



“Procyclicality: what it means and what could be done”

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It is a great pleasure and privilege to be in Madrid for this conference hosted by the Bank of Spain and the Financial Stability Institute. I would like to present a few remarks on procyclicality, what it means, what role it played in the current crisis and which policy options are available to mitigate its amplitude and impact on financial systems.

What is procyclicality?

Strictly speaking, procyclicality refers to the tendency of financial variables to fluctuate around a trend during the economic cycle. Increased procyclicality thus simply means fluctuations with broader amplitude.

Such a simple description seldom fits the behaviour of financial systems in real life. More likely, following a shock, the path of asset prices and evolution of financial aggregates will display various and highly irregular forms of volatility, with possible non linearities and discontinuities (a good example being liquidity freezes). These are characteristic features of complex systems. "Once such a system is destabilized, it moves away from the linear regime and experience non linear behaviour such as path dependence...sustained oscillations...and regime shifts"¹.

Indeed, financial systems can be seen as complex systems². They are based on interdependence between multiple actors and counterparties. Transmissions occur through networks whose structure and architecture is constantly changing through financial innovation and regulatory arbitrage. Also, financial systems are "human" systems. Their behaviour is shaped by the way human beings react to shocks in their environment.

¹ Quote from FRBNY Economic Policy Review Issue on Systemic Risk (November 2007, page 26)

² See Haldane (2009)

Herd behaviour has long been known to be an essential feature of financial markets. More subtly, individual reactions, by themselves rational, can, by the virtue of their mutual interaction, produce strong amplification effects³.

A broader definition of procyclicality would thus encompass three components, which cannot easily be distinguished in real life: (1) fluctuations around the trend (2) changes in the trend itself and (3) possible cumulative deviations from equilibrium value. This points to the policy challenges regulators face. They have to try and identify when pure cyclical fluctuations morph into something different: either a change in the trend itself or the start of a cumulative process.

A good operational approach to procyclicality would look at all amplification mechanisms which provoke (or allow) the financial system to deviate durably or permanently from its predetermined path so that the trend itself may be affected in the short or medium run.

What are the mechanisms at work?

Analytically, it is useful to distinguish between procyclicality of capital and procyclicality of leverage.

Procyclicality of capital is easy to understand. When conditions are good, financial institutions are profitable and their strong capital base allows them to take larger positions in the markets. This mechanism has been amplified by mark to market accounting⁴. In a mark to market environment, an increase, for instance, in asset prices quickly translates into stronger capital for financial institutions. This, in turn, triggers additional demand for assets and a further increase in their prices. This kind of "inverted demand curve", where demand increases with prices, potentially creates powerful feed back loops.

Procyclicality in leverage is more subtle. It has been shown that financial institutions' balance sheets expand and contract with the economic cycle⁵. Many different mechanisms are at work:

- First, risk management techniques: tools used to measure and value risk, such as VaR are naturally and strongly procyclical, especially when constructed with very short data series. Risk management practices hardwired to valuations (such as margin calls) strongly amplify fluctuations in leverage and may lead to fire sales and "one sided" markets.

³ This has been luminously shown by Danielsson and Shin in their seminal article on "endogenous risk", based on the now famous parable of the Millennium Bridge.

⁴ It should be noted that there is no consensus on whether accounting rules matter. According to one view, accounting is "neutral" and procyclicality in financial variables faithfully reflect an exogenous reality. An opposite view would state that accounting creates incentives, influences behaviour and, therefore, accounting rules have a significant impact on the dynamics of financial systems. The views presented here are my own.

⁵ See Adrian and Shin (2007)

- Another mechanism⁶ relates to the dynamics of short term money markets: when liquidity is perceived as abundant, there is strong incentive for dealer-brokers to engage in maturity transformation through strongly leveraged positions.
- Finally, risk appetite itself moves along the economic cycle. Animal spirits obviously play a role. Also, valuation gains and losses may encourage risk taking or trigger sharp pull-backs.

