**Institution: The University of Manchester**

**Unit of Assessment: 18 (Economics and Econometrics)**

**Title of case study: Monetary Policy, Macroprudential Regulation, and Financial Stability**

## 1. Summary of the impact

Since the global financial crisis triggered by the collapse of the subprime mortgage market in the United States, a key issue for central banks has been the extent to which they should use monetary policy, along with macroprudential tools, to promote financial stability. University of Manchester (UoM) research has developed small theoretical models, and more detailed quantitative macroeconomic models, to help address this issue. This analytical work has helped to: *firstly*, influence the policies and operations of several major central banks (Brazil, Turkey and Morocco); and *secondly*, fuel the debate about global reform of bank regulation in international forums, such as the Financial Stability Board, the Basel Committee on Banking Supervision and annual meetings of central banks from Latin America. Impact has been achieved through presentations to these forums, alongside discussions with senior policymakers from other countries.

## 2. Underpinning research

A key issue for central banks, since the onset of the global financial crisis, has been the extent to which they should use monetary policy along with countercyclical macroprudential tools to promote financial stability and mitigate systemic risk. Academic economists have also been actively engaged in this rethinking of the role of central banks. A particular angle to address this issue is to conduct a formal analysis of alternative policy rules in the context of macroeconomic models (theoretical and applied) that are appropriate for different groups of countries, specifically with respect to the characteristics of their financial systems. This has been the main theme of the research that underlies this case study, with a focus on bank-based financial systems.

The research underpinning this impact case was initiated in 2007 at UoM, and has been coproduced with Williams College, the World Bank, the Central Bank of Brazil and the Central Bank of Turkey. The key researcher at UoM is Pierre-Richard Agénor, Hallsworth Professor of International Macroeconomics and Development Economics since (2004-date), and co-Director of the University's Centre for Growth and Business Cycle Research. One of his co-authors, Dr. K. Alper, was his PhD student at Manchester when the research agenda was initiated.

The aim of the research was, and continues to be, to develop small theoretical models and more detailed quantitative macroeconomic models (for both closed and open economies), to allow central banks to determine how and to what extent they should combine monetary policy and macroprudential tools to promote macroeconomic and financial stability. The culmination point of this agenda is the completion of a position paper, "Inflation Targeting and Financial Stability…" [B], which will be issued by a major multilateral institution, and in which a new regime for monetary policy – Integrated Inflation Targeting (IIT) – is proposed for middle-income countries. IIT is defined as a flexible inflation targeting (IT) regime in which:

- The central bank holds an explicit financial stability mandate.
- The policy interest rate responds directly (possibly in a state-contingent fashion) to excessively rapid credit growth.
- Monetary and macroprudential policies are calibrated *jointly* to achieve macroeconomic and financial stability.

More specifically, the research has helped to improve understanding in three areas:

I. The monetary transmission mechanism in a bank-dominated financial system [A][C].
II. How different bank capital regulatory regimes (including the new *Basel III* regime) affect the transmission of policy and exogenous shocks to inflation, economic activity and financial variables, and how, in turn, fluctuations in these variables affect macroeconomic and financial stability [A][D][E].

III. The extent to, and the conditions under, which monetary policy and macroprudential regulation are complements or substitutes in achieving macroeconomic and financial stability, and the extent to which these objectives should be integrated in a new monetary policy regime, dubbed 'Integrated Inflation Targeting' (ITT) [A][B][E][F].

**What is original and distinctive about the research is that it focuses on the types of financial systems and credit market imperfections that are pervasive in middle-income countries.** It therefore aimed at the outset to build cutting-edge models that are relevant for that group of countries.

As there are very few groups of researchers engaged in this activity, this line of research has received immediate international exposure, aided to a significant extent by the fact that one of the co-authors is a senior policymaker in the central bank of a major middle-income country, Brazil, which is also a member of the BRIC group of large and fast-growing emerging economies. The research outputs have been used to promote discussions among senior policymakers from these countries, and to inform their policy positions in international forums.

