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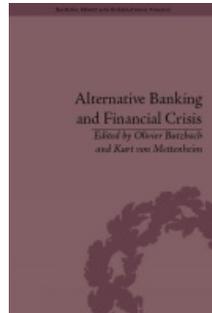
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# Literature overview on the counter-cyclical behavior of public and private bank lending

Alfredo Schclarek<sup>1</sup>

## 1. Introduction

The literature on public banks is quite varied but can be broadly divided into three categories: a) research on the relationship of public banks and economic growth and development; b) research that compare the performance of public and private banks, in terms of profitability, efficiency, outreach, etc.; and c) studies that assess the lending behavior of public banks through the business cycle or during crisis periods. In this section we make an overview of the literature focusing on the third aspect, namely the countercyclical lending behavior of public banks over the business cycle and/or in crisis times. This issue has come to attract more attention since the onset of the recent financial crisis and will probably receive even more attention once the difficulties in reigniting growth become more evident, especially in Europe. As is widely discussed currently, the austerity measures in Europe are resulting in a contractionary stance and may probably lead in the future to a reconsideration of alternative non-orthodox policy measures to stimulate private and public investment, reduce unemployment and spur economic growth.

In what follows we start by reviewing the empirical papers that study the lending behavior of public banks over the business cycle. After that, in section 2, we consider the literature that investigates the lending response of banks to an economic crisis. In section 3, we analyze the very scarce papers that incipiently look at possible explanations for the observed behavior of public banks over the business cycle or during crisis periods. Finally, in section 4, we conclude and put forward some thoughts on this incipient literature.

## 2. The lending behavior of public banks over the business cycle

Among the empirical papers that study the lending behavior of public banks over the business cycle, one of the first papers that use individual bank-level data is Micco and Panizza (2006). They use Bankscope data for 119 countries for the period 1995-2002 and find that lending by public banks is less pro-cyclical than lending by domestic private banks, i.e. public banks may play a credit smoothing role over the business cycle and be used in the transmission of monetary policy. Specifically, they find that both public and private banks are procyclical in their lending but that public banks are significantly less procyclical, i.e. during a recession public banks reduce lending less than private banks and in booms they increase lending less than private banks. Further, when comparing developing and industrial countries, they find that banks in industrial countries are less procyclical than banks in developing countries, but that public banks in developing countries are less procyclical than public banks in industrial countries. In addition, they venture, without showing concluding empirical evidence, that this differential behavior between public and private banks is due to an explicit objective to stabilize credit over the business cycle.

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Another paper in this line of research is Bertay et al. (2012) that use an international sample of 1,633 banks from 111 countries for the period 1999-2010 using Bankscope. They find results in line with those of Micco and Panizza (2006), i.e. lending by public banks is less procyclical than the lending by private banks. In addition, they find that in countries with good governance, this lower procyclicality is more important. Moreover, lending by public banks located in high-income countries is even countercyclical. This result is in contrast to what is found in Micco and Panizza (2006), putting in doubt the robustness of the argument that public banks behave differently in developing and industrial countries. Another interesting result by these authors is that among private banks, foreign-owned banks' lending is especially procyclical.<sup>2</sup> They speculate that this procyclical behavior could be due to that these banks have ready access to funding from their international parent firms to take advantage of local lending opportunities during economic upswings. However, as their empirical methodology do not distinguish between the lending behavior in boom periods and in recessions, the highly procyclical lending behavior that they find may also be driven by their behavior in recessions. In other words, it could be the result of a higher countercyclical risk aversion by foreign-owned banks that imply that in recessions these banks cut lending drastically and use their funds to stay liquid or lend abroad.<sup>3</sup>

Following this last line of thought, Duprey (2012) also analyze the cyclical lending behavior of public banks, but distinguish the asymmetric response of bank lending along the business cycle, i.e. he differentiates between expansionary and recessionary phases. Using bankscope data for 3249 banks, of which 459 are public banks, from 93 countries over the 1990 and 2010 period, he finds similar results to those of Micco and Panizza (2006) and Bertay et al. (2012). However, he also finds that periods of positive economic shocks feature pro-cyclical public bank lending, with public banks sometimes increasing faster their credit than private banks, while periods of negative shocks are associated with acyclical public bank lending. This result would be pointing to a stabilizing influence of public banks at a time of recessionary tendencies. In addition, he finds a positive relationship between economic development and public banks' ability to absorb shocks, i.e. public banks in more developed countries are more able to act in a stabilizing manner during a recession. This result is in line with Bertay et al. (2012) and in contrast to Micco and Panizza (2006).

