P·E·F·M
POLITICAL ECONOMY OF FINANCIAL MARKETS

Policy brief

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Bring credit back into the monetary policy framework!

Michael Biggs, Deutsche Bank

Thomas Mayer, Frankfurt University and Deutsche Bank

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Introduction

With hindsight the decade before the beginning of the financial crisis in 2007 can be dubbed "The Great Illusion" instead of its popular characterization as "The Great Moderation". The relatively high growth and low economic volatility observed during this decade was not, as claimed at the time, the result of just-in-time production techniques, which seemed to abolish the inventory cycle, or the achievement of central bankers, who had conquered the business cycle by perfecting monetary policy through the concept of inflation targeting. It simply turned out to be the upswing in a great credit cycle that turned in 2007.[2] Most economists, and notably those running the big central banks, were blind to the workings of the credit cycle, because they believed in economic theories in which credit played no role of itself.

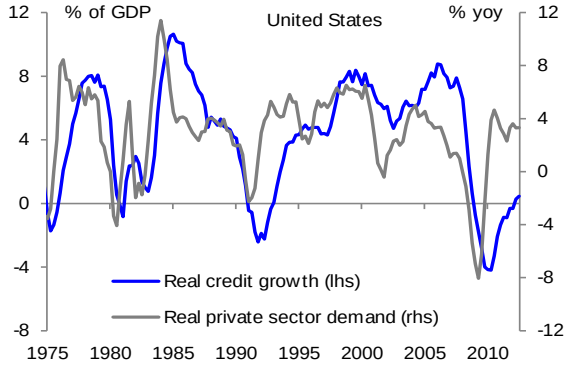
The neglect of the role of the credit in the economic cycle is partly a function of the theoretical shortcomings of current mainstream macroeconomics, but it is also in part the result of a pervasive error made by empirical macroeconomists. Since the relationship between credit and the economic cycle is poorly understood, probably because of the lack of theoretical framework, practitioners invariably commit a stock/flow error by comparing growth in credit with growth in economic activity. As a result the relationship between the two is mistakenly perceived to be weak.

We show that if properly compared, the relationship between credit and the economic cycle is strong. An implication of this result is that credit growth is an important indicator of the business cycle, and consequently that credit variables can play an important role in guiding monetary, fiscal and regulatory policy. In our view, a clear focus on credit can not only complement inflation targeting but also reach far beyond it, promising greater price and financial stability in the future.

The credit impulse framework

The neglect of the role of the credit in the economic cycle is partly a function of the theoretical shortcomings of current mainstream macroeconomics, but it is also in part the result of a pervasive error made by empirical macroeconomists. The conventional approach when analyzing credit is to compare credit growth with GDP growth or spending growth. This is a stock/flow error – growth in the stock of credit is compared with growth in the flow of GDP[3]. As a result the relationship between the two is perceived to be weak. Anyone skeptical of the role of credit could be excused, based on chart 1, for concluding the credit is poorly correlated with the economic cycle, and indeed tends to lag economic activity.

Chart 1. Credit growth and real private sector demand



Source: Deutsche Bank, BEA, US Federal Reserve

[1] This paper was prepared in connection with the Political Economy of Financial Markets Programme at the University of Oxford. The authors would like to thank Max Watson and Claudio Borio for helpful comments.
[2] See Claudio Borio, "The financial cycle and macroeconomics: What have we learnt?" BIS Working Papers No. 395
[3] Interestingly, even Borio makes this error. In Borio (2012), he argues that credit cycles are of longer duration than business cycles. This is because he compares cycles in the stock of credit with cycles in the flow of GDP. If he compared either flows with flows or stocks with stocks (using perhaps the capital stock as his economy stock measure) he would find that the cycles are of equal length.

We argue, in contrast, that a flow variable such as GDP or domestic demand should be compared to the flow of credit, or new borrowing. Spending in a particular period will depend on the new borrowing that takes place in that period (the flow of credit), and consequently spending growth (changes in the flow of spending) must depend on changes in the flow of credit rather than credit growth (changes in the stock).

To illustrate, assume GDP in year t is:

1) $GDP_t = C_t + I_t$

and

(2) $\Delta GDP_t = \Delta C_t + \Delta I_t$

where C and I are consumption and investment and Δ indicates first differences of the variables. Now assume that the investment expenditure is financed by borrowing. If debt at the start of period t is D_{t-1} and investment is financed from new borrowing, then debt will increase by the amount of the investment. In other words,

(3) $I_t = \Delta D_t$

where ΔD_t is the flow of new credit (and $\Delta D_t/D_t$ is credit growth). Consequently,

(4) $\Delta GDP_t = \Delta C_t + \Delta\Delta D_t$

The change in GDP is related to the second derivative of credit ($\Delta\Delta D_t$) rather than credit growth. We call this change in the flow of credit ($\Delta\Delta D_t$) the "credit impulse", and it is related to the **change** in credit growth. This implies that spending growth depends not on the level of credit growth, but on whether credit growth is rising or falling.

To illustrate this point, perhaps two analogies might be useful. Firstly, the real economy analog of the credit impulse is the inventory cycle. Inventories are a stock concept, and it is the change in inventories (stock-building) that enters into GDP. And because it is the change in inventories that has an impact on GDP, it is the change in the change in inventories (the change in stock-building) that has an impact on GDP growth. Inventories can be falling but, if they are falling by less this year than they did last year, inventories make a positive contribution to GDP growth.

