Section A		
Institution: The University of Manchester		
Unit of Assessment: 16 (Economics)		
Title of case study: Building analytical capacity, informing monetary and macroprudential policy, and strengthening policy frameworks in central banks in Middle Income Countries		
Period when the underpinning research was undertaken: 2011 - 2019		
Details of staff conducting the underpinning research from the submitting unit:		
Names:	**Role(s) (e.g. job title):**	**Period(s) employed by submitting HEI:**
Pierre-Richard Agénor Kyriakos Neanidis	Hallsworth Professor Reader	2011 - 2020 2004 - 2020
Period when the claimed impact occurred: August 2013 - August 2020		
Is this case study continued from a case study submitted in 2014? No		

Section B

1. Summary of the impact

Research led by Prof. Agénor at the University of Manchester on the interactions between monetary and macroprudential policies since the global financial crisis (GFC), and the extent to which these policies should be combined to promote macroeconomic and financial stability in middle-income countries (MICs), has had a significant impact on central banks in these countries, and several international financial institutions, by:

- Building analytical capacity within central banking institutions in MICs and providing a better understanding of key aspects of the transmission mechanisms of monetary and macroprudential policies, and how these policies interact;
- Improving the operational macroeconomic models that several MIC central banks use for policy analysis and policy advice;
- Influencing the agenda of central banks and international institutions with respect to rethinking the design of macroeconomic policy frameworks, especially as it relates to institutional policy delegation and the combination of monetary and macroprudential policies with other short-term instruments of macroeconomic management.

2. Underpinning research

Research underpinning this case study was led by Prof. Agénor and has focused on the development of theoretical and quantitative macroeconomic models to study how monetary and macroprudential policies interact in an environment where frictions in financial markets are pervasive, and how these policies should be combined to promote macroeconomic and financial stability. Research was undertaken in direct collaboration with several central banks (Brazil, Morocco, and Turkey), a leading international financial institution (the Bank for International Settlements, BIS), and the Financial Stability and Development (FSD) Group – a research network established by major Latin American central banks. One of Agénor's main collaborators, Dr L. Pereira da Silva, was initially Deputy Governor of the Central Bank of Brazil and is currently Deputy General Manager of the BIS. Another close collaborator, Dr K. Alper, was a PhD student at Manchester when the research agenda was initiated.

The underpinning research focused on (a) previously unaddressed modelling issues related to the transmission mechanisms of monetary and macroprudential policies, and interactions between these policies ([1], [2], [3], [4] and [6]); and (b) specific policy challenges facing MICs, such as building and maintaining credibility [5], and managing large capital inflows ([1], [2], [6] and [7]). It has provided a range of technical contributions (summarized in [1] for the most part) related to the specification of financial frictions, the performance of monetary and macroprudential policy rules in macroeconomic models, and how these models should be used to calibrate joint policy responses. In addition, it has brought new understanding of the post-GFC design of macroeconomic policy frameworks in MICs, concerning institutional reforms pertaining to policy delegation, and the integration of monetary and macroprudential policies with other instruments of macroeconomic management.

The research shows that to achieve macroeconomic and financial stability, monetary and countercyclical macroprudential policies are largely complementary – even though there are conditions under which they can be in conflict in terms of their respective objectives. At the same time, under some circumstances, monetary policy may need to be more proactive and address directly systemic risks to the financial system through changes in interest rates. Given the difficulty of establishing and maintaining policy credibility in MICs, this means that institutional reforms aimed at delegating a contingent but explicit financial stability mandate to the central bank may be necessary ([1], [5]).

In addition, the fundamental complementarity between monetary and countercyclical macroprudential policies implies that greater coordination between central banks and regulators is crucial. These policies should be calibrated jointly to achieve macroeconomic and financial stability, using macroeconomic models that account for the pervasive frictions that characterize financial markets in MICs. Coordination helps to internalize trade-offs and can generate significant gains, compared to non-cooperation ([1], [3], [4], [6]). In practice, this means that Monetary Policy Committees and Financial Stability Committees (which often operate with different time horizons and objectives) should collaborate more closely to ensure timely decisions and avoid short-run policy conflicts.

