The capital surcharge on banks offering 'superdeposits': An early example of macroprudential policy measure in Portugal

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Abstract
In October 2011, Banco de Portugal imposed a capital surcharge on banks offering 'superdeposits', i.e. deposits with a remuneration deemed excessive. This policy measure was later adjusted and reinforced in April 2012. Its motivation was macroprudential in nature, addressing a significant financial stability concern. It was an early example of such type of measures in Portugal, before the current institutional framework of macroprudential policy was in place. At the time, Portuguese banks were aggressively trying to increase their funding through deposits, in a context of very unfavorable macroeconomic conditions and the associated materialization of credit risk. Excessive competition for deposits was amplifying bank losses by raising interest expenses and thereby increasing the risks to the stability of the Portuguese banking system. Furthermore, the higher deposit rates were passing-through to the loan rates, thus contributing to further deepen the recession. The available evidence discussed in the paper, based both on macroeconomic data and on microdata on individual deposits collected from banks for monitoring purposes, suggests that the imposition of the capital surcharge contributed to contain the war for deposits amongst Portuguese banks. (JEL: G21, G28)

1. Introduction

Macroprudential policies address risks and vulnerabilities which relate to the whole or significant parts of the financial system rather than to individual financial institutions. According to Clement (2010), the term 'macroprudential' goes back to the late 1970s but became widely used only after the global financial crisis in 2007-8. The Basel III Accord, signed in November 2010 by bank regulatory agencies from major industrialized countries, acknowledged the need to mitigate systemic risk whose materialization so strongly impacted the financial system during the acute period of the crisis (and again during the subsequent sovereign debt

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crisis in several European Union – EU – member states). The terms of the Accord were transposed into EU law in 2013, by the Capital Requirements Directive (CRD IV)[1] and the Capital Requirements Regulation (CRR)[2] , and included some provisions which reflect a macroprudential approach to banking regulation, e.g. new liquidity requirements and counter-cyclical and other capital buffers.[3] The CRD IV also required member states to formally set up a 'designated authority' for macroprudential policy. The European System Risk Board (ESRB), with operations supported by the European Central Bank (ECB), was established in December 2010 and given a coordination role of macroprudential policies carried out by the national designated authorities and by the ECB, with little direct enforcement power.[4] Although the initiative to implement macroprudential measures remains primarily with national authorities, since 2014 the ECB also plays a role in macroprudential policy for the European Banking Union, according to the Single Supervisory Mechanism Regulation.[5]

In October 2011, before this transformation of the European banking regulatory framework took place, before Banco de Portugal was formally designated as the Portuguese macroprudential authority,[6] and a few months following the agreement on the Financial Assistance Programme requested by the Portuguese authorities to the EU and the International Monetary Fund (IMF), Banco de Portugal decided to impose a capital surcharge, in the form of a deduction from own funds, on banks raising deposits bearing interest deemed excessive. This measure had not been foreseen in the Programme and had a clear macroprudential motivation,[7] because it addressed a financial stability risk which was becoming very significant. In this paper, we discuss and assess this policy measure.

At the time, Portuguese banks were aggressively trying to increase their funding through deposits, in a context of very unfavorable macroeconomic conditions and the associated materialization of credit risk. Excessive competition for deposits was amplifying bank losses by raising interest expenses. Furthermore, the higher deposit rates were passing-through to the loan rates, thus contributing to further deepen the recession.

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1. Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013.

2. Regulation (EU) 575/2013 of the European Parliament and of the Council of 26 June 2013.

3. Some provisions are not yet in force due to transitional periods and the still ongoing process of preparation and approval of implementing legislation.

4. The ESRB was established by Regulation (EU) 1092/2010 of the European Parliament and of the Council of 24 November 2010, following a recommendation of the 'Larosière Report'. In response to the global financial crisis, this report was prepared by a High Level Group, chaired by Jacques de Larosière and tasked by the European Commission to consider how financial supervision could be strengthened.

5. Council Regulation (EU) 1024/2013 of 15 October 2013. This Regulation gives the ECB the power to tighten (but not to scale down) certain macroprudential measures implemented by the national authorities.

6. Banco de Portugal was designated the Portuguese macroprudential authority by Decree-Law 142/2013 of 18 October 2013, which amended the central bank statute for that purpose (Articles 12(c) and 16-A), following the ESRB Recommendation ESRB/2011/3 of 22 December 2011 (published in the Official Journal of the European Union on 14 February 2012).

7. Although at the time Banco de Portugal did not use the term 'macroprudential' when referring to it.

In the following sections of the paper, we will look into specific issues and details related to the enforcement and effectiveness of this macroprudential policy measure. We will start in section 2 by discussing the evolution of deposit interest rates in Portugal in 2011-12 as well as the relevant macroeconomic and financial context for that evolution. In section 3, we will provide some historical background on deposit rate controls in Portugal. In section 4, we will give a brief account of the measure taken by the Spanish authorities in June 2011, also to discourage high deposit rates, which preceded by some months the capital surcharge imposed by Banco de Portugal and undoubtedly served as an inspiration for it. Section 5 will present in more detail the measures taken by Banco de Portugal in 2011 and 2012. Section 6 is based on the microdata collected from banks for monitoring purposes on the individual deposits which were contributing to the deduction from banks' own funds (for the ease of exposition, hereafter we will refer to them as 'superdeposits'). We will make use of this data set to characterize the scope and evolution of superdeposits. Finally, in section 7 we will make some concluding remarks.

2. Deposit rates and macroeconomic and financial background in 2011-12

After a steady decline of deposit interest rates since the beginning of the financial crisis in 2008, most of the previous decrease was reverted during the second half of 2010 and in 2011. From values close to 1.4% in 2010Q2, interest rates of new deposit operations jumped to levels above 4% by 2011Q3 (Figure 1). In the same period, the spread vis-à-vis the 3-month Euribor rate increased almost 200 basis points (bp) to 2.6 percentage points (pp), an abnormally large value for this indicator and its maximum since the inception of the euro.[8]

The hike in the (average) deposit rates was accompanied by an increase in dispersion across banks. Being rather moderate before the crisis, dispersion started to increase thereafter, and became clearly apparent in 2010/2011. Considering the distribution of the deposit rates covering 40 banking groups, the distance between percentiles 20 and 80, which was very low until 2008 and around 150 bp in the beginning of 2010, had more than doubled by the end of 2011, reaching a maximum of 300 bp in the last quarter of 2011.

