied within the past five years from the day the questionnaire was conducted.[38] The relevant data

[38] Share of foreign denials are addressed by World Bank Guide (WBG) question 1.10, as detailed in Appendix 1 and 2 of Barth et al. (2006).

are only available for the 2003 and 2007 questionnaires.

Table 2.4 clearly shows that foreign banking application denials are more commonplace in the South-MED countries, which is in stark contrast with the EU-MED where such denials are very rare.[39] In particular, all of the (four) foreign banking licensing applications for the years between 1998 and 2002 have been denied in Egypt. More recently, Egypt has denied nearly a third of the foreign licensing applications (13 out of 41) within the five years leading to 2007. Morocco has denied one of the two applications at the same period. Israel has also refused nearly one-fifth of all the foreign applications, potentially offsetting its relatively relaxed licensing requirements as noted above. Algeria and Tunisia do not appear to use foreign denials as an entry obstacle. These results show that foreign denials could be one place where there is little sign of convergence between some of the South-MED and EU-MED countries.

The third and last indicator on entry obstacles relates to the dominance of government-controlled banking. The index is a simple measure of the market power of banks that are majority-owned by the state, i.e. 50% or more, in terms of total assets.[40]

Table 2.5 points at significant differences on both sides of the Mediterranean. While the state has little control over banking in the EU-MED countries, except for Portugal and Greece, public banks represent between 30 to 90% of the banking activity in the South-MED. This is particularly the case for Algeria and Egypt where the state has a control over a significant majority of the banking sector. State-owned banks in these countries often enjoy implicit or explicit state guarantees, with access to public funding and possibly subject to less strict or flexible rules, which may be a disadvantage for potential entrants and more generally undermining competition (Barth et al., 2004).

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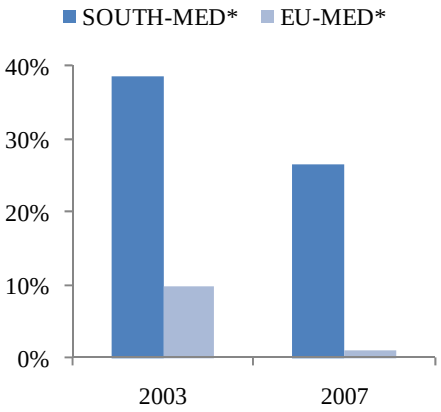
[39] The responses to our own survey do not reveal any particular reasoning—political or otherwise—for the elevated foreign denial rates in the four Southern-Mediterranean countries. In their response to the relevant question on foreign entry (Question 2.3.a, see Annex), the Tunisian authorities have stated that although foreign entry could be advantageous on bank governance and accumulation of 'know-how', it can also serve to elevate risks by facilitating the transmission of external shocks to the domestic financial system.

[40] Share of government-controlled banks is addressed by World Bank Guide (WBG) question 3.8.1, as detailed in Appendix 1 of Barth et al. (2006).

Table 2.4 Share of foreign applications denied

	2003	2007
Algeria	0%	
Egypt	100%	32%
Israel	17%	20%
Morocco		50%
Tunisia	0%	0%**
*SOUTH-MED**	39%	27%
Cyprus	0%	0%
Spain	7%	0%
Greece	14%	0%
Italy	13%	3%
Malta	0%	0%
Portugal	0%	0%
*EU-MED**	10%	1%



Notes: Question not included in the 2000 questionnaire.

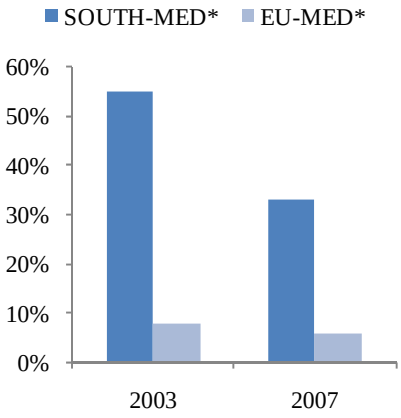
* Regional averages are weighted by total banking assets.

** For Tunisia, the 2007 result obtained from own survey.

Source: BRSS.

Table 2.5 Market share of government-controlled banks (% of total assets)

	2003	2007
Algeria	96	90
Egypt	65	67
Israel	46	0
Morocco	35	29
Tunisia	43	
*SOUTH-MED**	55	33
Cyprus	4	3
Spain	0	0
Greece	23	
Italy	10	9
Malta	0	0
Portugal	23	25
*EU-MED**	8	6



Notes: Figures represent share of banks with at least 50% state ownership.

* Regional averages are weighted by total banking assets.

Source: BRSS.

Put together, the three indices provide a contrasting picture of the sampled countries in terms of entry obstacles. The set of documents needed for a valid licensing application are similar on both sides of the Mediterranean to large extent. These requirements are most likely used to ensure that only 'fit and proper' undertakings are allowed to operate as banks. Only two countries, Cyprus and Israel, can be distinguished in this respect, with few licensing requirements. Turning to less official controls that the authorities exert on the banking sector, foreign entry denials are proportionally high in some of the South-MED countries, particularly in Egypt, Israel and Morocco. The state also maintains a substantial direct control over the banking sector in most of the countries in the region, with publicly owned banks accounting for more than two-thirds of the banking sector activities in Algeria and Egypt. In short, although the official entry conditions appear comparable, there are significant and persistent entry obstacles that can curtail competition in the South-MED banking sectors, possibly emanating from official authority in practice and political interference.

2.4 Area III: Capital requirement stringency

One of the common aims of regulating banks is to ensure that they operate soundly. Regulatory capital requirements are an important part of these rules, which determine the minimum amount of capital a bank should hold relative to its total assets.

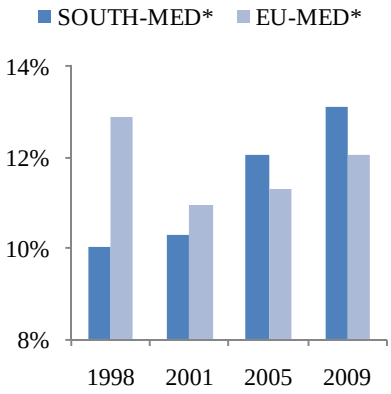
Comparing the capital ratios represents a good first step towards understanding how sound the banking sector is. There are clear signs that the capital ratios have converged over time. For example, as depicted in Table 2.6, the total capital ratios have converged over time across both sides of the Mediterranean over time. First of all, with the exception of Malta, which can be considered as an offshore centre, all the countries have maintained a total capital ratio of between 9 to 15%.[41] In recent years, the

[41] The banks in the so-called 'offshore financial centres' often provide a number of advantages to their clients, including low taxes, light regulation and account anonymity. These side benefits enable them to collect deposits at relatively low costs and place them in safe and liquid assets. As a consequence, these banks often have above-average capital adequacy ratios; see Barth et al. (2006, pp. 173-177, especially Figure 3.27), for evidence.

banks in South-MED countries have actually become better capitalised, with the average capital ratios reaching to 13% in 2009.

Table 2.6 Regulatory capital ratios (% of risk weighted assets)

	1998	2001	2005	2009
Algeria		11.9	12.0	
Egypt	10.2	9.8	14.1	15.1
Israel	9.2	9.5	10.7	12.6
Morocco	13.1	12.6	11.5	11.8
Tunisia		11.1	12.4	12.4
*SOUTH-MED**	10.0	10.3	12.1	13.1
Cyprus	9.9	14.0		
Spain	12.5	13.0	11.7	12.2
Greece	11.4	13.6	13.3	11.7
Italy	13.4	10.4	10.6	12.1
Malta	15.3	18.4	20.6	23.9
Portugal	12.3	9.5	11.3	10.5
*EU-MED**	12.9	11.0	11.3	12.0



Notes: Figures represent share of total capital in risk-weighted assets using the 1988 Basle Accord definitions.

* Regional averages are weighted by total banking assets.

Sources: BRSS and IMF Global Financial Stability Reports (GFSR).

The Southern-MED banks appear to be at least as well-capitalised as their Northern counterparts, especially after early 2000s. Does this result reflect the stringency of capital requirements or a lower appetite for risk? In other words, is it the regulations that make the banks sounder or are the banks simply not willing to take too many risks? In order to answer this important question, it is necessary to look deeper into the rules.

There are different ways of measuring the stringency of capital requirements. The index that is used here gives consideration to the types of capital allowed, the risk-weights applied, and whether the minimum capital ratios vary with risk. More specifically, the capital stringency index aims to determine the extent to which capital requirements restrict leverage potential and risky behaviour, including questions on i) whether the minimum capital-to-asset requirements are in line with 1988 Basle Accord definitions; ii) whether the minimum ratio varies with the bank's credit risk or iii) market risk; and whether the value of iv) unrealised loan losses, v) unrealised security losses or vi) foreign exchange losses are deducted from

regulatory capital. Additionally, the index aims to measure the restrictions imposed on the source of regulatory capital, such as vii) whether these funds are verified by regulatory authorities; and, whether viii) cash and government securities, or more generally ix) non-borrowed funds are the only allowed forms of capital for initial disbursements and subsequent injections.[42] A greater number of affirmative responses to these questions lead to a higher stringency score.

Table 2.7 summarises the comparison of the stringency of the capital requirements for the countries in our sample. A quick glance through the figures reveals a contrasting picture. Among the South-MED countries, Algeria is a clear exception according to the results of the 2007 survey, with affirmative answers to all questions except the variability of minimum capital ratio according to an individual bank's market risk. The capital requirements are relatively flexible for other countries in the South-MED. For example, in Egypt minimum capital ratios do not vary and the unrealised loan, security or foreign exchange losses are not deducted from regulatory capital. The same also is the case for Morocco and, to a lesser extent, Israel.[43] The 2003 rules in Tunisia appear to be comparable, at least according the 2003 survey for which data are available, to the EU norms.

Among the EU-MED countries, Spain has the most stringent capital requirements, with affirmative answers to all of the nine questions in 2003 and 2007, followed by Portugal, Malta and Cyprus. For the latter two, there is a clear tendency of substantial strengthening of rules following their EU accession in 2004. Italy has the most lenient capital requirements, where the minimum capital ratios are constant for all banks, only unrealised securities losses are deducted from regulatory capital and there are no restrictions on the source of regulatory capital as noted in the questionnaire.

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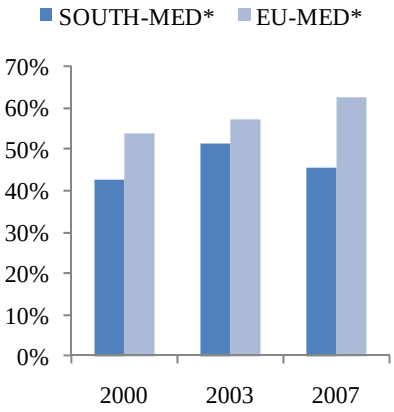
[42] The stringency of capital requirements index is addressed by World Bank Guide (WBG) questions 3.1.1, 3.2, 3.3, 3.9.1, 3.9.2, 3.9.3, and 1.5—1.7. The calculation of the index is detailed in Appendix 2 of Barth et al. (2006), pp. 337-338. One question (WBG 3.7) on the fraction of revaluation gains allowed as part of capital is omitted from the calculation of the index since the responses were not available for most countries in our sample.

[43] Morocco has recently enacted laws to make its capital requirements more stringent. In 2009, the minimum capital ratio was raised from 8% to 10%. The Moroccan authorities are also preparing to apply an even-higher capital adequacy requirement of 12% to the more risky undertakings.

Table 2.7 Stringency of capital requirements (% of maximum score)

	2000	2003	2007
Algeria		33	89
Egypt	56	33	33
Israel	33	67	44
Morocco	44	44	33
Tunisia		67	
*SOUTH-MED**	43	51	45
Cyprus	11	44	67
Spain	89	100	100
Greece	44	56	33
Italy	33	22	22
Malta	67	56	67
Portugal	44	78	89
*EU-MED**	54	57	62



Note: Greater values represent greater restrictive rules as a share of a maximum score of 9 points.

* Regional averages are weighted by total banking assets.

Source: BRSS.

With these results in hand, it is easy to see that there is a pattern of divergence. Some of the EU members have exceptionally flexible capital requirements, while the opposite is true for others, especially the new member states. In turn, capital requirements of most of the South-MED countries are in general less stringent than the EU-MED averages, especially regarding rules on deductions for unrealised loan losses and risk-based supervision.[44] Therefore, the capital adequacy ratios are high in the South-MED, most probably not because of the stringency of the underlying rules but because of the business models and the risk-aversion of banks.

[44] These results are largely in line with the key regulatory shortcomings identified for the region in Tahari et al. (2007), using compliance of European countries with Basel Core Principles on prudential regulations and requirements (BCPs 6 to 15) as a benchmark.

The findings should be interpreted with care. The capital requirement standards as summarised by the Basle Accords were designed, at least until very recently, for and by the regulators in advanced economies. Our own surveys in Morocco and Tunisia reveal that the regulators face constant challenges in applying the capital requirements. The key difficulties identified by the authorities are instructive and include: i) absence of external rating systems; ii) deficiencies in banks' information systems, which favour foreign banks over domestic institutions; iii) lack of well-developed credit information systems; iv) financial opaqueness in most enterprises and v) resistance to change, both from banks and borrowers. There is also evidence that the strict enforcement of capital adequacy requirements can lead to a severe 'credit crunch' in countries where the alternatives to bank-based financing are less developed (Chiuri et al., 2002). In turn, all of the Southern Mediterranean countries, with the exception of Morocco, have substantial stocks of non-performing loans, which warrant a more severe approach to provisioning practices.

These remarks highlight the fact that the regulations that are conceived with developed countries in mind may not always be applicable for developing countries, calling for refinements in certain areas, including—but not limited to—the applicability of the internal-ratings based approach to risk in Basel II.

2.5 Area IV: Supervisory authority

A key issue in the effectiveness of banking regulations is whether the supervisory authorities have the necessary powers to apply a variety of measures to discipline or, at the extreme, resolve banks that violate the rules or engage in imprudent activities. To that extent, in most countries, the supervisors take prompt corrective action against a bank if the capital falls below the minimally required level. If the deterioration of the bank continues, the supervisor must have the ability to find a resolution before the bank becomes insolvent, posing a systemic threat. In order to be effective, the supervisors need access to reliable and frequently updated information on the condition of the banks. The judicial systems often allow the courts to intervene, diminishing, postponing or reversing illegitimate supervisory actions; however these should not undermine the supervisor's chief responsibility of protecting and ensuring an orderly operation of the banking market. These aspects of the supervisory system issues should be in line with the regulatory priorities and not subject to political patronage.

In short, the supervisors should have the authority to discipline potentially troubled banks and resolve problems while remaining independent from political influence.

Two indices are used for measuring supervisory authority.

The first index measures the official power of the supervisor to take specific actions to correct or prevent problems. The relevant questions include the ability of supervisors to i) meet external auditors without approval of bank; ii) communicate directly with auditors on illicit activities undertaken by bank's management or directors; iii) receive disclosure of off-balance sheet items; iv) take legal action against negligent auditors; v) change organisational structure of troubled banks; vi) order management or directors to cover losses; vii) suspend dividend distributions; viii) bonuses and ix) management fees. Additionally, for the 2003 and 2007 surveys, additional questions on troubled banks were also considered on the supervisors' ability to x) declare insolvency; xi) suspend ownership rights; xii) supersede shareholder rights and xiii) fire or hire management or xiv) directors.[45] An affirmative answer to any of these questions represents a greater supervisory power. Some of these powers may only be exercisable by some supervisory-like institutions, such as the depository insurance agency or the bank restructuring agencies, which grant a more moderate power to supervisors.[46] In other cases, the courts or the government may be involved, which would serve to void the power of the supervisors in those actions.

Interestingly, Table 2.8 shows that the South-MED grant more power to their supervisory authorities. This is particularly the case in Egypt, which has responded affirmatively to all of the questions in all three surveys. In Morocco, the supervisory authorities also exert substantial power, although they cannot take legal action against external auditors for negligence. In Algeria, which is the only South-MED country with decreasing official power in 2007, the supervisory agency may no longer be

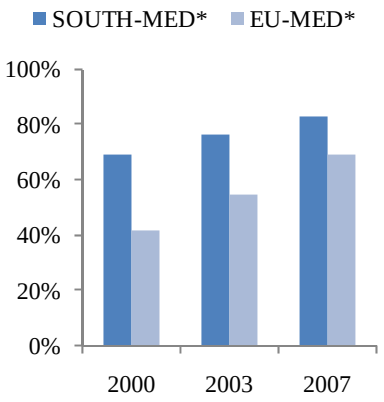
[45] The official supervisory power index is addressed by World Bank Guide (WBG) questions 5.5-5.7, 6.1, 10.4, 11.2, 11.3.1-11.3.3, 11.6, 11.7, and 11.9.1-11.9.3. The calculation of the index is detailed in Appendix 2 of Barth et al. (2006), pp. 339-342.

[46] In these cases, the aggregate score is augment by only ½ points; for more details, see calculation of the index is detailed in Appendix 2 of Barth et al. (2006), pp. 339-342.

able to suspend the granting of executive bonuses and management fees for troubled banks. In Tunisia, only the courts can declare a bank insolvent, which is increasingly the case in most developed countries.

Table 2.8 Official supervisory power (% of maximum score)

	2000	2003	2007
Algeria		100	79
Egypt	100	100	100
Israel	44	50	71
Morocco	78	89	93
Tunisia		93	
*SOUTH-MED**	69	76	83
Cyprus	100	57	86
Spain	44	64	82
Greece	56	86	71
Italy	33	36	50
Malta	67	100	100
Portugal	67	100	100
*EU-MED**	41	54	69



Note: Greater values represent greater restrictive rules as share of a maximum score of 14 points in 2003 and 2007 and 9 points in 2000.

* Regional averages are weighted by total banking assets.

Source: BRSS.

Turning to the EU-MED countries, it is interesting to see that the new member states, Cyprus and Malta, grant increasing official power to their authorities. The same applies to Portugal and, to a lesser extent, Spain. Italy once again obtains the lowest score in official supervisory power: unlike other countries in our sample, the Italian supervisory authority has no right to sue external auditors for negligence, order directors or managers to cover losses, suspend the decision to distribute dividends, bonuses, or management fees, or remove the management.

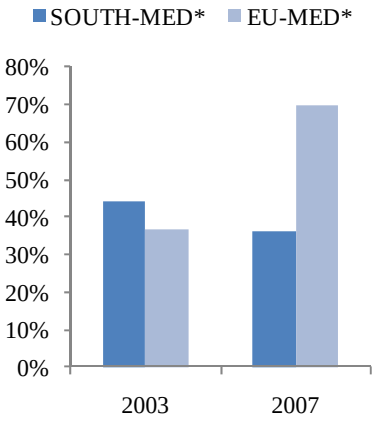
The second index for assessing supervisory authority turns more generally to the independence of the supervisor from political influence. For this index, three questions from the BRSS are considered: i) Are supervisory bodies accountable *only* to a legislative body? ii) Are supervisors legally liable for its actions committed in exercise of their duties? iii) Does the head of the agency have a fixed term? The level of

independence is determined by points obtained by counting affirmative answers to questions (i) and (iii) and a negative answer to (ii).[47]

The results depicted in Table 2.9 show a clear divergence in terms of independence from political interference. While the banking supervisors of the EU-MED countries have become more independent, not much has changed in the South-MED countries. The biggest concern remains the accountability of the supervisor directly to the executive arm, i.e. president, prime minister or other cabinet members, which is the case in all of the Southern Mediterranean countries.[48]

Table 2.9 Independence from political interference (% of maximum score)

	2003	**2007**
Algeria	33	0
Egypt	67	67
Israel	33	33
Morocco	33	33
Tunisia	67	
*SOUTH-MED**	44	36
Cyprus	67	100
Spain	67	100
Greece	67	67
Italy	0	33
Malta	100	67
Portugal	100	100
*EU-MED**	37	70



Notes: Greater values represent more independence as share of a maximum score of 3 points.

* Regional averages are weighted by total banking assets.

Source: BRSS.

[47] The independence from political interference index is addressed by World Bank Guide (WBG) questions 12.2, 12.10, and 12.2.2. The calculation of the index is slightly different than the specification in Appendix 2 of Barth et al. (2006), pp. 349-350, in that in order to score a point in question 12.2 the supervisory bodies should be accountable to no one other than a legislative body, such as the Parliament or the Congress.

[48] In the case of Morocco, the governor of the Bank Al-Maghrib serves at the discretion of the King.

Of particular concern is Algeria, where none of the three criteria outlined above is satisfied in 2007, which implies an enormous potential for political interference. The same can also be said for other countries, such as Israel, Morocco and possibly Tunisia. In comparison, the supervisor is accountable to the Parliament in almost all EU members except Italy and Malta. Once again, the Italian supervisory authority remains well below the EU standards in terms of independence from political interference due to its accountability to the central government and its legal liability for damages to a bank in exercise of its duties. Another key distinguishing factor is the fixed-term for the head of the regulatory authority, which is not available as an option in Algeria, Israel or Morocco but has become increasingly popular among the EU members.

The results of the BRSS surveys reviewed in this section show that the powers granted have increased or remained constant in almost all of the countries. Moreover, the official powers granted to supervisors appear to be on the rise on both sides of the Mediterranean. Turning to operational independence, the government officials have the ability to politically interfere in the work of the supervisors. Therefore, despite the fact that the supervisors are assigned almost full authority, it is possible that these powers remain notional due to government interference. Provided that some of the South-MED countries have substantial government presence in the banking sector (already noted above), the operational independence should be a guiding principle to ensure that all banks – publicly or privately-owned – are treated equally.

2.6 Area V: Deposit insurance

Deposit insurance systems are among the key elements of a country's financial safety net, designed to prevent any disruptions to the financial markets and the economy. By protecting depositors, the deposit insurance schemes provide confidence to relatively small depositors and prevent bank runs. At the same time, they may introduce moral hazard, diminishing the depositors' incentives to monitor and screen the banks and amplifying the shareholders' incentives to engage in excessive risk. The moral hazard problem implies that banks have incentives to take on risk that can be shifted to a deposit insurance fund or, ultimately, the tax payers.

Efforts are being taken across the world to mitigate moral hazard problems arising from deposit guarantee schemes.[49] First, the amount of coverage matters. In some countries, aside from limits on the total amount, a co-insurance is imposed to ensure that depositors bear some part of the costs.[50] Second, the use of risk-adjusted premiums may also serve to better internalise the costs of the risks that they take. Third, the way that the deposit insurance schemes are funded also matters. For example, when the government is explicitly or implicitly involved in providing the necessary funds, moral hazard may be attenuated, especially in countries where the government has ample resources. In turn, when the system is backed with funds by banks, moral hazard can be limited by the understanding that the amount of guarantees is restricted with the pooled reserves.

