



Munich Personal RePEc Archive

## **Simulating Banking Sector Development in the GCC States**

Al-Moulani, Ali and Alexiou, Constantinos

National Bank of Bahrain, Manama, Bahrain, Cranfield University,  
School of Management

2018

Online at <https://mpra.ub.uni-muenchen.de/98650/>

MPRA Paper No. 98650, posted 19 Feb 2020 15:06 UTC

## **Simulating Banking Sector Development in the GCC States**

**Ali Al-Moulani\* and Constantinos Alexiou\*\***

\* National Bank of *Bahrain*, Manama, Bahrain, Email: [almoulani@hotmail.com](mailto:almoulani@hotmail.com)

\*\* Cranfield University, School of Management, College road, MK43 0AL, UK

Email: [constantinos.alexiou@cranfield.ac.uk](mailto:constantinos.alexiou@cranfield.ac.uk)

# **Simulating Banking Sector Development in the GCC States**

## **Abstract**

We provide simulation results on the banking sector's depth levels for the Gulf Cooperation Council (GCC) States. In this context, several relationships between four banking sector depth ratios and the banking sector determinants in the top quartile countries are considered. The emerging evidence suggests that Oman and Saudi Arabia are set to exhibit deepening in their financial sector whilst Bahrain and Kuwait are likely to be the beneficiaries from enhancing banking sector stability, efficiency, and competition, as well as improving their governance, institutional, and legal settings.

Key words: Banking sector development, GCC countries, Simulation.

JEL: G1; O1; O16; O53

## **1. Introduction**

Following the growth in the number of research papers investigating the finance-growth nexus, part of the literature shifted its focus towards the role of legal origins and systems on the development of the financial sector, while others considered the role of institutions and political economy. In this context, the research interest diverted from understanding the effect of government intervention on financial sector development to the more fundamental institutional setting within the economy on the sector development.

Studies that investigate the determinants of financial sector development have considered different research questions, datasets, and empirical methods over the years. Prior to the seminal work of King and Levine (1993) that found a strong association between financial development and economic growth, scholars examining the relationship between the financial

sector and economic activities focused on the costs and benefits of financial repression for the broader economy. McKinnon (1973) and Shaw (1973) provided two of the core studies in this area that demonstrate how government interventions in the financial sector deter economic growth by shifting the economy away from its competitive market equilibrium. Their studies suggest that imposing interest rate ceilings discourages savings, capital accumulation, and efficient allocation of capital in the economy (Gemech and Struthers, 2003).

The introduction of policies associated with the banking sector, macroeconomic, and governance in the GCC States aim at converging the levels of banking sector depth in the six states with those of countries in which the banking sector depth's positive influence on long-term economic growth is the highest.

This study for the first time explores the ability of the banking sector's development in the GCC region to converge with that at the top quartile countries in terms of positive influence of their banking sector on economic growth. In this context, the evidence obtained are of great significance for policymakers across the region in so far as it gauges the potential impact of policies on the sector's development and long-term economic growth.

The rest of the paper is organized as follows: Section 2 presents a brief literature review whilst section 3 elaborates on the empirical investigation and the simulation results obtained. Finally section 4 discusses the results and provides some concluding remarks.

## **2. Brief Literature Review**

The banking sector development literature suggest that the sector's development is influenced *inter alia* by factors related to the governance, institutional and legal settings, the macroeconomic environment, and the sector structure.

Amidst a number of macroeconomic factors that affect the development of the banking sector, inflation, trade openness, capital liberalisation, and international financial integration have

been regarded as the key determinants. In particular, Boyd et al. (2001) using a dynamic panel approach find that inflation is inversely related to banking sector development. In particular, the evidence generated suggests that low to moderate inflation rates are negatively associated with banking sector depth measures, such as bank credit to the private sector, bank assets, and bank liabilities-to-GDP ratios.