Since the second half of the 1990s, due to the lack of domestic savings, the Portuguese banking sector had been intermediating the required borrowing from abroad. By mid-2010, liabilities of Portuguese banks evidenced by debt placed on the wholesale funding markets amounted on average to more than 20% of their balance sheet and they had virtually lost access to these markets, while needing to redeem the maturing debt. At the time, banks were also financing heavily the Portuguese Treasury, which faced increasing difficulties in placing debt through the international government bond

8. From 1999 up to 2008, deposit rates on new operations were lower than the 3-month Euribor (with an average spread around -35 bp). From 2008 onwards, with the beginning of the global financial crisis, the spread became positive but below 1 pp until 2010.

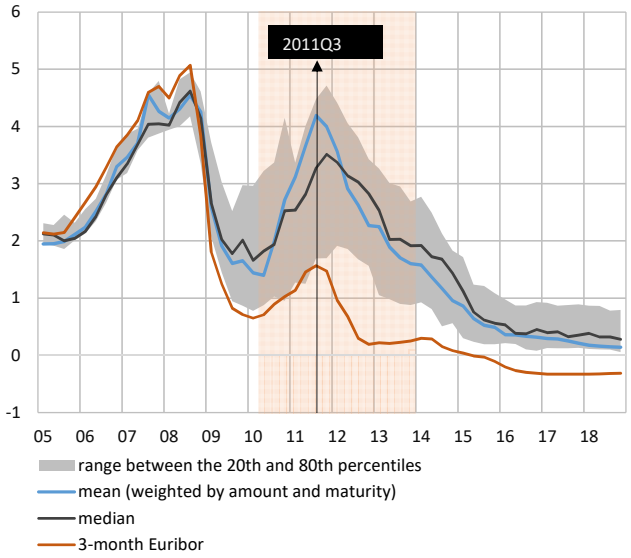

FIGURE 1: Deposits interest rates (new operations and renewals)
Source: Banco de Portugal and Esteves *et al.* (2019)

markets. Moreover, the Financial Assistance Programme negotiated and agreed in the spring of 2011 required a substantial deleveraging process of the Portuguese banking system, including a target for the loans-to-deposits ratio (also called 'transformation ratio') of 120% for end-2014, a value significantly lower than the average level of about 160% observed by end-2010, with some banks reaching much higher levels (Figure 2).[9]

Portuguese banks resorted to funds from the Eurosystem (Figure 3) but were confronted with very tight limits to collateral availability, against the background of rating downgrades of the Portuguese government debt. Therefore, turning to deposits was an obvious choice. By the summer of 2011, it was clear that a 'war for deposits' was raging amongst Portuguese banks. And it was also clear that the overall stock of deposits was expanding at significant rates (middle chart of Figure 2). The higher deposit remuneration offered by banks and the heightened risk perception and aversion were causing a recomposition of portfolios, especially but not only of households, in favor of deposits and in detriment of other assets. This process was much facilitated by the fact that management companies of investment funds were controlled by banks and the portfolios of the funds included a large proportion of securities issued abroad.

Increased costs with deposit interest were beginning to impact on the profit and loss accounts of Portuguese banks, already suffering from the effects of very unfavorable macroeconomic conditions, reflected in a rise in impairment costs due to loans that had recently become non-performing. Moreover, the pass-through from deposit rates to interest rates on new loans was taking place, contributing to depress even further

9. After the third programme review mission in February 2012, this objective became only an "indicative" target. For most banks the indicator converged rather quickly to the target and then overachieved it.

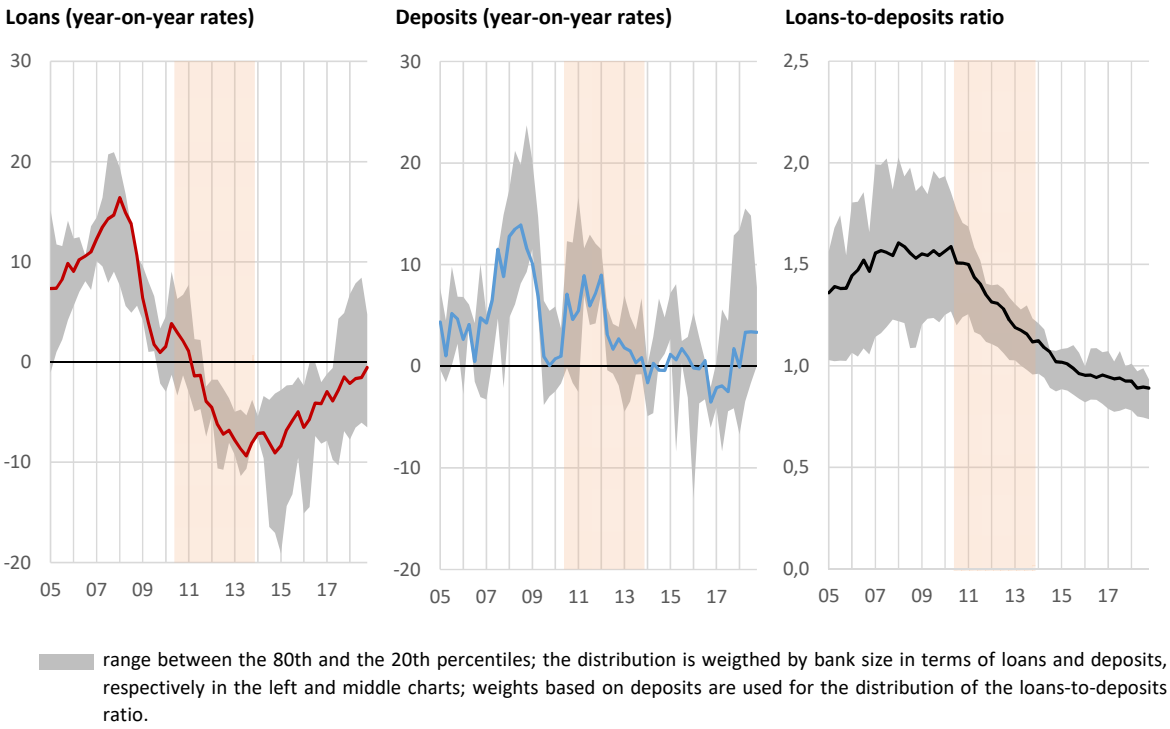

FIGURE 2: Loans-to-deposits ratio
Source: Esteves *et al.* (2019).

FIGURE 3: Eurosystem funding to Portuguese banks (€ million)
Source: Banco de Portugal

the amount of credit to the economy and to deepen the recession. Cross-correlations computed for the period 2010-2013 between the monthly changes of deposit rates and monthly changes of loan rates (in both cases new operations and renewals) (see Figure 4) suggest that the former were indeed anticipating the latter by a few months.