Looking at the existing schemes, there are clear differences on both coasts of the Mediterranean (Table 2.10). The revised EU Deposit Insurance Directive requires member states to maintain deposit insurance with a coverage limit of at least €100,000, raised from a minimum of €20,000 in the aftermath of the 2007-09 financial crisis. [51] Most of the countries in the EU-MED have chosen to set this base amount as their coverage limits, representing between to 4 to 7 times the average annual income figures. The 2009 amendment has also abolished the co-insurance system, which allowed up to 10% of losses to be shared with covered depositors. Risk-based premiums exist only in Italy and Portugal. Setting itself clearly apart from the other countries in the region, Italy has an *ex-post* funding structure, where the banks are required to contribute after the deposit guarantee scheme is activated. Cyprus and Malta have hybrid systems in which substantial amounts of supplementary (*ex-post*) funding may be activated if the funds' resources fall below pre-set levels. The levels of *ex-ante* funds display substantial variation, wherever they exist, with a low of 0.01% of eligible deposits in Cyprus and a high of 1.00% in Portugal.

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[49] See Kane (2000) and Demirgüç-Kunt et al. (2005) for a review of the potential effects and key design features of the deposit insurance schemes.

[50] Empirical evidence shows that the coverage limits and co-insurance practices serve to reduce bank failure likelihoods substantially, (Demirgüç-Kunt & Detragiache, 2002).

[51] Directive 2009/14/EC, which amended the Deposit Guarantee Directive 94/19/EC. The minimum amount of €100,000 has been in force as of 31 December 2010.

Table 2.10 Deposit guarantee schemes in the Mediterranean, latest available figures

	Est. date	**Coverage limit**		**Primary funding by**	**Co-insurance**	**Risk-based premiums**	*Ex-post/ ex-ante*	*Ex-ante* **coverage ratio****
		€ (Dec. 2010)	*(% of GDP per capita, PPP)*					
SOUTH-MED								
Algeria	1997	6,200	108%	Banks	No	No	*Ex-ante*	n.□.
Egypt	-							
Israel	-							
Morocco	2□06	7,200	228%	Banks	No	N	*Ex-ante*	1.40%
Tu□isia								
EU-MED								
Cyprus	1997	100,00	4□3%	Banks	No*	No	Hybrid	0.01%
Spain	1977	100,000	439%	Banks	No*	No	*Ex-ante*	0.80%
Greece	1995	100,000	482%	Banks	No*	No	*Ex-ante*	0.58%
Italy	1987	103,291	462%	Banks	No*	Yes	*Ex-post*	0.00%
Malta	2003	100,000	785%	Banks	No*	No	Hybrid	0.10%
Portugal	1992	100,000	595%	Banks	No*	Yes	*Ex-ante*	1.00%

* Co-insurance has been abandoned by the amending Directive 2009/14/EC.

** The actual coverage ratio is calculated as the ratio of ex-ante funds and eligible deposits using published figures for 2007-08.

Sources: European Commission (2010), IMF (2008), Bank Al-Maghrib (BAM) and Banque d'Algérie (BNA) .

Tuning to the South-MED countries, Egypt, Israel, and Tunisia have no schemes in place.[52] In Algeria and Morocco, the coverage limits represent one to two times the average annual incomes, pointing at a much lower level of protection afforded than in the EU. As in the EU-MED, the deposit guarantee schemes do not have a co-insurance option or use risk-base premiums. Algerian authorities are involved in the funding of the system, which is not surprising since the publicly-owned banks represent nearly 90% of the total banking assets.

The deposit insurance scheme index identifies the level of observance of standards that are thought to mitigate the moral hazard problem. Since recent information is available, the index is constructed for the years 2003, 2007 and 2010. For countries with an explicit system, three issues are relevant: i) whether a co-insurance discount is applicable to payouts, ii) whether premiums are risk-adjusted and iii) whether only banks take a primary role.[53] An additional point is scored for an affirmative answer to each one of these questions. A score of zero is assigned to countries where no explicit system exists, since in those cases the government is assumed to provide implicit guarantees, implying a greater incentive to take risks by banks.[54]

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[52] In Egypt, although the legal framework allows for the establishment of an autonomous deposit insurance fund, no scheme has been setup yet.

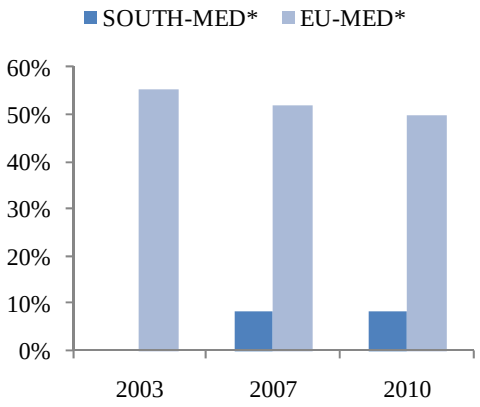
[53] The calculation of the deposit insurance scheme index follows the format detailed in Barth et al. (2006, p. 354), except that a score of zero is assigned for countries with no explicit insurance scheme.

Three separate sources were used for the deposit insurance scheme information. First, the BRSs provided the basic information and evaluation for 2003 and 2007. Whenever the BRSS gave conflicting or incomplete results, the information contained in Demirgüç-Kunt et al. (2005), the European Commission's (2010) assessment of EU deposit guarantee schemes as well as the legal documents from the websites of Bank Al-Maghrib (BAM) and Banque d'Algérie (BNA) were used.

[54] Gropp & Vesala (2004) shows that credible implicit guarantees operating through the expectation of public intervention at times of distress can aggravate the moral hazard problem when compared to explicit deposit guarantee schemes. As the authors note, the key issue is whether the institutional and fiscal conditions would make the inherent guarantees credible. It is assumed here that the three countries with no explicit systems, namely Egypt, Israel and Tunisia, have ample

Table 2.11 Deposit insurance index (% of maximum score)

	2003	2007	2010
Algeria	0**	33	33
Egypt	0	0	0
Israel	0	0	0
Morocco	0	33	33
Tunisia	0	0	0
*SOUTH-MED**	0	8	8
Cyprus	67	33	33
Spain	33	33	33
Greece	33	33	33
Italy	67	67	67
Malta	67	33	33
Portugal	100	100	67
*EU-MED**	55	52	50



Notes: Greater values represent greater restrictive rules as share of a maximum score of 3points.

* Regional averages are weighted by total banking assets.

** The Algerian deposit guarantee system, which existed since 1997, was partly funded by the government in 2003.

Sources: BRSS, Demirgüç-Kunt et al. (2005), European Commission (2010), Bank Al-Maghrib (BAM) and Banque d'Algérie (BNA).

The figures in Table 2.11 show that moral hazard issues are more of a threat in the South-MED countries. For the most part, this is due to the absence of deposit guarantee schemes in Egypt, Israel and Morocco (in 2003), and Tunisia. The Algerian system was equivalent to an implicit guarantee in 2003 since the government had a direct funding role.[55] Turning to countries with explicit systems, some similarities emerge. Out of the three issues outlined above, Algeria, Cyprus, Spain, Greece, Malta and Morocco only satisfy the requirement that the banks (and not the government) take the primary role of funding the scheme in 2010. The

fiscal resources and the necessary institutional framework that could make such guarantees credible.

[55] Under Law no. 90-10 of 1990 regarding money and credit, the Algerian Treasury was a contributor to the deposit guarantee fund (Art. 170). More recently, the government's funding role has been replaced with full funding by banks under the amending Law no. 03-11 of 2003 regarding money and credit (Art. 118).

Italian and Portuguese systems, in turn, include risk-adjusted premiums, impacting significantly the EU-MED averages. Lastly, the EU-MED averages display a downward trend, which is entirely due to the gradual abandonment of the co-insurance payouts.

Many of the South-MED countries have been reluctant to develop deposit insurance schemes. A badly designed scheme can invite additional risks and may not be better than a system with no scheme at all. The results show that the schemes that exist in Algeria and Morocco (as well as in other EU-MED countries) may indeed amplify the moral hazard risks. These conclusions, however, should be interpreted with care. As the recent financial crisis has shown, when a run on a bank has the potential to spur broader panic, the governments are likely to step in to stop a potential bank run, notwithstanding the type of explicit arrangements in place.[56] One may wonder, quite justifiably, whether the named arrangements do really mitigate moral hazard when they may be so easily replaced with limitless state support. However, it should not be forgotten that such blanket guarantees are not viable in most of the South-MED countries with limited public resources. Therefore, the explicit schemes, wherever they exist, are the only viable insurance for depositors, highlighting the importance of the design issues in resource-poor countries.

2.7 Area VI: Private monitoring

Most of the regulatory factors considered in this study relate to the rules and standards set forth by the regulators, which are used to distinguish between acceptable and unsound behaviour. In this manner, the regulatory principles are often well-defined, calling for compliance with specific rules or standards. However, banks are also influenced by these hard-wired forces. Market forces and investors may also be crucial in shaping the decisions and, in particular, restraining risky behaviour. For example, block-holders can, at least in theory, exercise their voting power to influence managerial actions. More realistically, debtors or stockholders use available information to assess the bank's conditions and indirectly influence the management by withdrawing funds, which has an impact on

[56] This was amply demonstrated during the Northern Rock fall of 2007 when the UK Treasury, extended the existing guarantees on bank deposits – with a maximum payout of £31,700 at the time—to cover all deposits.

the borrowing costs of the banks. As far as depositors and other debt-holders are concerned, private monitoring could be seriously undermined when an explicit and overly generous deposit insurance scheme exists.

The availability of reliable and timely information to investors is at the core of market disciple. The index is therefore based on the survey responses to a number of questions on disclosure rules and standards, comprising whether: i) a certified audit is required; all of top-10 banks are rated by ii) domestic and iii) international credit rating agencies; income standards include accrued through unpaid interest on iv) performing or v) non-performing loans; vi) banks are required to produce consolidated accounts; vii) directors are liable for erroneous or misleading reporting; viii) subordinated debt allowable or required as part of capital; ix) off-balance items are disclosed to the public; x) banks are required to disclose risk management procedures and xi) supervisors are required to make enforcement actions public.[57] The private monitoring score increases with affirmative answers to the previous set of questions.

The comparisons points at a small but growing disparity between the coasts of the Mediterranean (Table 2.12). Although most countries fulfil a majority of the requirements, the constant progress of the European countries is not paralleled in Southern countries.

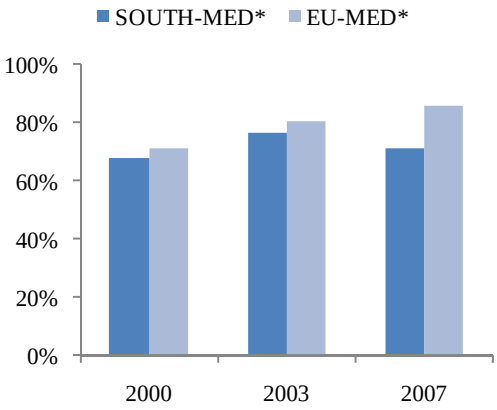
The most striking difference between the Southern and Northern countries is the share of the top-10 banks that are rated by (international or domestic) credit rating agencies, which has widened substantially according to the 2007 survey. In particular, almost all of the top-10 banks are rated by credit rating agencies in the EU, except Malta. In the South-MED countries, most banks are not rated. In some cases, this is due to the inherent structure of the market. For example, Algeria's largest banks are state-owned and were not subject to ratings as of 2007. In other countries, there are clear problems with disclosure. In two of the most developed

[57] The private monitoring index is addressed by World Bank Guide (WBG) questions 5.1, 5.3, 10.7.1-2, 10.1, 10.1.1, 10.3, 10.6, 3.5-6, 10.4.1, 10.5, and 11.1.1. The calculation of the index is slightly different than the specification in Appendix 2 of Barth et al. (2006, pp. 350-352), excluding a question on the presence of an explicit deposit insurance, which is already covered in another index.

markets in the region, Israel and Morocco, only half of the top-10 banks are rated.[58]

Table 2.12 Private monitoring (% of maximum score)

	2000	2003	2007
Algeria		73	64
Egypt	64	73	73
Israel	73	82	82
Morocco	64	82	73
Tunisia		55	
*SOUTH-MED**	68	77	71
Cyprus	73	82	82
Spain	82	82	91
Greece	64	82	91
Italy	64	82	82
Malta	73	82	82
Portugal	82	64	73
*EU-MED**	71	80	86



Note: Greater values represent greater restrictive rules as share of a maximum score of 11 points.

* Regional averages are weighted by total banking assets.

Source: BRSS.

Another common issue, especially more recently, is the exclusion accrued (though unpaid) interest from income statements, which allows them undue flexibilities in determining their earnings. Also, Tunisian and Algerian banks are not required to produce consolidated accounts that cover all financial subsidiaries. Lastly, according to the 2003 BRSS, the banks in Tunisia are not required to make public their risk management procedures, which became standard in the region in recent years.

These results show that the regulatory structures of South-MED countries have not matched the progress in the North countries in enhancing their disclosure rules. It is true that there are broad similarities on both sides of the Mediterranean. For example, a certified audit is compulsory in all of the sample countries and the accounting rules exhibit

[58] These results may also arise from a small or highly concentrated banking sector. In such a case, only a handful of top banks will dominate the banking sector while the other (smaller) banks will be subject to less investor scrutiny.

similarities in most of the countries. However, the proportion of banks subject to independent ratings has not changed much in the South-MED countries over the past few years. These results call for a serious examination of the readiness or the appropriateness of deposit insurance coverage in these countries.

2.8 Area VII: Credit information and laws

Access to information and creditor protection laws are crucial for ensuring the smooth operation of credit markets. Economic theory suggests two crucial limits to the amount of credit that financial institutions can grant to potential borrowers. On the one hand, credit conditions are clearly bound by the ability of creditors to enforce contracts, require repayment, claim collateral and possibly gain control over the receivables. The easier these actions, the more likely will be the lenders to grant the loans. On the other hand, lenders would like to have access to accurate information on the potential borrowers, such as credit histories, other lenders and other banking transactions.

Theoretical models suggest that an operational information-sharing infrastructure can reduce adverse selection in credit markets and facilitate access to credit, especially among more opaque borrowers such as small- and medium-size enterprises (SMEs) (Pagano & Jappelli, 1993). When such information is available, the creditors can make a better judgement on the credit-worthiness of the borrowers. Other studies have documented the importance of creditors' rights on the availability of credit (La Porta et al., 1998 and Levine, 1998). Recent studies have confirmed these views with increasingly convincing evidence that both credit information mechanisms and creditors' rights have a nontrivial impact on the flow of credit and financial development (Jappelli & Pagano, 2002; Djankov et al., 2007; and Haselmann et al., 2010).

The credit information and laws indices developed in this subsection are based on the Getting Credit methodology developed in the World Bank's Doing Business surveys.[59] The relevant area covers the legal rights

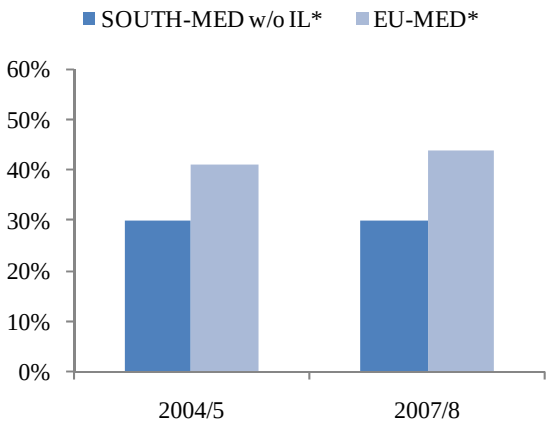
[59] First started in 2003, the World Bank's Doing Business surveys cover over 180 countries, providing a snapshot of regulatory and legal conditions and their effects on businesses, especially on small and medium-size enterprises (SMEs). Each year, the surveys are sent out to a large number of local experts specialising in different fields, including lawyers, consultants, officials and other professionals who are in

of borrowers and lenders with respect to secured transactions and the extent of credit information-sharing. Two sets of indicators are used for these purposes.

The first set describes how well the collateral and bankruptcy laws facilitate lending, covering: i) ability to use moveable assets while keeping possession of assets; ability to obtain non-possessory security rights in ii) a single or iii) all moveable asset classes without requiring a specific description of the collateral; iv) extension of security rights to future or after-acquired assets; v) ability to secure all types of debts and obligations via a general description; vi) availability of a collateral registry; ability of secured creditors to obtain priority without exceptions in the case of vii) defaults viii) liquidations, and ix) restructuring; and x) possibility of out-of-court agreements on collateral enforcement. An affirmative answer to any one of these questions enhances the relevant scores.[60]

Table 2.13 Strength of legal rights (% of maximum score)

	04-05	07-08
Algeria	30	30
Egypt	30	30
Israel	90	90
Morocco	30	30
Tunisia	30	30
*SOUTH-MED**	57	55
Cyprus		90
Spain	60	60
Greece	30	30
Italy	30	30
Malta		
Portugal	30	30
*EU-MED**	41	44



Note: Greater values represent more independence as share of a maximum score of 10 points.

* Regional averages are weighted by total banking assets.

Source: BRSS.

close contact with the legal and regulatory structures of the covered countries (the results of the surveys are available from http://www.doingbusiness.org/).

[60] See the World Bank's Doing Business website on more details on the methodology (http://www.doingbusiness.org/methodology/getting-credit).

Table 2.13 shows that the legal rights granted to creditors are slightly less in the South. Israel does exceptionally well, better than almost all countries, by satisfying all but one criterion on the availability of out-of-court agreements on collateral enforcement. Among the EU-MED countries, Cyprus also does equivalently well, complying with all but one criterion, namely regarding the secured creditors' claims during reorganisation. Spain also performs well but fails to grant some of the sought-after rights to secured creditors and over future assets. Other countries, including those in the South-MED, do relatively badly, complying only with the standards on the use of movable assets as collateral, ability to grant non-possessory rights for a group of assets and the use of debts in collateral agreements.

The second index measures the availability, coverage and depth of credit information, either through public credit registries or private credit bureaus. The relevant questions relate to the i) collection both positive and negative information, ii) collection of data on firms and information, iii) collection of data from retailers and utility companies, iv) availability of credit history for at least two years, v) availability of data on small loans (i.e. less than 1% of annual incomes) and vi) ability of borrowers to access their credit history. As above, an affirmative answer to any one of these questions leads to an additional score for the credit information index.

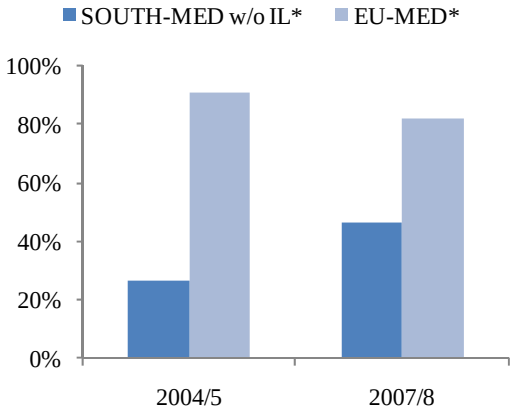
Table 2.14 clearly shows that the South-MED countries lag behind their Northern counterparts in terms of the depth of credit information. The figures also show that the differences have diminished in recent years. Israel is clearly an outlier, especially according to the more recent Doing Business survey where it satisfies all of the six criteria except the distribution of positive and negative credit information. With no credit information sharing infrastructure in place, Cyprus is another exception.

More broadly, the EU-MED countries comply with almost all of the criteria. A common shortcoming, present in Italy, Greece and Portugal, is that the private registries do not collect information from retailers or utility companies. The South-MED countries (except Israel) have notable deficiencies on credit information availability and sharing, despite significant improvements over the last few years. As of 2008, two countries in the region had operational private credit bureaus: Egypt and Israel. According to the results of the 2007-08 Doing Business survey, Egypt scores

relatively low since borrowers have no right to inspect their credit histories and since data from retailers are not used.[61]

Table 2.14 Depth of credit information (% of maximum score)

	04-05	07-08
Algeria	17	33
Egypt	33	67
Israel	50	83
Morocco	17	17**
Tunisia	33	50
*SOUTH-MED**	37	62
Cyprus		0
Spain	83	83
Greece	67	67
Italy	100	83
Malta		
Portugal	83	83
*EU-MED**	91	82



Note: Greater values represent more independence as share of a maximum score of 6 points.

* Regional averages are weighted by total banking assets.

** The 2007-08 figures for Morocco do not take account of the fact of the creation of the new private credit bureau that became operational in 2009.

Source: BRSS

Public credit registers exist in all of the countries, although their effectiveness varies. Focusing on the South-MED countries with public registries only, i.e. Algeria, Morocco and Tunisia, several common weaknesses are notable. [62] First, none of the countries provide borrowers the right to access or contest information on their own credit histories. Second, the registries do not collect and distribute data from retail and utility companies. Also, Tunisia and Morocco also scores relatively low,

[61] Egypt has substantially improved on these weaknesses in 2009-10 and has increased its score to a perfect 100%, according to the Doing Business 2011 survey results. For more information, see http://www.doingbusiness.org/reforms/overview/economy/egypt.

[62] According to the most recent Doing Business 2011 survey for the year 2010, Morocco obtains an almost perfect score (83%). For more information, see http://www.doingbusiness.org/reforms/overview/economy/morocco.

mostly due to the absence of detailed data collection. Lastly, although the Algerian public registry collects and distributes both positive and negative information, it does not distribute detailed information on a borrower's history or small loans.

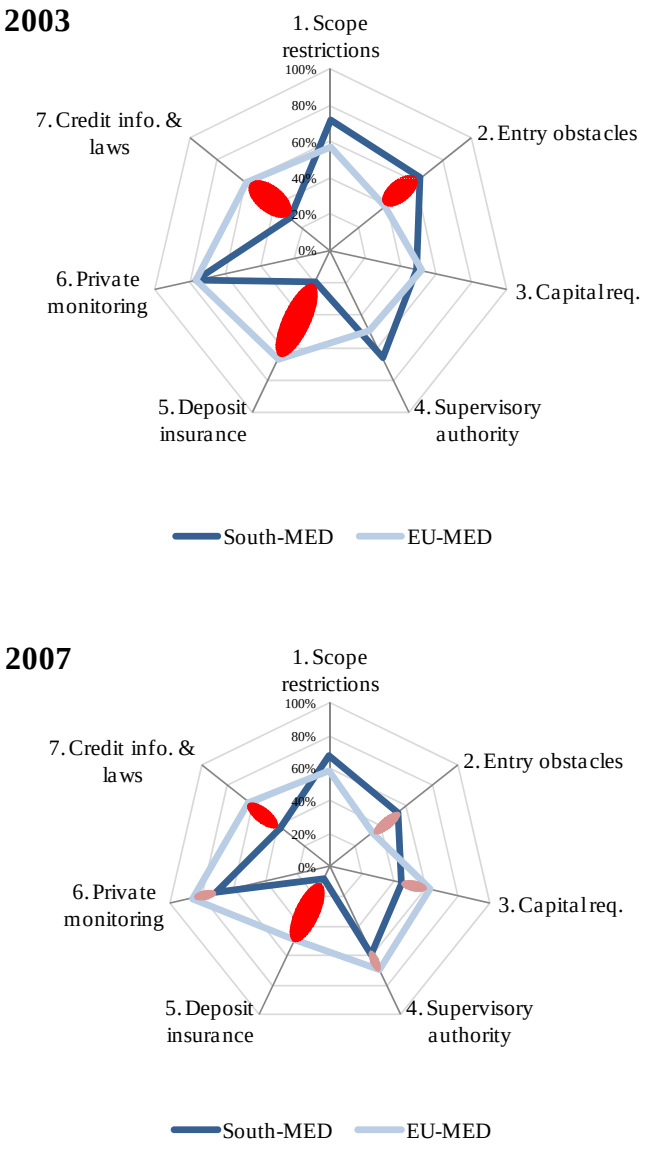
In summing up, the figures above show that despite substantial reforms in recent years, the South-MED countries clearly lag behind in terms of the use of credit information. The same cannot be said concerning the strength of legal rights; most of them on both sides of the Mediterranean have a similar set of legal rights granted to the creditors. Based on recent findings that highlight the importance of credit information-sharing not only for the availability of credit but also for the stability of the banking sectors as a whole, the South-MED countries should do all they can to converge to the EU's standards on this front (Houston et al., 2010). The types of reforms that have been introduced in several countries, such as Egypt, should be a model for others in the region to assure an even development of their economies with the flow of credit flowing to the smaller and more opaque firms.