Rajan and Zingales (2003) argue that the competition-enhancing effects of financial development would jeopardise the economic rents exploited by the incumbents under the current competition environment. They maintain that trade and capital account liberalisation align the incumbent firms' and financial intermediaries' interest with financial development as the benefits of liberalisation offset the costs associated with the loss in economic rents. Huang and Temple (2005) however, find that trade promotes banking sector development in higher-income countries but not the lower-income countries. For more on trade and capital account liberalisation see for instance Almarzoqi et al. (2015), Elsherif (2015), Baltagi et al. (2009), Chen et al. (2016), David et al. (2015) and Ahmed (2016).

Additional factors such as financial repression, regulations, and the level of the sector maturity are also deemed to be instrumental in determining financial sector development. More specifically, Bencivenga and Smith (1992) present a theoretical model in which high reserve requirements lead to the development of an informal financial sector that coexists with the formal sector and is not subject to such requirements. The model demonstrates that financial liberalisation results in welfare gains as funds shift from the informal to the formal sector that provides superior risk sharing. Roubini and Sala-i-Martin (1992) contend that some governments tend to repress the financial sector to attain inflationary revenue as financial repression induces private agents to carry larger stocks of nominal money, hence, indicating that such policies reduce the amount of services provided by the financial sector to the economy. Moreover, Barth et al. (2004) report evidence on the basis of which regulations

restricting banks from engaging in investment banking, insurance, and real estate activities are negatively associated with the level of banking sector depth. They also find a positive connection between private monitoring—measured by indices related to external auditing, credit rating, and accounting standards—and banking sector depth.

Bahadir and Valev (2015) argue that countries with lower initial levels of financial development experience faster credit growth. In this context, there is a financial development convergence process whereby countries with less developed banking sectors see their sectors develop at a faster pace than countries with more developed sectors.

On the significant role that institutions play on financial sector development, Acemoglu and Johnson (2005) show that the contracting and property rights institutions' proxies are positively associated with the credit to private sector to GDP ratio whilst Chinn and Ito (2006) find that the level of creditors' protection is positively associated with the stock market turnover and credit to private sector to GDP. Similarly, Djankov et al. (2007) investigating the impact of legal creditor rights and creditor registries on the banking sector depth find that improvement in creditor rights or the introduction of a creditor registry is followed by an increase in the banking sector depth. In the same spirit, Ayadi et al. (2013) contend that strong legal institutions, good democratic governance and adequate implementation of financial reforms, are instrumental in the development of a strong banking sector.

Le et al. (2015) argue “that better governance and institutional quality foster financial sector development in developing economies while economic growth and trade openness are key determinants of financial depth in developed economies” (p. 1047). Finally, Cherif and Dreger (2016) in a study on the financial development in the Middle East and North Africa (MENA) region, find that higher levels of corruption deter significantly the development of the banking sector.

### 3. Empirical Investigation.

In this study, we employ the banking sector depth determinant models put forward by Al-Moulani and Alexiou (2018). The paper identifies 34 countries<sup>1</sup> in which banking sector depth contributes the most to long-term economic growth. The data for countries in this group, referred to as the top quartile countries, is used to estimate the determinants of the banking sector depth through dynamic panel data models and following general-to-specific selection approach. A GMM approach has been adopted to estimate four models that demonstrate the significance of the banking sector efficiency, stability and competition, inflation and spending behaviour, and the legal, institutional and governance settings for the banking sector development in the top quartile countries. The results of the system GMM dynamic panel models are presented in Table 1.

*Table 1: Banking Sector Depth Determinant Models*

Model Number	1	2	3	4
Dependent Variable	Bank Credit to Private Sector/GDP	Bank Assets/GDP	Bank Liabilities/GDP	Money Supply/GDP
Independent Variables				
Bank Credit to Private Sector to GDP Ratio <sub>t-1</sub>	0.9127*** (0.028)			
Bank Assets/GDP <sub>t-1</sub>		0.6481*** (0.132)		
Bank Liabilities/GDP <sub>t-1</sub>			0.6712*** (0.150)	
Money Supply/GDP <sub>t-1</sub>				0.8814*** (0.072)
Z-Score <sub>t-1</sub>				0.1516* (0.089)
Net Interest Margin <sub>t-1</sub>			-0.3296** (0.157)	
Bank Concentration Ratio <sub>t-1</sub>	-0.1628* (0.089)			
Saving/GDP <sub>t-1</sub>				-0.2512*** (0.091)
Consumption/GDP <sub>t-1</sub>				-0.3989** (0.165)
Consumer Price Index <sub>t-1</sub>		-0.2305* (0.137)		
Political Stability & Absence of Violence			0.2568** (0.123)	
Rule of Law		0.3961** (0.158)		
Regulatory Quality	0.0433* (0.024)			