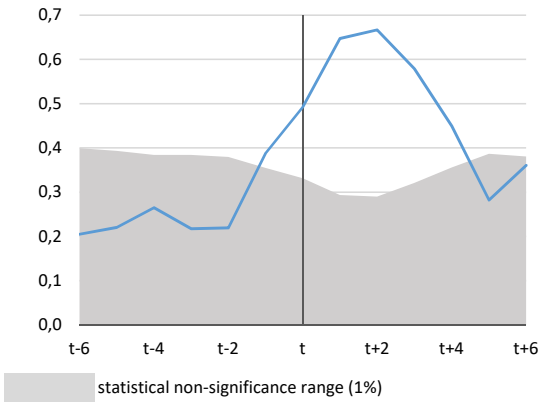

FIGURE 4: Cross-correlations between changes in deposit rates and in loan rates (2010-13, new operations and renewals, based on monthly data)

This is confirmed by a formal causality test controlling for the change in the market rates represented by the 3-month Euribor. We estimated the following dynamic linear regression by ordinary least squares and monthly data for the period 2010-13:[10]

$$\Delta il_t = c^{(l)} + \sum_{j=1}^{5} \alpha_j^{(l)} \Delta il_{t-j} + \sum_{j=1}^{5} \beta_j^{(l)} \Delta id_{t-j} + \sum_{j=1}^{5} \gamma_j^{(l)} \Delta ie_{t-j} + \varepsilon_t^{(l)}$$

where Δ il, id, ie and ε denote month-on-month change, the average loan rate on new operations, the average deposit rate on new operations, the 3-month Euribor rate, and a residual term, respectively. The joint hypothesis of non-significance of coefficients $\beta_j^{((l)}$ $(j = 1, \ldots, 5)$ was rejected with a P-value of 0.011. [11]

The left chart of Figure 5 confirms that the hike on deposit rates from mid-2010 was indeed passing through to the loan rates on new operations and renewals. In spite of the jump observed in deposit rates, the margin only slightly decreased from 2010Q2 to 2011Q3 and the right side chart of Figure 5 reveals that it happened because the three largest banking groups did not choose (or were not able) to increase it, unlike most smaller banks.[12]

10. The number of lags on the right-hand side was selected using the Akaike Information Criterion (AIC) which is known to perform better than alternative criteria in small samples.

11. The reverse Granger causality (i.e. from changes in loan rates to changes in deposit rates), also controlling for changes in the 3-month Euribor, provided evidence on the lack of causality (the test was associated with a P-value of 0.659. This test was based on the equation

$$\Delta id_t = c^{(d)} + \sum_{j=1}^{5} \alpha_j^{(d)} \Delta id_{t-j} + \sum_{j=1}^{5} \beta_j^{(d)} \Delta il_{t-j} + \sum_{j=1}^{5} \gamma_j^{(d)} \Delta ie_{t-j} + \varepsilon_t^{(d)}$$

and consisted of testing the joint nullity of $\beta_j^{(d)}$ $(j = 1, \ldots, 5)$.

12. Using microdata for January 1990 – December 2002, Antão (2009) concluded that the response of deposit rates to changes in market rates tended to be smaller than one, and around one for loan rates. Therefore, in the pre-crisis period, an increase in market rates like the one observed from mid-2010 up

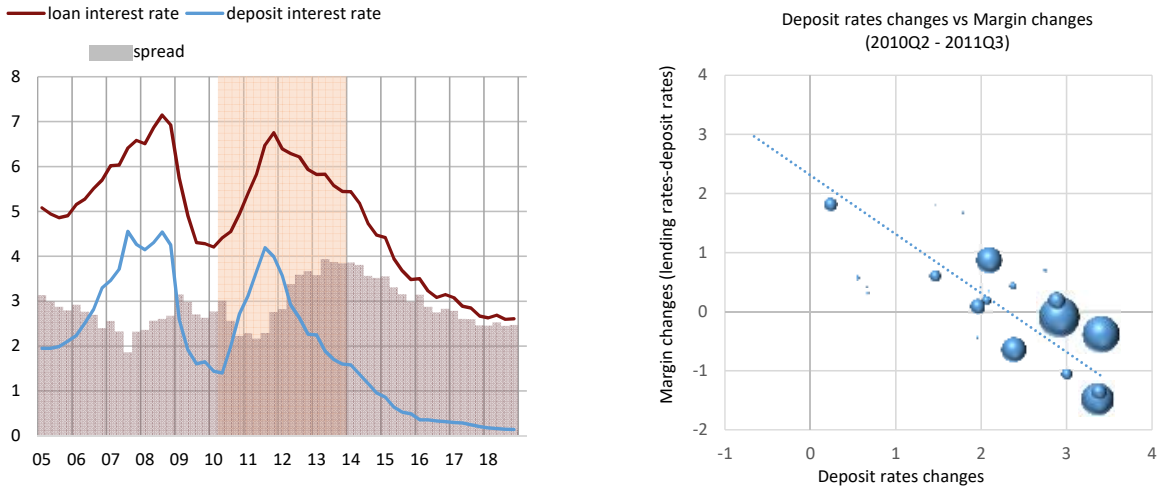

FIGURE 5: Loan rates vs deposit rates (new operations and renewals)

Source: Esteves *et al.* (2019).
Note: The size of the circles on the right side chart reflects the relative size of each banking group evaluated by the sum of the stocks of loans and deposits at end-2010.

All in all, in October 2011, the recession of the Portuguese economy was still worsening, deposit rates were increasing out of control, the pass-through to loan rates was taking place and contributing to deepen even further the recession, and the stock of bank deposits was expanding in response to the higher deposit rates and to a much heightened risk aversion of economic agents and to the response of management companies of investment funds.

In this context, getting inspiration from a measure taken by the Spanish authorities some months before, in June 2011, but adapting it to overcome some of its shortcomings, Banco de Portugal decided to impose a deduction from banks' Core Tier 1 own funds, effective as from 1 November 2011, based on the amount of deposits contracted with rates 300 bp or higher than the relevant Euribor rate.

Soon after the new measure was enforced, the average interest rates on new deposit operations (and renewals) began to decline. The evolution of deposit rates also greatly benefited both from a reversal in the upward movement of market interest rates and from the decision by the ECB, in December 2011, to widen the eligibility of assets accepted as collateral for its refinancing operations,[13] which eased the binding collateral constraints that Portuguese banks were facing.

In April 2012, the capital surcharge was adjusted and reinforced, by the clarification of its coverage regarding demand deposits, by the reduction of the spread over market

to 2011Q3 would probably be followed by a widening of the margin between loan and deposit rates. Nevertheless, given the macroeconomic background in 2010-11, and in particular the scarcity of bank funding, it is remarkable that the margin did not decrease more significantly.

13. ECB decision ECB/2011/25 of 14 December of 2011 on additional temporary measures relating to Eurosystem refinancing operations and eligibility of collateral. This decision was taken shortly after President Mario Draghi came into office.

rates for shorter term time deposits, and by the doubling of the former deduction to own funds. On 30 June 2012, three of the four largest banking groups were recapitalized by the Treasury,[14] and another smaller banking group was recapitalized in January 2013, which also contributed to ease the liquidity concerns of these banks.

