Institution: University of Leicester

Unit of Assessment: 19 Business and Management Studies

Title of case study: The re-capitalization of the banking system in emerging economies

1. Summary of the impact

The global financial crisis of 2008 required policy makers to restructure radically banking systems through re-capitalization, essentially injecting capital to the banks. The Unit's research has shown that recapitalization policy has the potential to impose significant costs on the wider economy and on the banking system in particular. This research brings this trade-off to the attention of policy-makers at central banks who will now be better informed about the nature of the associated costs. . Our research outputs enabled some of these policy-makers to decide at which point on the trade-off they might wish to locate their policy choices.

2. Underpinning research

The foundation of this work goes back to earlier studies by Dr Meryem **Fethi** (Leicester since 2002), Dr Mohamed **Shaban** (Leicester since 2009) and Weyman-Jones (Loughborough) on productivity and efficiency which was started in the 1990s at Leicester under the direction of Professor Peter **Jackson** (Leicester since 1979). The motivation for this specific research lies largely in measuring the costs of recapitalization on the banking system. The aim is to understand the implications of the policy changes imposed by the monetary authorities in Switzerland in the aftermath of the 2007-08 financial crisis. Banks in emerging economies were required by the World Bank to aim for equity-capital ratios on the order of 19-20%, far in excess of Basel requirements. Banking system re-capitalization, i.e. a greater reliance on equity capital rather than short term borrowing as a means of providing full loss absorbing capacity for problem loans, is currently a major preoccupation of policy makers around the world. It is widely believed that a well-capitalized banking system will be less vulnerable to financial crises compared to an inadequately capitalized banking system which is more susceptible to financial shocks. In the UK, the broad response to the crisis by the Bank of England was similar to the general approach. As Mervyn King put it "much, much more equity; much, much less short term debt".

However, many emerging economies experienced a number of shocks before the current global crisis and some began to recover ahead of the developed economies. As a consequence, there are considerable lessons to be learned from the emerging economies during the last half-decade about financial liberalisation, banking system re-capitalization and financial crises. An example is Turkey which experienced major financial disruption in 2000-2001. During this period, the banking system was re-structured with fewer but stronger banks that were re-capitalized with higher capital ratios. Following the global financial crisis of 2008, the IMF felt that the banking sector in Turkey had shown greater resilience compared to the 2000-2001 crisis. The IMF concluded that the factors contributing to this included large capital and liquidity buffers, and a reliance on deposit-based funding.

This research programme represents a novel approach to measuring efficiency and productivity in the banking systems of emerging economies. Two papers were published: one with a special focus on Turkish banking systems, and the second study uses a set of emerging economy banking systems (1, 2). A modelling framework was constructed to measure the impact of the balance sheet constraint on banking production costs. This is then supplemented by the specification of composed error stochastic frontier analysis to derive productivity decomposition, where the decomposition includes the impact of the capital constraint.

The requirement to hold levels of a fixed input, i.e. equity, above the long run equilibrium level, is modelled in an innovative way. To capture the effect of this under-leveraging, the banking system is allowed to operate in an uneconomic region. A productivity decomposition is developed that can include exogenous factors such as policy constraints. A panel data set of banks in emerging economies is used during the financial upheaval period of 2005-2008 to analyse these ideas. Results indicate the importance of the capital constraint in the decomposition of productivity. The higher levels of equity required by the re-capitalization pushes the shadow rate of return on equity to a negative number. This means the economy pays a high price in terms of foregone investment opportunities to ensure banking recovery. The decreased rate of return on equity acts further as an offset to total factor productivity growth of the banking system.

The dominant logical response from policy makers during the recovery phase of a banking crisis is to recapitalise the banking system. The Unit's research shows that such a policy imposes costs on the financial system, namely, recapitalization can result in a significant reduction in the shadow rate of return on banks' equity. It can become negative. As such, this research has provided a valuable lesson for the monetary authorities in emerging markets.

Policymakers at central banks in emerging economies pursuing recapitalization of their banking sectors should expect to see a restriction on their banking systems' overall productivity growth. Saving the banking system from financial crisis is both possible and essential but it brings with it economic pain for those parts of the economy outside of the banking sector.

The research has been led by Dr Meryem Duygun Fethi (Senior Lecturer, University of Leicester), Dr Mohamed Shaban (Senior Lecturer, University of Leicester), and Prof Thomas Weyman-Jones (Professor of Industrial Economics, Loughborough University)

3. References to the research

1. Fethi, Meryem Duygun; Shaban, Mohamed; Weyman-Jones, Thomas. (2012) 'Turkish Banking Recapitalization and the Financial Crisis: An Efficiency and Productivity Analysis.' *Emerging Markets Finance & Trade.* Nov 2012 Supplement 5, Vol. 48: 76-90.

2. Fethi, Meryem Duygun; Shaban, Mohamed; Sickles, Robin; Weyman-Jones, Thomas. 'How regulatory capital requirement affects banks' productivity: An application on emerging economies banks.' Under review in *Journal of Productivity Analysis*.

3. Fethi, Meryem Duygun; Shaban, Mohamed; Weyman-Jones. (2011) 'Liberalisation, Privatisation and the Productivity of Egyptian banks: a non-parametric approach' *Service Industries Journal* 31/7: 1143-1163.