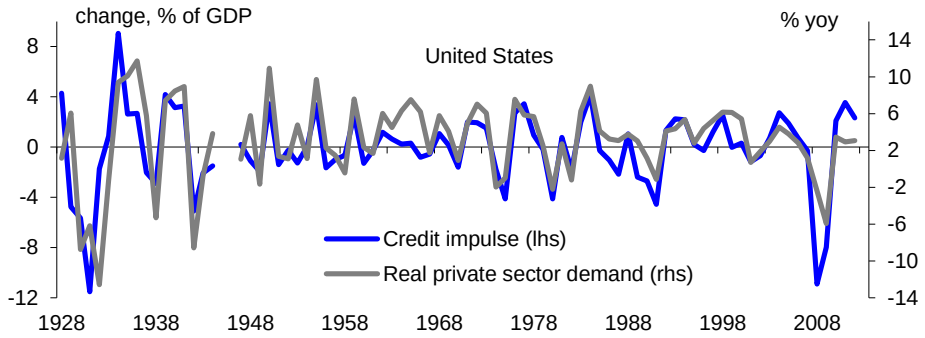
Secondly, when economists assess the impact of fiscal policy on demand growth, they look not at growth in government debt, but at the change in new government borrowing. In other words, they look at the change in the budget deficit, otherwise known as the fiscal impulse. The fiscal impulse is effectively the second derivative of government debt, and we are arguing that the impact of private sector credit on demand should be thought of in the same way. The private sector equivalent of the fiscal impulse is the credit impulse.

This has an important implication for the impact of credit on spending in general, but in particular on recoveries after credit crises. After a credit crisis all that is required for a recovery in demand growth is that new borrowing rises – it is not necessary that the level of new borrowing (and therefore credit growth) is positive. If households are de-leveraging, then a slowdown in the pace of de-leveraging will be sufficient to boost demand growth. **A credit-led rebound in domestic demand growth can occur even while credit growth is negative and debt levels fall.**

Returning to our fiscal example, assume a government was running a budget surplus of 10% of GDP, and they chose to cut taxes and boost spending so that the surplus fell to 5.0% of GDP. These tax cuts and spending hikes would boost real domestic demand growth, even as government credit growth remains negative (government is running a surplus).

As empirical support for this argument, we show the credit impulse for the US against real private sector demand growth since 1928 (chart 2). In our view the correlation is excellent. The relevance of the credit impulse rather than credit growth to demand was particularly evident in the US in 2010. Credit growth was negative in 2010 but, because credit growth was less negative than in 2009, the credit impulse was positive. As a result, real private sector demand grew 3.7%.

Chart 2. US credit impulse and real private spending growth

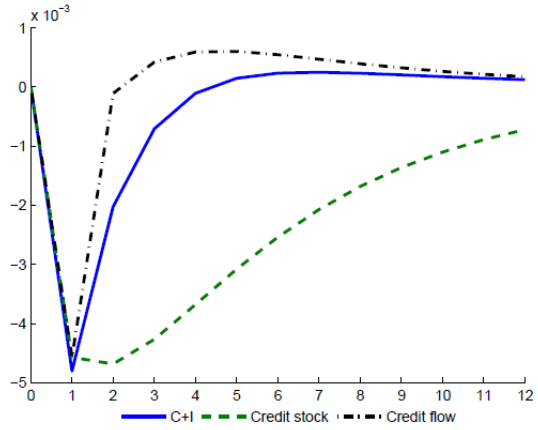


Source: Deutsche Bank, BEA, Bureau of the Census, US Federal Reserve

Interestingly, this finding is not inconsistent with New Keynesian models. The problem with modern NK models is that in general they do not allow for an interaction between credit markets and the real economy. Given that NK models allow for movements away from full equilibrium, by their nature they provide scope for changes in variables like credit and money to have at least temporary real effects. It is our conjecture that if DSGE models of the NK variety were to incorporate credit frictions, then they would inevitably show that demand growth is correlated not with credit growth but with the credit impulse.

As a case in point, Monacelli (2009)[4] introduces credit frictions into a standard New Keynesian DSGE model. In this paper Monacelli focuses on the role of durable goods in the business cycle and does not examine the implications of his model for the relationship between demand and credit. However, our credit impulse result is implicit in his model. As chart 3 shows, if the credit variable in his model is shocked, economic activity rebounds in line with the flow of credit, and not the stock.

Chart 3. Credit stock, credit flow and GDP in a DSGE model (Monacelli 2009)



Source: Biggs, Mayer and Pick (2010)

Does the mainstream really make the error of comparing credit growth with demand growth?

We claim that the conventional approach has been to compare developments in the stock of credit with developments in the flow of GDP. The risk of course is that we have built up a straw man, and that the conventional approach has not been to make the stock flow error we suggest. We produce three pieces of evidence in favour of our view.

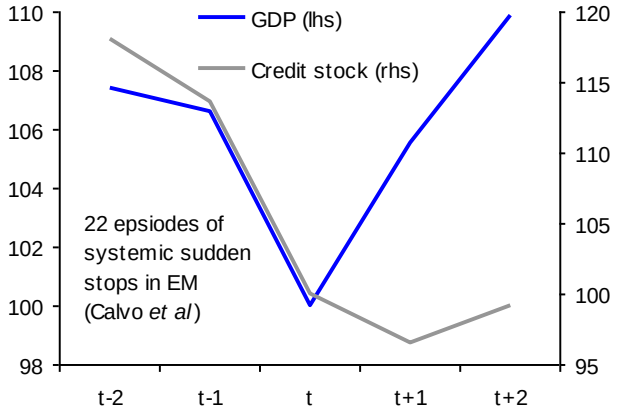
Firstly, in two influential papers, Calvo, Izquierdo and Talvi (2006a, 2006b)[5] investigate the behavior of a number of macroeconomic variables around episodes of systemic sudden stops in emerging markets. Calvo et

[4] Monacelli, T (2009), "New Keynesian models, durable goods, and collateral constraints", Journal of Monetary Economics, 56, pp. 242–254.