These insights led to a thorough re-examination of a widely used macroeconomic policy framework in MICs – and in some advanced economies – inflation targeting (IT). While IT has performed relatively well in these countries, in the post-GFC world it has proved to be in need of serious rethinking. To highlight the operational implications of the complementarity between monetary and macroprudential policies for policy delegation, and their links with other policy instruments (such as foreign exchange intervention and capital controls), a new policy framework, *integrated inflation targeting* (IIT), was proposed ([5]). This proposal is the third major insight from the underpinning research.

3. References to the research

[1] **Agénor, P.R**., Monetary Policy and Macroprudential Regulation with Financial Frictions, MIT Press (Cambridge, Mass.: 2020). ISBN: 9780262044226.

[2] **Agénor, P.R**., K. Alper, and L. Pereira da Silva, “Sudden Floods, Macroprudential Regulation and Stability in an Open Economy,” Journal of International Money and Finance, 48 (November 2014), 68-100. https://doi.org/10.1016/j.jimonfin.2014.07.007

[3] **Agénor, P.R**., K. Alper, and L. Pereira da Silva, “External Shocks, Financial Volatility and Reserve Requirements in an Open Economy,” Journal of International Money and Finance, 83 (May 2018), 23-43. https://doi.org/10.1016/j.jimonfin.2018.01.003

[4] **Agénor, P.R**., and L. Pereira da Silva, "Cyclically Adjusted Provisions and Financial Stability," Journal of Financial Stability, 28 (February 2017), 143-62. https://doi.org/10.1016/j.jfs.2016.12.009

[5] **Agénor, P.R.,** and L. Pereira da Silva, Integrated Inflation Targeting (Basel: 2019).

[6] **Agénor, P.R**., and R. Zilberman, "Loan Loss Provisioning Rules, Procyclicality, and Financial Volatility," Journal of Banking and Finance, 61 (December 2015), 301-15. http://dx.doi.org/10.1016/j.jbankfin.2015.08.035

[7] **Neanidis, K.** (2019). ‘Volatile capital flows and economic growth: the role of banking supervision’, *Journal of Financial Stability*, 40, 77-93. https://doi.org/10.1016/j.jfs.2018.05.002

Related grants: “Financial Volatility, Macroprudential Regulation and Economic Growth in Low-Income Countries”, £289,698 [Agénor (PI), Neanidis (Co-PI], ESRC-DfID Growth Research Programme, ES/L012022/1, awarded to University of Manchester (Lead Research Organisation) and Central Bank of West African States (Collaborator), Sept 2014 – August 2017.

Evidence of Research Quality: Five of the research outputs were published in international peer-reviewed journals in the fields of banking, finance and international macroeconomics. Reference [1] was published by a world-leading academic publishing house (MIT Press). Reference [5] was aimed at policymakers, published online by the BIS and has been widely circulated among policymakers and served as the basis for advanced training.

4. Details of the impact

Evidence of impact relates to the three dimensions in which the research has produced new results and insights: (i) improved understanding of key aspects of the transmission mechanisms of monetary and macroprudential policies, and how these policies interact; (ii) practical guidance and training for, central bank economists in MICs on the specification of macroeconomic models aimed at integrating financial frictions and regulatory regimes, and how countercyclical monetary and macroprudential policies should be calibrated to promote stability; and (iii) the design of macroeconomic policy frameworks in the post-GFC world, especially as it relates to institutional policy delegation and the combination of short-term policy instruments.