**3. References to the research** (all references available upon request - AUR)

The research underlying this case study has been published in a variety of professional journals, in a book contribution, and in a publication by a multilateral institution. One of these publications won a prize for best paper in finance from the *International Finance Review*. The key references in relation to the impacts below, are the following:

[A] (2013) Agénor, P.-R., Alper, K. & Pereira da Silva, L. "Capital Regulation, Monetary Policy and Financial Stability" *International Journal of Central Banking* (September) (AUR)
[B] (2013) Agénor, P.-R. & Pereira da Silva, L. 'Inflation Targeting and Financial Stability: A Perspective from the Developing World' Inter-American Development Bank/*Centro de Estudios Monetarios Latinoamericanos* (AUR)
[C] (2012) Agénor, P.-R. & Alper, K., "Monetary Shocks and Central Bank Liquidity with Credit Market Imperfections" *Oxford Economic Papers* 64(3) 563-91 doi:10.1093/oep/gpr037
[D] (2012a) Agénor, P.-R., Alper, K. & Pereira da Silva, L. "Capital Requirements and Business Cycles with Credit Market Imperfections" *Journal of Macroeconomics* 34(3) 687-705 doi:10.1016/j.jmacro.2012.02.007
[E] (2012b) Agénor, P.-R., Alper, K. & Pereira da Silva, L. "Sudden Floods, Prudential Regulation and Economic Stability in an Open Economy" *Banco Central do Brasil* Working Paper Series 267(February) Revised and submitted to *Review of Economic Dynamics* (AUR)
[F] (2012) Agénor, P.-R. & Pereira da Silva, L. "Macroeconomic Stability, Financial Stability, and Monetary Policy Rules" *International Finance* 15(2) 205-24 doi:10.1111/j.1468-2362.2012.01302.x

**4. Details of the impact**

As noted, the main theme of the research that underlies this case study has been on the extent to which central banks should use monetary policy, along with countercyclical macroprudential tools, to promote financial stability and mitigate systemic risk. Primary impacts can be noted at the Central Banks of Brazil, Turkey and Morocco.

**Pathways to Impact:** In addition to formal academic papers, the underlying research was disseminated through several policy-oriented papers [B][E]. Several outputs were also presented in seminars and conferences. These include presentations in central banks (e.g. The Bank of France, The Central Bank of Brazil, and The Central Bank of Turkey) and international organizations (European Central Bank, Bank for International Settlements, Inter-American Development Bank, OECD, World Bank). Presentations of the key policy insights were also made in specialized policy forums, including a meeting of the G20 Central Banks in Brazil, and meetings of the Financial Stability Board (FSB) and the Basel Committee on Banking Supervision (BCBS). All these presentations took place between June 2009 and December 2012. In addition, the position paper

[B] and a policy brief based on it were used as background material for a presentation at the annual meeting of central banks from Latin America, held in April 2013. Subsequently, the paper was distributed widely amongst the central banks of the G20 countries.

In January 2012 Professor Agénor held a special seminar in Brazil to discuss integration of the key analytical insights of the underlying research in the operational models used by the Central Bank of Brazil (BCB), with the bank's Governor noting that the research agenda introduced by Professor Agénor:

> "…*has been relevant at both an analytical and practical level to enrich our discussions at the Banco Central do Brazil (BCB). In particular, I would like to point out… its timeliness given the challenges posed by the global financial crisis and its aftermath for central banks and regulators… In Brazil…we had in the past and continue now to aim at achieving both macroeconomic stability and financial stability and need to refine our understanding of their interaction with macroprudential policies.*" [1]

Following his visit, a Working Group of several researchers was established at BCB to implement the work program that he outlined. Insights from the research were also used as input in the design of a new Macroprudential Regulation Department at BCB.

In further collaboration with BCB, in December 2012 Professor Agénor participated in a joint workshop organized by BCB and the Inter-American Development Bank (IADB) on 'Managing Capital Inflows in Latin America'. His presentation was based on [B], a document which combines and refines all previous research in this area undertaken by the research team.

**Reach and Significance of the Impact**

**Brazil**: As outlined, BCB has benefited directly from the research output. One of the co-authors, Dr Pereira da Silva, has been in charge of implementing a program of macroprudential regulation in Brazil, and research outputs have helped to shape the new framework, by providing key insights on how an IIT regime works – most importantly, the fact the policy interest rate must respond directly (possibly in a state-contingent fashion) to excessively rapid credit growth, and the fact that monetary and macroprudential policies are calibrated jointly to achieve macroeconomic and financial stability. Dr da Silva is also Brazil's representative in the technical meetings of the G20 and in various international forums (FSB and BCBS). Several policy papers, including a comprehensive Position Paper, have been circulated in events organized by these institutions and there is informal evidence that these papers have helped several other middle-income countries to clarify their position on specific systemic regulatory issues.