[5] Calvo, G. A., Izquierdo, A., and Talvi, E. (2006a), "Phoenix miracles in emerging markets: Recovering without credit from systemic financial crises", NBER Working Paper 12101

al. observe that "sudden stops" in credit to emerging economies give rise to extremely sharp contractions in economic activity. However, "post-collapse recoveries tend to be steep", and "they materialize with virtually no recovery in external or domestic credit".

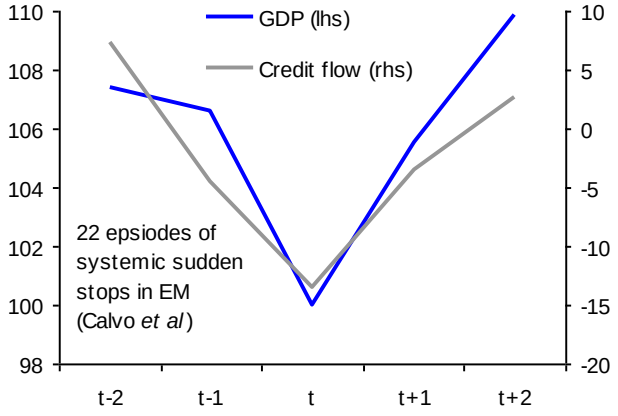
Chart 4. GDP and the stock of credit in EM economies that experience sudden stops



Source: Deutsche Bank, Calvo et al (2006)

This stylized fact is captured in Chart 4, which shows the average developments in GDP and credit for 22 EM economies that suffered a sudden stop in credit. It is clear that while the stock of credit decreases in line with the level of GDP during the onset of a systemic crisis, it does not recover as GDP recovers. This led Calvo et al. to suggest that these recoveries were credit-less, and to term recoveries of this sort a "Phoenix Miracle", with output appearing to "rise from the ashes".

Chart 5. GDP and credit flows in EM economies that experience sudden stops



Source: Deutsche Bank, Calvo et al (2006)

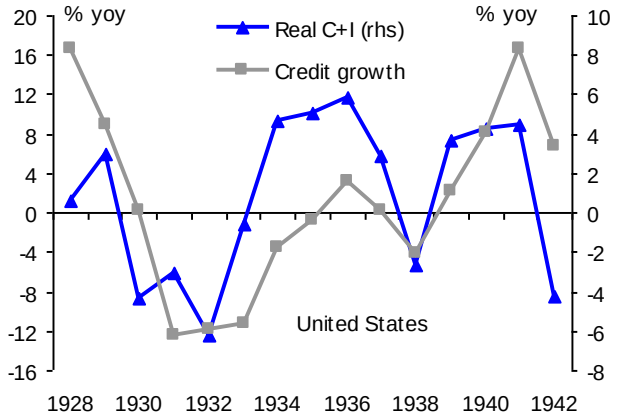
In our view, the "Phoenix Miracle" is a miracle only by construction, and arises because Calvo et al. have made the error of comparing developments in the flow of GDP with developments in the stock of credit. As we argued earlier, the appropriate comparison would be between the flow of GDP and the flow of credit. This comparison (calculated from exactly the same data) is shown in Chart 5. The rebound in GDP in period t+1 is perfectly consistent with the rebound in the flow of credit, even if the stock of credit continued to decline.

Calvo et al. (2006a, 2006b) also compare the behaviour of credit in the crises in emerging market economies to that of the U.S. during the Great Depression. They plot U.S. GDP against the level of credit during the 1930s, and show that GDP recovered without any apparent rebound in credit. This point is arguably captured more

Calvo, G. A., Izquierdo, A., and Talvi, E. (2006b), "Sudden stops and Phoenix miracles in emerging markets", American Economic Review, 96(2), pp. 405-410.

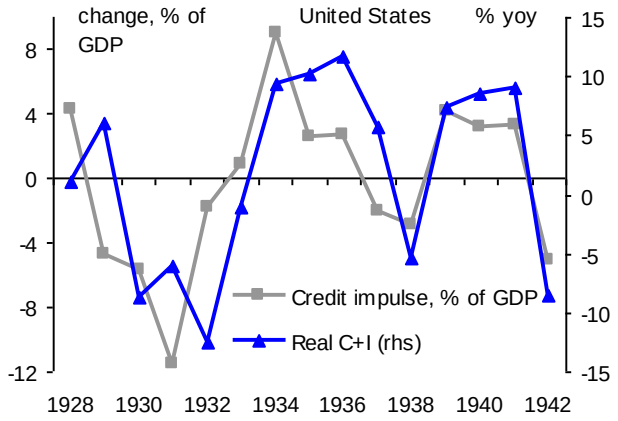
forcefully by looking at the growth rates rather than the levels of credit and GDP, as shown in Chart 6. Real private sector demand growth exceeded 9.0% in 1934 and 1935, even though credit growth was negative.

Chart 6. US credit growth and demand growth during the Great Depression



Source: Deutsche Bank, BEA, Bureau of the Census, US Federal Reserve

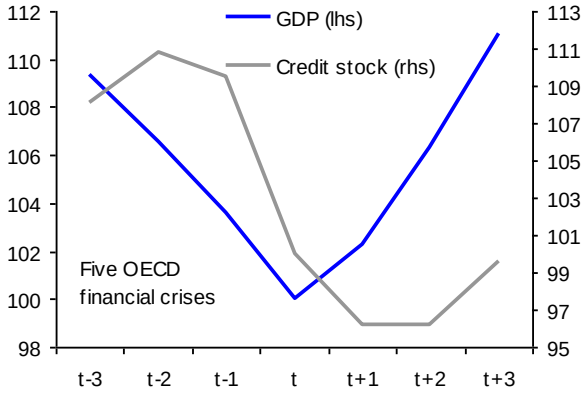
Chart 7. US credit impulse and demand growth during the Great Depression



Source: Deutsche Bank, BEA, Bureau of the Census, US Federal Reserve

However, while credit growth was -2.0% in 1934, it was still considerably stronger than in 1933. The flow of credit was negative, but the change in the flow of credit was strongly positive. Consequently, the credit impulse surged, and real private sector demand growth followed suit. In our view this confirms the importance of credit to the recovery, even though credit growth is negative (chart 7).