2.9 Conclusions

The previous sections reviewed the quality and the level of convergence of the regulatory and supervisory structures of the South-MED and EU-MED. The assessment included seven dimensions, including scope of banking, entry obstacles, the stringency of capital requirements, the power and independence of the supervisory authority, incentives provided by the deposit insurance scheme, private monitoring and creditors' rights and access to information. This section will provide a summary of these areas, offering a comparative analysis of the seven composite indicators that aggregate the relevant indices.

Figure 2.2 and Table 2.15 diagramme and summarise the key remaining weaknesses that distinguish the South-MED countries from their counterparts in the North.

Figure 2.2 Regulatory standards in South-MED and EU-MED regions



Note: The diagrammes above sum up the weighted averages for the regulatory indices in each of the seven areas discussed in sections 2.2 to 2.8. The North-South disparities are highlighted in shades of red, with darker shades representing greater differences, i.e. more than 25% disparity. For entry into banking, depth of credit information and strength of legal rights indices, the South-MED averages exclude Israel as an outlier. For credit information and laws indices, 2004-05 and 2007-08 figures were used.

Table 2.15 Key regulatory weaknesses in the South-MED

	Description	General remarks	Algeria	Egypt	Morocco	Tunisia
AREA I. Scope restrictions	Restrictions on or prohibition of various activities	In line with EU-MED standards	Some restrictions on insurance	Some restrictions on real-estate	Some restrictions on insurance; real-estate activities prohibited	Some restrictions on insurance & real-estate activities
AREA II. Entry obstacles	Licensing, foreign entry & presence of public banks	Below EU-MED standards due to foreign denials & role of government	Public banks represent >90% of bank activity	Foreign denials; public banks represent > 60% of bank activity	Foreign denials	Few obstacles; public banks have diminishing role
AREA III. Capital requirements	Extent to which capital requirements restrict risks	Increasing disparity due to risk-insensitivity	Surpassing most of EU-MED standards	Market & credit risks not considered; broad def. of capital	Market & credit risk not considered; broad def. of capital	Comparable with EU-MED standards
AREA IV. Supervisory authority	Ability of supervisors to prevent & correct problems	Below EU-MED standards due potential for political interference	High potential for political interference	Supervisor enjoys full set of powers	Some potential for interference	High potential for political interference
AREA V. Deposit insurance	Presence of an explicit scheme & mitigation of moral hazard	Below EU-MED standards due to implicit insurance & adverse incentives	No co-insurance or risk-adjusted premiums	Implicit government guarantees	No co-insurance or risk-adjusted premiums	Implicit government guarantees
AREA VI. Private monitoring	Availability of reliable & timely information to investors	Increasing disparity due to poor accounting practices	Top banks not rated; flexibility in accounting	Several top banks not rated	Several top banks not rated; flexibility in accountings	Flexibility in accounting rules; no risk mgt. disclosure
AREA VII. Credit info. & laws	Ability of legal & information systems to facilitate lending	Below EU-MED standards due to deficient info system	Public registry only; no borrower access or detailed info	Private registry established in 2006	Public registry only prior 2009; common issues prior that date	Public registry only; no borrower access or detailed info

Source: Authors' compilation.

The collective assessment of the convergence of the regulatory and supervisory structures of the South-MED countries with the EU-MED standards gives a mixed picture (Figure 2.2 and Table 2.15). Despite some improvements, key weaknesses remain in deposit insurance, entry obstacles and credit information. Moreover, some recent issues recent disparities have also become apparent, especially in the stringency of capital requirements, potential for political interference and private monitoring.

The deposit insurance index has failed to improve since neither the Egyptian nor Tunisian authorities have put in place an explicit insurance scheme. As discussed in Section 2.6, implicit schemes may enhance risk-taking through a blanket government guarantee for the leading institutions. Moreover, even in Algeria and Morocco, no effort has been made to align the banks' incentives by implementing risk-based premiums or co-insurance schemes, which would help internalise some of the costs to the deposit guarantee schemes due to excessive risk-taking.

The South-MED countries have implemented a number of reforms to improve the availability and use of credit information by financial institutions. Egypt and, more recently, Morocco have established private credit bureaus in 2006 and 2009, respectively. Nevertheless, the South-North gap has not been narrowed. Algeria and Tunisia continue to rely only on public registries, restrict the borrowers' right to inspect their credit histories, fail to collect and distribute detailed data, including from non-bank sources, such as retail stores or utility companies. Although the literature provides little guidance, private credit bureaus have an improved access to new technologies and know-how to ensure that information-sharing mechanisms work effectively. The countries in the region should continue to monitor developments and spearhead innovative systems to use the stock of information and infrastructure already set-up by the public systems.[63]

[63] Morocco may serve as interesting example, by effectively combining the data collection roles and capacities of the Bank Al-Maghrib, which operates the public registry, and the newly established private credit bureau, Experian-Morocco. For a comparative analysis of the Moroccan and Egyptian credit information systems, see Madeddu (2010, pp. 21-23).

Another major issue, the presence of entry obstacles, continues to be a key weakness of the regulatory structures of the region. Although the licensing requirements exhibit similarities on both sides of the Mediterranean, other indicators point at substantial barriers to entry. Government ownership, which is widespread in the region, gives undue advantages to incumbent banks and restricts entry incentives. In Morocco, the government-owned banks represent a declining proportion of total bank activities; in Algeria, Egypt and (to some extent) in Tunisia, the government-ownership persists. Although government ownership may have some beneficial side benefits, the authorities have to ensure that such roles are well-defined and should not be an obstacle to the development of the financial system.[64] The rates of foreign denials are also very high, further supporting the idea of substantial entry barriers and competitive advantages enjoyed by domestic incumbent banks.

In addition to these three key weaknesses, the 2007 survey points at three new concerns. The stringencies of capital requirements, which were in line with the EU standards in 2003, have deteriorated according to the latest BRSS survey. There are some exceptions, like Algeria and, to a lesser extent, Tunisia. However, in Egypt and Morocco, the capital requirements and accounting standards have become more flexible and less risk-sensitive. Poor accounting practices have also contributed to an increasing disparity in private monitoring indices.

Lastly, political interference has become a significant possibility, potentially undermining supervisory authority and reinforcing the governments' direct control – an additional concern on the competitiveness and efficiency of the banking sector. As the eruption of public discontent in Tunisia and Egypt in early 2011 clearly attests, the region's governments have attempted to maintain (perhaps for far too long) a tight grip on their countries' political and economic systems. It is exactly such forms of interference that may conflict with the objectives of the financial and competition authorities.

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[64] Rocha et al. (2010a) notes the essential role that public banks fulfil in the region by providing financing to the SMEs. The authors note that private banks are unable to fill this gap largely due to the generally weak quality of financial infrastructure, including the availability and reliability of information on potential borrowers.

3. ANALYSIS OF EFFICIENCY AND CONVERGENCE

The process of financial reform undertaken by both developed and developing countries aimed to establish a market-based financial sector, to boost bank competition through improved mobilisation of savings, to enhance market-based allocation of resources and to foster more efficient risk-management capabilities. However, the conventional wisdom relating to the positive effect of reforms on financial sector performance is not always validated by empirical studies (Berger et al., 2000). Despite a vast literature on the effects of deregulation on the efficiency and productivity of banks (see Berger & Mester, 2003; Mukherjee et al., 2001, Isik & Hasan, 2003, Zhao et al., 2010, among others) deregulation seems to have had a positive effect in some countries but not in others. Indeed, the outcome of deregulation policies seems to reflect several country-specific demand and supply conditions of the banking industry prior to deregulation.

This part of the study attempts to shed light on these issues by examining the effect of financial reform on the efficiency of the banking sector in 11 countries in the Mediterranean region: Cyprus (CY), Algeria (DZ), Egypt (EG), Spain (ES), Greece (GR), Israel (IL), Italy (IT), Malta (MT), Morocco (MA), Portugal (PT) and Tunisia (TN) over the period 1995-2008. The second part of the analysis aims to contribute to the current debate on fostering integration in the Mediterranean region. Following Casu & Girardone (2010), we use the concepts of β-convergence and σ-convergence and employ a dynamic panel data analysis to assess the speed at which financial markets are integrating.

Our results indicate an improvement in bank efficiency across the region, particularly in the latter part of the sample period. The overall mean efficiency in the region is increasing, driven by technological improvements

by the best practice banks. Spanish banks dominate the region both in terms of overall efficiency and of meta-technology ratios. Nonetheless, during the sample period, the average meta-technology ratio for the region is also increasing, thus indicating an ability of banks in all countries to appropriate the best available technology.

These results are supported by the estimation of β-convergence σ-convergence. The β coefficient is always negative and statistically significant, thus indicating that convergence in efficiency scores has occurred across countries in the MED-11 area. Furthermore, results for the σ-convergence suggest an increase in the speed of convergence as the σ coefficient is always negative and statistically significant. This indicates that, whereas the technological gap is still wide, it is narrowing at a faster speed.

3.1 Literature review

There is a vast literature on the use of frontier techniques to evaluate bank efficiency, using both parametric and non-parametric methodologies. While earlier studies focused on one methodological approach and on individual countries (mainly the US, or EU countries) (Berger & Humphrey, 1997; Goddard et al., 2001), in recent years both the number of cross-country studies and the number of studies focusing on developing countries has increased, mainly due to the unprecedented economic reforms implemented in such countries (for a review of recent literature see, among others, Berger (2007), Goddard et al. (2007) and Hughes & Mester (2010).

Most cross-country studies assume that banks in different countries can access the same banking production technology. In other words, they assume a common production frontier for all countries in order to be able to compare efficiency results across borders. The interpretation of the resulting efficiency scores relies significantly on the validity of this assumption. In some cases this is a major drawback, as the production technology is substantially different among countries, particularly if countries are at different levels of financial development. Bank efficiency estimates may be influenced by factors not generally included in the efficiency analysis, such as differences in bank type, ownership and other bank specific conditions. In such cases, the assumption of a common frontier may be misleading. Further, such an assumption can lead to bias efficiency results of banks from different countries as it ignores differences

in regulatory, competitive and economic conditions that are beyond a bank's control (Dietsch & Lozano-Vivas, 2000 and Chaffai et al., 2001). The Bos & Kool (2006) study indicates that if environmental factors are not appropriately controlled, efficiency estimates may be biased. Recent empirical studies have attempted to overcome this problem by integrating country-specific environmental variables into the efficiency estimation.

The influence of environmental variables on cross-country efficiency levels has been of interest for many researchers. Bikker (2004) investigates the differences in X-efficiency levels of European banks and concludes that X-efficiency estimates from single-country studies, as often found in the literature, can be very misleading. He documents significant differences in cost-efficiency scores across countries and sizes of banks, bank specialisation as well as institutional conditions (supervisory rules, government interference, customer preferences and level of development). Bos et al. (2005) analyse the effects of accounting for heterogeneity on the German bank efficiency scores for the period 1993-2003. They find that banks of different sizes, geographic origins and types (cooperative and savings) have significantly different cost efficiency scores. Dietsch & Lozano-Vivas (2000) investigated the influence of the environmental conditions on the cost-efficiency of the French and Spanish banking sector over the period 1992-98. They showed that the specific environmental conditions of each country occupy an important role in the definition and specification of the common frontier of different countries.

In fact, when environmental variables are incorporated in the model, the differences between both banking industries are reduced substantially and the cost-efficiency scores improved. The Chaffai et al. (2001) study, on a sample of European countries over the period 1993-97, report similar findings. They conclude that controlling for environmental conditions reduces the differences in average operational inefficiency scores among countries. Grigorian & Manole (2006) use a DEA approach to estimate the efficiency levels of transition countries between 1993 and 1995 and a two-step approach to explain the differences in efficiency across countries. They find that foreign ownership and enterprise restructuring enhance commercial bank efficiency. Bos & Kool (2006), on the other hand, find that market specific factors and regional macroeconomic factors are of limited importance in explaining operational efficiency of the Dutch cooperative banking sector. Battese et al. (2004) have recently proposed a so-called 'meta-frontier' as the method to estimate country or regional-specific frontiers and end up with efficiency scores that can be compared in an

absolute sense. The meta-frontier results from the envelopment of regional specific frontiers. Bos & Schmiedel (2003) apply the meta-frontier methodology to eight European banking markets for the period 1993–2000. The authors conclude that for most countries included in the study, profit efficiency in particular improves significantly when estimated using a meta-frontier instead of a common frontier arguing that this may be evidence of the importance of local market circumstances. Ben Naceur et al. (2011) examine the effect of financial-sector reform on bank performance in selected Middle Eastern and North African (MENA) countries in the period 1994-2008 using Data Envelopment Analysis (DEA) and employ a meta-frontier approach to calculate efficiency scores in a cross-country setting. They then employ a second-stage regression to investigate the impact of institutional, financial and bank-specific variables on bank efficiency. Overall, their results show that the observed efficiency levels of banks vary substantially across markets, with differences in technology explaining most of the efficiency differentials.

Several studies investigate the existence and implications of financial convergence, especially in relation to the deregulation processes.[65] Only a few studies, however, directly address the issue of the relationship between financial integration and bank efficiency. Tortosa-Ausina (2004) examines the convergence in efficiency of Spanish banks following deregulation through a model of distribution dynamics and finds evidence of decreased dispersion of efficiency scores at the end of the deregulation period. Murinde et al. (2004) investigate the convergence of the banking systems in Europe following the launch of the single market programme in 1993. They find weak evidence of convergence and only for specific products. Weill (2009) attempts to provide evidence of financial integration by estimating the convergence of cost efficiency derived from the application of SFA methodology. His results indicate an on-going process of convergence at the EU level. More recently, Casu & Girardone (2010) evaluate the dynamics of EU banks' cost efficiency by means of DEA and then assess their convergence both towards an EU-wide frontier and towards best practice. Their results seem to provide supporting evidence of convergence of efficiency levels towards an EU average. Nevertheless, the potential

[65] See Baele et al. (2004) for a review of different measures of financial market integration.

gains brought about by increased integration seem to have been offset by a decrease in the overall efficiency levels of EU banks.

3.2 Methodology

3.2.1 Data Envelopment Analysis

DEA is a mathematical linear programming technique developed by Charnes et al. (1978), which identifies the efficient frontier from the linear combination of those units/observations that (in a production space) use comparatively fewer inputs to produce comparatively more outputs. The original (or Charnes, Cooper and Rhoades - CCR model) assumes constant returns to scale (CRS), which is the optimal scale in the long run. Banker, Charnes and Cooper (1984) (or the BCC model) include an additional convexity constraint (λ) to allow for variable returns to scale (VRS). In particular, if at any time t there are N firms that use a vector of inputs to produce a vector of outputs, the input-oriented BCC measure of efficiency of a particular firm is calculated as:

$$\begin{aligned} &\min_{\theta,\lambda} \theta_i \\ &s.t. \quad \sum_{r=1}^{N} y^t{}_{mr} \lambda^t{}_r \geq y^t{}_{mi} \\ &\qquad \sum_{r=1}^{N} x^t{}_{kr} \lambda^t{}_r \leq \theta_i x^t{}_{ki} \\ &\qquad \lambda^t{}_r \geq 0 \\ &\sum_{r=1}^{N} \lambda = 1 \end{aligned} \tag{1}$$

where $\theta_i \leq 1$ is the scalar efficiency score for the i-th unit. If θ_i =1 the i-th firm is efficient as it lies on the frontier, whereas if θ_i < 1 the firm is inefficient and needs a (1- θ_i) reduction in the inputs levels to reach the frontier.

The choice of using a DEA is based on several considerations: it works well even with a small sample size and it does not require any assumption about the functional form of the frontier or of the inefficiency component. We adopt an input-minimisation orientation, based on the

assumption that during periods of regulatory changes and increased competition, market participants strategically focus on cutting costs. Therefore we would expect changes in inputs used to be closely associated with the changes in market structure.

3.2.2 Meta-frontier analysis

There are various ways to incorporate environmental variables in the estimation of bank efficiency, the most commonly used are the one-step and the two-step approach. In the one-step approach, environmental variables are included directly in the estimation of efficiency whereas in the two-step approach, efficiency scores obtained in the first stage of analysis are then regressed on a number of country-specific environmental variables. Both approaches are employed in the literature: the one-step approach seems to be the preferred choice if using a parametric approach to the efficiency evaluation, following the maximum likelihood procedure of Battese & Coelli (2005). On the other hand, the two-step approach seems to be the favoured approach if efficiency is estimated by means of Data Envelopment Analysis (DEA). In a typical two-stage study, the relative efficiency of each institution is evaluated in the first stage based and then regressed (as the dependent variable in an ordinary least squares or a Tobit regression) on various explanatory variables in the second stage to identify the factors whose impact on efficiency is statistically significant. A theoretical justification for the use of a two-stage method that uses DEA in the first stage is provided by Banker & Natarajan (2008).

Departing from the standard two stage approach, Battese et al. (2004) and O'Donnell et al. (2008) recently proposed a so-called 'meta-frontier' method to estimate country or regional-specific frontiers and obtain comparable efficiency scores, as the meta-frontier results from the envelopment of regional specific frontiers.

In this study, to accommodate the potential country variation of available banking technology and to obtain comparable technical efficiencies for the countries in our sample, we follow the meta-frontier approach. If we consider the available technology to be a state of knowledge in existence at a given point in time, we can define the meta-technology as the totality of the regional/country-specific technologies. The meta-frontier production function is therefore a frontier function that envelops all frontiers of individual countries/groups.

To apply the meta-frontier approach with DEA, it is necessary to solve separate models (equation 1) for each country in order to specify the country-specific frontiers and one for the joint data set for solving the meta-frontier. The efficiencies measured relative to the meta-frontier can be decomposed into two components: a component that measures the distance from an input-output point to the group frontier (the common measure of technical efficiency) and a component that measures the distance between the group frontier and the meta-frontier (representing the restrictive nature of the production environment).

The meta-technology ratio (DEA-MTR), that is the relative productivity of technologies, can be obtained as the ratio between meta-frontier (in)efficiency (DEA-M) and the country-specific (in)efficiency (DEA-C). The higher the ratio, the closer a country's production technology is to the 'best practice' in the region. Vice versa, the lower the ratio, the bigger is the technology gap.

3.2.3 Modelling convergence

To investigate the convergence of bank efficiency levels across the 11 countries in the Mediterranean region (MED-11) over the period 1994-2008, we follow Casu & Girardone (2010) and employ the concepts of β-convergence and σ-convergence (Barro & Sala-i-Martin, 1991, 1992 and 1995; and Quah, 1996).

To estimate unconditional β-convergence or the 'catch-up effect', we employ the following equation:

$$\Delta y_{i,t} = \alpha + \beta(\ln y_{i,t-1}) + \rho \Delta y_{i,t-1} + \varepsilon_{i,t} \qquad (2)$$

where i=1,…11 and t=1,…14; $y_{i,t}$ = the mean efficiency of the banking sector of country *i* at time *t*; $y_{i,t-1}$ = the mean efficiency of the banking sector of country *i* at time *t*-1; $\Delta y_{i,t} = \ln(y_{i,t}) - \ln(y_{i,t-1})$; α, β and ρ are the parameters to be estimated and $\varepsilon_{i,t}$ = error term. A negative value for the parameter β implies convergence; the higher the coefficient in relative terms the greater the tendency for convergence. Equation (2) is first estimated without including the lagged dependent variable ($\Delta y_{i,t-1}$), as in the conventional growth theory models. The β-convergence equations are estimated by pooled OLS regression and Generalised Method of Moments

(GMM) to introduce dynamic behaviour in the time series and cross-sectional variation (Blundell & Bond, 1998).

To estimate cross sectional dispersion or σ-convergence, that is to estimate how quickly each country's efficiency levels are converging to the average, we adopt the following autoregressive distributed lag model specification:[66]

$$\Delta E_{it} = \alpha + \sigma E_{i,t-1} + \rho \Delta E_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

where $E_{i,t} = \ln(y_{i,t}) - \ln(\bar{y}_t)$; $E_{i,t-1} = \ln(y_{i,t-1}) - \ln(\bar{y}_{t-1})$; $y_{i,t}$ and $y_{i,t-1}$ are defined as before; $\bar{y}_t$ = the mean efficiency of the MED-11 banking sectors at time *t*; $\bar{y}_{t-1}$ =the mean efficiency of the MED-11 banking sectors at time *t*-1; $\Delta E_{it} = E_{i,t} - E_{i,t-1}$; α, σ and ρ are parameters to be calculated and $\varepsilon_{i,t}$ is the error term. σ < 0 represents the rate of convergence of $y_{i,t}$ towards $\bar{y}_t$; the larger is σ in absolute value, the faster the rate of convergence. The model in equation (3) is estimated initially without the inclusion of the lagged dependent variable (ΔE_{it-1}), as we did for the β-convergence in equation (2).

3.3 Descriptive statistics

The sample relates to a balanced sample of commercial and savings banks in the following 11 countries in the Mediterranean region: Cyprus (CY), Algeria (DZ), Egypt (EG), Spain (ES), Greece (GR), Israel (IL), Italy (IT), Malta (MT), Morocco (MA), Portugal (PT) and Tunisia (TN) over the period 1995-2008.

Table 3.1 below provides some descriptive statistics of the total number of observations in the sample and the average total assets by year and country.

[66] Similar specifications have been estimated, among others, by Fung (2006), Parikh & Shibata (2004), Weill (2009) and Casu & Girardone (2010).

Table 3.1 Number of observations and average total assets (€ million)

	N. of obs.	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Change 1995-2008
CY	4	2,369	2,895	3,371	3,653	4,505	5,435	6,585	7,053	7,652	8,653	10,489	14,221	18,209	21,300	899%
DZ	2	2,851	2,739	2,440	2,477	2,574	2,547	2,642	2,354	2,297	2,266	2,716	2,848	3,002	4,021	141%
EG	14	1,459	1,571	1,803	1,962	2,403	2,777	3,114	2,784	2,169	2,229	3,129	3,511	4,146	4,321	296%
ES	65	10,264	11,275	12,658	13,605	15,184	18,663	19,919	19,818	21,749	30,402	36,931	41,634	47,559	51,800	505%
GR	8	7,812	8,690	10,035	10,972	13,497	15,804	16,956	17,248	17,723	18,848	22,279	27,218	33,131	38,674	495%
IL	5	3,489	3,655	3,666	3,579	4,798	5,771	6,346	4,615	4,074	4,072	4,765	5,305	5,631	6,462	185%
IT	80	3,049	3,347	3,592	3,926	4,078	4,386	4,693	5,057	5,113	5,694	6,232	6,795	7,246	8,429	276%
MA	4	2,320	2,334	2,318	2,634	2,973	3,274	3,390	3,509	3,685	4,965	6,095	7,444	8,658	10,537	454%
MT	4	1,008	1,162	1,314	1,474	1,670	1,837	1,975	2,137	2,203	2,281	2,395	2,692	2,904	3,161	314%
PT	10	8,910	9,617	10,845	12,500	14,495	18,857	20,559	20,928	22,458	23,646	26,185	28,842	31,887	34,340	385%
TN	10	1,088	1,121	1,078	989	1,163	1,379	1,544	1,453	1,404	1,435	1,575	1,633	1,733	1,941	178%
Mean	206	4,056	4,401	4,829	5,252	6,122	7,339	7,975	7,905	8,230	9,499	11,163	12,922	14,919	16,817	375%

As is apparent from Table 3.1, Italy and Spain dominate the sample, while the number of observations for Algeria, Israel, Morocco and Malta is particularly low. Data availability improves in the final years of the sample period, probably due to better reporting of accounting data; however, for the purpose of the present analysis, we concentrate on continuously operating institutions over the time period.

