

# Macroprudential Policies and the Lucas Critique<sup>1</sup>

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The experience of recent years has reinforced the view that the financial system tends to amplify shocks over the cycle, leading to excessive lending in boom times and sharp contractions when economic conditions deteriorate. Common explanations for this are based on the fact that the players in the financial system are typically subject to constraints that tend to exacerbate shocks, such as borrowing constraints that fluctuate with asset prices, risk-sensitive capital requirements or remuneration schemes based on relative performance.

Importantly, research has also identified several externalities that are at play. In particular, individual agents subject to borrowing constraints do not internalise that forced liquidations can impose negative effects on other players in the system. This can cause them to take more risk than is warranted for the social point of view, and lead to excessive fluctuations in the economy (eg Korinek, 2011). The presence of this, and other externalities, implies that a financial system that is not governed by appropriate systemic policies will not operate efficiently. There is hence a strong rationale for macroprudential policies.

Based on the experience of violent crises in the past years and the strong theoretical backing, there has been a significant interest in designing macroprudential policies that limit fluctuations in the financial system:

- The new Basel Accord incorporates capital buffers that are built up in good times and can be run down when economic conditions deteriorate.
- The liquidity coverage ratio of Basel III – which aims at safeguarding banks against short-term outflows – contains a countercyclical element to the extent that such liquidity buffers are released in bad times.
- On the accounting side, there is a discussion about whether mark-to-market accounting – which has the potential to amplify the impact of asset price changes – should be suspended when prices are depressed.

There is also a growing debate about whether monetary policy should "lean against the wind" with respect to the financial cycle, that is, whether the central bank should raise interest rates when the economy experiences excessive credit expansion and asset price inflation, but lower interest rates in times of significant contraction in lending or general stress in the financial system.

However, it is also well known that the financial system tends to react to new policies in surprising – and often undesirable – ways. This insight is essentially an application of the Lucas critique in economics; in banking circles referred to as

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Goodhart's Law. The Lucas Critique provides a cautionary background for the implementation of new policies. Rational agents tend to anticipate the consequences of new policies and may adopt their behaviour in ways that affect the effectiveness of policies. New financial regulation, which is moving from a microprudential to a macroprudential view of the world, is based on our experiences with past crisis episodes and is in essence backward-looking. It may hence lead to unexpected outcomes when financial intermediaries change their behaviour in response to a modified financial architecture.

The typical regulatory cycle looks as follows. An unwanted behaviour in the financial system is observed and this is attributed to a market failure. Policymakers devise a policy that specifically targets this failure. Upon implementation it is then discovered that the policy does not work. This is because financial institutions circumvent the spirit of the policy by shifting into economically equivalent activities that are not affected by regulation. In addition, the responses of market participants often lead to undesirable outcomes in other parts of the financial system.<sup>4</sup> The apparent failure of regulation in turn leads to a series of new and increasingly complex measures, which by themselves bring about further unintended consequences.

The lessons from the past, however, seem to have been largely forgotten when it comes to the design of new policies. So far little thought has been given as to how the financial system will react to these new measures. The experiences with previous policies should make us very cautious in this regard. On the face of it, we would expect the potential for adverse side effects to be significantly larger for system-based regulation. This is because such regulation is inherently more complex than traditional regulation that was focused on individual institutions only. The difficulty of properly predicting the impact of a policy rises with its complexity. High complexity also provides ample opportunities for financial institutions to sidestep new regulation.

In this paper we will discuss three areas in which countercyclical policies are likely to have effects outside their intended realm.

## 1. Systemic risk-taking

Countercyclical policies cannot be separated from a second dimension of the systemic risk: the extent to which institutions in the financial system are correlated with each other. Such correlation can arise through various channels: herding in investment activities, the use of common funding sources, interconnectedness through interbank linkages, but also because of convergence of risk management practices and trading strategies.

In particular, Horváth and Wagner (2015) have shown that countercyclical policies have the potential to increase cross-sectional risk. The intuition is simple. Under countercyclical capital requirements, banks are subjected to relatively higher requirements when the economy is doing well but to lower requirements in bad times. Such requirements hence insulate banks from economy-wide fluctuations as

<sup>4</sup> For instance, tight regulation in the core banking system can cause a build-up of risk in the less regulated shadow banking system.