The impact described under (i) and (ii) was achieved through training activities, which covered both theoretical and practical modelling aspects related to monetary and macroprudential policies. With the support of the FSD Group, Agénor provided training, based on the academic contributions mentioned earlier, to central bank researchers in Latin America; regional events were held in Colombia and Brazil ([A]). Similar events were held for staff at the Central Bank of Morocco ([C]). In addition, Agénor was invited by the IMF to provide training to its economists based on contribution [5]. Regional conferences organized by the FSD Group also helped to promote these dimensions of impact by encouraging knowledge sharing among researchers in Latin America ([A]). A large ESRC-DfID funded project, “Financial Volatility, Macroprudential Regulation and Economic Growth in Low-Income Countries”, led by Prof Agénor (Principal Investigator) and Dr Neanidis (Lead Co-Investigator) also provided extensive training and advice. A key partner in this project was the Financial Stability Department of Western Africa’s common central bank (BCEAO). Through this project, Neanidis provided specialized training to staff of BCEAO’s Financial Stability Department in Senegal [D]. The final meeting of this collaboration was attended by 60+ researchers from African central banks and included onsite specialized training on macroprudential regulation, and on the econometric methods used in some of the project’s papers, as well as on the use of the national and international datasets and relevant computer code prepared in the context of that research.

The impact described under (iii) was achieved through participation by Agénor and some of his collaborators in high-level policy-oriented seminars and conferences, during which the research material underlying [5], and [5] itself, was presented. These activities, which all took place between 2011 and 2020, include presentations in central banks (specifically, the Central Bank of the Argentine Republic, the Central Bank of Brazil, the Central Bank of Turkey, and the Central Bank of Uruguay), at international organizations (the European Central Bank, BIS, Inter-American Development Bank, IMF, OECD, World Bank), meetings of the G20 Central Banks, the Financial Stability Board (FSB), the Basel Committee on Banking Supervision (BCBS), the 2018 IMF-World Bank Annual Meetings, and the 2019 Meeting of the Chief Economists of Central Banks and Ministries of Finance of Latin America, amongst other venues.

i) Building a better understanding of key aspects of the transmission mechanisms of monetary and macroprudential policies in MICs, and how these policies interact

The research findings have helped to build a better understanding of a range of issues associated with the transmission mechanism of monetary policy in the presence of financial frictions, including (i) the process through which specific macroprudential instruments (especially capital requirements, required reserves, and taxes on foreign borrowing) are transmitted to the economy; (ii) the interactions between monetary and macroprudential policies; (iii) the need to coordinate and jointly calibrate numerically these policies; and (iv) the reasons why integrated macroeconomic policy frameworks are needed to promote economic stability. As evidenced in the testimonials, these findings had direct impact on the central banks of several MICs, as well as a prominent regional financial institution, namely, the BCEAO. The Director of Research at the Central Bank of Brazil, for instance, states that Agénor's research papers [2] and [3] showed *"that countercyclical macroprudential policies, in the form of adjustments in required reserves, capital buffers, or restrictions on bank foreign borrowing, could play a significant role in promoting macroeconomic and financial stability. These insights have played an important role in the way BCB staff think about the combination of monetary and macroprudential policies and the design of the BCB's new macroprudential stability department"* [B].

Other central banks in Latin America have also found the research to be *"highly beneficial in terms of understanding the importance of combining instruments, especially macroprudential tools among themselves, to promote macroeconomic and financial stability"* [A]. The Director of Research at the Central Bank of Morocco notes that *"research on excess liquidity… has helped to understand and study the implications of interest rate policy and changes in reserve requirements on bank liquidity and macroeconomic stability"* [C]. The former Director of BCEAO's Financial Stability Department states that the research helped its staff *"better understand the need for policy coordination – not only among macroprudential instruments themselves, but also between macroprudential and monetary policies"* and *"has been critical in determining the set of tools that we should consider in our macroprudential policy framework"* [D]. The Director of Research at the Central Bank of Turkey states that *"insights [from the research] have helped us to recognize the importance of combining monetary and countercyclical macroprudential policies"* [E]. Finally, official publications by the BIS and the IMF refer specifically to the policy prescriptions detailed in [5] stating that "*there are good arguments for including both macroprudential measures and FX intervention as part of an integrated macro-financial stability framework*" [F].