Deposit rates continued to gradually decline throughout 2012 and the years thereafter. The differential to the 3-month Euribor narrowed significantly but only after early 2013. The stock of deposits levelled off in 2012 but did not decrease in the following years in spite of the new measure. Upon entry into force of the CRR in 2013, Banco de Portugal was no longer empowered to require from banks a capital surcharge as the one imposed in 2011-12, and thus it ceased to apply, but meanwhile the war for deposits had lost its relevance.

3. Deposit interest rate ceilings in Portugal

Portugal experienced a wide range process of liberalization in the financial sector in the second half of the 1980s and the early 1990s. Since the mid-1970s, the Portuguese economy was tightly controlled by the state. In particular, the banking sector was almost fully state-owned, with the exception of few mutual and foreign-owned banks, which represented a small market share. After an amendment of the Portuguese Constitution approved by Parliament in late 1982, bank ownership was opened to domestic and foreign entrants from August 1983. In the years following Portugal's accession to the European Community in 1986, capital movements were progressively liberalized in tandem with the modernization of the operational framework of monetary and exchange rate policies. Bank deposit and loan markets were also gradually liberalized during the period 1987–92.

The legal provisions which were enabling the control of interest rates by the Portuguese authorities in the late 1980s had been in place since 1965.[15] Under these provisions, throughout the 1970s and the 1980s several changes of deposit rate floors and ceilings had occurred in response to changes in inflation and other macroeconomic conditions. As for demand deposits, from 1974 onwards only households' demand deposits could bear interest and the corresponding maximum rate was set by Notice of Banco de Portugal.[16] In January 1987,[17] the ceiling on demand deposits by households was removed, but it was reinstated again on 18 March 1989, defined as one third of the

14. The largest banking groups, which were subjected to the European Banking Authority's stress test exercise, were required to strengthen their capital positions in order to reach a Core Tier 1 capital ratio of 9% by 30 June 2012 following an assessment of their sovereign debt exposures at market prices as at 30 September 2011. This decision led to the public recapitalization of CGD, BCP and BPI banking groups.

15. Articles 8 and 9, Decree-law 46492 of 18 August of 1965, with further details provided by Ministerial Order 21477 of the same date. For the Portuguese interest rate regulations before 1965, see for instance Pinheiro *et al.* (1997), p. 23-27 of Volume II and legal references included in Table "End of period banks' lending and deposit rates" of Volume I.

16. In the period 1978-84, besides deposits by households, deposits by local governments, cooperatives and charitable bodies could also earn interest.

17. Banco de Portugal Notice 1/1987 of 6 January 1987.

ceiling set for 6-month time deposits. In May 1992,[18] there was the full liberalization of demand, time and savings deposit rates, about six months before the adoption of a new legal framework for credit institutions and financial companies,[19] transposing into Portuguese law the Second Banking Directive, the Solvency Ratio Directive and the Own Funds Directive.[20]

Therefore, when the capital charge on superdeposits was decided by Banco de Portugal in October 2011, Portuguese banks had been operating in a fully liberalized deposit market for about twenty years. Ando to our knowledge, not many similar policy measures had been taken elsewhere. The one policy measure that comes closest was taken by the Spanish government in June 2011, just a few months before the Portuguese measure was adopted, and it also aimed at disincentivising deposit rates perceived as excessive without strictly banning them. But while in the Portuguese case deposits bearing interest above certain limits implied a deduction to the bank's own funds, the Spanish regulation instead increased the contribution to the deposit guarantee fund for such deposits.

4. The Spanish measure in June 2011

At the outset of the global financial crisis in 2007, Spain had a comparatively low sovereign debt level among euro area countries. However, it was experiencing a significant property bubble. Coinciding with the financial crisis of 2007–08, Spanish real estate prices began to fall. The burst of the bubble contributed to a severe economic downturn and created serious liquidity and solvency problems in many Spanish banks which were heavily exposed to the construction and real estate sectors. The problems of liquidity were exacerbated by the significant decline in the turnovers of the interbank market and the bank issued bond market.

The crisis expanded in the following years, and required the public bailouts of several banks. It happened in the context of an intensification of tensions in the sovereign debt markets of several euro area countries. Greece had to resort to a financial assistance programme from the EU and the IMF in May 2010, Ireland and Portugal followed soon in November 2010 and May 2011, respectively.

18. Banco de Portugal Notice 5/1992 of 20 May 1992.

19. Decree-law 298/92 of 31 December 1992.

20. Following the first Basel Accord (Basel I), signed in July 1988, minimum capital requirements for banks were gradual and formally adopted in most developed countries, whilst ceilings on (deposit and credit) interest rates, which were commonly used in banking regulation until then, were progressively eased or abandoned. In Europe, the Basel I Accord was laid down into Community law through the adoption in 1989 of the Solvency Ratio and Own Funds Directives. Together with the Second Banking Directive, they aimed at harmonizing prudential banking supervision regulation, and were transposed into national law by the member states by 31 December 1992. The Second Banking Directive dealt with authorization requirements for banks, as well as with the main rules to which banks were subject once licensed to operate. It was built upon the First Banking Directive of 1977, a rather modest initial step towards the harmonization of banking supervisory rules in the common market.

In spite of the favorable starting situation in terms of public accounts, the bank bailouts, the economic downturn, and the falling real estate tax revenue increased the Spanish public deficit and debt levels and led to a substantial downgrading of its credit rating. In June 2012, Spain's 10-year government bonds reached a 7% yield, culminating the increased difficulty in accessing bond markets. In July 2012, the Eurogroup decided to provide financial assistance to Spain, to be channeled to fund the restructuring and recapitalization of Spanish banks.[21]

One year before, on 3 June 2011, amidst the worsening of the banking crisis, which was turning systemic, the Spanish government passed a decree [22] stipulating, amongst other measures, additional contributions to the deposit guarantee fund for the deposits raised by banks bearing interest above certain limits. Specifically, those limits were set at: (i) 100 bp above the one-month Euribor rate for demand deposits; (ii) 150 bp above the 3-month Euribor rate for time deposits with agreed maturity of up to 3 months; (iii) 150 bp above the 6-month Euribor rate for time deposits with agreed maturity higher than 3 months and lower than one year; (iv) 100 bp above the 12-months Euribor rate for time deposits with agreed maturity higher than one year. For the purpose of determining the contribution to the deposit guarantee fund, deposits with excessive remuneration (if eligible for the guarantee) were to be weighted at 500%, i.e. they would require five times as much contributive effort as the remaining regular deposits (which was legally set since 2002 at 0.6‰ of the guaranteed deposit amount).