Substantial differences in the average size of banks are apparent, with Spanish banks being the largest. The average size (total assets) of all institutions in the sample increases from €4,056,000,000 in 1995 to €16,817,000,000 in 2008. It is necessary to point out, however, that in some countries the high number of small- and medium-sized institutions has an impact on the overall country averages (for example, Italy), whereas in other countries only a small number of large banks is present in the sample (for example, Israel).

3.3.1 Input and output variables

There are two main approaches to the definition of inputs and outputs of financial institutions: the production approach and the intermediation approach. Both approaches are widely used in the literature and there is no consensus on the superiority of one or the other. In this study we follow a variation of the intermediation approach (Sealey & Lindley, 1977). This approach views financial institutions as mediators between the supply and the demand of funds. As a consequence, deposits are considered as inputs, and interest on deposits as a component of total costs, together with labour and capital.

In the cross-country setting of the present study, the need for comparable data from different countries imposes strong restrictions on the variables one is able to use, not least because of the various accounting criteria used in the four countries under investigation. To minimise possible bias arising from different accounting practices, the broad definition of variables as presented by Bankscope was chosen.

Specifically, the input variable used in this study is Total Costs (Interest Expenses + Overheads), whereas the output variables capture both the traditional lending activity of banks (total loans) and the growing non-lending activities (other earning assets).

We aggregate the cost expenditure[67] into a single input to minimise the well-known dimensionality problem associated with DEA. In small samples, if we have a high number of variables relative to the number of observations, units can be wrongly identified as efficient because too many constraints have been specified. Observations tend to become incomparable and hence figure on the frontier owing to the inability of DEA to indentify peers. One way around this, commonly used in the literature, is to aggregate the input variables in a single monetary value. Tables 3.2, 3.3 and 3.4 report the descriptive statistics of the input variable (total costs) and the two output variables (total loans and total other earning assets), respectively.

Table 3.2 Total costs (average, € million)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Change 1995-2008
CY	179	221	254	288	320	392	418	464	465	494	547	615	913	1,130	630%
DZ	149	163	141	124	104	137	127	81	65	65	106	72	102	92	62%
EG	116	133	150	159	195	240	252	193	138	135	208	247	275	354	305%
ES	909	940	885	913	894	1,216	1,312	1,131	961	1,020	1,397	1,706	2,277	2,852	314%
GR	899	987	1,026	1,165	1,282	1,386	1,118	992	903	940	980	1,297	1,867	2,496	278%
IL	209	171	275	306	361	428	564	242	246	240	314	230	244	278	133%
IT	297	306	283	267	231	261	276	267	258	252	261	307	376	463	156%
MA	129	137	135	147	155	179	178	186	178	261	277	269	326	397	307%
MT	55	66	76	86	109	110	115	106	99	92	96	105	120	132	238%
PT	815	799	781	919	883	1,123	1,276	1,130	1,105	1,176	1,215	1,408	1,793	2,247	276%
TN	68	73	56	64	69	84	96	93	85	87	102	108	120	122	180%
Mean	348	363	369	404	418	505	521	444	409	433	500	579	765	960	276%

Total costs increase steadily (+276%) over the sample period; costs increase in all countries. The largest increase is displayed by banks in Cyprus (+630%) and the smallest by banks in Algeria (+ 62%).

Tables 3.3 and 3.4 show the averages for the two output variables, total loans and total other earning assets.

[67] Overheads comprise Personnel Expenses, Other Administrative Expenses and Other Non-Interest Costs.

Table 3.3 Total loans (average, € million)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Change 1995-2008
CY	1,334	1,639	1,903	2,185	2,610	3,155	3,592	4,019	4,360	4,841	5,484	7,474	10,327	13,413	1005%
DZ	863	792	602	429	539	690	842	734	763	784	939	893	994	1,358	157%
EG	656	740	865	971	1,270	1,506	1,604	1,309	902	884	1,160	1,233	1,430	1,658	253%
ES	4,619	5,183	6,169	7,021	8,072	9,967	11,027	11,622	13,112	18,454	22,804	28,097	32,289	34,605	749%
GR	2,734	3,110	3,516	4,224	5,437	6,679	7,926	9,427	10,569	11,477	13,410	17,193	22,395	28,460	1041%
IL	2,481	2,535	2,422	2,434	3,167	3,938	4,504	3,386	2,885	2,707	2,978	3,237	3,373	3,907	158%
IT	1,480	1,522	1,678	1,902	2,178	2,506	2,713	2,972	3,219	3,501	3,916	4,381	4,946	5,938	401%
MA	1,233	1,259	1,217	1,420	1,624	1,718	1,724	1,690	1,759	2,390	3,270	3,926	4,956	6,365	516%
MT	500	656	711	775	851	918	961	997	1,034	1,106	1,141	1,312	1,454	1,648	330%
PT	3,629	4,125	5,161	6,948	8,791	11,937	13,462	14,291	14,657	15,632	16,757	18,706	21,665	24,134	665%
TN	722	711	672	700	782	979	1,103	1,076	1,037	1,027	1,110	1,142	1,167	1,325	183%
Mean	1,841	2,025	2,265	2,637	3,211	3,999	4,496	4,684	4,936	5,709	6,634	7,963	9,545	11,165	606%

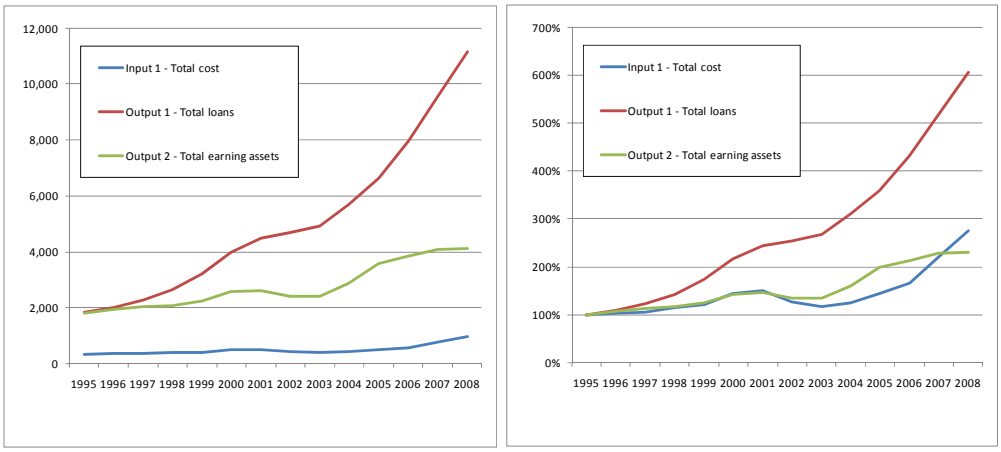
Total loans are steadily increasing in all countries, with the highest percentage change displayed by Greek and Cypriot banks. This might be a consequence of increased lending following EU membership. Other earning assets are also increasing steadily, but not at the same rate of loans (percentage change 230% versus 606%).

Table 3.4 Total other earning assets (average, € million)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Change 1995-2008
CY	685	878	1,094	1,038	1,238	1,545	2,221	2,072	2,416	2,963	4,117	5,220	6,242	6,009	877%
DZ	1,577	1,620	1,508	1,707	1,655	1,476	1,217	1,017	916	865	1,102	1,329	1,303	1,780	113%
EG	693	724	824	863	962	1,089	1,305	1,296	1,156	1,242	1,810	2,104	2,483	2,346	338%
ES	4,731	5,105	5,383	5,320	5,503	6,425	6,383	6,045	6,485	9,888	11,731	11,049	12,163	13,258	280%
GR	4,559	4,993	5,742	6,061	7,029	7,994	7,736	6,773	6,115	5,456	6,640	6,988	6,853	6,334	139%
IL	818	851	669	655	985	1,044	999	653	633	860	1,388	1,732	1,997	1,646	201%
IT	1,298	1,536	1,593	1,673	1,500	1,462	1,467	1,507	1,325	1,596	1,897	2,000	1,829	1,822	140%
MA	600	601	609	683	962	1,229	1,436	1,369	1,394	1,687	1,849	2,341	2,465	2,891	482%
MT	411	408	487	571	660	744	827	942	973	1,010	1,074	1,171	1,187	1,330	323%
PT	4,285	4,447	4,509	4,281	4,034	5,108	5,008	4,613	4,902	5,939	7,549	7,997	8,091	7,625	178%
TN	104	139	135	189	238	274	294	260	250	293	329	345	412	386	371%
Mean	1,797	1,937	2,050	2,095	2,251	2,581	2,627	2,413	2,415	2,891	3,590	3,843	4,093	4,130	230%

Figure 3.1 illustrates the trend of the input and output variables, both as averages and as percentage change (1995 as base year). Bank growth in these countries has been mainly driven by development of the traditional lending function, and the increase in total costs seems to be mirrored by the steady growth of bank loans. Cypriot and Moroccan banks display the most remarkable increase in other earning assets; this is possibly due to the entry of foreign banks.

Figure 3.1 Average and percentage change- input and output variables



3.4 Results

3.4.1 Efficiency results

This section presents the results of the application of the DEA meta-frontier analysis to evaluate the efficiency of banks in selected countries in the Mediterranean region.

Table 3.5 reports descriptive statistics of efficiency scores for the countries under observation as well as estimates for all countries combined (meta-frontier). Technical efficiencies and meta-technology ratios are estimated for each country in each of 14 years of analysis, relative to a balanced panel data set rather than relative to yearly frontiers, which makes analysis of the evolution of efficiency over time meaningful.

Table 3.5 Country-specific DEA efficiency scores (DEA-C)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Mean
CY	96.9	97.2	96.6	97.9	100.0	98.2	99.8	100.0	97.3	95.2	95.6	95.1	92.9	99.3	**97.3**
DZ	100.0	94.4	93.1	95.7	100.0	100.0	100.0	100.0	94.7	90.4	91.3	90.2	91.4	98.6	**95.7**
EG	89.4	88.7	91.3	88.6	86.1	86.6	85.1	83.9	80.8	89.5	90.4	89.5	83.7	79.0	**86.6**
ES	90.4	90.3	87.4	86.2	83.1	87.4	87.3	86.4	87.1	84.1	83.0	85.2	86.1	87.5	**86.5**
GR	96.0	94.0	94.9	88.1	94.8	96.5	97.5	96.9	94.0	91.5	94.2	89.6	93.2	93.4	**93.9**
IL	94.9	93.0	98.2	93.4	96.5	96.5	99.0	96.6	89.7	98.6	99.1	93.8	95.3	88.9	**95.2**
IT	81.2	83.2	86.8	85.6	83.5	81.6	83.2	80.8	68.4	79.4	80.8	80.5	84.0	82.3	**81.5**
MA	100.0	97.3	98.0	96.6	99.2	96.7	100.0	100.0	100.0	98.2	100.0	100.0	100.0	100.0	**99.0**
MT	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	99.2	100.0	100.0	**99.9**
PT	89.8	89.4	91.6	95.4	95.1	91.2	93.7	93.5	90.3	89.1	93.4	92.7	93.5	95.3	**92.4**
TN	80.3	86.1	92.5	92.5	91.3	96.9	94.9	89.3	92.8	93.0	93.0	96.4	87.8	94.9	**91.6**
Mean	92.6	92.2	93.7	92.7	93.6	93.8	94.6	93.4	90.5	91.7	92.8	92.0	91.6	92.7	

The average annual efficiency scores of banks of each country relative to each country's frontier (DEA-C) reveal a general steady trend. The results relative to the country frontiers are reported only for completeness of the analysis. Recall that these efficiencies are calculated relative to each country's frontier; the boundaries of these frontiers are restricted technology sets, where the restrictions derive from the available economic infrastructure and other characteristics of the production environment, as discussed above. Also recall the small number of observations in some countries, which causes dimensionality problems

We now move to the crucial part of this analysis, the measurement of efficiency relative to a meta-frontier, defined as the boundary of an unrestricted technology set. It is interesting to note that in most countries, the country-specific frontiers were at least partially tangent to the meta-frontier. This is the case when at least one observation from each country lies both on the country and on the meta-frontier and it is therefore positioned in the point of tangency between the country and the meta-frontier. This indicates that the meta-frontier closely envelops the country-specific frontiers and that the value of the technological gap ratio equals the maximum value of one for at least one observation in each of the sample countries.

Looking at the efficiency scores derived from the estimation of the meta-frontier as displayed in Table 3.6, Spanish banks dominate the region, with average efficiency scores of 80.4%. Cypriot, Egyptian and Tunisian

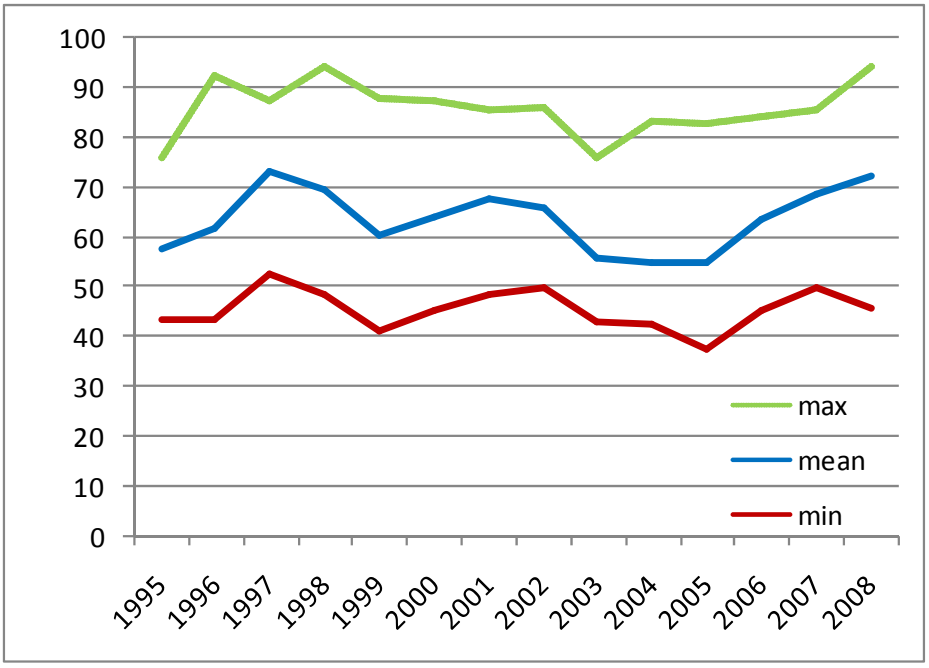
banks are lagging behind with average efficiency scores of 55.6%, 49.5% and 58.1% over the period. The region's average efficiency score is 63.5%, which indicates that Mediterranean banks could, on average, reduce costs (inputs) by 36.5% and still produce the same outputs.

Table 3.6 Mean meta-frontier DEA efficiency scores

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Mean
CY	47.7	52.2	70.0	57.9	46.1	53.1	61.6	53.7	46.1	42.5	48.2	60.8	69.9	69.2	**55.6**
DZ	74.2	78.3	82.9	94.3	87.8	71.2	70.0	73.2	64.3	57.2	52.1	73.7	72.6	93.7	**74.7**
EG	51.7	51.4	60.1	56.1	43.2	45.3	49.3	49.8	44.5	45.7	45.4	53.3	52.0	45.7	**49.5**
ES	59.3	65.7	84.0	85.3	82.3	87.2	85.5	85.7	75.7	83.0	82.9	84.2	85.0	79.2	**80.4**
GR	45.4	43.5	52.7	48.4	41.0	48.4	65.3	62.4	56.6	50.4	52.9	54.2	63.9	68.1	**53.8**
IL	74.6	92.3	69.9	56.7	46.2	52.2	48.5	67.1	43.2	42.4	37.5	66.6	74.2	77.9	**60.7**
IT	44.5	47.9	58.6	65.6	63.9	69.8	71.8	71.8	57.6	63.2	62.0	64.0	70.3	73.5	**63.2**
MA	57.8	55.9	74.4	69.2	58.8	65.1	71.8	60.3	49.1	45.4	49.7	65.0	85.5	93.9	**64.4**
MT	76.1	79.5	87.3	81.5	63.4	65.2	67.7	57.3	63.8	56.2	59.7	62.9	62.7	70.4	**68.1**
PT	59.8	62.9	80.8	73.0	68.1	76.3	78.2	78.0	65.5	67.6	70.3	66.7	68.5	64.2	**70.0**
TN	43.3	46.9	82.5	76.3	62.9	70.1	72.3	63.4	47.8	48.2	44.1	45.2	49.9	60.6	**58.1**
Mean	57.7	61.5	73.0	69.5	60.3	64.0	67.4	65.7	55.8	54.7	55.0	63.3	68.6	72.4	**63.5**

Figure 3.2 illustrates the trend of efficiency levels over the period 1995-2008. For all countries, it is possible to note an improvement in efficiency levels in the later stages of the analysis, from 2005 onwards (with the exception of Egypt). This improvement is particularly remarkable for Algerian and Moroccan banks. The overall mean efficiency in the region is improving, once again driven by improvements in the best practice. Minimum average efficiency scores also seem to be increasing, following a drop in 2008.

Figure 3.2 Average meta-frontier DEA scores



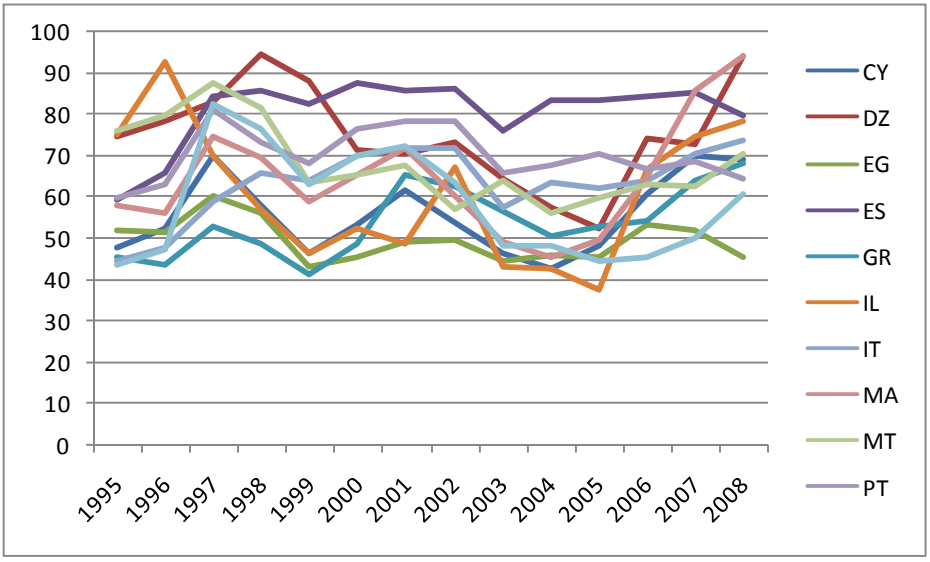


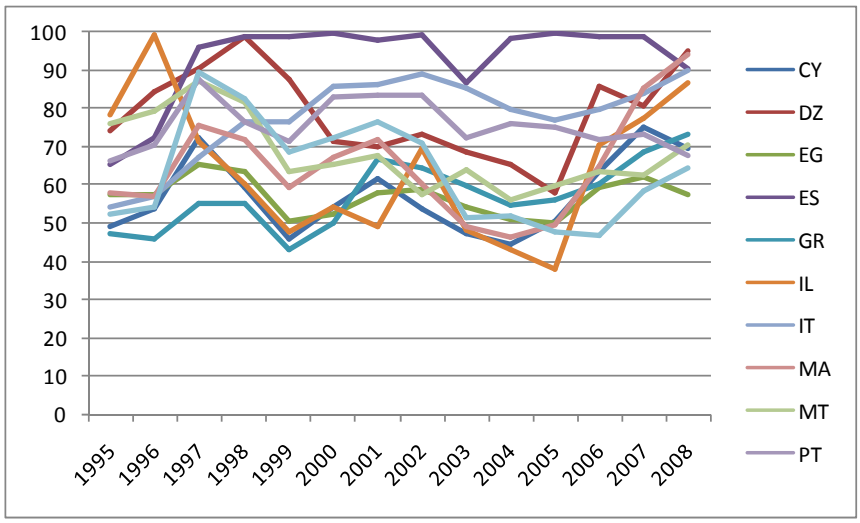
Table 3.7 illustrates the meta-technology ratios. The meta-technology ratio (DEA-MTR) or technological gap, is calculated as the ratio between meta-frontier (in)efficiency (DEA-M) and the country-specific (in)efficiency (DEA-C) and it indicates the relative productivity of technologies. The higher the ratio, the closer a country's production technology is to the 'best practice' in the region. Vice versa, the lower the ratio, the bigger is the technology gap. An increase in the meta-technology ratio can be seen as convergence towards the best practice.