<sup>1</sup> The countries are Arab Republic of Egypt, Armenia, Austria, Azerbaijan, Belarus, Belgium, Botswana, Brunei Darussalam, Cameroon, China, Democratic Republic of Congo, Equatorial Guinea, France, Germany, Hong Kong SAR, India, Israel, Italy, Japan, Kuwait, Latvia, Malaysia, Malta, Mauritius, Mexico, Panama, Republic of Congo, Republic of Korea, Russian Federation, Sri Lanka, Switzerland, The Bahamas, Trinidad and Tobago, and United States.

Constant	1.0131*** (0.360)	-0.7408*** (0.287)	0.3231 (0.326)	2.5223*** (0.913)
Observations	392	502	374	375
Groups	31	32	33	32
Instruments	27	34	31	29
AR(1)	-2.61	-2.1	-2.68	-3.17
AR(1) p-value	0.009	0.036	0.007	0.002
AR(2)	0.3	0.49	-0.38	-0.65
AR(2) p-value	0.767	0.626	0.706	0.515
Sargan Overidentification Test	34.17	37.37	57.01	21.86
Sargan p-value	0.063	0.167	0.001	0.588
Hansen Overidentification Test	23.02	30.78	25.78	19.35
Hansen p-value	0.46	0.426	0.531	0.733

Notes: The table reports the regression results of the selected System GMM for the dynamic panel data models investigating the relationship between bank sector depth measures and their determinants. The models employ the annual data for the 34 countries over the period from 1960 to 2015. All the models are based on the two-step estimation procedure and the Windmeijer corrected standard error. Robust t-statistics are shown in parentheses, with significance levels at the 10% (\*), 5% (\*\*), and 1% (\*\*\*) levels indicated. The data were sourced from the World Bank: World Development Indicators.

The results of model number 1 indicate that the current level of the bank credit extended to the private sector relative to the size of the economy is determined by its lagged value, the level of banking sector concentration, and the regulatory quality. In the dynamic regression model, investigating the factors influencing the bank assets to GDP ratio, the CPI and rule of law are statistically significant at the 10% and 5% levels of significance respectively. The results also reveal that the rule of law has a relatively considerable effect on the banking sector depth measure. Model 3 suggests that the bank liabilities to GDP ratio is determined by its lagged level, the net interest margin, and political stability. Finally, the results associated with the fourth model indicate that in addition to the previous reading of money supply to GDP ratio, the banking sector stability measured by the z-score, the levels of consumption, and the levels of savings are found to be statistically significant determinants of the banking sector depth.

### *3.1 Simulation Process*

The simulation is conducted by using the regression equations of models 1 to 4, which represent the linear relationship between four banking sector depth ratios and the banking sector determinants in the top quartile countries. The factors determining the banking sector development in the GCC region are then converged to the weighted average of those of the top

quartile countries over a period of five years and then kept constant at the same levels for another five years. The calculated banking sector depth ratio for each year is employed as the lagged value in the dynamic model's equation for the subsequent year.

The assumption that the factors can converge linearly in a period of five years in response to the introduction of policies and regulations is entirely hypothetical and is only assumed for simulation. Identifying and assessing the effect of certain policies and regulations on the determinant factors is beyond the scope of this paper, as discussed above. Another assumption underlying the simulation is that for the GCC countries with more advanced governance, institutional, and legal indices than the top quartile group weighted average, the measures are assumed to be intact throughout the simulation period. This reflects the belief that countries enjoying superior political stability and absence of violence, rule of law, and regulatory quality are interested in maintaining, if not improving, their standards.