Should procyclicality be avoided?

Not necessarily:

- Financial stability is not an end by itself. It only helps if it is conducive to better macroeconomic performance. Volatility may be driven by fundamentals. Sharp movements in asset prices may help the financial system to serve as a cushion, an "absorber" for exogenous economic shocks. This is welfare improving since it avoids, or mitigates, adjustment in more rigid goods or labor markets.
- By the same token, not all procyclicality is bad. It all depends on the causal link: is the financial system the origin or the amplifier of destabilizing dynamics? Or does it simply react to cyclical evolutions in the real economy? We should only be concerned by "intrinsic procyclicality", which is created *inside* and *by* the financial system.
- Finally, cyclicity in the real economy can be beneficial to long term growth as it is one mechanism through which "creative destruction" can take place in the productive system.

Real and significant damages occur if and when financial imbalances are allowed to build for a long time with two consequences: first asset prices significantly deviate from their fundamental trend, which creates distortions in the allocation of resources; and second, those imbalances unwind suddenly and abruptly, triggering major disruptions in growth and the economic cycle. This is what is happening right now. And this closely resembles the definition of a bubble.

This clearly points to one possible mandate for macroprudential supervision that, if it were feasible, would be both pragmatic and legitimate: to avoid bubbles. Bubbles are not always triggered within the financial system. They may have roots in productivity shocks, for instance. But cyclical fluctuations cannot develop into a bubble-like process unless some amplification mechanisms are allowed to work fully in an overall permissive financial environment.

⁶ see Adrian and Shin (2008)

What role did procyclicality play in the current crisis?

During the first phase of the crisis, it was possible to take a "short term view" of procyclicality. It may have looked as if mark to market accounting, together with highly illiquid markets, generated downward spirals in asset prices and created "excessive" losses, with no relation to real underlying economic reality. Such liquidity spirals may have occurred at some critical moments⁷.

However, it now seems that the disproportion between banking losses, on the one hand, and movements in underlying asset prices, on the other, can (almost) fully be accounted for by the extraordinary degree of leverage which accumulated in the financial system over the last decade. Procyclicality was at work, but on a much longer time horizon, and during the upward phase of the credit cycle.

The following stylized facts describe what happened⁸:

- overall leverage grew strongly during the last decade
- there was an upward break in the trend growth around 2003/2004
- "inside" leverage (between financial institutions) grew faster than "outside" leverage (in the real economy)
- the growth in leverage was closely associated with a dramatic increase in maturity transformation
- risk measurement methodologies played a role in minimizing the impact of leverage in financial and risk reporting
- accounting methodologies also played a central role. Instant recognition of profits led to a disconnection in time between measuring the return on an asset and recognizing the risk; this created a powerful incentive to take risk and strongly amplified the credit cycle.

⁷ at times, CDS indices appeared mispriced with implied probabilities of default clearly inconsistent with any plausible state of the global economy

⁸ see CGFS, April 2009

Policy options

Addressing procyclicality clearly involves many policy actions. Those should be part of an integrated framework of macro prudential supervision. I will briefly deal with the general approach, then discuss the instruments available to mitigate procyclicality.

General approach

As in many matters of public policy, there is a choice between rules and discretion in dealing with procyclicality.

The rule based approach can be built on "automatic stabilizers" which would constrain institutions in their behaviour, regardless of their own individual situations. Examples would include contracyclical capital requirement, for instance, as well as dynamic provisioning.

Alternatively, discretionary action could consist in "top down" interventions from macroprudential authorities. They would step in and impose (or relax) constraints whenever they come to the conclusion that dangerous imbalances are building up (or unwinding).

We probably cannot dispense of this second approach. The difficulty to date cycles makes it dangerous to rely purely on automatic mechanisms, which cannot be precisely calibrated. Financial cycles, in particular, are driven by changes in risk appetite which are impossible to predict. Actually, one essential objective of macroprudential supervision may be to "regulate" (not in the legal sense, but economically) the aggregate level of risk appetite inside the financial system. This unavoidably involves some degree of discretionary judgement. How that judgement is made will determine the relevance and effectiveness of macroprudential supervision.