The research has also had a direct impact on policymaking at BCB, because one of the core models that it uses for day-to-day operations (to provide inputs for regular policy meetings) has begun to incorporate insights from the research conducted under the agenda described above, with the BCB governor recognising that research outputs are:

> "…*useful for us at home and also to strengthen our dialogue in a variety of international fora including the BRICS, the Group of Twenty countries (G20). They also contributed to our discussions with senior policymakers from advanced economies…* [and are] *also part of the Banco Central do Brazil (BCB) effort to sponsor Technical Assistance activities and Training Seminars involving many central banks in Latin America.*" [1]

**Turkey**: There is clear evidence that the research has proved useful for policy analysis and policy discussions at the Central Bank of Turkey (CBT). The Head of Research and Monetary Policy Department at CBT praised the research, affirming that CBT staff have "*benefited very significantly, at an analytical level, from the research work…* [and] *Professor Agénor has played a leading role in developing this agenda".* More specifically, it was noted that the research *"explicitly focused on the type of financial systems that Turkey (as well as many other middle-income countries) face… These systems tend to be bank-dominated and credit market imperfections play a critical role in their functioning. Developing models that adequately capture these structural* *features are essential if these models have to be useful guides for policy*" [2]

**Morocco**: Similarly, as the former Director, Economics and International Relations at the Central Bank of Morocco (BAM) notes, the research *"has proved extremely important for BAM because it is explicitly focused on the type of financial systems that Morocco operates… analytical work led by Professor Agénor has helped to improve significantly our understanding of the monetary transmission mechanism in a bank-dominated financial system."* Again, it is noted that the development of models that adequately capture the structural features of such economies is necessary for policy impact. Accordingly, Agénor's work on the transmission mechanism with imperfect credit markets has served as a key input for the specification of a particular forecasting model (specifically, a VARX model), which "*continues to be used to this day by BAM staff to establish quarterly macroeconomic forecasts and conduct policy analysis, with results published regularly in BAM's Inflation Report and in background policy documents prepared for regular meetings of BAM's Monetary Policy committee*" [3].

**Additional Impact**: The research has also benefited international institutions, including the International Monetary Fund (IMF) and the World Bank. A recent IMF executive board paper references the work of Agénor and colleagues on 'Sudden Floods' [E], noting that: *"In open economies, financial shocks can originate abroad and, more importantly, lead to an appreciation of the domestic currency. While this limits inflation, when banks have foreign liabilities, it leads to financial amplification by strengthening banks' balance sheets, causing credit to expand. As a result, macroprudential policy needs to react more and monetary policy less, but the interplay between the two does not change markedly"* [4].

Similarly, a policy paper by the Vice President of the World Bank also dwells extensively on this research, noting that: *"One important message emerging from this discussion is that monetary policy and regulation are complementary instruments aiming at macroeconomic and financial stability. A prudent approach should try to avoid 'corner solutions', that is, putting the entire weight of ensuring price and financial stability on only one instrument… Agénor, Alper, and Pereira da Silva… develop a general equilibrium framework for analyzing this issue"* [5].

**5. Sources to corroborate the impact** (all claims referenced in the text)

[1] Testimonial from Governor, Central Bank of Brazil (28th June 2013)
[2] Testimonial from Head of Research & Monetary Policy Department, Central Bank of Turkey (4th July 2013)
[3] Testimonial from (former) Director, Economics and International Relations, Central Bank of Morocco (26th June 2013)
[4] (2013) International Monetary Fund Board Paper 'The Interaction of Monetary and Macroprudential Policies: Executive Summary – Approved By Olivier Blanchard and José Viñals' (29th January) p. 12
[5] (2011) Canuto, Otaviano "How Complementary Are Prudential Regulation and Monetary Policy?" The World Bank, Poverty Reduction and Economic Management (PREM) Network (Number 60: June) pp. 4, 6