This legal provision, which became popularly referred to as "Ley Salgado" (after Elena Salgado, then Second Deputy Prime Minister and Minister of the Economy and the Treasury), was approved when banks were fiercely competing for funds in the deposit market and deposit rates were increasing, heightening financial stability concerns. The measure was reported by the media as attempting to halt the "war" between banks for raising deposits.[23]

The Spanish measure in 2011 appears as more flexible and market friendly than the legal imposition of rigid deposit rates ceilings. Nevertheless, it raised issues of coverage equal treatment, mainly because additional contributions to the deposit guarantee fund only applied to deposits below €100,000 and larger deposits were exempted.

In early August 2012, the Spanish news agency EFE reported that officials from Banco de España and from the Ministry of the Economy and Treasury were studying

21. The envelope of approved financial assistance amounted to € 100 billion. Upon request by the Spanish government, the European Stability Mechanism disbursed € 39.5 billion in December 2012 and further € 1.8 billion in February 2013.

22. Royal Decree 771/2011 of 3 June 2011. Banco de España Circular 3/2011, of 3 July 2011, provided the implementing rules for the enforcement of the contributions.

23. Most foreign banks operating in Spain were established as subsidiaries and therefore were contributors to the Spanish deposit guarantee fund and were affected by Salgado law. Two exceptions were the branches of Banco Espírito Santo and of ING, the former a Portuguese bank and the latter of Dutch origin, which continued to offer deposit rates quite above the soft legal limits set for banks incorporated in Spain.

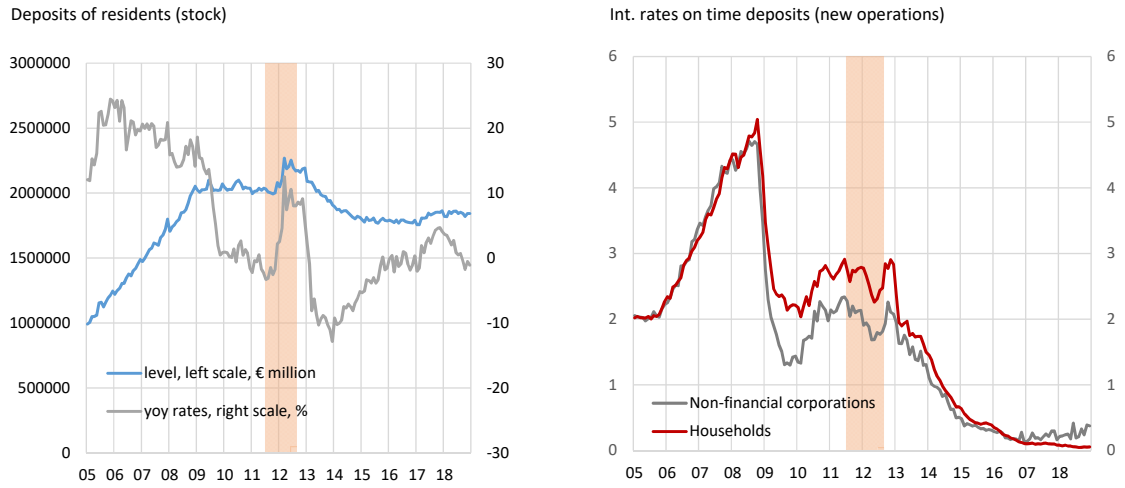

FIGURE 6: Spain: Deposits of residents
Source:Banco de España (Statistical Bulletin)

the possibility of terminating Salgado law, hinting at problems regarding its lack of effectiveness. Salgado law was actually repealed on 31 August 2012.[24]

The political context in Spain had changed significantly since the enforcement of Salgado law, specifically after the general election of November 2011.[25] Meanwhile, the regular contribution rate to the deposit guarantee fund had been raised to 2‰ and the management of the fund (chaired by a deputy Governor of Banco de España) was empowered to collect additional contributions from the banks if needed (the cap for the total contributions was set at 3‰ of eligible deposits).[26] Moreover, by the time Salgado law was repealed, the upward pressure on interest rates was weakening and deposits were beginning to decline (Figure 6).

5. The Portuguese measure

In the run-up to the participation in the euro, in the second half of the 1990s, Portugal enjoyed moderate to high real GDP growth, a very substantial decline in borrowing costs, and a significant increase in private sector debt, whilst its current account deficits were rapidly deteriorating. Due to the lack of domestic savings, the Portuguese banking sector intermediated the required borrowing from European banks. In the period

24. By Real Decreto-ley 24/2012 of 31 August 2012. The repeal was reiterated by Ley 9/2012 of 14 November 2012.

25. Socialist Prime-Minister José Luís Zapatero resigned in September 2011, and his government gave way in December 2011 to the first conservative government of Prime-Minister Mariano Rajoy. As of Banco de España, Governor Miguel Ordónez had reached the end of its term of office in June 2012, being replaced by Governor Luís Linde de Castro, at around the time of approval of the financial support package granted to Spain by the Eurogroup.

26. Real Decreto-ley 16/2011 of 14 October 2011 and Real Decreto-ley 19/2011 of 2 December 2011.

2000-07, Portugal's economic performance deteriorated with lower growth, ongoing large current account deficits, continued increase in private sector debt, and a rise in government deficit and debt. Interest rates remained relatively low and banks went on funding the gap in domestic savings through further funding from abroad.

The global financial crisis had an important impact on the Portuguese economy: real GDP stalled, before falling sharply in 2009; the current account deficit continued unabated in 2009 and 2010, leading to a substantial increase in net foreign liabilities; and the government deficit increased dramatically, rising to above 10% of GDP in 2010. The era of low interest rates on Portuguese debt ended during this period, along with the rising spreads on sovereign debt of other European periphery countries and emerging markets.

The Greek crisis began in October 2009, and spreads on Portuguese ten-year government bonds versus German bonds continued to widen, with some fluctuations. In March 2011, spreads reached almost 5 pp and the main credit rating agencies downgraded Portugal's sovereign rating. Portugal's Prime Minister José Socrates resigned after the opposition rejected the Stability and Growth Programme proposed by his minority government. The following month, the credit rating of Portuguese sovereign debt was downgraded once again. The sovereign spread versus German bonds widened even further and capital inflows fell sharply.

In response to the sudden stop in capital inflows and to the dire situation of Portuguese public finances, the government requested financial assistance, setting the stage for the Financial Assistance Programme agreed with the EU and the IMF in May 2011. The total amount of financing granted for the period 2011-14 was €78 billion, of which €52 billion and €26 billion corresponded to financing through the European mechanisms and to assistance from the IMF, respectively. The Programme contained measures to support the banking system in terms of solvency and liquidity,[27] including the strengthening of banks' collateral buffers and the issuance of government guaranteed bank bonds.