4. Lozano-Vivas, Ana; Kumbhakar, Subal; Fethi, Meryem Duygun; Shaban, Mohamed. (2011) 'Consolidation in the European Banking Industry: How effective is it?' *Journal of Productivity Analysis* 36/3: 247-261.

5. Fethi, Meryem Duygun; Pasiouras, Fotios. (2010) 'Assessing bank efficiency and performance with operational research and artificial intelligence techniques: A survey', *European Journal of Operational Research* 204/2: 189-198

4. Details of the impact

The impact of Leicester research has brought this trade-off to the attention of policy-makers at several central banks who are now better informed about the nature of costs associated with this trade off. Such information has assisted them when deciding upon where on the trade-off they might wish to locate their policy choices.

This research has been presented at the annual conferences of the International Finance and Banking Society (IFABS). These conferences are attended by central bank economists and academics and central banks from emerging countries. The conferences are attended by 300 delegates each of which a minimum of 45 economists from 14 country central banks, European Central Bank, US Federal Reserve Banks, Federal Reserve Board, African Development Bank, BIS, IMF and World Bank.

IFABS was established in 2008 by Duygun Fethi and Shaban and has continued to be led by them. IFABS aims to provide a discussion forum for policy makers and academics to address issues relevant to the global financial crisis. The extension of this research (using the same model) was also presented at a research symposium organized by Banco do Brazil during August 2011. The symposium was attended by 40 delegates from different central banks and economists worldwide. The reach of the impact extends to policy makers in many emerging economies. We know that policy-makers in Indonesia and Turkey have acknowledged the impact of this research in their policy choices.

Impact on Indonesian State-owned Banks

Duygun Fethi and Shaban were officially invited during July 2012 by the Supreme Audit Board (BPK) in Jakarta Indonesia to present their research findings to a group of 80 executive bankers and bankers from four state-owned banks, Bank Indonesia (BI), and Supreme Audit Board of Indonesia (BPK). The BPK is responsible for auditing more than 600 state-owned entities in different economic sectors, with around 6000 employees operating in Jakarta and other provinces. One of the economic sectors that PBK audits, is the banking sector, particularly state-owned banks, which comprise the four largest commercial banks in Indonesia. Dr Bahrullah Akbar, the BPK Board Member whose departmental responsibility is to oversee the state-owned banking sector in Indonesia, stated that *“Dr Duygun Fethi’s research has been extremely influential in shaping the BPK's policy stance with respect to setting the capitalization ratio for Indonesian banks including those of the four state owned banks”.*

As a result of the presentation in Jakarta and three subsequent visits of BPK officials to Leicester, the BPK has found the model useful in shaping their recapitalization policies, and hence, the BPK brought the model to the attention of executives from four state-owned banks who were not familiar with the costs of recapitalization:

- Bank Rakyat Indonesia (BRI). The largest bank in Indonesia, the seventh largest bank in Asia, with 9,000 branches, 100,000 employees and 30 million customers.
- Bank Negara Indonesia (BNI), which has 1,000 branches, and 9 million customers.
- PT Bank Tabungan Negara
- Bank Mandiri, which is the second largest bank in Indonesia, with 1,733 branches.

Fethi and Shabaan were also invited to speak at a conference organized by the Supreme Audit Board of Indonesia in Jakarta in October 2013. In September 2013, the researchers had reached an agreement with the BPK to provide capacity building for the bankers and auditors with a seminar and a training course in Leicester in November 2013. This aimed to bring the model to the attention of a wider audience.

Impact on Turkish banking sector

Fethi and Shabaan were invited to present their research at a symposium organised by the Central Bank of Turkey in December 2011. The symposium was attended by a group of 90 delegates of which 40 were from the Central Bank of Turkey, the Treasury and from Turkish banks.

The research was published in a special issue of a journal that was associated with this meeting. Dr Ahmet Faruk Aysan, a board member of the Central Bank of Turkey commented that *“The findings of your research are highly significant for us at the Central Bank of Turkey. They have been extremely useful in familiarising us to understand the impact of regulating banks’ capital on banks’ productivity and its consequences on the economy overall. In the light of your model, our discussions at the Bank led us to use reduced rates of recapitalization”.* They were invited to a further Central Bank of Turkey event to discuss their work in November 2013.

As evidenced in the letters provided by the officials at the central banks in emerging economies, the significance of this research is that:

- It challenges popular post financial crisis policy responses in emerging economies
- It invites policy makers to take a wider perspective on their policy design
- It modifies policy-makers' expectations about the consequences of the implementation of their policies.

Dr Akbar of BPK elucidates the significance of ULSM research on their policy design, as follows:

"Prior to the work of Drs Duygun Fethi and Shaban the setting of the capitalization ratios would not have taken into consideration the macroeconomic costs that bank capitalization impose. Our policy discussions have taken these costs into account and have resulted in lower ratios than otherwise would have been the case. It is our strong expectation that significant social welfare benefits will flow from these decisions in the form of lower levels of unemployment and hence higher per capita disposable incomes".

5. Sources to corroborate the impact

Letters from the policy-makers (central banks) to support the achieved impacts in shaping their future policies:

1. Letter from the BPK (Supreme Audit Board) Board Member.
2. Letter from the Central Bank of Turkey Board Member.