In addition, Foos (2009) uses a sample of 950 German banks over the period 1987-2005 to show that lending by saving banks is less sensitive to business cycle conditions than lending by either cooperative or commercial banks

### 3. The lending behavior of public banks during crisis times

In addition to the papers that look at the business cycle properties of public bank lending, there are also papers concentrating not on the business cycle but specifically to crisis periods. One of those papers is the work of Brei and Schclarek (2013a) where the role of public bank lending in the event of systemic financial crises is studied from an empirical perspective. They compare the lending responses across public and private banks to financial crises using balance sheet and income information for about 764 major banks from

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<sup>2</sup> Rashid (2011) also find that foreign-owned bank lending is more volatile than domestic bank lending, without making a distinction between private and public banks.

<sup>3</sup> This argument implies that the risk aversion is not a constant but a variable that varies with the business cycle. In boom times agents reduce their risk aversion as they are in euphoria and in recessions they increase their risk aversion as they enter into panic. This argument follows the ideas of Minsky (1992).

50 countries during the period 1994-2009. Using panel regressions, they find empirical evidence that the growth rate of lending during normal times is positive and not significantly different between the average private bank and the average public bank. However, during financial crises, the growth rate of private bank lending decreases importantly while that of public banks slightly increases or keeps constant depending on the econometric specification. These results indicate that private banks have a pro-cyclical behavior during times of crisis while public banks have a counter-cyclical or acyclical behavior. These results are in line with the work of Bertay et al. (2012), who on top of looking at the business cycle response of public bank lending, also check what happens during crisis times.

Further, Cull and Martinez-Peria (2012) use bank-level data from 2004 to 2009 and find that government-owned banks in Eastern Europe did not significantly differ from domestic private banks. However, they find that foreign banks in Eastern Europe declined at a faster rate than that of their domestic private counterparts during the crisis. In the case of Latin America, they find that public bank lending outperformed that of domestic and foreign banks. However, De Haas et al (2012) provide evidence on the behavior of credit for a larger sample of Eastern European countries than that of Cull and Martinez Peria (2012). The authors find, for a sample of 1294 banks in 30 Eastern European countries over the period 1999-2009, that credit provided by foreign banks outgrew that of domestic (public and private) banks before the crisis and it sharply decelerated in 2008. On the other hand, lending by government-owned banks and domestic private banks declined in 2009, but government-owned banks were less pro-cyclical than (domestic and foreign) private banks.

In addition, the cross-country evidence is also complemented with some bank-level country case studies. For instance, Leony and Romeu (2011) show for Korea that the credit contraction during the crisis would have been deeper if public banks had not expanded their loan portfolios. Coleman and Feler (2012) argue that localities in Brazil with a large share of government banks experienced a relative increase in lending following the onset of the 2008 financial crisis compared to areas with a small share of government banks. These areas with a large share of government banks similarly experienced a relative increase of approximately two percentage points in employment. In addition, using data for 348 large Russian banks, Davydov (2013) studies the impact of public bank lending and risk-taking over the period 2005-2011. He finds that during the crisis of 2008-2010, public banks increased their lending, at the same time that they charged lower interest rates, in contrast to private domestic banks and foreign banks. Also, Önder and Özyildirim (2013) study the lending activities of Turkish public and private banks during the period 1992–2010. Their results suggest that although public banks might issue loans for political reasons in election periods, they also seem to play an important role in offsetting the adverse effects of economic shocks, especially in developed provinces. Finally, Lin et al. (2012) study the experience of public bank lending in Japan during the 1990` crisis using a firm-year panel data set that spans the period from 1977 to 1996 for all publicly traded companies on the Tokyo Stock Exchange. They find that public banks lending has a positive and significant effect on corporate investment during the crisis, for more credit constrained firms, and for firms with higher growth prospects. Thus, public bank lending can enhance efficiency of the firm's investment by mitigating credit constraints.