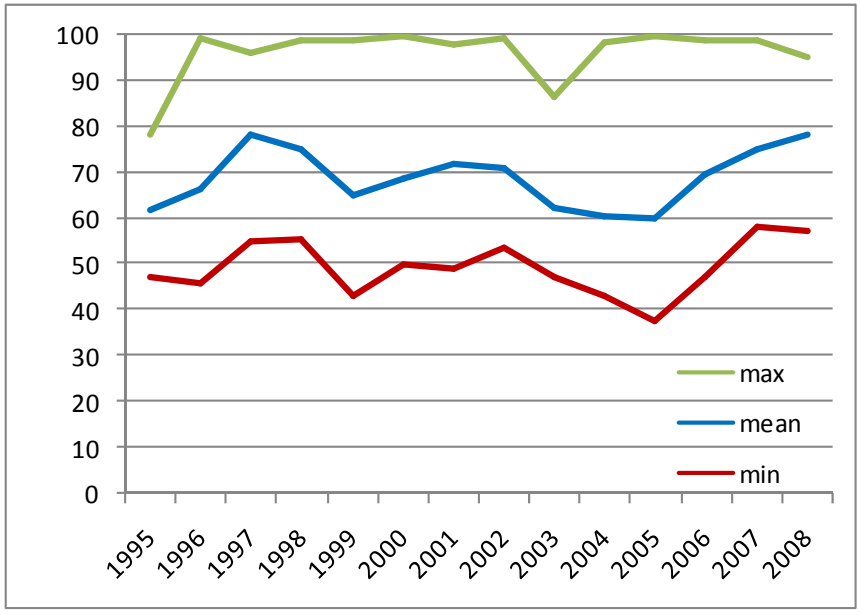
Table 3.7 Average meta-technology ratios

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Mean
CY	48.9	53.5	72.5	59.1	46.1	54.0	61.7	53.7	47.1	44.6	50.3	63.6	75.2	69.6	**57.1**
DZ	74.2	84.6	90.4	98.7	87.8	71.2	70.0	73.2	68.8	65.2	57.7	85.9	80.8	95.1	**78.8**
EG	57.6	57.3	65.5	63.3	50.4	52.6	58.1	59.0	54.0	50.8	50.1	59.1	62.0	57.3	**56.9**
ES	65.3	72.3	96.0	99.0	98.9	99.8	97.7	99.1	86.5	98.4	99.8	98.7	98.8	90.4	**92.9**
GR	47.0	46.1	55.0	55.2	42.9	49.9	66.8	64.4	60.0	54.8	56.0	60.2	68.5	73.1	**57.1**
IL	78.2	99.2	71.2	60.3	47.8	54.1	49.1	69.6	48.1	43.1	37.8	70.4	77.6	86.8	**63.8**
IT	54.2	56.9	67.3	76.5	76.6	85.6	86.3	89.0	85.1	79.6	76.7	79.6	84.0	89.7	**77.6**
MA	57.8	57.2	75.8	71.6	59.2	67.1	71.8	60.3	49.1	46.2	49.7	65.0	85.5	93.9	**65.0**
MT	76.1	79.5	87.3	81.5	63.4	65.2	67.7	57.3	63.8	56.2	59.7	63.3	62.7	70.4	**68.1**
PT	66.2	70.6	87.8	76.4	71.2	82.9	83.3	83.3	72.3	75.8	75.0	71.7	73.4	67.5	**75.5**
TN	52.5	54.0	89.5	82.6	68.7	72.4	76.3	70.8	51.4	52.1	47.8	47.0	58.3	64.4	**63.4**
Mean	61.6	66.5	78.0	74.9	64.8	68.6	71.7	70.9	62.4	60.6	60.1	69.5	75.2	78.0	**68.7**

During this period of analysis, the average meta-technology ratio is increasing indicating an ability of banks in all countries to appropriate the best available technology. Spanish banks exhibit the highest meta-technology ratio; the ratios also display increasing trend overtime. This indicates that Spanish banks consistently improved their performance and their technology became best practice. The dominance of Spanish banks is clearly illustrated in Figure 3.3. Moroccan and Algerian banks seem to catch up with best practice.

Figure 3.3 Average meta-technology ratios





There is overall some indication of catching up with the best available technology. However, the institutions comprising the sample are often the largest banks in some countries and are for the majority foreign-owned in the MENA region. As a result, the indication of catching up must be treated with caution.

3.4.2 Convergence results

To evaluate β-convergence for our cross-section of Mediterranean countries, we estimate equation (2) by OLS and GMM. Table 3.8 shows regression estimates of the convergence coefficient β for the period 1995-2008. The results from equation (2) that exclude the lagged dependent variable are reported in the first column. The beta coefficient is always negative and statistically significant, thus indicating that convergence in efficiency scores has occurred across countries in the MED-11 area. The results are confirmed in all three models although the goodness of fit for the SYS-GMM (last column) shows that the p-value for AR(1) is greater than 5%.

Table 3.8 Beta convergence

Coefficients	**Equation (2) without lagged dependent variable**	**Equation (2)**	
	Pooled OLS Robust	Pooled OLS robust	SYS-GMM two step robust
β	-.2502***	-.3174***	-.3952***
	(.0588)	(.0679)	(.1816)
ρ	-	-.1682*	+.1516
		(.8813)	(.1801)
α	1.0481***	1.321***	1.6448**
	(.2461)	(.2843)	(.7520)
Goodness of fit:			
R2	0.1227	0.1626	
m1 p-value			0.245
m2 p-value			0.720
Sargan/Hansen			1.000

Note: OLS= Ordinary Least Squares; SYS-GMM= System GMM.

*,**,*** indicates significance at the 10%, 5% and 1% levels. Asymptotic standard error in parentheses. Two-step estimates are Windmeijeier corrected (Windmeijer, 2005). m1 and m2 are tests for first-order and second-order serial correlation. Sargan & Hansen is a test of the over-identifying restrictions for the GMM estimators.

Table 3.9 reports the results for the σ-convergence. In our case sigma convergence indicates how quickly each country's efficiency levels are converging to the average. Recall that $\sigma<0$ represents the rate of

convergence of $y_{i,t}$ towards $\bar{y}_t$; the larger is σ in absolute value, the faster the rate of convergence. We firstly estimated the model with pooled OLS and fixed effects (the Hausman test allows us to reject random effects). Potential problems with these two models are addressed by the estimation of a dynamic GMM model. The last column of Table 3.10 reports the SYS-GMM estimations results (equation 3). Following Arellano and Bover (1995) and Blundell & Bond (1998), the use of a GMM estimator should help mitigate possible endogeneity problems and omitted variable bias. Results for all the estimations suggest an increase in the speed of convergence as the σ coefficient is always negative and statistically significant. Further, the SYS-GMM results satisfy the three additional conditions: a significant AR(1) serial correlation, lack of AR(2) serial correlation and a high Sargan/Hansen test.

Table 3.9 Sigma convergence (dependent variable ΔE)

Coefficients	**Equation (3) without lagged dependent variable**		**Equation (3)**		
	Pooled OLS robust	Fixed effects	Pooled OLS robust	Fixed effects	SYS-GMM two step robust
σ	-.1874***	-.4131***	-.2129***	-.5645***	-.1791***
	(.0607)	(.0687)	(.0641)	(.0805)	(.4521)
ρ			-.0151	-.1271	-.1359
			(.0972)	(.0864)	(.4760)
μ	-.00032	-.0074	-.0029	-.0095	-.0019
	(.0093)	(.0100)	(.0097)	(.0092)	(.0198)
Goodness of fit:					
R2	0.0961		0.1194		
F-test		39.09***		26.08***	
m1 p-value					0.342
m2 p-value					0.843
Sargan/Hansen					1.000

Note: OLS= Ordinary Least Squares; SYS-GMM= System GMM.

*,**,*** indicates significance at the 10%, 5% and 1% levels. Asymptotic standard error in parentheses. Two-step estimates are Windmeijeier corrected (Windmeijer, 2005). m1 and m2 are tests for first-order and second-order serial correlation. Sargan &Hansen is a test of the over-identifying restrictions for the GMM estimators.

3.5 Conclusions

This study examines the dynamics of cost efficiency in 11 Mediterranean countries over the period 1994-2008. For all countries, the results indicate an improvement in efficiency levels in the later stages of the analysis, from 2005 onwards (with the exception of Egypt). This improvement is particularly remarkable for Algerian and Moroccan banks. The overall mean efficiency in the region is improving, once more driven by improvements in the best practice. Spanish banks dominate the region, with average efficiency scores of 80.4% against the region's average of 63.5%. Spanish banks also exhibit the highest meta-technology ratio and the ratios increase overtime. This indicates that Spanish banks consistently improved their performance and their banking technology became best practice. Nonetheless, during this period of analysis, the average meta-technology ratio is increasing, indicating an ability of banks in all countries to appropriate the best available technology.

These results are supported by the estimation of β-convergence. The β coefficient is always negative and statistically significant, thus indicating that convergence in efficiency scores has occurred across countries in the MED-11 area. Furthermore, results for the σ-convergence suggest an increase in the speed of convergence as the σ coefficient is always negative and statistically significant. This indicates that, whereas the technological gap is still wide, the gap is narrowing at a faster speed.

4. IMPACT OF BANK REGULATIONS ON EFFICIENCY

Although the quality and adequacy of banking regulation and supervision are often touted as the essential factors contributing to a sound and well-performing banking sector, few studies have produced empirical evidence to back these assertions. A common finding is that certain specific regulatory elements may have a positive impact, while others may do the opposite or invite instability. Moreover, an adequate and well-functioning regulatory system appears to improve various performance or stability measures as long as they are complemented by other institutional and macroeconomic conditions.

This section focuses on a very specific question: Are the banks in the Mediterranean more cost efficient in countries with sounder regulatory and supervisory conditions? The results echo the recent findings in the literature. Certain regulatory aspects, such as disclosure requirements, credit information availability and entry obstacles, are highly important. The presence of an explicit deposit insurance scheme also improves efficiency, drawing attention to the importance of enhancing confidence for depositors. Other findings are less clear and require further investigation. For example, although restrictions on activities lower efficiency, it is possible that they could lead to increased risks.

The next section provides an overview of the literature. Then, section 4.2 summarises the data sources and gives an extensive summary of the variables used and their hypothesised impacts. Section 4.3 discusses the empirical results and section 4.4 summarises the main findings.

4.1 Literature review

The literature on the regulatory and supervisory determinants of bank efficiency is still in its infancy. Most studies use relatively broad measures of regulatory and institutional conditions. For example, Dietsch & Lozano-Vivas (2000) and Bos & Kool (2006) draw attention to the importance of a number of "environmental factors", including those relating to bank structure and regulation, such as concentration ratios, capital strength and intermediation ratios. The authors find that banks that operate in less concentrated markets, with greater capital and higher intermediation ratios tend to have lower costs. Similarly, Fries & Taci (2005) focus on transition economies using a broad measure of banking sector reforms, developed by the European Bank for Reconstruction and Development (EBRD), to find that banks in countries with an active agenda tend to perform better and have higher profitability.

Our study is similar to several recent studies that assess empirically the impact of regulations on different measures of bank efficiency. Barth et al. (2006) use the BRSS database for the years 2000 and 2003 to identify the regulatory and institutional determinants of net interest margins and cost efficiency in 68 countries. The authors' results provide partial support for the importance of capital regulations and supervisory power. More specifically, aside from private monitoring, most of the variance in interest margins and overhead costs are explained by institutional and macro-economic factors. The stringency of capital requirements and the power bestowed on supervisory authorities are at best weakly associated with greater efficiency. These findings provide a broad support for the third pillar of Basel II.

More recently, Pasiouras (2008) also uses the BRSS databases and a large sample of banks from 95 countries but develops cost and scale efficiency measures. Although the results support all three pillars of Basel II, the results are especially strong for the market discipline mechanisms (i.e. the third pillar). In addition, the role of bank-specific factors, such as bank liquidity and capitalisation, as well as market-specific factors, such as access to banking and presence of government-owned banks, are reaffirmed in the study.

In a later study, Pasiouras et al. (2009) assess the impact of regulatory conditions on profit and cost efficiency of banks using similar data. The authors find that regulations that improve supervisory power and market discipline tend to have a positive impact on both of the measures. In turn,

capital requirements tend to improve only cost efficiency while reducing profit efficiency. In addition, the results show that restricting banks' activities may improve their profit efficiencies and worsen their cost efficiencies.

4.2 Methodology and data

The model for assessing the impact of regulatory and institutional factors on bank efficiency is as follows:

$$MTR_{it} = f(B_{it}, C_{it}, R_{it}) + \varepsilon_{it}$$

where *B* stands for bank-specific factors that relate to bank *i* at time *t* while *C* and *R* stand for country-specific and regulatory factors and *MTR* is the meta-technology ratio as derived in section 3 which is the bank-specific meta-frontier efficiency divided by the country-specific efficiency.

The Barth et al. database provides up to three observations for each country, based on the 2000, 2003 and 2007 surveys. Due to different completion times, the surveys give a glimpse of the regulatory conditions between the publication year and one (or even two) years prior. For example, the 2000 survey was sent to the authorities in 1998, with most results arriving in 1999-2000. In order to minimise potential errors from misalignments between regulatory and non-regulatory factors, the later were averaged over a relevant time period. Moreover, the time spans were chosen to ensure that the current explanatory variables are used to explain future efficiency scores. Table 4.1 details the correspondence between the regulatory and non-regulatory variables.

Table 4.1 Sample correspondence for survey years

Survey year	Meta-tech. efficiency (MTR)	Other variables (B, I, M)
2000	Avg. of 1999-2001	Avg. of 1998-2000
2003	Avg. of 2002-04	Avg. of 2001-03
2007	Avg. of 2006-08	Avg. of 2005-07

Note: For all non-regulatory variables (i.e. *MTR*, *B*, *I*, *M*), the averages for the given periods were used.

The level of coverage of the sampled banks is depicted Table 4.2. When the entire sample is considered, the database covers just over the half of the entire banking assets. The coverage in the South-MED is significantly

more partial, with the total assets of the banks in the sample representing between one-quarter to one-third of the total assets of the banks in the region. Moreover, the total activities of the South-MED account for a small proportion of the entire sample. More specifically, the total assets of the South-MED banks within the sample represent are between 5 to 10% of the total assets of all banks in the sample. This is simply an outcome of the size of the EU's banking market. In order to ensure a balanced database, Italy's larger banks were excluded.

Table 4.2 Coverage of sample

	Banks in sample (number of banks)			**Coverage** (% of bank assets in country)			**Share in sample** (% of entire sample assets)		
	2000	**2003**	**2007**	**2000**	**2003**	**2007**	**2000**	**2003**	**2007**
Algeria	2	2	2	27.6%	10.3%	8.8%	0.48%	0.97%	0.89%
Egypt	14	14	14	32.4%	34.5%	47.8%	3.10%	1.91%	1.58%
Israel	5	5	5	13.6%	12.6%	15.6%	5.05%	3.35%	2.33%
Morocco	4	4	4	35.1%	38.7%	54.0%	0.96%	0.83%	0.83%
Tunisia	10	10	10	73.1%	72.2%	74.3%	0.49%	0.42%	0.31%
SOUTH-MED	35	35	35	24.5%	23.9%	31.5%	10.51%	7.65%	5.96%
Cyprus	4	4	4	51.4%	73.1%	79.9%	1.09%	0.91%	1.19%
Spain	65	65	65	97.8%	94.1%	95.0%	29.08%	32.66%	38.31%
Greece	8	8	8	65.9%	66.5%	69.2%	4.96%	4.63%	4.99%
Italy	80	80	80	19.8%	19.2%	17.4%	45.79%	46.19%	43.34%
Malta	4	4	4	46.6%	49.2%	30.7%	0.41%	0.39%	0.49%
Portugal	10	10	10	59.8%	64.4%	72.4%	8.16%	7.58%	5.73%
EU-MED	171	171	171	55.1%	52.4%	60.0%	89.49%	92.35%	94.04%
ENTIRE SAMPLE	206	206	206	51.9%	50.3%	58.3%	100.00%	100.00%	100.00%

Sources: Bankscope, national central banks and the ECB.

Among the 11 countries in the sample, Algeria has the lowest coverage. This is entirely due to the fact that most of the Algerian banks are publicly-owned for which little information exists. All of the covered banks in Algeria are owned privately. For Israel, the detailed balance sheet information was available for only a small share of the banks. In other

South-MED countries, the coverage is more complete. This is particularly the case in Tunisia where the total assets of the sampled banks represent nearly three-quarters of the total assets of all banks in Tunisia.

4.2.1 Bank-specific variables

Four bank-specific variables are used to control for the market power, size, liquidity and capital strength.

The natural logarithm of a bank's assets, defined as the **bank assets** variable, serves as an indicator of the bank's size. Size could be a determinant of costs if there are increasing returns to scale. For example, larger banks may be able to reduce their operating costs by cutting back on personnel and administrative costs. Moreover, if a fixed cost is associated with financial transactions, larger banks may also be able to recue such costs. Lastly, larger banks may be in a better position to diversify their risks and thus reduce their borrowing costs.[68]

Market power is measured by the **bank market share**, i.e. the share of a bank's assets in total banking assets for the relevant years. According to the traditional 'quiet life hypothesis', banks that are in a dominant position are unlikely to occupy themselves with cost reduction and are likely to behave inefficiently (Hicks, 1935). Alternatively, managers of banks with extensive market power may have other incentives than being efficient, such as 'building empires', (Hughes et al., 2003). These theories would suggest that market share would be negatively correlated with efficiency.

Bank liquidity will be measured by the ratio of cash and due from central bank and other banks (i.e. demand and time deposits maintained in other banks) to customer deposits. Capital strength is measured by share of **bank equity** in total assets. Well-capitalised and liquid banks tend to face lower default risks and are thus likely to face lower funding costs. On the other hand, in the Middle East and Northern Africa (MENA) region, such banks tend to hold significant amounts of government debt, possibly under

[68] The literature has obtained mixed results on the impact of bank size or scale on efficiency, although most studies have found that large banks are either more efficient or equally efficient as smaller banks. See DeYoung (1998) for a general discussion. For results that are applicable to the Middle East and the North Africa (MENA) region, see Olson & Zoubi (2010), who provide evidence for scale economies.

direct or indirect government control and with extensive market power, both of which could lead to inefficiencies. Thus, there is no clear relationship between these two variables and bank efficiency.

4.2.2 Country-specific variables

Three country-specific variables are considered:

Inflation is often thought to increase instability and decrease bank efficiency, since it makes price discovery harder and makes interest rates less informative about the underlying conditions. High inflation may increase labour costs and, by increasing the number of transactions, lead to an increased competition in excessive branching and other operational costs. Additionally, inflation exacerbates information asymmetries, increasing the costs of state verification (Huybens & Smith, 1999). Economic **growth**, or more specifically real GDP growth, is included to control for business cycles.

The third indicator, **institutional quality,** is built by aggregating eight dimensions of the quality of political institutions. These dimensions are: i) polity, which measures the relative strength of democratic (or conversely autocratic) institutions, determining the extent to which the executive arm is controlled by regular checks and balances, guarantee of civil liberties, freedom of political expression and participation; ii) executive openness, which measures the openness of the executive recruitment; iii) executive competitiveness, which controls for the competitiveness of the election procedures; iv) executive constraints, measuring the extent of authority that can be practiced by the executive arm; v) political competitiveness, which measures the competitiveness of the political arena; vi) control of corruption, concerning the perception that public authorities can exercise their power without obtaining private gain; vii) voice and accountability, which measure the degree to which citizens can voice their opinions and desires in the political system; and viii) rule of law, capturing the perceptions on the quality of contract enforcement, property rights, police, courts and likelihood of crime and violence. The **institutional quality** variable is the first principal component of the seven variables identified above. By using a single variable to account for the various dimensions, the principal component analysis effectively addresses the potential multi-collinearity concerns that would arise from including the variables collectively.

Institutional and political conditions are likely to be very important in determining bank behaviour, stability and performance. For example, giving authorities extensive powers in countries where political freedoms and checks and balances are limited could lead to a misuse of authority. Indeed, Barth et al. (1999) and La Porta et al. (2002), among others, find that prevalence of state is associated with poorly operating financial systems. Public interference may also be an instrument for politicians to expand or maintain their power (Shleifer & Vishny, 1994). Another interesting question is whether banking stability closely reflects the ambitions of politicians who are in power.[69]

A number of studies find that institutional conditions matter in the determination of bank efficiency. Pasiouras (2008) find that the degree to which a country's laws protect private rights matters substantially, such that banks in better-governed countries are much more efficient. Using a sample that is similar to the present study, Ben Naceur et al. (2009) show that several institutional factors, most notably the quality of the judicial system and a better legal system, are crucial in explaining cross-country differences in bank efficiency across four Middle East and North Africa countries: Egypt, Jordan, Morocco, and Tunisia.

4.2.3 Regulatory variables

The regulatory factors are mostly based on the Barth et al. surveys (BRSS) and, for the case of credit information, on World Bank's Doing Business Surveys. The variables used and a brief description of their construction methodology, already detailed in section 2, are presented below.

The index **scope restrictions** measures the degree of restrictions on what a bank can do, including prohibitions on key non-traditional activities, such as securities and insurance underwriting, brokering, dealing, real estate development and so forth.[70] In theory, restricting the

[69] Using data on 25 emerging countries, Brown & Dinc (2005) find that bank failures are significantly less likely to occur prior to an election, pointing to a concern for loss of votes and increased attention paid to stability. Indeed, among the failures observed in the sampled countries in the authors' dataset, only 10% have taken place within a year before the election. The study also raises another interesting point on crisis management: banks that are taken over by the government almost never fail, reflecting the underlying guarantees.

[70] For more details on the scope restrictions index, see section 2.2.

range of activities may have opposing effects on efficiency. On the one hand, allowing banks to take equity positions can exacerbate the moral hazard problems between a borrower and a lender, adversely affecting the optimality of investment decisions and the overall bank efficiency (Boyd et al., 1998). On the other hand, when banks engage in a broader set of activities, their ability to diversify risks is also enhanced. A more stable income stream can serve to reduce borrowing costs, which will increase efficiency.

Entry obstacles are measured by aggregating the degree of licensing restrictions, the rate of foreign denials (share of denials in total applications over the past five years) and the total market share of the government-owned banks in terms of total assets. A regulatory structure that is more amenable to entry is likely to enhance competitive conditions, possibly undermining market power and the potential for a 'quiet life' (see above). Several studies find that foreign entry is associated with more competitive conditions, translating into lower costs and profits for domestic banks, (Claessens et al., 2001; Claessens & Laeven, 2004). Highly predominant state-ownership of the banking sector may also undermine the competitive conditions.[71]

The **capital requirement stringency** considers whether there are explicit requirements on the amount and type of capital allowed, risk adjustments and initial capital.[72] Although stricter rules on capital and an autonomous supervisor may make the system as a whole sounder, the impact on efficiency is less than clear. More and better capital held by one bank could translate into lower borrowing costs and may signal operational efficiency. However, when the conditions apply to all the banks, the informational benefits do not materialise. Moreover, more stringent rules may increase compliance costs, undermining efficiency.

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[71] Although public banks may have a development role (Gerschenkron, 1962; Stiglitz, 1994; Hakenes & Schnabel, 2006) and may even be more stable than their commercial peers (Garcia-Marco & Robles-Fernandez, 2008; Ayadi et al., 2009), there is a general agreement that is backed by substantial evidence that undue public interference leads to an inefficient allocation of credit and risk-taking (Sapienza, 2004; Dinc, 2005; Khwaja & Mian, 2005; Cole, 2009).

[72] For more details on the capital requirement stringency index, see section 2.4.

The index of **supervisory independence** measures the autonomy of the supervisor from political influence, considering whether the supervisor is ultimately accountable to a minister, could be sued for his/her actions committed in exercise of his/her duties, and whether the head of the agency has an undetermined (i.e. non-fixed) term.[73] Under the 'private interest view' to regulation, politically-oriented regulators fail to maximise social welfare and may thus undermine private-sector efficiency (Shleifer & Vishny, 1994; Barth et al., 2006).

The **deposit insurance** variable is a dummy that identifies the existence of an explicit deposit insurance scheme. Considering the index's impact on bank efficiency, there may be opposing forces at play. Several studies have noted that excessive guarantees may result in moral hazard and may encourage excessive risk-taking and increase the likelihood of crises (Merton, 1977; Bhattacharya & Thakor, 1993; Demirgüç-Kunt & Detragiache, 2002; Demirgüç-Kunt & Kane, 2002). These risks could increase borrowing costs, thereby lowering efficiency. However, having a safety net could also enhance efficiency, especially in the context of developing countries where the (shadow) cost of funds is often high since many potential depositors may not open an account or due to the risks of bank runs (Diamond & Dybvig, 1983). By reinforcing the soundness of deposits, the schemes may thus lower costs and enhance efficiency.