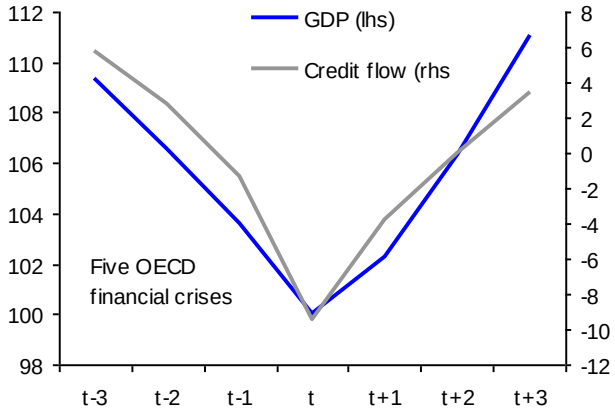
Chart 8. Demand and credit growth in the US



Source: Deutsche Bank, IMF, Various national statistics offices

Secondly, Claessens, Kose and Terrones (2009)[6] observed that "credit-less recoveries" were a developed country phenomenon as well. Chart 8 plots the average level of consumption and investment against the average level of credit for the years around the banking crises in Finland, Japan, Norway, Spain, and Sweden. Just as in the case of the sudden systemic stop crises in emerging markets, chart 8 shows that developments in the stock of credit lags behind those in consumption and investment. It takes on average two years after the trough of the crisis before credit growth resumes. However, chart 9 shows that the flow of credit resumes at the same time as the economy starts to recover.

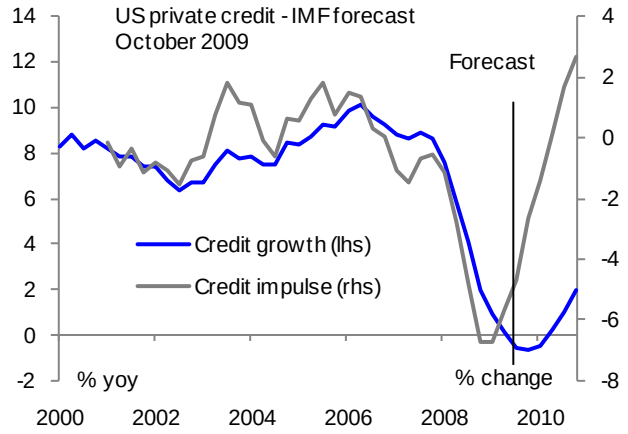
Chart 9: GDP and the stock of credit in OECD countries that suffered a financial crisis



Source: Deutsche Bank, IMF, Various national statistics offices

Our third, most current and possibly our favourite example of this error comes from the IMF in 2009. In the foreword to the World Economic Outlook and Global Financial Stability Report for October 2009, the IMF argued that "A further key constraint on the pace of the recovery will be limits of credit availability. Bank deleveraging will constrain the supply of bank credit for the remainder of 2009 and into 2010 in both the United States and Europe". Because of the credit constraint on the pace of the recovery, the IMF expected real GDP growth of 1.5% in the US in 2010, held back by demand growth of 1.7%.

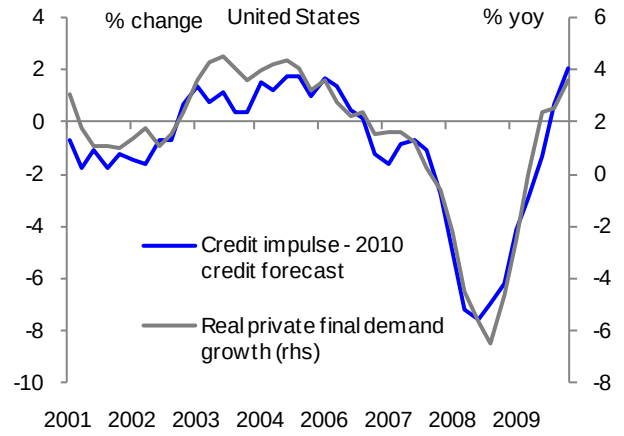
Chart 10. US credit growth and the credit impulse – IMF forecasts



Source: Deutsche Bank, IMF

[6] Claessens, S.M., Kose, A., and Terrones, M.E. (2008), "What happens during recessions, crunches and busts?", IMF Working Paper 08/274.

Chart 11. US credit impulse and demand growth



Source: Deutsche Bank, IMF

The IMF's credit growth forecasts are shown in chart 10. They expected credit growth to remain negative through 2009, and then increase to still historically very low levels of 2.0% yoy by end-2010. Because credit growth was low, they expected demand growth to be weak. The increase in credit growth they were forecasting, however, implied a very positive credit impulse for 2010. If our credit impulse argument is correct, then the IMF forecasts were internally inconsistent. Given their outlook for credit growth, they should have expected strong demand growth in 2010.