### 3.2 Base Scenario

Before considering the possible effect of converging the banking sector depth determinants, it is worth considering the models' predictions based on the assumption of the *status quo* in the determinants over the same 10-year period.

*Table 2: Change in the Banking Sector Depth Ratios under the Base Scenario*

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
<i>Bank Credit to Private Sector to GDP Ratio</i>	-12%	-24%	2%	-4%	9%	-3%
<i>Bank Assets to GDP Ratio</i>	-22%	1%	9%	7%	3%	-1%
<i>Bank Liabilities To GDP Ratio</i>	-19%	-2%	4%	0%	2%	0%
<i>Money Supply to GDP Ratio</i>	57%	68%	174%	434%	46%	-8%
<i>Average*</i>	-18%	-9%	5%	1%	5%	-1%

\*the calculation of the average levels exclude the Money Supply to GDP Ratio

Table 2 suggests that by maintaining the same levels of bank concentration and regulatory quality, the bank credit to private sector to GDP ratio is expected to fall in four out of the six

countries. Over the ten-year period, bank assets to GDP ratios are expected to increase by less than 10% in four countries while they drop in Bahrain and the UAE when the levels of CPI and the rule of law index are assumed to remain intact. In addition, bank liabilities to GDP ratio are expected to grow in two countries, drop in two, and stagnate in the remaining two when the levels of net interest margins and the political stability and absence of violence index remain constant.

Finally, table 2 indicates that no change in the banking sector depth determinants would result in the multiplication in the size of the money supply to GDP ratio. A closer examination of the simulation computation reveals that the relatively low levels of savings to GDP and consumption to GDP ratios in all the GCC States, with exception of the UAE, amplify the predicted banking sector depth levels considerably. The low levels of savings and consumption ratios might be attributed to a very specific period in the economic cycle during which they are recorded (i.e. the year 2010) where GDP levels are relatively high, or possibly to the different spending patterns in the Gulf region vis-à-vis the top quartile countries. In this context, the money supply to GDP ratios' predictions might not be suitable for drawing any insightful conclusions.

On average, Oman and Saudi Arabia are expected to see their banking sector depth ratios increase by 5% over the period, while Bahrain will lose as much as 18% of its sector depth if the related determinants are maintained at the initial levels of 2014 and 2015.

### *3.3 Convergence Scenario*

Assuming the convergence of the banking sector development determinants in the first five years of the simulation while keeping the determinant factors constant in the second five years, table 3 demonstrates that all the GCC countries anticipate seeing their banking sectors develop further on average.

*Table 3: Change in the Banking Sector Depth Ratios under the Convergence Scenario*

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
<i>Bank Credit to Private Sector to GDP Ratio</i>	25%	22%	32%	31%	34%	24%
<i>Bank Assets to GDP Ratio</i>	-8%	14%	23%	11%	23%	16%
<i>Bank Liabilities To GDP Ratio</i>	-10%	1%	10%	7%	12%	4%
<i>Average</i>	3%	13%	22%	16%	23%	15%

Encouraging competition in the banking sector and elevating the regulatory quality is anticipated to increase the credit to private sector to GDP ratios in the region between 22% and 34%. Bank assets to GDP ratio is expected to increase in five out of the six Member States over the simulated period, provided that policies on inflation targeting and the rule of law—similar to those already in place in the group of 34 countries—are introduced. It is further envisaged that most of the sector development is likely to take place in Oman and Saudi Arabia whilst in Bahrain the sector’s outlook appears to be less optimistic. The picture is similar when considering the efficiency, political stability and absence of violence in the region where banking sectors in Oman and Saudi Arabia are the beneficiaries.

#### **4. Discussion and concluding remarks**

Even though the results of the base and convergence scenario point to a similar conclusion - i.e. that Oman and Saudi Arabia are expected to experience the highest levels of banking sectors development gains - when assessing the results of the two scenarios the conclusions are different, as exemplified in table 4.