With virtually no access to the wholesale funding markets, and facing limits to Eurosystem financing due to collateral availability, Portuguese banks made aggressive efforts towards raising deposits. Their commercial strategy consisted of increasing deposit rates, waging a "deposits war" which shared some features with the one that was being observed in Spain. In a context of heightened risk aversion, there was a readjustment of households' portfolios in favor of deposits and to the detriment of other savings instruments perceived as more risky. By the end of September 2011, total deposits were growing 4.0% year-on-year, reflecting an increase in household deposits of 9.2% that was partial offset by a decline of 12.9% in non-financial corporation deposits.

However, the favorable behavior of deposits was being achieved at the expense of spiraling deposit rates. Interest rates of new deposits jumped from 1.4% in 2010Q2 to 4.2% by 2011Q3. Four months after the measure taken by the Spanish authorities,

27. Regarding the former, €12 billion (of the total amount of €78 billion) was allocated to the so called Bank Solvency Support Facility.

Banco de Portugal also decided to intervene and penalize banks offering very high deposit rates. Instead of raising the contribution for the deposit insurance fund for those superdeposits, Banco de Portugal opted to require additional capital to the bank whenever a new deposit was raised bearing interest above a certain level.

Even without this intervention related to the excessive remuneration of some deposits, Portuguese banks were already very pressed to raise their capital ratios, which were deemed low by the troika, and in addition were suffering the impact of substantial losses associated with the fall in economic activity.[28] Therefore, directly penalizing the own funds of banks offering superdeposits was considered potentially more effective than raising the associated contributions to the deposit insurance fund. Adopting the Spanish measure in Portugal would have required a change (by the government) of the legal framework regulating the contributions to the deposit insurance fund, in order to allow: (i) different contribution rates depending on the deposit remuneration; and (ii) infra-annual collection of contributions from the banks (which in Portugal are only collected once a year in April).[29] Moreover, directly penalizing banks' own funds did not exempt from the penality deposits above €100,000 and deposits from entities not covered by the deposit insurance (in particular public administrations and financial corporations) as it would have happened if the measure was defined as an increased contribution to the deposit insurance fund.

Banco de Portugal intervention to discourage superdeposits became effective as from 1 November 2011.[30] New (or renewed) deposits became eligible to contribute to the deduction from own funds whenever its deposit rate offered by the bank exceeded the reference rate, defined as the Euribor rate of the relevant maturity plus 300 basis points.[31] For a given superdeposit with amount d_n (in euros), maturity m_n (expressed in days), and rate i_n (scaled such that 1% = 0.01), the following formula was provided by Banco de Portugal for computing the contribution c_n (in euros) of that deposit to the deduction from own funds over the period of one year:[32]

$$c_n = d_n.m_n.(i_n - r_n).\rho$$

where r_n is the reference rate for deposit n (i.e. the Euribor rate of a similar maturity plus 0.03) and ρ is a scaling factor set at 0.005. For superdeposits in currencies other than the euro, the amount was to be defined as the euro equivalent using the exchange rate of the day and the reference rate was to be computed with the interbank market rate (with similar maturity) of the currency concerned substituting for the Euribor. Using

28. Banco de Portugal Notice 3/2011 of 17 May 2011 had been released just some months earlier requiring banks to strengthen their Core Tier 1 capital ratios from 8% of risk-weighted assets to 9% and 10%, respectively by 31 December 2011 and by 31 December 2012.

29. Otherwise, the first effect of the measure would only be felt by banks in April 2012.

30. The legislative basis were Banco de Portugal Notices 7/2011 and 8/2011, both published on 25 October 2011, and Instruction 28/2011, effective as from 1 November 2011.

31. Only deposits placed or renewed after 31 October 2011 were eligible.

32. That is, an eligible deposit placed with bank X on day t of a given year Y contributed to the deduction from own funds of bank X from day t of year Y up to day t-1 of year Y+1.

the formula above, and for example, a one-year deposit of €1,000 contracted on 15 November 2011 with an interest rate 4 pp above the one-year Euribor, resulted in a deduction from the bank's own funds of €18.25 during the period from 15 November 2011 to 14 November 2012.

The capital surcharge did not apply to European banks operating in Portugal through branches because they were not subject to Banco de Portugal's supervision on capital requirements.[33] These branches would also had been excluded from the coverage if the measure had been designed (like in Spain) to affect the contribution of superdeposits to the Portuguese deposit insurance fund, as the deposits placed with these branches contributed to the funds of their home countries and not to the Portuguese fund.

Effective as from 2 April 2012,[34] Banco de Portugal adjusted the new prudential regulation, on three counts. First, it clarified that the contribution of demand deposits, in terms of amount and maturity, should be computed only once a month using the monthly average of new eligible demand deposits during that month and considering a one-month maturity.[35] Second, the scaling factor ρ was doubled to 0.01. Third, it clarified in more precise terms which market rate should be picked and reduced most of the spreads which should be considered when computing the reference rate to be used in the formula above (Tables 1 and 2). Considering the example provided above, a similar one-year deposit of €1,000 contracted with an interest rate 4 pp above the one-year Euribor but on 10 May 2012 instead of 15 November 2011, would have required €36.50 of additional bank capital during the period from 10 May 2012 to 9 May 2013 due to the increased scaling factor.

Deposit maturity	Relevant market rate
Overnight	EONIA
Up to one year	Euribor for the maturity concerned
Longer than one year	max[Euribor(12 months); IRS for the relevant maturity]

TABLE 1. Market interest rate relevant for computing the reference rate

Notes: IRS defined as published by the International Swaps and Derivatives Association; For interim maturities, market rates were to be linearly interpolated based on the closer available maturities.

Deposit maturity	Spread (bp) before 2 April 2012	Spread (bp) after 2 April 2012
Up to 91 days	300	225
From 92 to 182 days	300	250
From 183 to 273 days	300	275
Longer than 274 days	300	300

TABLE 2. Spreads when computing the reference rate

33. It was the case of *Barclays Bank*, *Deutsch Bank* and *Privatbank*.

34. Banco de Portugal Instructions 15/2012 and 16/2012 of 16 April 2012. The latter Instruction stipulated the data reporting obligations by banks (and was later amended by Instruction 30/2013 of 16 December 2013). For demand superdeposits initiated before 2 April 2012, Banco de Portugal Notice 15/2012 established that they had to contribute to the deduction to own funds but only as from 1 June 2012.

35. Which is roughly equivalent to abstain from any type of averaging and treat demand deposits as time deposits with one-day maturity.