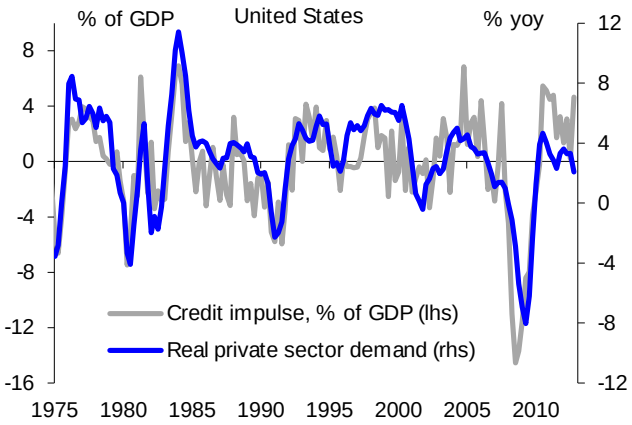
As it happens, credit growth was even weaker than the IMF anticipated. By April 2010 they had revised down their credit growth forecast to 0.3% yoy by the end of 2010, and the reality was actually slightly weaker than that. If credit growth was the constraint, they should have revised down their real GDP growth forecast. Instead, they revised up their forecast. In the end, GDP growth reached 2.4%, driven by a strong rebound in real private sector demand growth of 3.7%. While this should have been something of a puzzle to the IMF given their focus on credit growth, the rebound in demand was perfectly consistent with the credit impulse that their credit growth forecasts implied (chart 11).

These are simply three examples where mainstream economists have made this stock/flow error, but in reality the mistake is far more common than even these examples might let on. The mistake is implicit in every statement that suggests that deleveraging should be a drag on demand growth.

The credit impulse framework and monetary policy

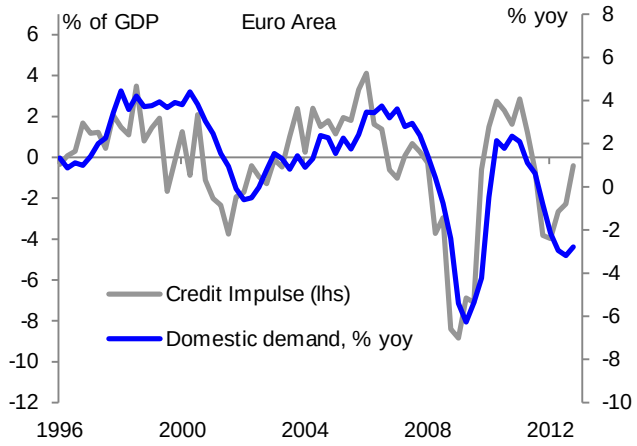
We argued in the previous section that GDP growth should be related to the credit impulse, or the change in new borrowing. The charts 12-13 for the US and the euro area provide a sense of the nature of the relationship.

Chart 12. US credit impulse and demand growth



Source: Deutsche Bank, BEA, US Federal Reserve

Chart 13: Euro area credit impulse and real private demand growth



Source: Deutsche Bank, ECB, Eurostat

In both charts it is evident that when the credit impulse is zero (lhs), growth tends to be close to potential. Fluctuations in the credit impulse around zero cause fluctuations in GDP around trend. Consequently, the relationship between GDP growth and the credit impulse can be described as:

$\Delta GDP_t = \alpha + \beta\Delta\Delta D_t$

where α represents trend GDP growth.

If GDP growth is correlated to the change in new borrowing, then it follows that GDP must be correlated to new borrowing. Taking the integral of both sides yields,

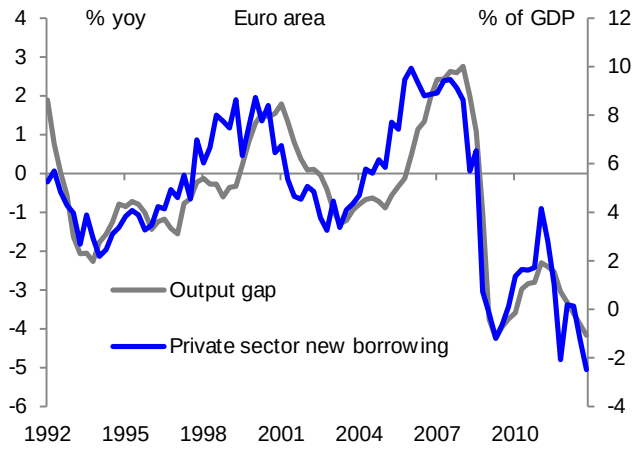
$GDP_t = \alpha T + \beta\Delta D_t + k1$

where k1 is a constant. If the economy has been growing for T years at potential growth of α, then αT represents potential GDP (denoted PGDP from here on). If we take PGDP over to the left hand side and then divide through by PGDP, we get:

$(GDP_t\text{-}PGDP_t)/PGDP_t = \beta\Delta D_t/PGDP_t + k2$

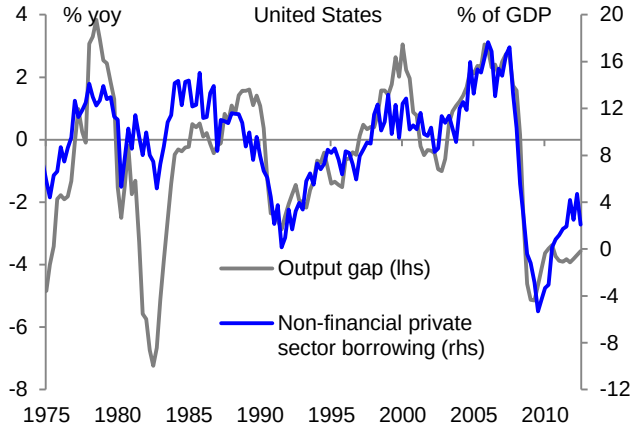
The first term is the output gap and the second term is new borrowing relative to potential GDP. In short, new borrowing as a % of GDP should be correlated with the output gap. This follows logically from our credit impulse argument, and is supported by the empirical evidence. Charts 14 and 15 show the correlations between the output gap (as estimated by the OECD) and private sector new borrowing as a % of GDP for the US and the euro area. In both cases the correlation is excellent.