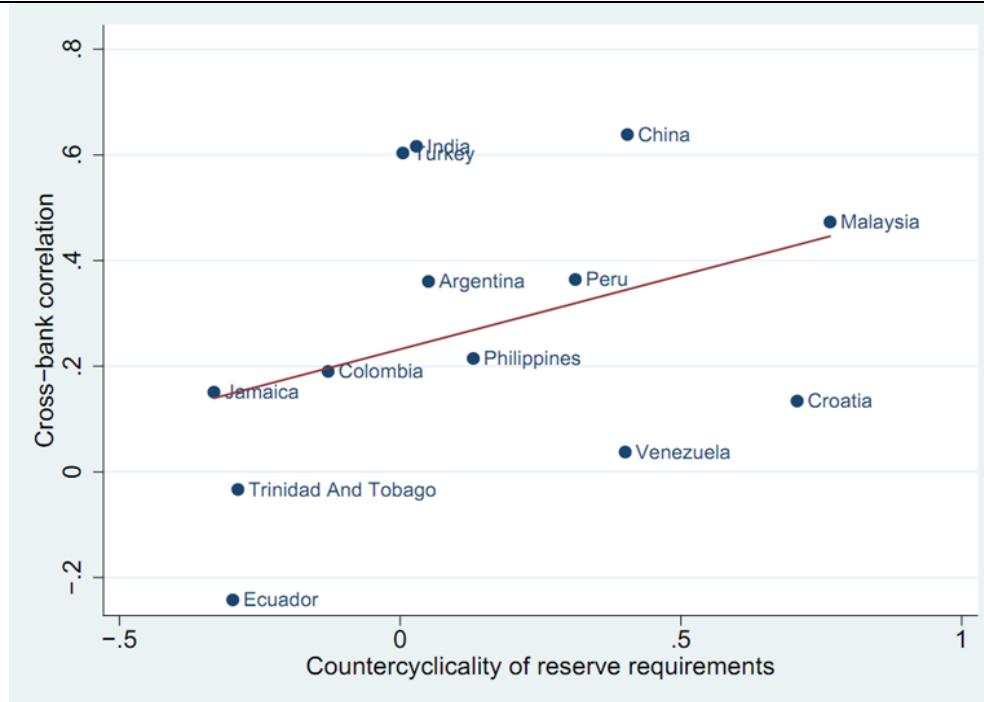
they require more capital only when capital is generally abundant and less capital when it is costly to raise it. However, they do not insulate banks from fluctuations in bank-specific, idiosyncratic, conditions. In particular, a bank that focuses more on idiosyncratic exposures runs the risk that it will experience stress at a time when other banks are doing well. In this case the bank would be subject to high capital requirements when it is most costly. The consequence is that countercyclical policies increase the incentives for banks to correlate with each other. Systemic risk may thus increase, rather than fall.

There is some evidence for this mechanism being at play coming from developing countries. While, with the exception of Spain, capital requirements have not been consistently used for macroprudential purposes, Federico et al (2012) show that developing countries have made active use of reserve requirements over the business cycle. Defining countercyclical as the correlation of reserve requirements with GDP, Federico et al (2012) find that the majority of these countries used reserve requirements in a countercyclical fashion.

Figure 1 plots their measure of countercyclical against the average pair-wise correlation of banks in the respective countries. This figure shows a positive relationship between countercyclical and bank correlation:

Countercyclical of reserve requirements and cross-bank correlation

Figure 1



Note: Countercyclical of reserve requirements is the correlation between the cyclical component of reserve requirements and real GDP. Cross-bank correlation is the average pair-wise correlation of banks using weekly stock returns from September 2011 to September 2012.

Source: Federico et al (2012).

How could regulation respond to this problem? An alternative to countercyclical buffers is to incentivise banks to become less correlated. For example, regulators can

impose higher capital requirements for systemic banks.<sup>5</sup> The analysis in Horváth and Wagner (2015) shows that such a policy would dominate countercyclical buffers in the presence of incentive problems. This is because it addresses two dimensions of systemic risk at the same time. First, it discourages correlation among banks. Second, by doing so it makes the system less procyclical as more heterogeneous institutions will respond less strongly to aggregate shocks. In contrast – as argued before – countercyclical policies improve systemic risk along one dimension at the potential cost of worsening it along another.