ii) Improving the operational macroeconomic models that central banks use for policy analysis and policy advice

The underpinning research has helped central banks to improve the operational macroeconomic models that are used for policy analysis and to provide policy advice to senior decision makers in their institutions. The specific technical contributions that have been referred to in the testimonials relate to: the incorporation of financial frictions (Morocco [C], Turkey [E]); the introduction of specific macroprudential policy instruments and their transmission channels (FSD Group [A], Morocco [C], BCEAO [D]); and interactions between these instruments and monetary policy (FSD Group [A], Brazil [B]). For instance, the Central Bank of Turkey has incorporated several technical contributions (discussed in [2] and [3]) focusing on combining monetary and countercyclical macroprudential policies in the operational models that it uses to *"provide advice to senior management"* [E]. As stated by the Director of Research of the Central Bank of Morocco, the work on the transmission mechanism of monetary policy with financial frictions has served as a *"direct analytical underpinning"* for the specification of the VAR-X forecasting model that the institution uses *"to establish quarterly macroeconomic forecasts and conduct policy analysis… Results have been published regularly in [the institution's] Monetary Policy Report and used in background policy documents prepared for meetings of the… Monetary Policy Committee"* [C]. In addition, as noted by the former Manager of the FSD Group, the research findings on the performance of reserve requirements and dynamic provisions, two instruments that are widely used in Latin America ([1], [3], [4], [6]), *"have helped several central banks in the region in their effort to rethink and redesign their policy-oriented macroeconomic models in a* *context where both macroeconomic and financial stability matter"* including Chile and Colombia ([A]).

iii) Improving the design of macroeconomic policy frameworks

At a broader level, the research has contributed to the international debate on how macroeconomic policy frameworks should be designed in the post-GFC world in order to promote macroeconomic and financial stability. As stated by the BIS Deputy General Manager, the proposal presented in [4], which highlights the importance of policy combinations – involving not only monetary and macroprudential policies but also other short-term instruments of macroeconomic management, such as foreign exchange intervention and capital controls – is viewed as *"influential in the field"* and important for its *"ongoing work on how monetary policy frameworks, and macroeconomic policy frameworks in general, should be re-evaluated and thought over in the aftermath of the global financial crisis."* He also states that it will *"significantly help the BIS to promote… the analytical and policy debate on the design and performance of monetary policy frameworks, and [to] provide sound policy advice to its members"* [G]. The Director General of the Research and Training Centre for Banking Studies (COFEB) at BCEAO has stated that the underlying research has *"has helped us at a practical level to rethink and redesign our macroprudential regulatory framework",* with particular consideration given to *"the role of dynamic loan loss provisions"* [D]. Meanwhile, the national central banks of Morocco and Brazil have drawn on the underpinning research in [5] to redesign respectively *"their monetary policy framework"* [C], and their *"overall macroeconomic policy framework"* [B].

5. Sources to corroborate the impact

[A] Testimonial from former Manager, Financial Stability and Development Group (currently Director of Research, Central Bank of Chile). 21.9.20
[B] Testimonial from Director of Research, Central Bank of Brazil, 18.9.20
[C] Testimonial from Director of Research, Central Bank of Morocco, 10.9.20
[D] Testimonial from former Director of Financial Stability Department, BCEAO, 22.9.20
[E] Testimonial from Director of Research, Central Bank of Turkey, 14.9.20
[F] Evidence of written policy reports by BIS and the IMF, including lecture by BIS General Manager at the London School of Economics, https://www.bis.org/speeches/sp190502.htm and IMF Staff Discussion note. See Appendices 1 and 2.
[G]Testimonial from Deputy General Manager, Bank for International Settlements, 16.9.20