Chart 14. Euro area output gap and new borrowing



Source: Deutsche Bank, ECB, Eurostat

Chart 15: US output gap and new borrowing

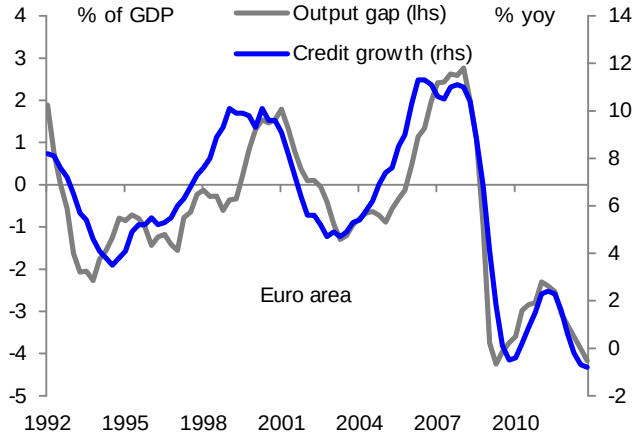


Source: Deutsche Bank, BEA, US Federal Reserve

The implications of this view is that if we know what new borrowing as a % of GDP is, we have a reasonable estimate of the output gap. If new borrowing is high as a % of GDP then the economy is operating above potential.

For given periods of time, credit growth can be used as proxy to new borrowing in % of GDP[7] and hence provides a readily available, excellent indicator for a possible overheating of an economy, which is much easier to measure than the unobservable output gap. Chart 16 shows the two variables for the euro area and chart 17 for the US. In both cases nominal credit growth is well correlated with the output gap.

Chart 16. Euro area output gap and credit growth

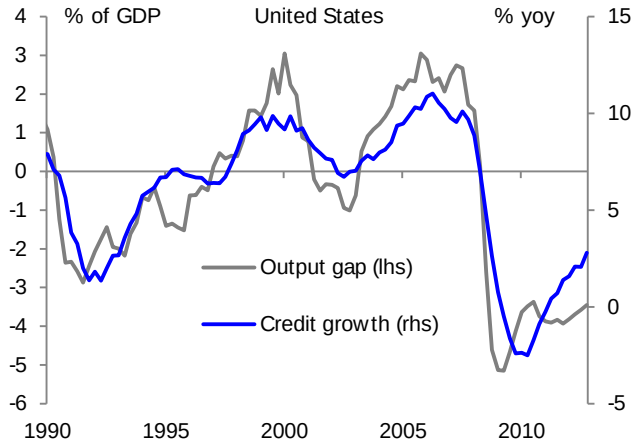


Source: OECD, ECB, Deutsche Bank Global Market Research

Charts 16-17 have interesting implications for the sustainability of economic growth. In both regions, an output gap of 0% is consistent with nominal credit growth of 7.0%. Potential nominal GDP growth averaged 4.8% in the US over the observed period and less than 4.0% in the euro area. In other words, when the output gap was 0%, credit was rising faster than nominal GDP and the debt ratio was rising.

[7] The difference is that in the first measure the denominator is GDP, whereas in the second measure it is the stock of credit.

Chart 17. US output gap and credit growth



Source: OECD,US Federal Reserve, Deutsche Bank

An output gap of 0% would have suggested that the economy was performing at its potential and on a growth path that is generally perceived as being sustainable. Unless there were worrisome signals from actual inflation, the Taylor Rule would have suggested that policy interest rates were appropriate at existing levels.

However, the right hand scale of these charts suggests that growth at potential went along with credit growth that was faster than nominal GDP growth. In other words, growth in line with potential was associated with an ever-increasing debt to GDP ratio. What might have appeared to have been a sustainable growth path from an output gap perspective was a growth path that gave rise to unsustainable debt dynamics. Thus, application of the Taylor Rule by the central banks in the euro area and the US during the observed period, which many studies suggest was the case, paved the way towards excessive debt accumulation, financial instability and the subsequent financial crisis.

In a recent paper, Borio (2012) suggested that any framework attempting to capture the impact of credit on the economic cycle should be able to demonstrate how GDP growth in line with potential might not be sustainable. In our view this framework achieves that aim. If GDP growth had been in line with potential, past history suggests that credit growth would have been in excess of nominal GDP growth and the debt ratio would have been rising forever.

Bringing credit back into the policy framework

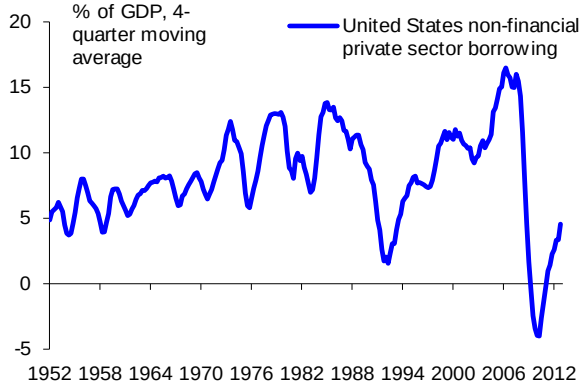
In our present system of public-private partnership for credit and money creation the central bank sets interest rates with a view to inducing banks to generate credit and money growth consistent with price stability over the medium-term. Based on our above discussion the approach to monetary policy in this system would need to be altered and simplified. First, we need to recognize that price and financial stability are inseparable: the latter is a necessary condition for the former. Hence, monetary policy needs to keep an eye on both objectives. Although this has recently been recognized an operational framework for “macro-prudential surveillance” is still missing.