4. The reasons for the lending behavior of public banks over the business cycle and/or during crisis times

Clearly, from the empirical evidence of the last two sections there is ample evidence that private bank lending is procyclical and that public bank lending is less procyclical or even countercyclical. Thus, the next question that arises naturally is why there is such a difference in the lending behavior of private and public banks. For this question the literature is scarcer and the evidence is still preliminary without any strong conclusions. In what follows, the existent empirical evidence is presented and then some theoretical papers are reviewed.

Regarding the reasons for the less procyclical behavior of public banks, Bertay et al. (2012) find that funding at public banks is less procyclical than that of private banks. More specifically, they find that non-deposit liabilities for public banks are less procyclical than that of private banks. Moreover, they find some weak evidence that short-term funding is also less procyclical for public banks. This evidence imply than in boom times private banks are more active in the short-term wholesale market, while public banks are more active in recessionary times. In addition, for the case of countries with high government effectiveness, they find that equity is procyclical for private banks and countercyclical for public banks, implying that equity increase for public banks when most needed (recessions) while it falls for private banks.

In addition, Brei and Schclarek (2013a) investigate the causes of the differential behavior of public and private banks and test two alternative explanations. The first one is that public banks suffer less deposit withdrawals than private banks during crisis times. The other explanation is that public banks increase their capital more than private banks during a crisis. However, these two hypotheses are rejected by the data, finding no difference between private and public banks. Therefore, the authors speculate, without showing empirical results, that the reason for the difference between private and public banks is due to the higher willingness (or risk tolerance) of the latter to provide lending in an unstable crisis environment.

Finally, Mc Candless et al. (2003) investigate Argentina's experience with bank runs and try to explain the variation in deposits during the 2001 crisis. Using monthly bank-level data, they find that bank fundamentals rather than self-fulfilling prophecy theory explain better the bank run. Further, they show evidence that during the first months of the crisis public banks suffered less deposits withdrawals than domestic and foreign private banks, but as the crisis deepened the difference was blurred. Considering that this crisis ended up being an extremely deep exchange rate crisis, this evidence may be suggesting that at first, when the crisis erupted, depositors trusted more public banks, but when it became evident that this was a systemic bank run the difference in trustworthiness disappeared.

In what follows some theoretical articles are presented. The theoretical framework of Brei and Schclarek (2013b) allow them to explore three tentative explanations for the behavior of public and private banks in crisis times. Firstly, the objective of public banks, in contrast to private banks, is not only to minimize losses in the event of a financial crisis, but also to promote the recovery of the whole economy. Secondly, public banks are more likely recapitalized in times of distress because their owner, the state, tends to have more resources than private shareholders. Finally, public banks tend to suffer less deposit withdrawals than private banks in a severe crisis because depositors perceive public banks as a safer alternative than private banks due to the implicit guarantee by the state.

In addition, Andries and Billon (2010) build a theoretical model where banks face a risk of failure in bad states of the economy, i.e. when productive firms suffer a low productivity state. They show that a greater

state share in the bank ownership benefit from a more stable deposit base owing to the provision of a better deposit guarantee. This enables public banks to insulate their loan periods of financial instability and provide more stable lending than private banks. The better deposit guarantee by public banks is assumed exogenously and not derived endogenously.

Another theoretical paper that tries to explain the differential behavior of public and private banks is Duprey (2013). He argues that public banking long term inefficiency generates a lower short term lending cyclicity compared to private commercial banking. In his model, public bank specializes in lending to shirking entrepreneurs due to a larger monitoring cost for public banks, while on this segment, the private bank prefers to step back to preserve its profits. Thus, in crisis times, when more productive projects have a lower profitability, private bank lending is procyclical while public bank lending is less sensitive to productivity shock. It should be noted, however, that in this model the increased lending by public banks over private banks in crisis times is an inefficient consequence of their lower capacity to screen good project, not an active and rational policy decision.