This regime of contributions to the deduction from banks' own funds lasted until 31 December 2013, and ceased to be applicable upon entry into force of the CRR. Taking into account that contributions of superdeposits to the deduction from own funds were kept for a period of one year from their origination (or renewal), the deductions extinguished themselves on 31 December 2014, at the latest.[36]

6. A characterization of superdeposits based on microdata

6.1. Data processing

For the purpose of monitoring the compliance with the capital surcharge, banks were asked by Banco de Portugal to report on a weekly basis all the deposits newly contracted or renewed with interest rate above the reference rate. Although banks incorporated in other EU member states doing business in Portugal through branches were not affected, as above mentioned, by the capital surcharge imposed by Banco de Portugal, they were asked to report to Banco de Portugal using the same reporting templates.

For each individual superdeposit, information was reported *inter alia* on the date of contract, the maturity, the contracted deposit rate, the currency in which the deposit was denominated, the amount of the deposit, and the institutional sector of the depositor.[37] We were given access to these data for the period June 2011 – December 2013 covering about 1.3 million individual deposits. Although the capital surcharge was not yet in force before November 2011, the data reported by banks for the period June 2011 – October 2011 emulates the eligibility criterion which became effective on 1 November 2011.

Banks reported deposits denominated in 16 different currencies. However, deposits denominated in euro and in USD represented 96% and 3.5%, respectively, of reported deposits weighted by amount and maturity. In order to simplify the computations (in particular in what regards the interbank market rates in all different currencies) we removed from the data set all deposits but those denominated in euro and USD.[38]

The format of bank reports changed slightly during the period, most significantly for deposits contracted before and after 2 April 2012. In addition, as described in the previous section, on the same date more deposits became eligible for reporting due to the reduction of the spread used to compute the reference rate for each deposit (Table 2). We performed an exercise to check if the reported deposits were eligible, i.e. if the contracted deposit rate was higher than the relevant reference rate. For deposits contracted before 2 April 2012, 11% of their number and 7% of their overall amount (8% if the amounts are weighted by maturity) apparently did not comply with the eligibility condition (in the sense that their deposit rate was not higher than the reference rate as computed by

36. The prudential reporting of individual superdeposits initiated with Banco de Portugal Instruction 16/2012 was only formally terminated later on with Instruction 6/2017 of 3 April 2017.

37. It should be mentioned that there is no identification of the depositors other than their institutional sectors.

38. We also removed from the data set 1,070 observations either with negative maturity, or negative amount, or no currency identification, or with an invalid date of contract.

us). However, it is worth mentioning that the maturity for deposits contracted before 2 April 2012 is not exactly known because we only had available the maturity range they belonged to. We converted these non-overlapping ranges into specific maturities expressed in number of days by assigning to each deposit a maturity equal to the upper limit of the range (which tended to be the mode of the distribution observed in the sub-period after 2 April 2012). Hence, the maturity assigned was 7 days for deposits pointing to the range 'up to 1 week', 31 days for 'more than 1 week up to 1 month', 92 days for 'more than 1 month up to 3 months', 183 days for 'more the 3 months up to 6 months', 365 days for 'more than 6 months up to 1 year'. When the deposit maturity was indicated to be 'more than 1 year', it was assumed a maturity of 913 days, reflecting the average of 730 and 1095 days (respectively 2 and 3 years), which were the two maturities of more than 1 year around which we observed the higher relative frequency in the information available from 2 April 2012 onwards.

Regarding deposits reported by banks which were contracted after 2 April 2012, only 2% of their number and 5% and 3% of their amount (non-weighted and weighted by maturity, respectively) did not comply with the eligibility condition as emulated by us. Demand deposits reported in this second sub-period indicate either zero or 1 day maturities, and we opted to harmonize the maturity of demand deposits to 1 day.[39]

6.2. Superdeposits in the period 2011-2013

On the right side of Figure 7 we present the proxy (based on the filtered data just described and excluding branches of banks incorporated in other EU member states) for the overall amount of the monthly contributions to the deductions from own funds which resulted from contracting superdeposits. As mentioned in the previous section, Banco de Portugal established that these contributions once generated had to be deducted from the Core Tier 1 capital over a period of 12 months.[40]

The left side of Figure 7 shows the overall monthly amount of superdeposits when weighting the individual operation amounts by maturity (expressed in days) and dividing by 365. By simply summing the contracted amounts of the superdeposits would be meaningless given that we would be adding amounts of deposits with very short maturities (and likely high turnover) to amounts of deposits with long maturities (and less frequent turnover). The result would grossly over represent deposits with small maturities in detriment of deposits with larger maturities. By performing the described type of weighting, we are adjusting deposit amounts so that we can treat them as if they were all contracted with a 1-year maturity.

When analyzing both charts, we should remind that the values for months prior to November 2011 (including those for October 2011) are only emulations of what those variables would be if the regulation had already been in place, which it was not, for the deposits contracted during that period.

39. This assumption is consistent with the remark made in footnote 35.

40. For instance, the contribution resulting from the superdeposits contracted on June 2012 affected the banks' capital from June 2012 to May 2013.

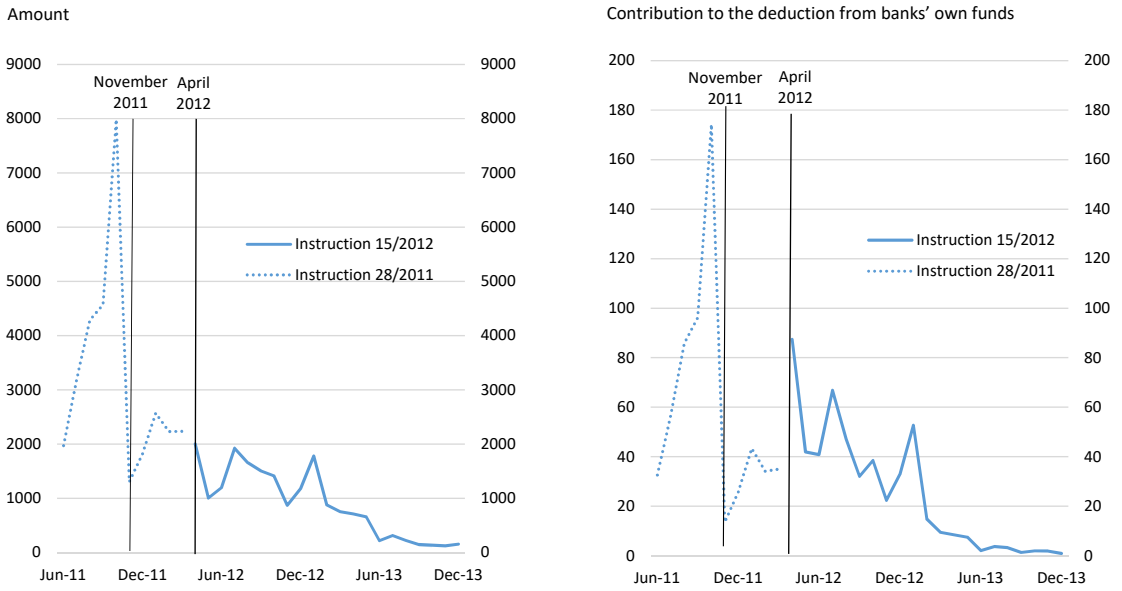

FIGURE 7: Superdeposits: Weighted amount and contribution to the deduction from capital (€ million, monthly data, excluding branches of banks incorporated in other EU member states)
Note: Amounts weighted by maturities expressed as no. days / 365