By putting credit in the centre of monetary policy analysis and execution we can both operationalise and simplify a monetary policy framework aiming for price and financial stability. As we explained in previous sections, credit growth is both theoretically and empirically closely related to the output gap without suffering from the real time measuring problems of the latter. Hence, to the extent that inflation is seen as being created in a Phillips curve model and inflation expectations are formed accordingly, the central bank should conduct monetary and macro-prudential policy with a view to stabilising credit growth at its steady-state level—we may call this approach “credit-targeting”. Stabilising credit growth is akin to minimizing the output gap, while aiming for credit growth at its steady-state level is tantamount to stabilising credit growth at a level consistent with a sustainable economy-wide leverage (debt to GDP) ratio.

Over time, the debt to GDP ratio (D/GDP) converges towards (B/g)*(1+g) where B is new borrowing as a % of GDP and g is the nominal GDP growth rate. The (1+g) term has only a modest impact on the ratio, so a good proxy for the steady state debt ratio is simply the ratio of new borrowing relative to nominal potential GDP

growth[8]. The aim for policy makers would be to target a level of new borrowing that, for anticipated trends in potential nominal GDP growth, could cause the debt ratio to converge to a sustainable level over time.

Chart 18: US private sector new borrowing as a % of GDP



Source: BEA, US Federal Reserve

In the US, the current private debt to GDP ratio is 160%, which is well down from the 180% heights achieved in early 2009, but is still probably viewed as excessive. Sustainable debt ratios are difficult to estimate, but it could be argued that 130% of GDP, observed in 2000, before the excesses of the credit boom, is a sustainable level. If nominal GDP growth is expected to average 5% in future and we estimate that 130% is a sustainable debt ratio, then new borrowing as a % of GDP should hover around 6.5% over time. If new borrowing levels are contained around 6.5%, then an excessive build-up of debt and a subsequent credit crisis is unlikely. New borrowing has averaged 4.5% over the past four quarters – it can still increase by some way from current levels. These levels of new borrowing justify keeping policy interest rates below the neutral level. If new borrowing rises above 6.5%, in contrast, policy makers should consider raising interest rates above neutral levels.

Estimating sustainable growth rates and debt ratios is of course not straight forward, but credit can have implications for monetary policy (in the broader sense) even without one being too exact on these metrics. In 2006/07, for example, new borrowing was in excess of 16% of GDP (chart 18). If nominal GDP growth was expected to average 5%, this implied a steady state private sector debt ratio of over 300%. If we debate whether 160% is sustainable, it is reasonable to assume that 300% is not. Regardless of what was happening to the output gap or inflation, interest rates should have been increased to constrain new borrowing.

The implications for fiscal policy

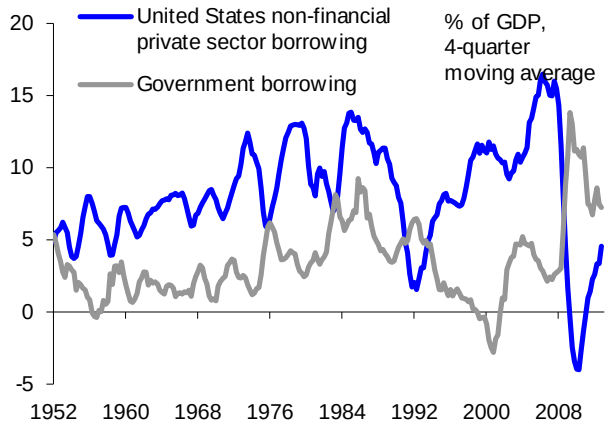
This framework can also be applied to monetary and fiscal policy jointly. In an ideal world private sector new borrowing would be held at a level consistent with a sustainable debt to GDP ratio, the credit impulse would remain zero, and GDP would grow in line with potential. In this utopian environment the macro stabilisation role could be played by monetary policy. In reality, other shocks drive new borrowing away from equilibrium levels, and changes in policy rates might be ineffective in preventing a credit collapse or moderating a credit boom. Under these circumstances fiscal policy can play an important role.

Our suggested approach would be that if private sector borrowing increases to uncomfortable levels and credit policy is ineffective in bringing credit growth down, fiscal policy should respond by lowering government borrowing such that total borrowing in the economy (the sum of private and public sector borrowing) is

[8] To see this,
$D_{t+1} = D_t + B*GDP_{t+1}$
Debt at the end of the year is equal to debt at the start of the year plus new borrowing. Consequently,
$D_{t+1}/GDP_{t+1} = (D_t + B*GDP_t(1+g))/GDP_t(1+g)$ and in the steady state,
$D_{t+1}/GDP_{t+1} = D_t/GDP_t$.
Therefore,
$Dt/GDPt = (D_t + B*GDP_t(1+g))/GDP_t(1+g)$
Multiplying through by $GDPt(1+g)$ yields
$D_t(1+g) = (D_t + B*GDP_t(1+g))$
Rearranging,
$gD_t = B*GDP_t(1+g)$
$D_t/GDP_t = (B/g)*(1+g)$

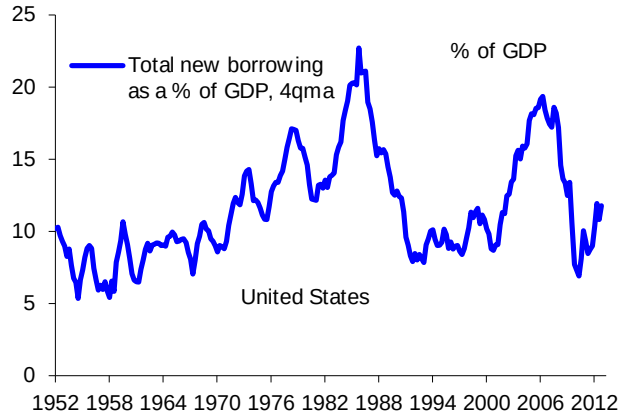
maintained at appropriate levels[9]. Falling government borrowing in the face of rising private sector borrowing would have two effects. Firstly, the negative fiscal impulse and the headwind it would provide to demand might help stem the surge in private sector borrowing. Even if it does not, the improvement in the fiscal balance will mean that when the credit slowdown does finally occur policymakers will have abundant fiscal room to deal with the impact of the fall in new borrowing on demand.