Table 4: Net Effect Change of Converging the Determinant Factors on the Sector Depth

	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE
<i>Bank Credit to Private Sector to GDP Ratio</i>	37%	46%	30%	34%	24%	26%
<i>Bank Assets to GDP Ratio</i>	15%	14%	14%	4%	20%	17%
<i>Bank Liabilities To GDP Ratio</i>	9%	4%	6%	7%	10%	4%
<i>Average</i>	20%	21%	16%	15%	18%	16%

Table 4 provides the anticipated changes in the banking sector depth ratios due to the convergence of the determinant factors (as in the convergence scenario discussed earlier) considering the projected levels under the *status quo* scenario. For instance, the bank credit to private sector to GDP ratio in Kuwait is expected to drop by 24% over a ten-year period if the determinants are held constant at their last levels (see table 2); when the determinants converge to those of the top quartile countries, the ratio is likely to improve by 22% over the same period; hence, the total effect of encouraging competition and regulatory quality in Kuwait on the banking sector depth measure is expected to amount to 46%. The results in table 4 are thus the effect of converging the determinant factors on the banking sector development, as opposed to not doing so.

The results in table 4 provide different conclusions from those reported in tables 2 and 3. The results associated with the credit to private sector to GDP ratio show that Kuwait can derive most of the sector development when converging the determinants, compared to maintaining them at the current levels, while Saudi Arabia is expected to benefit the least. In contrast, Saudi Arabia and the UAE's bank assets to GDP ratios gains are anticipated to be the highest due to implementing policies that converge the determinant factors then not doing so. Finally, the development of the sector measured by bank liabilities to GDP ratio grow more in Saudi Arabia and Qatar under the convergence scenario as opposed to the *status quo* scenario.

Overall, all the GCC States' banking sectors are predicted to benefit from shifting the levels of the banking sector structure, macroeconomic, and governance, institutional and legal factors to those of the top quartile countries with Kuwait and Bahrain emerging as the highest gainers. By taking no action, in the case of these latter two countries, their banking sectors are likely to

be less developed a decade from now. Policies that converge the determinant factors in Kuwait and Bahrain would maintain or improve the current levels of banking sector depth per the average results of the simulations.

To sum up, the findings associated with the simulation suggest that Oman and Saudi Arabia are set to exhibit deepening in their financial sectors regardless of whether policymakers opt to implement policies and regulations that converge the sector determinants with those of the top quartile countries. The simulation indicates that Bahrain and Kuwait are likely to be the beneficiaries from enhancing the banking sector stability, efficiency, and competition, as well as improving their governance, institutional, and legal settings.

## References

- Acemoglu, D., & Johnson, S. (2005) Unbundling Institutions. *Journal of Political Economy*, 113(5), 949–995.
- Ahmed, A. D. (2016) Integration of financial markets, financial development and growth: Is Africa different? *Journal of International Financial Markets, Institutions and Money*, 42, 43–59. doi:10.1016/j.intfin.2016.01.003.
- Al-Moulani, A. and Alexiou, C. (2018) A Benchmarking Modelling Exercise in the Context of Banking Sector Deepening and Long-Term Economic Growth, Working Paper, Cranfield University.
- Almarzoqi, R. M., Ben Naceur, S., & Kotak, A. (2015) What Matters for Financial Development and Stability? *IMF Working Paper, WP/15/173*(173), 1–43
- Ayadi, R., Arbak, E., Ben Naceur, S., & Groen, W. P. De. (2013) Determinants of Financial Development across the Mediterranean. *MEDPRO Technical Report*, (29).
- Bahadir, B., & Valev, N. (2015) Financial development convergence. *Journal of Banking and Finance*, 56, 61–71. doi:10.1016/j.jbankfin.2015.03.001.
- Baltagi, B. H., Demetriades, P. O., & Law, S. H. (2009) Financial development and openness: Evidence from panel data. *Journal of Development Economics*, 89(2), 285–296.
- Barth, J. R., Caprio, G., & Levine, R. (2004) Bank regulation and supervision: What works best? *Journal of Financial Intermediation*, 13(2), 205–248.
- Bencivenga, V., & Smith, B. (1992) Deficits, inflation, and the banking system in developing countries: The optimal degree of financial repression. *Oxford Economic Papers*, 44(4), 767–790.
- Boyd, J. H., Levine, R., & Smith, B. D. (2001) The impact of inflation on financial sector performance. *Journal of Monetary Economics*, 47, 221–248.
- Chen, W., Hamori, S., & Kinkyo, T. (2016) Financial development and financial openness nexus: the precondition of banking competition. *Applied Economics*, 48(12), 1130–1139.

doi:10.1080/00036846.2015.1093087.