The **private monitoring** variable is an indicator for the disclosure of information, which is at the core of market discipline.[74] The disclosure of reliable and timely information allows investors and depositors to better understand and monitor the underlying risks and inefficiencies and can serve as a disciplining tool on the bank's management.[75] There are some questions, however, on whether disclosure requirements and practices can really function in countries with poor accounting standards and underdeveloped capital markets, which tend to be the primary customers of such information. In responding to these concerns, Caprio & Honohan

[73] For more details on the supervisory independence index, see section 2.5.

[74] For more details on the private monitoring index, see section 2.7.

[75] The idea is at the core of the third pillar of the Basel II framework. Basel Committee on Banking Supervision's (1999) consultative paper on capital adequacy asserts that "[m]arket discipline imposes strong incentives on banks to conduct their business in a safe, sound and efficient manner" (BCBS, 2001, p. 1).

(2004) note that despite these shortcomings, market discipline could work to discipline banks, especially in countries with no credible deposit guarantees—explicit or implicit—where market participants have strong incentives to engage in monitoring.

Credit information is an indicator for the availability, coverage and depth of credit information.[76] Information-sharing can impact efficiency levels through various channels. First, it can reduce market power by breaking the information monopolies developed by existing banks (Vives, 1990). In this manner, making information more available can work against the 'quiet life' that the incumbent banks enjoy. Second, it improves the accuracy of credit-worthiness assessments of banks, thereby reducing credit risks and the efficiency in the allocation of credit (Pagano & Jappelli, 1993).

4.2.4 Data sources

Perhaps the most important challenge that researchers face in attempting to assess the impact of regulations is the availability of reliable data on regulatory conditions. Presently, the standard dataset that quantifies the quality and adequacy of banking regulations for a large set of countries over time is based on the detailed results of the Financial Sector Assessment Program (FSAP). Undertaken jointly by the IMF and the World Bank since 1999, the FSAP regularly evaluates the regulatory structures of its members by assessing their compliance with international standards. For the banking regulations, the assessors use the so-called 'Basel Core Principles' (BCPs) of the Basel Committee on Bank Supervision, which were issued in 1997 as a basis for their evaluations.[77] These assessments are conducted according to standardised methods developed by the Basel Committee and result in a score of compliance on each one of the 25 BCPs.[78]

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[76] For more details on the strength of credit information index, see section 2.8.

[77] The Basel Committee on Bank Supervision comprises representatives from bank supervisory agencies from advanced countries, including Australia, Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom and the United States, as well as developing countries, including Argentina, Brazil, China, Hong Kong SAR, India, Indonesia, Korea, Mexico, Russia, Saudi Arabia, Singapore, South Africa and Turkey.

[78] For a thorough review of these methodologies, see World Bank (2005).

The IMF has compiled an in-house database that provides the level of compliance in each one of BCPs for all the evaluated countries since 1999.[79]

As the earliest study of its kind, Sundararajan et al. (2001) have used the BCP database to show that it does a poor job in explaining interest spreads and credit risk. Attempting to explain this counter-intuitive result, Das et al. (2005) find that regulatory quality leads to a more sound banking sector with less liquidity stresses as long as cross-country differences in institutional quality are accounted for. Pointing at a stronger degree of conditionality, Podpiera (2006) finds that a greater compliance with the BCPs has enhanced asset quality and bank performance when various financial, macroeconomic and structural factors are controlled for. More recently, Demirgüç-Kunt & Detragiache (2010) fail to find a relationship between BCP compliance and systemic risk measures.

Taking a different route, Barth et al. (2004) have compiled an alternative dataset on banking laws and regulations, also used in this study. The authors' dataset (referred henceforth as the Barth et al. regulatory and supervisory survey or the "BRSS") is based on the results of a worldwide survey, collected from national regulatory authorities in over 150 countries in the years 2000, 2003 and 2007.[80] Analysing the data, the authors find regulatory systems that facilitate adequate private monitoring (i.e. disclosure requirements) tend to have a beneficial effect across almost all the indicators they consider. Other regulatory variables, such as the official supervisory power or capital requirements, have no or little impact. In later work, Barth et al. (2006) show that several institutional factors, such as the absence of corruption and the presence of voice and accountability, also have a strong positive impact on net interest margins and overhead costs. Using the BRSS, Laeven & Levine (2008) find that the impact of regulations on risk depends crucially on a bank's ownership structure. In

[79] The publication of the FSAP results, including the detailed Reports on the Observance of Standards and Codes (ROSCs), is voluntary. Although most developed countries have agreed to publish the detailed assessments and ROSCs, among the South-MED countries in our sample, a detailed account of compliance with BCPs is only available for Tunisia. Moreover, Egypt has agreed only to publish a summary of the FSAP 2008 report. For these reasons, the compilation of the BCP compliance scores was not possible for our sample.

[80] The covered years are approximate as the responses have been collected over several years in each one of the countries.

particular, banks with more powerful shareholders tend to take more risks, making the link between regulatory environment and risk-taking ambiguous (even negative) when ownership is not accounted for.

Comparing the different approaches to measuring regulatory adequacy and quality, one of the main questions is whether the BRSS and the IMF's BCP assessments are measuring the same things. In theory, there should be substantial correlation between the two databases since both are based on comparable principles. However, Čihák & Tieman (2008) note that the correlation between the two databases is exceptionally low. The differences can arise due to a variety of reasons. Neither measure is perfect in fully implementing the laws as "countries may change the regulatory framework to appear better on paper but not on ground" (Barth et al., 2006, pp. 81-82). The BCP assessments are likely to be more illuminating in this manner, as they depend on independent assessments and not on self-evaluations. The BRSS, which relies on answers to standardised questions, is less likely to contain potential 'grading biases' that are more likely in the BCP assessments.

Table 4.3 details the data sources and provides a descriptive summary of the variables used in the regressions in this section. The institutional quality and the regulatory factors exhibit substantial variance, which could make them helpful in explaining the variability in the bank efficiency scores.

Table 4.3. Data sources and descriptive statistics

Variable name	Source	Obs.	Mean	St. dev.	Min	Max
Bank efficiency (MTR)	Own calculations & Bankscope	618	0.817	0.160	0.310	1.074
Bank assets	Bankscope	618	8.165	1.523	3.456	13.724
Bank market share	Bankscope	618	0.047	0.111	0.000	0.780
Bank liquidity	Bankscope	618	0.033	0.044	0.000	0.443
Bank equity	Bankscope	618	0.088	0.045	-0.037	0.364
Inflation	WDI	618	2.754	0.874	1.317	7.278
Growth	WDI	618	2.944	1.579	0.230	6.134
Institutional quality	Polity IV & Kaufmann et al. (2009)	606	9.777	3.726	-0.060	11.699
Scope restrictions	Barth et al. surveys	596	7.065	1.528	5.000	10.000
Entry obstacles	Barth et al. surveys	596	8.155	11.556	0.292	55.233
Cap. req. stringency	Barth et al. surveys	596	5.045	2.863	1.000	9.000

Supervisory indep.	Barth et al. surveys	596	1.099	1.027	0.000	3.000
Deposit insurance	Barth et al. surveys	596	0.904	0.294	0.000	1.000
Private monitoring	Barth et al. surveys	596	8.440	0.995	6.000	10.000
Credit information	Doing Business surveys	400	4.705	1.256	0.000	6.000

Note: The Bankscope database is compiled and distributed by Bureau van Dijk; World Development Indicators (WDI) and Doing Business surveys are both distributed by the World Bank; Polity IV is developed and distributed by the Center for Systemic Peace and Colorado State University.

4.3 Empirical results

This section investigates the impact of complying with the regulatory standards developed in earlier chapters on efficiencies of banks. Since the efficiency scores developed in section 3 are always positive and almost always fall within the unit range, the dependent variable (i.e. the MTR) is a limited dependent variable. The empirical estimations in this section use the Tobit model. Two specifications were used to ensure that the results are robust. First, Table 4.4 gives the results of a pooled regression. Second, Table 4.5 provides results for random-effects panel regressions. The effects of each of the regulatory variables were estimated separately in order to reduce the potential multi-collinearity that exists between these variables.

Starting with the bank-specific variables, the results are mostly in line with prior literature. Bank size, or the natural log of bank assets, has a significant and robust impact on efficiency. Larger banks are more efficient, which would confirm the presence of scale economies, in line with the findings of Olson & Zoubi (2010). In turn, market power, as measured by the market share, has generally a negative impact on efficiency. This result confirms the 'quiet life' hypothesis, which suggests that the market power that banks enjoy leads them to forego revenues or cost-saving opportunities. Several studies have found evidence for such a relationship with a variety of efficiency and performance measures, including Berger & Hannan (1998) for the US banks and Maudos & de Guevara (2007) for the EU banks.[81]

[81] An alternative explanation is that the management of larger banks are more interested in 'building empires'. For a study documenting how such incentives may give rise to lower bank efficiency, see Hughes et al. (2003).

Banks that are more liquid are significantly less efficient. As noted repeatedly in earlier sections, the South-MED banks are more liquid because they hold more government assets. Since the opportunity cost of holding liquid assets are low, such banks are also more likely to hold more cash and cash-like deposits in the central bank and other banks. The relative inefficiency of these banks appear to confirm the 'lazy banks' view, which suggests that banks in developing countries that invest in public assets develop more slowly and are substantially less efficient (Hauner, 2008; Hauner, 2009).

The results on the impact of capitalisation on efficiency are less conclusive for the strength of capitalisation. According to the pooled regression results (Table 4.4), well-capitalised banks have a slightly higher efficiency than other banks; however, these results are not robust and disappear completely in the panel regressions (Table 4.5). It is entirely possible that the positive impact of the strength of capitalisation is offset by the business models of such banks, which, much like the highly-liquid institutions, invest more in government assets.

Among the two macroeconomic factors, inflation clearly has the more robust impact. More specifically, a lower rate of inflation contributes substantially to greater bank efficiency, which is in line with the literature, (Demirgüç-Kunt et al., 2004; Kasman & Yildirim, 2006). In turn, economic growth is generally positively related to efficiency, pointing to economic spillovers and potential opportunities for banks to reduce costs during bursts of growth.

The institutional quality variable, which is an aggregation of a number of institutional factors, including the strength of democratic processes, political openness, power exercised by the executive arm, election procedures, control of corruption, voice and accountability, and the rule of law. The coefficient estimates are highly significant in all of the specifications and point to a strong positive correlation between the quality of institutions and efficiency. These findings are in line with recent findings and highlight the fact that bank regulations cannot be viewed in isolation from the overall institutional framework, (Demirgüç-Kunt et al., 2004; Barth et al., 2006).

Table 4.4 Determinants of bank efficiency, pooled regressions

	I	II	III	IV	V	VI	VII
Bank assets	0.028***	0.027***	0.023***	0.032***	0.031***	0.027***	0.022***
	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
Bank market share	-0.408***	-0.460***	-0.385***	-0.486***	-0.502***	-0.424***	-0.188**
	(0.053)	(0.063)	(0.055)	(0.058)	(0.054)	(0.058)	(0.080)
Bank liquidity	-0.410***	-0.151	-0.486***	-0.416***	-0.398***	-0.475***	0.138
	(0.104)	(0.119)	(0.107)	(0.115)	(0.107)	(0.112)	(0.122)
Bank equity	0.191*	0.224	0.210*	0.326***	0.262**	0.331***	0.168
	(0.116)	(0.138)	(0.119)	(0.126)	(0.120)	(0.123)	(0.135)
Inflation	-0.041***	-0.004	-0.029***	-0.025***	-0.034***	-0.026***	-0.030***
	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Growth	-0.001	0.010*	-0.002	0.024***	0.023***	0.013***	0.031***
	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)
Inst. quality	0.012***	0.005	0.016***	0.022***	0.013***	0.018***	0.015***
	(0.002)	(0.004)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)
Scope restrictions	-0.042***	..	..	..	..	..	..
	(0.004)						
Entry obstacles	..	-0.006***	..	..	..	..	..
		(0.001)					
Cap. req. stringency	..	..	0.020***	..	..	..	..

			(0.002)				
Supervisory indep.	..	..	..	0.010*	..	..	..
				(0.005)			
Deposit insurance	..	..	..	..	0.173***	..	..
					(0.020)		
Private monitoring	..	..	..	..	..	0.032***	
						(0.006)	
Credit information	..	..	..	..	..	..	0.049***
							(0.009)
Constant	0.899***	0.591***	0.473***	0.329***	0.317***	0.191***	0.254***
	(0.064)	(0.063)	(0.042)	(0.042)	(0.039)	(0.049)	(0.047)
Observations	584	380	584	584	584	584	400
Wald χ^2 (8)	465.4	284.5	437.3	360.3	424.4	386.0	299.9
Log likelihood	482.9	335.2	468.9	430.4	462.5	443.3	337.0

Notes: Standard errors in parentheses. The regressions use the Tobit estimation procedures to account for the limited dependent variable, the meta-technology ratio (MTR), or the ratio of bank-specific meta-frontier efficiency and the country efficiency.
***, **, * represent statistical significance at the 1%, 5%, and 10% levels (p-values), respectively.

Table 4.5 Determinants of bank efficiency, random-effects panel regressions

	I	II	III	IV	V	VI	VII
Bank assets	0.028***	0.022***	0.024***	0.026***	0.027***	0.020***	0.023***
	(0.005)	(0.006)	(0.005)	(0.005)	(0.005)	(0.006)	(0.005)
Bank market share	-0.274***	-0.273***	-0.263***	-0.245***	-0.268***	-0.201**	-0.120
	(0.077)	(0.085)	(0.077)	(0.080)	(0.077)	(0.081)	(0.085)
Bank liquidity	-0.306***	-0.184*	-0.317***	-0.325***	-0.325***	-0.338***	-0.022
	(0.095)	(0.097)	(0.095)	(0.096)	(0.093)	(0.095)	(0.106)
Bank equity	-0.079	0.204	-0.108	-0.086	-0.070	-0.074	0.157
	(0.127)	(0.144)	(0.128)	(0.128)	(0.125)	(0.128)	(0.132)
Inflation	-0.016***	-0.012**	-0.012***	-0.012***	-0.030***	-0.011***	-0.021***
	(0.004)	(0.005)	(0.004)	(0.004)	(0.005)	(0.004)	(0.006)
Growth	0.009***	0.011**	0.010***	0.013***	0.008***	0.011***	0.016***
	(0.003)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
Inst. quality	0.021***	0.013***	0.022***	0.023***	0.013***	0.023***	0.016***
	(0.002)	(0.004)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
Scope restrictions	-0.010***	..	..	..	..	..	..
	(0.003)						
Entry obstacles	..	-0.003***	..	..	..	..	..
		(0.001)					
Cap. req. stringency	..	..	0.006**	..	..	..	..

			(0.002)				
Supervisory indep.	..	..	..	0.003	..	..	..
				(0.003)			
Deposit insurance	..	..	..	..	0.140***	..	..
					(0.025)		
Private monitoring	..	..	..	..	..	0.012***	..
						(0.004)	
Credit information	..	..	..	..	..	..	0.035***
							(0.008)
Constant	0.505***	0.544***	0.408***	0.400***	0.436***	0.358***	0.320***
	(0.059)	(0.072)	(0.047)	(0.048)	(0.047)	(0.050)	(0.048)
Observations	584	380	584	584	584	584	400
Wald χ^2 (8)	258.2	226.9	252.8	229.8	282.5	243.6	278.8
Log likelihood	570.4	370.6	568.7	566.4	580.6	570.3	387.0

Notes: Standard errors in parentheses. The regressions use the Tobit estimation procedures to account for the limited dependent variable, the meta-technology ratio (MTR), or the ratio of bank-specific meta-frontier efficiency and the country efficiency.

***, **, * represent statistical significance at the 1%, 5%, and 10% levels (p-values), respectively.

Turning to the regulatory factors, it is notable that several variables have robust and significant impact. The presence of explicit deposit schemes, greater disclosure practices for better private monitoring, and the availability and use of credit information all contribute strongly to greater efficiency. The same can also be said for the stringency of capital requirements, although the impact is less significant in the panel regression (column II) in Table 4.5. Restrictions placed on banking activities and entry obstacles adversely affect bank efficiency. Prohibiting security and insurance transactions may indeed reduce the banks' ability to diversify risks and activities which is by and large compatible with the literature on the higher profitability of banking conglomerates and universal banking, (Vander Vennet, 2002). Supervisory independence has only a weak impact on efficiency in the pooled regression (column III of Table 4.4), possibly due to the fact that other political factors, i.e. power of executive arm, are readily controlled.

The positive impact of the availability of information on bank efficiency is in line with the literature. In particular, the idea that disclosure laws and practices that facilitate private monitoring tend to reduce costs is echoed in several studies, including most notably Barth et al. (2006), Pasiouras (2008) and Pasiouras et al. (2009). Moreover, Brown et al. (2009) and Djankov et al. (2007) show that availability of credit information is associated with lower transaction costs and moderation of credit risks, enhancing the access of credit of opaque borrowers such as small- and medium-sized enterprises (SMEs).

A more surprising result is the pro-efficiency impact of the presence of deposit insurance schemes. The results reviewed in this section show that Mediterranean banks operating under deposit insurance schemes are significantly more efficient than those without such schemes. There is some weak support for these findings in recent literature. For example, Pasiouras (2008) finds that deposit insurance schemes improve efficiency (albeit at a marginal level of significance) when other regulatory aspects are considered alongside. In other cases, the availability of such schemes seems to have no or negative impact on efficiency. The results obtained here would seem to support the idea that having a safety net probably enhances efficiency by lowering the (shadow) cost of funds, especially in the MENA region where the level of access to banking is particularly low.

4.4 Conclusions

The results of this section clearly show that the banks in countries with a sound regulatory structure are significantly more efficient. In particular, the presence of deposit insurance schemes, disclosure standards that facilitate private monitoring and the availability of and access to credit information all enhance the cost efficiencies of banks. The stringency of capital requirements also has a positive impact on bank efficiency, albeit to a less extent. In turn, according to our findings, there is a case for allowing banks to engage in a wider scope of activities and dismantling entry obstacles. Supervisory independence seems to have no impact on cost efficiency, most likely due to the offsetting impact of increased risks arising from concentrated political power.

In short, our results support mainly the third pillar of Basel II with weaker support for the capital requirements. The rapid deployment of private credit bureaus, possibly modelled after the regional best-practice as evidenced by Morocco's brand new system, is also important in enhancing efficiency. However, none of these factors should be treated in a vacuum. Institutional quality, measured here by an aggregation of a number of political and governance-related factors, is a substantially important factor. Lastly, macroeconomic stability is also an important contributor to the efficiencies of banks.

It should be highlighted that the results of this section have assessed the importance of regulatory and supervisory practices for achieving bank efficiency. Other issues should also be considered for making a broad assessment of the suitability and adequacy of certain rules and standards. For example, while certain regulatory conditions may improve banks' cost efficiencies, they may undermine profits (e.g. systemic stability).

5. IMPACT OF BANK REGULATIONS ON GROWTH

The key justification for introducing financial regulations is based on the idea that financial markets are imperfect and that regulations can effectively correct these shortcomings. The various areas of regulations considered in this study have all sprung into existence due to these considerations. Since customers often have asymmetric information regarding the operations of the banks, licensing and disclosure requirements are put forward to restrict the possibility of improper activities while providing the investors with adequate information. Capital requirements are an attempt to contain the risk-taking incentives of the owners of banks. The powers granted to the supervisors ensure that they have access to adequate information on the financial intermediaries and can act in a timely and efficient manner when troubles arise. Deposit insurance schemes are put forward to mitigate the likelihood that imperfectly informed depositors lead to a bank run. Credit information availability is crucial to overcome credit rationing, which arises when the financial intermediaries have limited information on borrowers.

If the regulations and supervisory practices serve to respond to market imperfections in practice, they should have a clear pro-growth impact. A better functioning financial market that properly treats the information asymmetries that exist between the banks, their clients and the supervisors should indeed help allocate financial resources more efficiently. However, the impact of regulations may be more insidious if the authorities choose to use their powers for their own good and not for the common welfare. Under this so-called 'private interest view', politicians may attempt to orient the industry to lend to their politically connected clients and banks may capture the regulators to act in their own interests.

In short, the political imperfections may pose a greater risk to growth than the market imperfections.[82]

This chapter turns to a broader investigation of the economic benefits of regulatory and supervisory practices. The main question is whether banking regulations and practices have an impact on growth. Several channels through which the relationship may operate are considered, including the impact of regulations on cost efficiency, issuance of credit to the private sector and capital market activity. The empirical analysis also controls for the presence of other intermediate channels that are not accounted for.

The results show that regulations impact economic growth through their impact on bank efficiency and financial development. The role of government in the banking sector has a clear negative impact on growth, even beyond its impact on the identified intermediate variables. Thus, governments that are heavily present in the banking sector also engage in other activities that are less favourable to growth. Moreover, the impact of disclosure requirements, scope restrictions and capital requirements are mostly indirect, operating through the financial development variables.

5.1 Literature review

One of the key links between financial regulations and growth is the presence of entry obstacles as a key impediment to a competitive market. There are several conduits through which financial regulations may exert an impact on economic growth. A well-functioning regulatory framework can reinforce financial development and, in doing so, facilitates the flow of funding to the real sectors. The predominant view in economic literature is that a developed financial system can generate significant benefits for the economy. Although the idea that the development of the financial services sector is essential for economic development goes at least as far back as Schumpeter (1934), it was King & Levine (1993) who first empirically demonstrated a strong and robust relationship. Since then, several studies

[82] See Barth el al. (2006, pp. 21-46 and 178-280) for more details on the public- and private-interest views to financial regulations.

have confirmed that financial development enhances growth through the availability of external funds, higher employment, firm creation, etc.[83]

Economic theory identifies two main channels through which the positive impact of financial development on growth operates. On the one hand, a sound financial system increases the availability of resources for investment by mobilising idle savings, facilitating transactions and attracting foreign investments. On the other hand, such a system can improve the allocation of funding by enhancing risk management, transparency and corporate governance practices; reinforcing property and creditor rights; and so forth. A well-functioning financial system is particularly important for the development of the private sector, particularly small and medium-sized enterprises, which represent a significant proportion of economic activity but lack the internal sources to grow.[84]

Despite its wide recognition, several studies have challenged the validity of the so-called 'finance-growth' view. Most of these doubts rest on the direction of causality.[85] In particular, using a panel of less developed countries, Demetriades & Hussein (1996) find evidence of bi-directionality—and in some cases inverse correlation—for a panel of 16 developing countries.[86] Allowing for a non-linear relationship, Deidda & Fattouh (2002) fail to confirm the results of King and Levine (1993) for less developed countries included in their dataset. Similarly, Rioja & Valev (2004) verify that the relationship depends on the level of economic development, with little or uncertain impact on low or high extremes of the income levels. Using a dataset of 11 MENA countries over the 1979-2003 period, Ben Naceur & Ghazouani (2007) find that the development of

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[83] For a more complete survey of the so-called 'finance-growth' literature, see Levine (1997; 2004) and Demirgüç-Kunt and Levine (2008).

[84] Examining a number of national surveys, Fadil (2000) finds that a general lack of access to credit markets is one of the principal constraints faced by SMEs to grow in line with their cash-flow in the MENA region.