The prudential apparatus has worked in the past on the presumption that all movements in asset prices were based on fundamentals. This approach may prevent supervisors from dealing with excessive procyclicality until it is too late. The existence of bubbles, for instance, is impossible to prove until they burst. And, at least in the initial phase of a bubble, there is no lack of "fundamental" explanations for observed movements in asset prices.

It may be useful, to better deal with procyclicality in the future, to consider some rebalancing in the burden of the proof. Significant and lasting departures from past levels or trends in key asset prices, risk premia or credit aggregates should trigger a macroprudential review, with the objective of detecting amplification mechanisms at work. This seems justified when looking at the current social costs of previous hesitation.

This is also a rational course of action. One major source of procyclicality is excessive risk taking. Bubbles develop because investors have an incentive to ignore the "tail risk" that the bubble may burst. Because bubbles are mostly financed by credit, most of the risk is shifted to lenders. This asymmetry in incentives is extremely difficult to eliminate ex ante. Hence the need, for macro supervisors, to monitor closely the financial system and preserve their possibility to intervene by establishing the kind of presumption I just mentioned.

Instruments

The most important instrument in our current toolkit are capital requirements put on some financial intermediaries. Capital requirements primarily act as compulsory buffers imposed on banks and their shareholders. They also have an incentive function: to drive and limit risk taking by bank managers. So it seems natural, when addressing procyclicality, to think of countercyclical capital requirements.

However, capital requirements may not be binding when they are needed most. If assets market are booming and perceived returns are high, banks will always find the necessary capital, whatever the regulatory requirement. They will be able to both meet those requirements and distribute profits. Conversely, capital dries up during downturns, when it is most necessary⁹. There is clearly an asymmetry with strong equity outflows in boom times and no inflows in bad times. It is not clear that introducing counter cyclical capital requirements will suffice to counteract this very powerful dynamic, especially in bad times.

It may be necessary to look at other tools in order to address procyclicality and pre-empt the build up of imbalances. Those tools have to act more directly on individual and collective incentives. This is where accounting may matter most. Economically, it will always remain difficult, when looking at revenues drawn from a financial investment, to distinguish excess return from additional risk taking. But financial reporting may be conceived in such a way that this distinction is prudently introduced. There is no reasonable or practical alternative to fair value accounting for tradable securities. This does not mean, however, that any single valuation gain or loss should instantly be recognized as a profit (or loss) and financially treated as such. There is a possibility to delink valuation from income/profit recognition. Some disconnection between the valuation process – which should remain anchored on market prices – and income and profit recognition will have to be introduced, if only to account for risks which are there but have not yet materialized. Dynamic provisioning is one technique for doing so, when risks are closely related to the economic cycle. Valuation reserves may also be used when complexity or illiquidity creates additional risk linked to valuation. Provided those adjustments are rule based and made in a fully transparent process, they would not reduce the quantity or quality of information available to investors as to the real health of financial institutions.

⁹ for an analysis, see Kashyap and al. (2008)

Another avenue for research would be for the regulatory system to "force" the pricing of risk in all its dimensions. There is a clear analogy with tax theory: internalizing the risk eliminates market failures. This approach would be best implemented to liquidity risk linked to maturity transformation. Quantitative liquidity ratios are currently considered in a number of jurisdictions to be imposed on financial institutions. However, they may not protect the system against an aggregate liquidity shock, when, by definition, the demand for liquidity becomes infinite and any buffer proves insufficient. Pricing liquidity ex ante in the system would reduce the probability of such a shock and create incentives against relying too much on maturity transformation.

Admittedly, the conceptual challenges in quantifying, for instance, liquidity risk, are enormous. But we live in a world of second best, and even very approximate measures would do better than nothing at all.

Thank you.

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