Cherif, M., & Dreger, C. (2016) Institutional Determinants of Financial Development in MENA Countries. *Review of Development Economics*, 20(3), 670–680.

Chinn, M. D., & Ito, H. (2006) What matters for financial development? Capital controls, institutions, and interactions. *Journal of Development Economics*, 81(1), 163–192.

David, A. C., Mlachila, M., & Moheput, A. (2015) Does international integration matter for financial development in Africa? *Applied Economics*, 47(15), 1525–1549.  
doi:10.1080/00036846.2014.997925.

Djankov, S., McLiesh, C., & Shleifer, A. (2007) Private credit in 129 countries. *Journal of Financial Economics*, 84(2), 299–329.

Elsherif, M. A. (2015) The Determinants of Financial Development: Empirical Evidence from Egypt. *The Macrotheme Review*, 3(4), 69–87.

Gemech, F., and Struthers, J. (2003). The McKinnon-Shaw Hypothesis: Thirty Years on: A Review of Recent Developments in Financial Liberalization Theory. In *Development Studies Association (DSA) Annual Conference on “Globalisation and Development.”* Glasgow, Scotland: Development Studies Association.

Huang, Y., & Temple, J. (2005) *Does External Trade Promote Financial Development?* (No. 05/575). *Discussion Paper*. Bristol.

King, R. G., and Levine, R. (1993). Finance, Entrepreneurship and Growth: Theory and evidence. *Journal of Monetary Economics*, 32, 513–542.

Le, T.-H., Kim, J., & Lee, M. (2015) Institutional Quality, Trade Openness, and Financial Sector Development in Asia: An Empirical Investigation. *Emerging Markets Finance and Trade*, 52(2), 1047–1059. doi:10.1080/1540496X.2015.1103138

McKinnon, R. (1973). *Money and Capital in Economic Development*. Washington DC: Brookings

Institute.

Rajan, R. G., & Zingales, L. (2003) The great reversals: The politics of financial development in the twentieth century. *Journal of Financial Economics*, 69(1), 5–50.

Roubini, N., & Sala-i-Martin, X. (1992) Financial repression and economic growth. *Journal of Development Economics*, 39(1), 5–30.

Shaw, E. (1973). *Financial Deepening in Economic Development*. NY: Oxford University Press.

## DATA APPENIDNX

<i>Variable Name</i>	<i>Source</i>
<i>Assets of Deposit Banks (US\$ mn) to Total GDP in Current Prices (US\$ mn)</i>	<i>Passport Database - Euromonitor International</i>
<i>Liabilities of Deposit Banks (US\$ mn) to Total GDP in Current Prices (US\$ mn)</i>	<i>Passport Database - Euromonitor International</i>
<i>Money and quasi money (M2) as % of GDP</i>	<i>World Development Indicators, World Bank</i>
<i>Bank Z-score</i>	<i>World Development Indicators, World Bank</i>
<i>Bank credit to bank deposits (%GDP)</i>	<i>World Development Indicators, World Bank</i>
<i>Bank net interest margin (%)</i>	<i>World Development Indicators, World Bank</i>
<i>Bank concentration (%)</i>	<i>World Development Indicators, World Bank</i>
<i>Gross saving (% of GDP)</i>	<i>World Development Indicators, World Bank</i>
<i>Household final consumption (% of GDP)</i>	<i>World Development Indicators, World Bank</i>
<i>Consumer Price Index (2000-100)</i>	<i>World Development Indicators, World Bank</i>
<i>Political stability and absence of violence</i>	<i>Worldwide Governance Indicators, World Bank</i>
<i>Rule of law</i>	<i>Worldwide Governance Indicators, World Bank</i>
<i>Regulatory Quality</i>	<i>Worldwide Governance Indicators, World Bank</i>