[85] For a review of criticism of studies linking finance development to growth, see Wachtel (2001; 2003) and references therein. See also Arestis & Demetriades (1997) for reasons on why cross-country empirical studies may suffer from serious methodological problems.

[86] The only MED-11 country included in the sample of Demetriades & Hussein (1996) is Turkey.

banking and the stock market has no – or even a negative – impact on growth in the MENA region.

One explanation of these contrasting results is that some factors that are unaccounted for in the empirical analysis may explain why a financial system functions well and economic growth occurs (possibly simultaneously). The omission of these variables may then lead to an incorrect assessment of the direction and strength of the causal relationship.[87] In response to these criticisms, the literature has turned on these deeper structural conditions. Indeed, the emerging academic consensus is that financial development could be beneficial as long as certain conditions are present to ensure that the system develops adequately to serve the financial needs of the citizens and the private sector.

Development of financial regulations can also impact economic growth through their effect on efficiency and competitive conditions in the financial sector. The previous section has also given some evidence of the impact of financial regulations on cost efficiencies of the banks in the Mediterranean region. Although the literature on the impact of regulations on bank efficiency is currently at its infancy, several studies have reached similar conclusions. In particular, Barth et al. (2006) uses the results of their own regulatory and supervisory surveys (BRSS) to provide partial support for the positive impact of disclosure requirements on net interest margins and cost efficiency. Pasiouras (2008) and Pasiouras et al. (2009) also use same data source to confirm the results of Barth et al. (2006) while showing that certain bank- and market-specific factors also matter.[88]

A number of studies have also noted how regulatory conditions may impact entry and more broadly the competitive conditions in financial markets. Focusing on entry into banking markets, Cetorelli & Strahan (2006) find that state-level restrictions on bank entry reduces the share of smaller enterprises, effectively reducing the growth potential of the state. Larger firms are less affected by entry obstacles, as they can use alternative funding sources and have an easier access to capital markets. Restricted

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[87] The idea that unaccounted for factors and relationships between non-structural variables may introduce biases in the empirical assessment of policy impacts goes back to Lucas (1976).

[88] See section 4.1 for a more detailed treatment of the literature.

entry tends to support the market power of the incumbent firms, which could reduce the credit available to the economy as a whole and thereby have a negative impact on growth, (Cetorelli & Gambera, 2001).[89] Using a large sample of banks from the Middle East and North African countries, Turk-Ariss (2009) shows that the degree of competition, measured by the so-called 'H-statistic' first developed by Panzar & Rosse (1987), is positively correlated with foreign bank entry but is a decreasing function of activity restrictions.[90]

5.2 Methodology and data

The basic regression used in this section takes the following functional form:

$$Growth_{it} = g(F_{it}, C_{it}, R_{it}) + \varepsilon_{it}$$

where *Growth* is the real per capita growth for country *i* at year *t*. The variables *F*, *C*, and *R* represent financial development, macroeconomic and regulatory factors. In order to capture non-linear relationships, the natural logarithms forms were used for most economic and financial variables.

The use of financial development variables as explanatory variables may pose a bias in our estimations, since economic growth and financial development may be determined simultaneously. To control for these potential problems, an instrumental variables approach has been used in this section. As in La Porta et al. (1997), legal origin (i.e. French, English or mixed) is assumed to shape financial development. The use of legal origins as an instrument for financial development has been a popular tool since these institutional conditions can be safely treated as a purely exogenous (i.e. unchanging) determinant of economic growth. Moreover, several

[89] Although greater concentration in the banking sector may reduce the overall availability of credit, Cetorelli & Gambera (2001) find that it may enhance funding for firms that specialise in research and development, are highly dependent on external finance and develop long-lasting relationships with their creditors. These issues are less likely to be applicable in the Middle East and North African perspective since reliance on external financing is relatively low.

[90] Using 2000-06 figures, Turk-Ariss (2009) finds that market conditions in Algeria, Morocco and Tunisia can best be categorised as a monopoly. The banks in other MENA countries included in the study (Egyptian banks were not covered in the sample) operate under monopolistic competition.

studies have shown evidence that legal origins influence financial development through their impact on the treatment of shareholders, rights of creditors, effectiveness of contract enforcement and the use of international accounting standards. More specifically, La Porta et al. (1998) show that French civil law countries are relatively low performing in terms of shareholder and creditor rights, with less comprehensive accounting standards.[91] Two dummy variables, English or mixed legal origin, are included to account for different types of systems. Additionally, a dummy variable for Muslim countries is also included.

Assuming that legal origin indicators serve as appropriate instruments of financial development variables (*F*) is equivalent to a set of orthogonality conditions for the instrumental variables on the instrument variables (*Z*) and the error term, $E[Z'\varepsilon]=0$. Two-staged Generalised Method of Moments (GMM) techniques are used to estimate the models with the relevant orthogonality conditions.

Since the number of moment conditions may exceed the number of coefficients to be estimated, tests of over-identifying restrictions are carried out. These tests determine whether or not the instrumental variables are associated with growth beyond their ability to explain any variation in financial sector development. More specifically, the Hansen-Sargan test ('J-test') has a null hypothesis of correct model specification, which has an asymptotic χ^2 distribution with degrees of freedom of the number of over-identifying restrictions (Hansen, 1982). Failure to reject the test supports the validity of the model.

A second set of tests is also carried out to check the weakness or strength of the instruments. The so-called 'Cragg-Donald test' is simply an F-statistic on the hypothesis that the instruments do not enter the first stage regression of the two-stage estimations. A failure to reject the null hypothesis calls into question the validity of the instrumental variable estimates and hypothesis tests. The critical values of the test are given in Stock & Yogo (2001). As a simple rule of thumb, specifications with a

[91] These results are by and large confirmed in our sample. The three countries with elements of common British law (Cyprus, Israel and Malta) score very high on creditors' rights and the certified audit requirement for banks.

Cragg-Donald F-value that exceeds 9.08 will be considered to be appropriately defined.[92]

Table 5.1 Data sources and descriptive statistics

Variable name	Source	Obs.	Mean	St. dev.	Min	Max
Real GDP per capita growth	World Dev. Ind. (WDI)	142	2.424	2.081	-3.607	10.577
Initial GDP per capita (log)	WDI	154	8.603	1.064	7.028	9.776
Trade openness (log)	WDI	153	-0.343	0.381	-0.958	0.700
Inflation (log)	WDI	154	0.037	0.031	-0.004	0.261
Lack of corruption (log)	PRS Group	154	1.116	0.343	0.405	1.609
Bank efficiency (log)	Own calc. and Bankscope	154	0.519	0.091	0.321	0.692
Private credit (log)	WDI	153	-0.389	0.829	-3.242	0.945
Stock market turnover (log)	WDI	140	-1.215	1.165	-4.143	0.947
Scope restrictions	Barth et al. surveys (BRSS)	137	7.526	1.595	5.000	10.000
Government ownership	Barth et al. surveys (BRSS)	78	0.275	0.303	0.000	0.958
Cap. req. stringency	Barth et al. surveys (BRSS)	137	4.869	2.141	1.000	9.000
Supervisory independence	Barth et al. surveys (BRSS)	154	1.760	0.893	0.000	3.000
Deposit insurance	Barth et al. surveys (BRSS)	137	0.766	0.425	0.000	1.000
Private monitoring	Barth et al. surveys (BRSS)	137	8.212	0.958	6.000	10.000
Credit information	Doing Business surveys	140	8.000	2.921	4.000	14.000

Notes: Bankscope database is compiled and distributed by Bureau van Dijk; World Development Indicators (WDI) and Doing Business surveys are both distributed by the World Bank.

The regulatory variables (R) are only available for the years 2000, 2003 and 2007. Nevertheless, changes in regulations are relatively slow over time, as the results in section 2 amply demonstrated. It is therefore reasonable to assume that the regulatory factors remain constant in the periods prior to the observed outcomes, i.e. in 1995-2000, 2001-03 and 2004-07.

The sources and descriptive statistics for the data used in this section are summarised in Table 5.1. A number of country-specific time variant variables are used to control for macroeconomic factors. Real **initial GDP per capita** is included to account for fast growth in poorer countries. The expected sign for the coefficient is negative, implying a significant catch-up

[92] For our purposes, the Cragg-Donald threshold of 9.08 (with three instruments and a single endogenous variable) corresponds to a maximum bias of 10% at the 5% significance level. For more information, see Stock & Yogo (2001, Table 1).

effect. **Openness to trade**, which is calculated as the imports and exports divided by GDP, accounts for the positive spillovers from an open current account. **Inflation** rate is included to account for the impact of economic instability or inflationary policies on growth. Lastly, **lack of corruption** assesses the level of corruption within the political system and the bureaucracy.

Table 5.2 Impact of regulations on growth controlling for efficiency

	I	II	III	IV	V	VI	VII	VIII
Bank efficiency	6.118*	0.700	0.038	3.623	6.584	2.824	2.749	1.880
	(2.956)	(3.288)	(3.707)	(3.782)	(4.004)	(3.316)	(3.080)	(3.150)
Initial GDP per capita (real)	-0.920***	-0.977***	-1.328***	-0.928***	-0.878***	-0.876***	-0.974***	-0.907***
	(0.269)	(0.271)	(0.313)	(0.319)	(0.275)	(0.279)	(0.285)	(0.305)
Openness to trade	0.659	0.089	-0.172	0.268	0.661	0.104	0.148	0.993
	(0.490)	(0.472)	(0.828)	(0.500)	(0.461)	(0.456)	(0.472)	(0.621)
Inflation	3.883	6.885	6.599	5.979	4.119	5.696	7.364	2.991
	(6.866)	(7.168)	(8.575)	(7.678)	(6.596)	(7.668)	(7.244)	(6.313)
Lack of corruption	1.130	1.626**	0.169	1.635**	0.961	1.490**	1.412**	1.118*
	(0.722)	(0.637)	(0.946)	(0.702)	(0.853)	(0.654)	(0.673)	(0.678)
Scope restrictions		-0.242*	..	..	..	..	..	..
		(0.134)						
Government-ownership	..	..	-0.023*	..	..	..	..	..
			(0.013)					
Cap. req. stringency	..	..	..	-0.160	..	..	..	..
				(0.097)				

Supervisory independence	..	..	..	..	0.068	..	..	..
					(0.223)			
Deposit insurance	..	..	..	..	..	-0.358	..	..
						(0.427)		
Private monitoring	..	..	..	..	..	..	0.301	..
							(0.189)	
Credit information	..	..	..	..	..	..	..	0.037
								(0.092)
Constant	5.922**	10.219***	13.522***	7.290***	5.362*	6.911***	5.096*	7.968***
	(2.688)	(2.384)	(3.306)	(2.531)	(2.872)	(2.392)	(2.750)	(2.525)
Observations	142	127	77	127	142	127	127	130
F-test (second-stage)	4.068	4.907	4.555	2.303	3.599	2.712	2.928	4.253
… p-value	0.002	0.000	0.001	0.039	0.002	0.017	0.011	0.001
Hansen J-test for overidentification	2.057	2.955	2.178	2.824	1.961	0.704	0.448	3.075
… p-value	0.358	0.228	0.337	0.244	0.375	0.703	0.799	0.215
Cragg-Donald test for weak id.(>9.08)	10.01	13.62	13.71	13.56	9.92	15.70	19.91	16.34

Table 5.3 Impact of regulations on growth controlling for private credit

	I	II	III	IV	V	VI	VII	VIII
Private credit	-0.631	-0.839	-1.125	-0.953	-3.856	-0.433	-1.034	-0.196
	(0.984)	(0.780)	(1.194)	(0.780)	(3.105)	(0.761)	(0.957)	(0.475)
Initial GDP per capita (real)	-0.769**	-0.753**	-1.299***	-0.656*	0.402	-0.780**	-0.796**	-0.923***
	(0.382)	(0.335)	(0.286)	(0.336)	(1.103)	(0.307)	(0.318)	(0.300)
Openness to trade	0.671	0.431	-0.083	0.475	1.518	0.139	0.448	0.966
	(0.679)	(0.568)	(0.667)	(0.559)	(1.151)	(0.517)	(0.599)	(0.664)
Inflation	-0.181	5.856	13.660	4.545	-15.272	3.945	5.817	0.952
	(7.568)	(7.393)	(9.036)	(7.867)	(19.562)	(7.503)	(7.115)	(6.685)
Lack of corruption	1.947**	2.100***	0.977	2.292***	1.922*	1.912**	2.180***	1.295*
	(0.867)	(0.754)	(1.175)	(0.849)	(1.027)	(0.841)	(0.828)	(0.690)
Scope restrictions	..	-0.200	..	..	..	..	..	..
		(0.136)						
Government-ownership	..	..	-0.042*	..	..	..	..	..
			(0.024)					
Cap. req. stringency	..	..	..	-0.102	..	..	..	..
				(0.072)				
Supervisory independence	..	..	..	..	1.498	..	..	..
					(1.254)			
Deposit insurance	..	..	..	..	..	-0.306	..	..

						(0.418)		
Private monitoring	..	..	..	..	..	..	0.514**	..
							(0.250)	
Credit information	..	..	..	..	..	..	..	0.074
								(0.109)
Constant	6.897*	7.739**	12.530***	5.691*	-6.144	7.024***	2.297	8.609***
	(3.652)	(3.220)	(2.822)	(3.024)	(12.352)	(2.639)	(4.276)	(2.030)
Observations	142	127	77	127	142	127	127	130
F-test (second-stage)	3.986	5.087	5.713	2.318	2.470	2.747	3.055	4.284
… p-value	0.002	0.000	0.000	0.038	0.027	0.016	0.008	0.001
Hansen J-test for overidentification	4.367	1.975	2.053	2.400	0.659	1.151	0.107	3.264
… p-value	0.113	0.372	0.358	0.301	0.719	0.562	0.948	0.196
Cragg-Donald test for weak id.(> 9.08)	3.457	8.163	3.556	6.148	4.475	7.127	4.779	15.80

Table 5.4 Impact of regulations on growth controlling for stock market turnover

	I	II	III	IV	V	VI	VII	VIII
Stock turnover	0.784**	0.393	0.312	0.577	0.779**	0.393	0.394	0.657
	(0.363)	(0.400)	(0.356)	(0.415)	(0.363)	(0.398)	(0.385)	(0.463)
Initial GDP per capita (real)	-1.306***	-1.179***	-1.712***	-1.225***	-1.297***	-1.103***	-1.155***	-0.971***
	(0.289)	(0.334)	(0.376)	(0.398)	(0.296)	(0.346)	(0.332)	(0.300)
Openness to trade	1.715**	0.854	0.360	1.194	1.868**	0.694	0.774	1.610*
	(0.805)	(0.902)	(1.227)	(0.938)	(0.774)	(0.862)	(0.885)	(0.840)
Inflation	4.864	5.737	12.913	5.510	6.756	4.806	7.024	9.622
	(6.482)	(6.762)	(9.510)	(7.437)	(5.957)	(6.830)	(6.928)	(7.145)
Lack of corruption	1.156*	1.320*	0.302	1.933***	1.303*	1.731***	1.554**	1.220*
	(0.696)	(0.730)	(1.044)	(0.735)	(0.787)	(0.638)	(0.686)	(0.672)
Scope restrictions	..	-0.225	..	..	..	..	..	..
		(0.153)						
Government-ownership	..	..	-0.043***	..	..	..	..	..
			(0.015)					
Cap. req. stringency	..	..	..	-0.149*	..	..	..	..
				(0.081)				
Supervisory independence	..	..	..	..	-0.186	..	..	..
					(0.218)			
Deposit insurance	..	..	..	..	..	-0.438	..	..

						(0.447)		
Private monitoring	..	..	..	..	..	..	0.274	..
							(0.205)	
Credit information	..	..	..	..	..	..	..	-0.130
								(0.126)
Constant	13.785***	13.357***	17.426***	12.341***	13.844***	10.841***	8.839**	11.496***
	(2.685)	(2.971)	(4.388)	(4.128)	(2.771)	(3.534)	(4.050)	(2.610)
Observations	129	119	69	119	129	119	119	117
F-test (second-stage)	6.926	5.521	6.895	3.516	5.686	3.675	3.489	5.350
… p-value	0.000	0.000	0.000	0.003	0.000	0.002	0.003	0.000
Hansen J-test for overidentification	0.287	2.377	3.290	2.647	0.536	0.730	0.352	2.011
… p-value	0.866	0.305	0.193	0.266	0.765	0.694	0.839	0.366
Cragg-Donald test for weak id.(> 9.08)	11.07	9.827	15.01	8.701	11.97	9.172	11.76	15.28

Three financial variables are used to assess the impact on growth. First, **bank efficiency**, which is the country average for the meta-technology ratio scores for the banks (developed in section 2). Second, **private credit** measures the share of private credits to the GDP. Lastly, the **stock turnover** measures the ratio of stocks traded divided by the average market capitalisation for the period.

In addition to these variables, the regulatory variables already revised in section 4 are included, including scope restrictions, government-owned banks, capital requirements stringency, supervisor independence, deposit insurance, private monitoring and credit information. Entry obstacles were not included in the tests as government-ownership due to a lack of observations for foreign denials. Instead, the market share of state-owned banks is used as an indicator of the entry conditions, including foreign denials and the number of licensing requirements.[93]

5.3 Results

The results of the regressions are summarised in Table 5.2. The Hansen J-tests fail to reject the null hypotheses for the 24 specifications, implying that the instruments are properly used and are not correlated with the residuals of the (second-stage) regressions. An additional statistic, the Cragg-Donald test for weak identification, is also included. These results point at potential problems due to weak instruments in Table 5.3, which endogenously account for private credit except for the last column (VIII), which controls for the level of credit information available.

The results show that some of the country-specific variables do not matter while others have a significant impact on growth. In particular, our results reveal that inflation is not a significant determinant of growth in any of the specifications, despite a consistently positive coefficient estimate. Openness to trade has a weak positive impact on growth when stock market turnover is considered in Table 5.4, i.e. columns I and VIII. In turn, initial GDP per capita also has a persistently and significantly negative

[93] For more details on entry obstacles, see secion 2.3. The pairwise correlation coefficients between the market share of state-owned banks on the one hand and the licensing requirement and foreign denial scores on the other are 0.270 and 0.435, respectively.

impact on growth, which implies that poorer countries tend to grow more quickly than richer ones, as in Barro (1991).

There is broad evidence that lack of corruption has a relatively consistent and positive impact on growth. This is in line with the findings in the growth literature.[94] Corruption could lead to a number of inefficiencies, such as rent-seeking and avoidance behaviour, which may lead to substantial deadweight losses (Rose-Ackerman, 1975; Shleifer & Vishny, 1993). Mauro (1995) shows that corruption affects growth by lowering returns from private investment.

The results show that the three financial development variables have a relatively limited impact on growth. In particular, private credit (Table 5.3) does not have a significant impact (although all of the coefficient estimates are negative) when it is allowed to be the endogenously determined financial development variable. In turn, both bank efficiency (Table 5.2) and stock market turnover (Table 5.4) have positive impacts on growth.

Among the regulatory factors, government ownership has a weak but consistent impact, reducing growth in all three tables. More specifically, countries in which the state-owned banks are predominant grow less quickly. These findings are by and large supported in the literature. Barth et al. (1999) find evidence that government ownership of banks is associated with a low level of financial development, as measured by the available of credit to private enterprises. La Porta et al. (2002) find that government ownership of banks is associated with lower subsequent financial development and growth in per capita income. Beck et al. (2004) use firm-level data to show that public bank ownership tends to exacerbates market power of the incumbents and thus constrains credit to private enterprises.[95]

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[94] Several studies linking the impact of financial development to growth have used black market premia to account for corruption-related factors (Beck et al., 2000; Beck & Levine, 2004; Ben Naceur & Ghazouani, 2007).

[95] Part of the literature argues that excessive government ownership can be harmful because politicians use government-owned banks to further their own political goals (Shleifer & Vishny, 1994; La Porta et al., 2002). Dinc (2005) provides support to this 'political view' that public bank policies are often politically-oriented in finding that public banks increase their lending in election years. Caprio & Peria (2000) show that state ownership of banking is associated with a

Other regulatory factors have a less consistent impact. The strongest impact is with private monitoring, which is positively associated with capital income growth when private credit is considered but not in other cases. Scope restrictions tend to have a negative impact on growth when bank efficiency is considered but not when the two financial development factors are considered. Lastly, capital requirement stringency has a weak negative impact when the presence of stock market turnover is considered as an endogenous variable.

These findings imply that the government's role most likely serves as a proxy for other activities that are detrimental to growth—possibly unrelated to the financial markets. In turn, the impact of private monitoring, scope restrictions and capital requirements are mostly indirect, operating through the financial development variables, since their independent effects become insignificant when some of the financial development factors are controlled for.

5.4 Conclusions

According to our specifications, financial regulations have a relatively limited direct impact on growth. Among the seven regulatory areas considered throughout the paper, only government ownership—a proxy for entry obstacles and market conditions—appears to have a consistent and significant negative impact on growth. Moreover, there is limited evidence that financial development leads to economic development. Although efficiency and stock market turnover appear to increase income per capita growth, private credit appears to have little (and possibly negative) impact.

These results show that regulatory factors operate mostly through the financial variables. Based on the results reviewed in this section, the regulatory factors considered in the paper have at best an indirect impact on growth, working their way through financial development. Moreover, lack of corruption has a clear impact on growth, which underlines its importance as a precondition for growth.

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greater likelihood of crises. The latter finding should also be considered in light of evidence that public banks in developing countries are often more stable than their privately-owned counterparts (Ayadi et al., 2009).

Several technical shortcomings have to be noted at this stage. First, due to the small sample size considered in the study, panel estimations were not feasible. Second, the similarities between the countries considered might have generated sampling biases, which imply that the results have to be interpreted with care and should be adequately re-assessed before applying to other regions. Third, the similarities between countries also make the task of finding strong indicators more difficult as the cross-country variation is relatively limited. This is indeed one of the main causes for the apparent weaknesses of the instruments for the share of private credit in GDP. Lastly, the regulatory variables are assumed to remain fixed over long periods; although this assumption is unlikely to lead to substantial biases, it creates another source of homogeneity.

6. CONCLUSIONS

This study sheds light on the changing regulatory environments of four south Mediterranean countries: Algeria, Egypt, Morocco and Tunisia. Over the past two decades, all four countries have engaged in financial sector reforms, with varying degrees of depth, engagement and success. Morocco has achieved the most advanced financial system as compared to the three others, eliminating interest rate subsidies and controls; reinforcing the responsibilities and roles of the supervisor; improving the risk-management practices along with the state-of-the-art; successfully implementing of a deposit insurance scheme; and introducing a credit information system that may well serve as a best-practice for other developing financial systems.

The other South-MED countries examined in this study have been less successful in implementing key reforms. The banks in all of the three countries have relatively poor asset qualities, as evidenced by high rates of non-performing loans (NPLs). The policies put in place to respond to low asset quality have either led to limited improvement, a decline of credit availability or both. The privatisation efforts have been only partly successful and at times have not led to any change in the market conditions and financial development. In Algeria, the publicly-owned banks continue to dominate the banking sector, accounting for over 90% of total assets. In Egypt, although privatisation efforts have been partly successful, public loans and debt represent a substantial proportion of the portfolios of banks, which hampers financial development and growth opportunities. In Tunisia, a majority of the top three banks remain owned by the state.