## 2. Incentives of regulators

It is well known that financial regulation suffers from a time inconsistency problem, similar to the one arising for monetary policy. Ex-ante, regulators have an interest to be tough in order to limit risk-taking in the financial system. However, ex-post regulators are likely to bail out financial institutions in order to safeguard the stability of the financial system. This time inconsistency problem is arguably a major source of risk-taking in the financial system.<sup>6</sup>

Microprudential capital regulation was not prone to this problem because it was rule-based. Regulators could not easily deviate from the Basel standards in a discretionary fashion and hence there was little pressure to adjust capital requirements in the advent of shocks. This will all change with Basel III, which introduces an important discretionary element. Basel III contains guidelines for when countercyclical buffers should be invoked, but the ultimate decision is left to the regulators. To be sure, they are good reasons for this. In contrast to monetary cycles, it is more difficult to quantify credit cycles. It is hence important to leave significant room to regulators as to when to implement countercyclical policies.

However, this discretion introduces a significant time inconsistency problem. Ex-post, regulators will always have incentives to reduce the impact of negative shocks on the financial system. They are thus likely to allow banks to run down capital buffers in downturns. The opposite is not likely to happen following positive shocks. Pressure from the financial industry and politicians will make it difficult for regulators to impose additional capital when excesses start to materialise. The problem is compounded by the fact that it is nearly impossible to accurately measure when a boom becomes excessive. It will hence be difficult to hold regulators accountable for their decisions.

Ex-post, regulators will thus have a tendency to be lenient in their countercyclical policies. This is likely to create ex-ante moral hazard, in a way similar to bail-out expectations. Because of this, endowing regulators with a countercyclical tool can easily reduce welfare in the financial system (Wagner, 2015).

<sup>5</sup> For this, systemic risk can be quantified using measures such as the CoVar (Adrian and Brunnermeier, 2011) or the Systemic Expected Shortfall (Acharya et al, 2012).

<sup>6</sup> See Acharya and Yorulmazer (2007) and Farhi and Tirole (2012) for analyses of time inconsistency leading to systemic risk on the asset and liability side, respectively.

### 3. Endogenous booms

This area is, in our view, the most important one but also the one least understood.

Basel III views booms and busts as discrete and exogenous events. Buffers are implemented when an excessive boom (by some measure) materialises, while buffers can be released if there is a sufficiently severe downturn.

Cycles, however, develop over time. The response to a shock can initially be small but may be amplified later on. More importantly, cycles are to a large extent endogenous – they are not simply driven by a series of fundamental shocks. In particular, the literature on the nexus between finance and macroeconomics has emphasised that there are various feedback and amplification mechanisms that can lead to the endogenous build-up of a boom.<sup>7</sup>

The endogenous nature of booms has immediate consequences for macroprudential policies. First, anticipation of higher capital requirements if a boom turns excessive may prevent the boom from ever reaching the excessive stage in the first place. Many feedback mechanisms rely on intertemporal amplification, that is, on the knowledge that the impact of a shock is magnified over time. From theoretical studies on bubbles, for example, it is known that in order for bubbles to exist, it is crucial that there is the possibility that the bubble can go on forever. The presence of a regulator who is committed to pricking the bubble when it reaches a certain size may prevent the formation of bubbles. Capital surcharges imposed in boom times will hence have implications for bank behavior in normal times, which in turn will affect the likelihood and severity of booms.

Second, policies in pre-boom times matter as well. For instance, a policy that gradually increases capital requirements as the boom forms may stop the boom from ever becoming excessive. Discrete buffers akin to Basel III may then never have to be invoked.

### Conclusions

Current regulatory initiatives are making important strides towards reducing fluctuations arising from systemic risk in the financial system. Based on a static backward-looking view of the economy, these policies address clear externalities that have been identified in prior research and hence should lead to higher welfare. However, agents in the financial system are likely to adapt to new regulation, and sometimes in ways that render the original policies ineffective. To avoid this, regulators should pay more attention to the dynamic implications of new macroprudential instruments.

<sup>7</sup> See, for instance, Kiyotaki and Moore (1997).

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