Chart 19: US public and private sector new borrowing as a % of GDP



Source: BEA, US Federal Reserve

Chart 20: US total new borrowing as a % of GDP



Source: BEA, US Federal Reserve

This suggestion can be seen in the context of the US over the past two decades. In the 1990s, private sector new borrowing rose sharply, and government borrowing (the budget deficit) was allowed to fall in response. As a result, total borrowing remained relatively unchanged at around 10% of GDP, and the total debt ratio in the economy remained relatively stable over the decade (charts 19-20).

The problem in the 2000's was twofold – interest rates were hiked too gradually and predictably to prevent the surge in private sector new borrowing, and at the same time government continued to run hefty fiscal deficits. Total borrowing in the US surged to extremely high levels, at a time when the outlook for nominal GDP growth was not that high. Similar to the developments in the run-up to the 1987 stock market crash, private sector credit growth surged, but government borrowing did nothing to offset it. Consequently, total new borrowing increased to record levels or around 20% of GDP. If nominal GDP growth had remained around 5%, the total debt ratio would have surged to 400% from peak levels of around 250% in 2007.

Our analysis suggests that the US Federal Reserve should have seen the rise in new borrowing, and realized that this indicated an economy operating well above its potential and on its way towards financial fragility.

[9] The central bank could exert public pressure on fiscal policy in this regard by highlighting the need for fiscal policy adjustment in its regular reports on monetary policy and financial stability. For the sake of central bank independence we do not advocate a formal coordination of monetary and fiscal policy.

Under these circumstances, they should have hiked rates aggressively. If this had failed to cause lending growth to moderate, however, then government borrowing should have been curtailed.

Instead, lulled by a benign inflation outlook, policymakers allowed private debt levels to surge even as governments ran substantial budget deficits. US policymakers added fiscal profligacy to their monetary recklessness. A more cautious fiscal stance might not have prevented the credit crisis, but it would have left the US government with the fiscal space to respond without concern for the debt implications. In July 2000 the CBO projected that the US would run a budget surplus of on average 3% of GDP over the next decade. Instead, the budget balance averaged -2.0% between 2001 and 2008. If the 2000 budget projections had been achieved, the US would have entered the credit crisis with a debt to GDP ratio of 6.0%.

Implications for bank regulation

The framework also has implications for bank regulation. One of the important questions in the bank regulation debate is to identify an appropriate variable on which to anchor countercyclical capital buffers. This analysis suggests that the appropriate indicator could be credit as a % of GDP. If capital buffers rise as credit flows increase as a % of GDP and decline as new borrowing falls, these buffers will naturally guide new lending back to appropriate levels. If new borrowing rises, capital buffers will increase, the cost of capital to banks will increase, these increased costs will be passed on to borrowers, and credit growth could slow.

Interestingly, this view fits with empirical research on the subject. Drehman, Borio and Tsatsaronis (2011) have already shown that the best indicator for signaling the build-up phase to a credit crisis is what they call the credit to GDP gap, which is simply the deviation of the credit to GDP ratio away from its longer term average. Our framework provides a theoretical framework that supports their empirical finding. Moreover, our framework overcomes the artificial separation between “monetary policy” and “macro-prudential policy”, which is bound to give rise to frictions.

Summary and conclusions

In this paper we have argued that the monetary policy concept of inflation targeting has been blind to the development of credit because it is based on economic theories regarding money and credit as a “veil” over the development of the real economy. Inflation targeting induced central banks to keep policy rates too low to prevent the build-up of a credit bubble in the decade to 2007. In our view “credit targeting” provides a framework that could help prevent these crises from re-occurring.

How would it fit into the mandate of a central bank? As is the case today for most central banks, price stability would be the final goal for monetary policy. But instead of going from there directly to inflation targeting we would establish “financial stability” as an intermediate target. Without achieving financial stability the achievement of price stability remains elusive. Finally, we would establish credit growth as a technical intermediate target to achieve both financial and price stability. In the credit targeting approach, the central bank would aim to steady credit growth at a level consistent with a sustainable economy-wide leverage ratio. Credit targeting is both a substitute for and an extension of inflation targeting. It is a substitute, because credit growth is a good proxy for the output gap—the central variable in the inflation targeting approach—that is not subject to the real time measurement problems of the latter. But it is also an extension, because it aims for a steady-state credit growth consistent with financial stability. Finally, it is a simplification of the approach to monetary policy, putting one variable, credit, in the focus of policy makers instead of the myriad of variables used for inflation targeting. Like monetary targeting in the 1980s it can give central banks clear orientation at a time when they have become vulnerable to political influence in the wake of the loss of a sound and convincing monetary policy framework.

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P · E · F · M
POLITICAL ECONOMY OF FINANCIAL MARKETS

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- The first research topic is *Financial Integration in Europe* – why this has not lived up to expectations, and the implications for banking and fiscal union.
- The second research topic is *Regulatory Capture*. This explores how relations between the financial sector and regulators interacted with political and ideological influences in the 'regulatory space', during the run-up to the crisis.
- The third research topic is *Macroeconomic Policies and Financial Stability* – asking how monetary and fiscal policy regimes can respond to instability in the private sector, without jeopardizing policy transparency.
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PEFM
European Studies Centre
St Antony's College
University of Oxford
OX2 6JF

TELEPHONE:
+44 (0)1865 612846
FAX:
+44 (0)1865 274478
EMAIL:
maxwell.watson@sant.ox.ac.uk

www.sant.ox.ac.uk/pefm