The comparisons among the EU-MED countries reveal particular shortcomings. Despite some recent improvements, entry obstacles continue to be widespread in all of the South-MED countries, arising from high rates of denied foreign applications and closely linked with a dominant state ownership. Capital requirements are less stringent in the Southern

Mediterranean under examination, increasingly so due to the disparities in the risk-sensitivity of the minimum capital requirements. The existing deposit insurance schemes in place, i.e. those in Algeria and Morocco, provide adverse incentives and may increase moral hazard risks. In Egypt and Tunisia, the implicit government guarantees may also aggravate the moral hazard problem. Although private monitoring and disclosure requirements appear in line with the EU-MED standards, accounting practices are increasingly poor in the South-MED. Lastly, despite recent improvements, especially in Morocco and Egypt, credit information availability is relatively low within the region.

Turning to the cost efficiency analysis, results indicate an overall improvement in efficiency levels for the EU-MED and South-MED in the later stages of the analysis, from 2005 onwards (with the exception of Egypt). For the South-MED, this improvement is particularly remarkable for Moroccan and Algerian banks, but for different reasons. The overall mean efficiency in the region is improving, once more driven by improvements in the best practice. EU-MED banks, in particular the Spanish banks, dominate the region, with average efficiency scores of 80.4% against the region's average of 63.5%. Spanish banks also exhibit the highest meta-technology ratios and the ratios increase over time. This indicates that Spanish banks consistently improved their performance, and their banking technology became best practice. Nonetheless, during this period of analysis, the average meta-technology ratio is increasing, which indicates an ability of banks in all countries to appropriate the best available technology. These results are supported by the estimation of β-convergence. The β coefficient is always negative and statistically significant, thus indicating that convergence in efficiency scores has occurred across countries in the MED-11 area. Furthermore, results for the σ-convergence suggest an increase in the speed of convergence as the σ coefficient is always negative and statistically significant. This indicates that, whereas the technological gap is still wide, the gap is narrowing at a faster speed.

When examining the impact of the regulatory and supervisory practices on cost efficiency of banks, the results clearly show that a sound regulatory structure is a forceful contributor to an efficient system. The case of Morocco is revealing in this respect. In particular, deposit insurance schemes, adequate disclosure requirements and credit information availability seem to improve the efficiencies of banks. A broader definition of the banking market by imposing fewer scope restrictions and removing

entry obstacles also improves efficiency, albeit less significantly so than the previous factors. The rapid deployment of private credit bureaus, possibly modelled after the regional best-practice as evidenced by Morocco's brand new system, is also important in enhancing efficiency.

Lastly, the pro-growth impact of regulatory adequacy appears to operate mainly though its impact on financial development. The study shows that government ownership in banking is detrimental to growth, even outside the scope of financial development and other finance-related variables. Moreover, more restrictive disclosure and capital requirements as well as less limited scope restrictions have pro-growth impacts by enhancing financial development.

It is important to note that the regulatory practices and adequacy factors should not be treated in a vacuum. Institutional quality, measured in the study by a variety of political and governance-related factors, is a substantially important factor in all of the regressions. The control of corruption and the presence of democratic institutions are also important factors, which need to be considered alongside the regulatory conditions.

To sum up, the study highlights some of the key shortcomings of the banking regulations of the South-MED countries. It appears that some of the newer standards, such as the Basel II capital requirements, have been conceived with developed nations in mind and may not be appropriate, due to a variety of deficiencies in information-sharing and institutional and disclosure mechanisms. A key aim of the upcoming reforms should be to look for ways to reduce the role of government in the banking sector while ensuring that the regulatory framework and the relevant institutional development adequately respond to the market imperfections.

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ANNEX 1. CEPS SURVEY ON BANKING SUPERVISION FOR THE SOUTHERN MEDITERRANEAN COUNTRIES

The survey comprised two distinct parts: data requests and face-to-face interviews. Data requests (Section I) were sent prior to the interviews to allow for researchers to develop more focus in the interviews. Face-to-face interviews (Section II) were held with experts in the supervisory and regulatory agencies, backed with data obtained in section I and other sources, including a variety of international databases and data sources from the World Bank, IMF and national sources. The text of the survey is reproduced below.

SECTION 1. DATA REQUESTS

The following survey is designed to allow the CEPS research team to better assess the practice of banking supervision in your country. The data requests cover a variety of regulatory issues, including general aspects of the supervisory agency (Part 1); licensing, disclosure, and prudential requirements (Parts 2 to 4); crisis management practices and schemes (Parts 5 and 6); and, market infrastructure (Part 7). The last section (Part 8) concludes the interview with final remarks.

For all questions, please respond with the most recent information. In some cases, space is provided for OPTIONAL data on prior years. Please enter the data in the corresponding columns to distinguish between different years.

1. SUPERVISORY AGENCY

1.1. General

1.1.a. Name of agency:

1.1.b. Operational since:

1.1.c. Legal basis (please provide formal legal reference):

1.2. Resources

1.2.a. Budget:

1.2.b. Number of staff (Full-time equivalent (FTE), 2009):

1.2.c. Number of supervisory staff (FTE, 2009):

1.3. Management

1.3.a. Name of the current head of agency:

1.3.b. Current head appointed in:

1.3.c Current head's term to last until:

2. ENTRY AND LICENSING

2.1 General

2.1.a. Name of licensing body:
2.1.b. Operational since:
2.1.c. Legal basis:
2.1.d. New licenses granted:
2.1.e. Number of banks for the following categories:
2.1.e.i. Commercial banks:
2.1.e.ii. Public banks:
2.1.e.iii. Development banks:
2.1.e.iv. Islamic banks:
2.1.e.v. Specialised credit institutions:
2.1.e.vi. Foreign subsidiaries:
2.1.e.vii. Foreign branches:
2.1.f. Total assets of banks for the following categories:
2.1.f.i. Commercial banks:
2.1.f.ii. Public banks:
2.1.f.iii. Development banks:
2.1.f.iv. Islamic banks:
2.1.f.v. Specialised credit institutions:
2.1.f.vi. Foreign subsidiaries:
2.1.f.vii. Foreign branches:
2.1.f.viii. Currency:
2.1.g. Total customer loans of banks for the following categories:
2.1.g.i. Commercial banks:
2.1.g.ii. Public banks:
2.1.g.iii. Development banks:
2.1.g.iv. Islamic banks:
2.1.g.v. Specialised credit institutions:
2.1.g.vi. Foreign subsidiaries:
2.1.g.vii. Foreign branches:
2.1.h. Total customer deposits for the following categories:
2.1.h.i. Commercial banks:
2.1.h.ii. Public banks:
2.1.h.iii. Development banks:
2.1.h.iv. Islamic banks:
2.1.h.v. Specialised credit institutions:
2.1.h.vi. Foreign subsidiaries:
2.1.h.vii. Foreign branches:
2.1.i Concentration of banking sector (assets of top-3 banks as percentage of total banking assets):

2.2. Entry requirements

2.2.a. Please identify the minimum capital requirements for the following institutions, whenever applicable:
2.2.a.i. Commercial banks:
2.2.a.ii. Public banks:
2.2.a.iii. Development banks:
2.2.a.iv. Islamic banks:
2.2.a.v. Specialised credit institutions:
2.2.a.vi. Foreign subsidiaries:
2.2.a.vii. Foreign branches:
2.2.b. What types of funds may be used as paid-up capital upon entry:
2.2.b.i. Cash?
2.2.b.ii. Government securities?
2.2.b.iii. Borrowed funds?
2.2.b.iv. Other (please specify)?

2.3. Acquisitions

2.3.a. Name of approving body:
2.3.b. Acquisitions granted (2005-2009):

2.4. Rejections

2.4.a. Number of rejected licensing applications for the following institutions (2005-09):
2.4.a.i. Commercial banks:
2.4.a.ii. Public banks:
2.4.a.iii. Development banks:
2.4.a.iv. Islamic banks:
2.4.a.v. Specialised credit institutions:
2.4.a.vi. Foreign subsidiaries:
2.4.a.vii. Foreign branches:
2.4.b. Number of rejected acquisitions for the following institutions (2005-09):
2.4.b.i. Commercial banks:
2.4.b.ii. Public banks:
2.4.b.iii. Development banks:
2.4.b.iv. Islamic banks:
2.4.b.v Specialised credit institutions:

2.5. Foreign entities

2.5.a. Licences granted to foreign (majority-owned) branches (2005-09):
2.5.b. Licences granted to foreign (majority-owned) subsidiaries (2005-09):
2.5.c. Foreign acquisitions granted (2005-09):

3. INFORMATION DISCLOSURE

3.1. General

3.1.a. Number of legal actions taken against auditors for not fulfilling their responsibilities (2005-09):

3.1.b. Number of legal actions taken against bank directors on failing to disclose information accurately or truthfully to the public (2005-09):

4. PRUDENTIAL REQUIREMENTS

4.1. Capital requirements and conditions

4.1.a. What are the minimum capital requirements?

4.1.a.i. Tier 1 ratio (%):

4.1.a.ii. Total (tier 1 + tier 2) capital ratio (%):

4.1.a.iii. Leverage ratio (please specify):

4.1.a.iv. Other (please specify):

4.1.b. What are the actual capital conditions?

4.1.b.i. Tier 1 ratio (%):

4.1.b.ii. Total capital ratio (%):

4.1.b.iii. Simple leverage ratio (%):
Please specify calculation method:

4.1.b.iv. Other:

4.2. Liquidity and diversification requirements

4.2.a. Percentage bank assets held in government bonds (%):

4.2.b. Percentage foreign-currency denominated bank assets (%):

4.2.c. Percentage foreign-currency denominated bank liabilities (%):

4.3. Provisioning rules

4.3.a. Ratio of non-performing loans (NPL) to total loans (%):

4.3.b. How many days is a loan in arrears classified as?

4.3.b.i. Substandard:

4.3.b.ii. Doubtful:

4.3.b.iii. Loss:

4.3.c. What are the minimum provisioning requirements for loans that are classified as?

4.3.c.i. Substandard:

4.3.c.ii. Doubtful:

4.3.c.iii. Lost:

5. CRISIS MANAGEMENT

5.1. General

5.1.a. Number of times the "cease and desist" actions invoked (2005-09):

5.1.b. Number of banks restructured (2005-09):

5.1.c. Number of banks liquidated (2005-09):

6. DEPOSIT INSURANCE SCHEME

6.1. General

6.1.a. Is there an explicit deposit insurance protection system? If not, please skip this section.

6.1.b. Name of scheme:

6.1.c. Legal basis:

6.1.d. Operational since:

6.1.e. Number of times depository insurance was activated (2005-09):

6.1.f. How are depositors informed about the scheme?
6.1.f.i. Verbally when opening accounts:
6.1.f.ii. Notices or brochures available at branches:
6.1.f.iii. Media announcements:
6.1.f.iv. Direct mailings:
6.1.f.v. Publication in official journal/newspaper:
6.1.f.vi. Other (please specify):

6.2. Protection

6.2.a. What is the insurance limit per account for:
6.2.a.i. Local currency accounts?
6.2.a.ii. Foreign currency accounts, if covered?
6.2.b. What is the insurance limit per person for:
6.2.b.i. Local currency deposits?
6.2.b.ii. Foreign currency accounts, if covered?
6.2.c. Is there a 'co-insurance mechanism'? In other words, are depositors insured for some part of their deposits, notwithstanding the insurance limits above? If so, please specify the applicable ratio. Otherwise, leave blank.
6.2.d. Is there a legal period for which all the covered depositors must be paid in full? If so, specify the maximum allowed delay:

6.3. Funding

6.3.a. Please check how often are premiums collected:
6.3.a.i. Other (please specify):
6.3.b. If there is an ex-ante fund, please specify the amount of funds accumulated as percent of total customer deposits (2005-09):

7. MARKET INFRASTRUCTURE

7.1. Liquidity management

7.1.a. Agency responsible for implementing monetary policy:
7.1.b. Legal basis:
7.1.c. Operational since:
7.1.d. Amount of transactions in the inter-bank market:
7.1.e. Please detail which monetary policy tools are available for use:
7.1.e.i. Interest rate ceilings or credit ceilings? If so, please specify requirements:
7.1.e.ii. Reserve requirements i.e. deposit reserve requirement ratio? If so, please specify requirements:
7.1.e.iii. Liquid asset restrictions/ratios? If so, please specify requirements:
7.1.e.iv. Standing facilities? If so, amount of lending (2009):
7.1.e.v. Open market operations, i.e. buying/selling assets on secondary market, repo, or foreign exchange markets? If so, amount of lending (2009):

7.1.e.vi. Government or central bank security auctions? If so, please specify methods (volume tenders; interest rate bids; multiple-rate auctions; etc.). If so, amount of lending (2009):
7.1.e.vii. Others? (please specify as above)
7.1.f. Which of the above tools has been the most predominant one over the past five years? Please support the argument with evidence, i.e. amount/volume of transactions, etc.

7.2. Payment system

7.2.a. Number and value of card payments:
7.2.b. Number and value of cheques drawn:
7.2.c. Number and value of ATM withdrawals:

7.3. Public debt management

7.3.a. What percent of domestic credit is available to the
7.3.a.i. general government (2009)?
7.3.a.ii. state-owned (public) enterprises (2009**)**

SECTION II. FACE-TO-FACE INTERVIEW

The following interview is designed to allow the CEPS research team to better assess the practice of banking supervision in your country. The questions address a variety of regulatory issues, including general aspects of the supervisory agency (Part 1); licensing, disclosure, and prudential requirements (Parts 2 to 4); crisis management practices and schemes (Parts 5 and 6); and, market infrastructure (Part 7). The last section (Part 8) concludes the interview with final remarks.

Please answer the questions fully, providing details and references, whenever applicable. You will have an opportunity to make additional comments at the end of the questionnaire.

1.	**SUPERVISORY AGENCY**
1.1.	**General**
1.1.a.	What are the official roles and aims of the supervisory agency?
1.1.b.	How is the agency financed? By public funds, premiums on financial institutions, or else?
1.2.	**Resources**
1.2.a.	What are the educational requirements for supervisors, including required diplomas, specialisations, etc.?
1.2.b.	Approximately what percent of the agency's budget is devoted to training programmes for supervisors?
1.2.c.	Please comment on existing or potential cooperation opportunities with

	the EU to improve the resource utilisation of the agency, including technical aid, training, and twinning programmes.	
1.2.d.	Has the supervisory agency signed any mutual recognition agreements or memorandum of understanding (MoU) with the EU member states? If so, what are the details of these agreements?	
1.2.e.	Do the supervisors meet regularly with EU's supervisory authorities? Please provide details on frequency and types of meetings.	
1.2.f.	Does the supervisor agency have a seat as observer in Committee of European Banking Supervisors (CEBS)?	YES/NO
1.3.	**Management**	
1.3.a.	Who appoints the head of agency?	
1.3.b.i.	If there is a fixed term of service for the head of agency, what is the term?	
1.3.b.ii.	Can the fixed-term be renewed?	YES/NO
1.3.c.	Have there been instances of dismissal of the supervisory agency's management over the past few years? If so, please provide details.	
1.4.	**Liability**	
1.4.a.	Can the agency or management be held legally liable for its actions?	YES/NO
1.4.b.	Have the agency or management been held liable for its actions over the past few years? If so, please provide details on the case and final ruling.	
2.	**ENTRY AND LICENSING**	
2.1.	**Entry requirements**	
2.1.a.	What is the maximum delay for fulfilling minimum capital requirements? Are delays tolerated in fulfilling these requirements?	
2.2.	**Rejections**	
2.2.a.	Are the grounds for rejecting a licensing application specified by law? If so, what are these criteria?	
2.2.b.	If applicable, what are the most typical reasons for rejecting licensing applications?	
2.2.c.	If applicable, what are the most typical reasons for rejecting acquisitions?	
2.3	**Foreign entities**	
2.3.a.	Is there a political commitment to manage foreign entry into banking sector? Please comment on the arguments, potential benefits and harms that unmanaged foreign entry may pose.	

2.3.b.	How are the home-host supervisory conflicts resolved for foreign financial institutions established in your country? Is there an active cooperation with EU's supervisors?	
3.	**INFORMATION DISCLOSURE**	
3.1	**External audit**	
3.1.a.	Please name the top-three certified auditors in terms of number of banks audited:	
3.1.b.	Please comment on the adequacy and quality of external audits. In particular, do the auditors face difficulties (lack of training, resources, experience, etc.) in making an independent and fair judgement? If so, please identify how these issues can be overcome in the future?	
3.2	**Financial statements**	
3.2.a.	Are there delays (i.e. more than 1-2 days) in sending audited financial statements to authorities? If so, what are the typical reasons for filing late?	
3.2.b.	Are banks' directors legally liable for the accuracy and truthfulness of information disclosed to the public or to the authorities?	YES/NO
4.	**PRUDENTIAL REQUIREMENTS**	
4.1.	**Capital requirements**	
4.1.a.	Are the minimum requirements anticipated to remain the same over the next few years?	YES/NO
4.1.b.	Does credit to SME's receive any preferential treatment?	YES/NO
4.2.	**Liquidity and diversification requirements**	
4.2.a.	What are the rules and guidelines on asset diversification (maximum exposure to a single borrower, minimum diversification of loans among sectors, concentration limits, etc.)?	
4.2.b.	What is the reserve requirement, i.e. the minimum deposit reserve requirement ratio?	
4.3	**Basel implementation**	
4.3.a.	Is the Basel II framework currently applicable? If so, since when? If not, when is it anticipated to be applicable?	
4.3.b	Are there any differences in the implementation of Basel II for public banks and private banks? If so, what are the official reasons for making such a distinction?	
4.3.c.	What is the definition of tier I and tier II capital?	
4.3.c.	Are there plans to implement Basel III rules? If so, by when?	

4.3.d.	Is the internal ratings based (IRB) approach applicable? If so, since when? If not, when is it anticipated to be applicable?	
4.3.e.	Please comment on the main difficulties in applying Basel II and the upcoming Basel III.	
4.3.f.	Please comment on whether Basel II puts domestic banks at a disadvantage in comparison to foreign-owned banks.	
4.3.g.	Please comment on existing or potential cooperation opportunities with the EU to improve Basel II implementation, including technical aid, training, and twinning programmes.	
4.4.	**Provisioning rules**	
4.4.a.	When is a loan classified as a "non-performing loan" (NPL)?	
4.4.b.	Is a high NPL ratio a challenge for the banking sector? If so, what are the relevant policy responses to combat with this challenge?	
5.	**CRISIS MANAGEMENT**	
5.1.	**General**	
5.1.a.	Is there a regime exclusively applicable for bank insolvencies? If so, please detail the legal basis for the regime.	
5.1.b.	Please comment to what extent the current laws and structures ensure a speedy resolution/restoration of troubled banks?	
5.1.c.	What is the level of cooperation between the supervisory authority and government in resolution/restoration of troubled banks?	
5.1.d.	Has the financial crisis had any impact on banks in your country? If so, what was the impact? Increased NPL, liquidity support, insolvencies, etc.? Please provide details.	
5.2.	**Prompt corrective action**	
5.2.a.	Which body or bodies have the power to	
5.2.a.i.	Order a bank to "cease and desist" all activities? (please specify below)	
5.2.a.ii.	Impose penalties due to infraction of "cease and desist" orders?	
5.2.a.iii.	Override management's or director's decisions?	
5.3.	**Restructuring**	
5.3.a.	Which of the following actions are available during restructuring:	
5.3.a.i.	Mergers	YES/NO
5.3.a.ii.	Recapitalisation	YES/NO
5.3.a.iii.	Outright sale of the bank	YES/NO
5.3.a.iv.	Acquisition of assets by another bank	YES/NO
5.3.a.v.	Transfer of assets to an asset management company	YES/NO
5.3.a.vi.	Mergers	YES/NO

5.3.b.	Which body or bodies have the power to:	
5.3.b.i.	Supersede shareholders' rights?	
5.3.b.ii.	Replace management and directors?	
5.3.b.iii.	Forebear (i.e. withhold the application of) certain regulations?	
5.3.c.	To what extent are shareholders' rights upheld during restructuring, especially for those that contribute to the recapitalisation of the bank?	
5.3.d.	Is there a difference in the treatment of public banks and commercial banks during restructuring?	YES/NO
5.4.	**Liquidation**	
5.4.a.	Which body or bodies have the power to:	
5.4.a.i.	Declare a bank insolvent? (please identify below)	
5.4.a.ii.	Appoint a receiver or liquidator?	
5.4.a.iii.	Terminate shareholders' rights?	
6.	**DEPOSIT INSURANCE SCHEME**	
6.1.	**General**	
6.1.a.	Is there an explicit deposit insurance protection system? If not, please skip to section 7.	YES/NO
6.1.b.	Does the system provide coverage for foreign-owned banks?	YES/NO
6.2.	**Protection**	
6.2.a.	Is there a legally determined maximum delay to pay covered depositors in full in the event of the failure of a bank? If so, what is the period?	
6.2.b.	Please comment on the anticipated delay to pay the covered depositors in full in the event of the failure of an average-sized bank. Is this in line with the legal period mentioned above?	
6.2.c.	Historically, have depositors been compensated fully up to the legal protection? If not, please comment on the reasons, i.e. shortage of ex-ante funds, foreign exchange volatility, etc., for why the actual protection fell short of the intended protection.	
6.2.d.	Please comment on the powers of the insurer in intervening in a bank, revoking deposit insurance, taking legal action against management, etc.	
6.3.	**Funding**	
6.3.a.	Are premiums risk-adjusted? If so, please comment on how the risk ratings or valuations are determined.	
6.3.b.	Is there an ex-ante fund or an ex-post system? If the latter, please detail how the system is to operate in the event of a trouble? Is the system backed by government?	

7.	**MARKET INFRASTRUCTURE**
7.1.	**Liquidity management**
7.1.a.	How does the monetary policy impact banking in your country currently? What are the relevant anticipated changes in monetary policy in upcoming years? How will these developments impact banking?
7.1.b.	Please comment on existing or potential cooperation arrangements with the EU to improve the use of monetary policy tools, including technical aid, training, and twinning programmes.
7.2.	**Foreign exchange policy**
7.2.a.	How relevant are foreign currency risks in banking? How are these risks likely to evolve with the introduction of new exchange policies in upcoming years, if applicable?
7.3.	**Payment system**
7.3.a.	What is the predominance of cash-based transactions as opposed to card payments or paperless transactions?
7.3.b.	Is there a real-time gross settlement system? If so, since when has it been operational?
7.4	**Institutional environment**
7.4.a.	Please comment on the effectiveness of the judicial system on loan recovery. What needs to be done to overcome challenges, if any?
7.4.b.	How effective are laws in protecting private property rights? What needs to be done to overcome challenges, if any?
7.4.c.	Please comment on the degree of government involvement in banking. Is there an active government policy to direct credit? rovide details.
8.	**FINAL REMARKS**
8.1.	Please comment on the key challenges for banking supervision in your country, distinguishing between challenges faced by policy-makers, banking sector, auditors, investors and depositors.
8.2.	What are the most important regulatory and supervisory developments that have taken place in the past few years? What are the anticipated changes in the upcoming years?
8.3.	Please comment on the general cooperation opportunities with the EU to improve banking supervision.