## 5. Conclusions

In this review we have analyzed the lending behavior of private and public banks along the business cycle and during crisis periods. Although most of the empirical publications are very recent, there seems to be a consensus that public banks act less procyclical or even countercyclical in comparison to private banks. This evidence would be showing that public banks may be used to avoid that a financial crisis deepens or spreads to the real sector by the credit crunch brought about with the financial crisis and the increased risks and uncertainties that prevail in the economy. Further, that they can be used complementary with monetary and fiscal policies to implement a countercyclical macroeconomic policy to mitigate the business cycle during more normal times. These are two new roles that public banks may have that have not received enough or proper attention in the wider literature on public banks. Further, although the empirical evidence reviewed in this paper has not looked specifically at the issue, it can be ventured that public banks may also be used in a strategy to reignite growth and get out of stagnation and the unemployment trap after a crisis.<sup>4</sup>

What is lacking in this literature is a better understanding about the *reasons* for the different lending behavior of public and private banks. Although we have reviewed some empirical and theoretical papers that try to put forward some explanations, more empirical and theoretical research is needed. Among the different explanations put forward, those that seem to have a more promising explanation power are: a) public banks objectives are not only to maximize profits, but can also have as an objective to avoid the deepening of the crisis or smoothing the business cycle; and b) the owner of public banks, the state, is probably in a better financial situation or is more willing than private bankers to recapitalize its bank in times of financial distress or increased uncertainty.

Following this line of thought it is obvious that the countercyclical role of public banks during a crisis is only possible when the bank is relatively solvent and not undercapitalized. Further, if the state is already in dire conditions or even bankrupt when the crisis erupts or if the recession deepens before the countercyclical policies are put in place, it is probable that it will even be difficult of the state to react properly and

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<sup>4</sup> Sanya and Mlachila (2010) analyze the post-crisis lending behavior of banks in the Mercosur using both aggregate and bank-level data during the period 1990–2006. They find insufficient lending and holding of high levels of excess liquidity, but they don't distinguish between public and private banks.

recapitalize banks. Evidently these issues show the importance of a well-managed public bank, which is very prudent in normal times. Another important aspect to take into account is that firms and entrepreneurs should be willing to take loans for their productive projects. If they are not willing to invest, maybe because there is too much uncertainty, there is not much that public banks can do to foster private investment, i.e. the supply of credit needs also to be met by a demand for it. If private firms are not willing to invest, despite public banks willingness to lend at favorable conditions, public banks may still have a role to play. In this case, and for there to be an increase in investment and stimulation to the aggregate demand, it is probable public enterprises or public infrastructure projects that should lead the process. In this case, public banks may be used to finance this public investment.

Other issues that have yet not been clarified are if public banks lend at more favorable terms than private banks during crisis times in terms not only of interest rates but also in terms of the maturity structure of loans. Further, there is any difference between types of public banks, i.e. commercial public banks, savings banks, development banks, etc. Most of the surveyed literature do not distinguish between types of public bank and treat them all as the same. However, it is very probable that although all are public banks they act and react in very different ways during a crisis or along the business cycle. and if the relative size of these institutions matters.

On top of the individual characteristics of public banks, it is important also to analyze more systemic issues related to public bank participation in the financial system. In this sense, the importance of the role of public banks is dependent on the size of this sector relative to the whole financial system. If the public bank, or the network of public banks, is small in comparison to the whole banking system, its effectiveness is diminished. In contrast, if the public bank is large there is a higher probability that the increased lending will have systemic effects. Further, as the recent financial network literature stress, the network structure of the banking system should be carefully taken into account when trying to devise policies that enhance the resilience of the financial system. Thus, beyond the individual behavior of public banks, what is needed is to better understand how the network structure of the banking sector and the relative importance (size), position and role of public banks in this network matters for the cyclical behavior and the strength of the banking system.

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