From Figure 7 we take that the capital surcharge seems to have discouraged superdeposits upon its entry into force. There was a remarkable increase in the amount of superdeposits contracted from June 2011 to October 2011.[41] The exceptional high values obtained in October were influenced by some few very large deposits with long maturities.[42]

Another point to be taken from Figure 7 is the increase in the monthly contribution to the deduction from banks' own funds which occurred in April 2012, on the occasion of the capital surcharge reinforcement, in spite of no jump being visible in the weighted amount of superdeposits. This means that the larger contribution to the capital charge was mainly associated with the doubling of the scaling factor ρ (from 0.005 to 0.01). It is also worth highlighting that the contribution to the capital surcharge in the beginning of 2013 was already quite small, and it became virtual nil from mid-2013 onwards.

In the left side of Figure 8 we have the distribution across banking groups on a consolidated basis of the ratio computed as the amount of superdeposits (again weighted by maturities divided by 365 and excluding branches of banks incorporated in other EU member states) over the corresponding bank's stock of deposits, whilst the right side of Figure 8 is the chart of the distribution, also across banking groups on a consolidated basis, of the contribution to the capital surcharge as percentage of

41. The number of superdeposits reported by the banks (not shown in Figure 7) increased from 9,200 in June 2011 to 67,000 in October, afterwards declining sharply to 12,100 in November.

42. The five largest deposits, when weighted by maturity and divided by 365, account for almost €1.1 billion (14% of the monthly total for October).

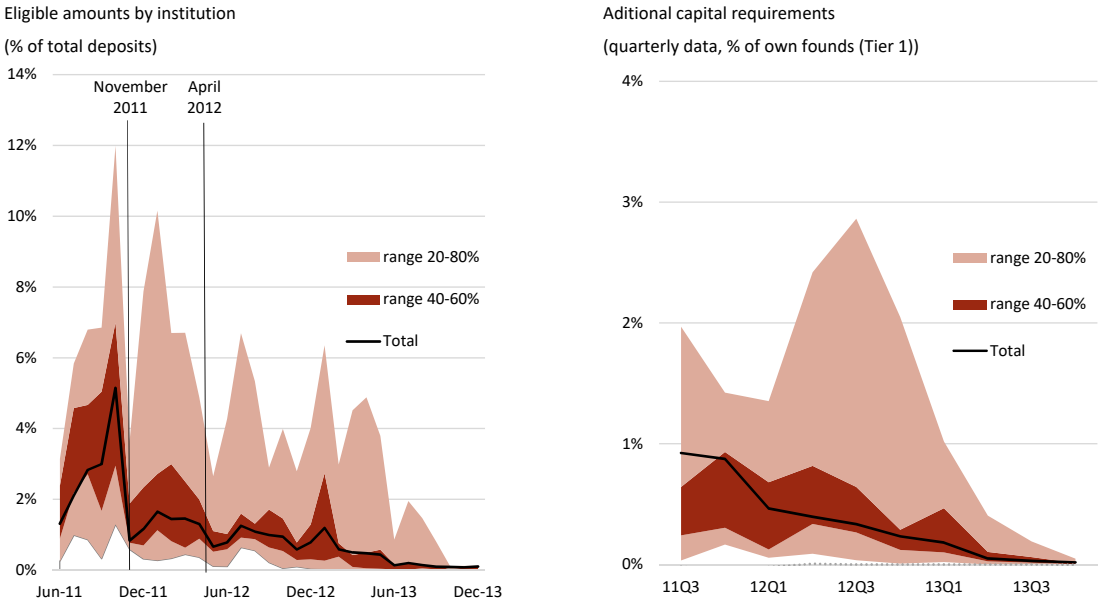

FIGURE 8: Institutions reporting superdeposits: Distributions across banks by weighted amount and by contribution to deduction from capital (on a consolidated basis)

Notes: Branches of banks incorporated in other EU member states are not considered; Banking groups are not weighted according to their size; "Total" corresponds to the ratio for the banking system excluding branches of banks incorporated in other EU member states.

banks' Tier 1 capital.[43] We should notice that the former indicator does not represent the distribution of the share of superdeposits in total deposits across Portuguese banking groups because the scaling of numerator does not provide a proxy for the stock of superdeposits. There was no way of computing a reasonable approximation of that share with the available information so our only goal in producing the ratios underlying the chart on the left side of Figure 8 was to display some relative indicator more comparable across banks.

Both distributions presented in Figure 8 confirm that the capital surcharge did not affect banking groups in a similar way. Some banks were considerably more exposed to the penalty imposed by Banco de Portugal than others. When considering the 1-year long moving sum of contributions[44] as stipulated by Banco de Portugal's regulation, we may infer that for some banks the deduction from own funds exceeded 10% of their Tier 1 capital. For the Portuguese banking system as a whole, and taking into account that monthly contributions add to the deduction from own funds during a period of one year after the superdeposits were contracted by banks, Figure 9 provides our estimate of the amount of capital charge effectively imposed by Banco de Portugal. It peaked at €211

43. For both distributions, the mass of probability attached to each bank is given by its share in the stock of deposits.

44. Note that the right side of Figure 8 does not show the capital penalty (i.e. the moving sum) but only the quarterly contributions to it.

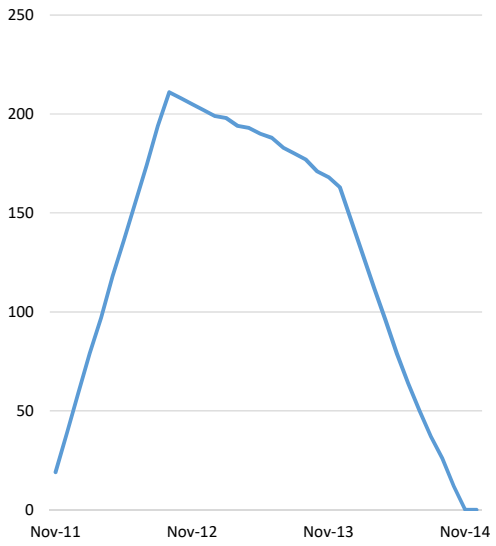

FIGURE 9: Overall deduction from own funds (€ million)
Note: Branches of banks incorporated in other EU member states are not considered.

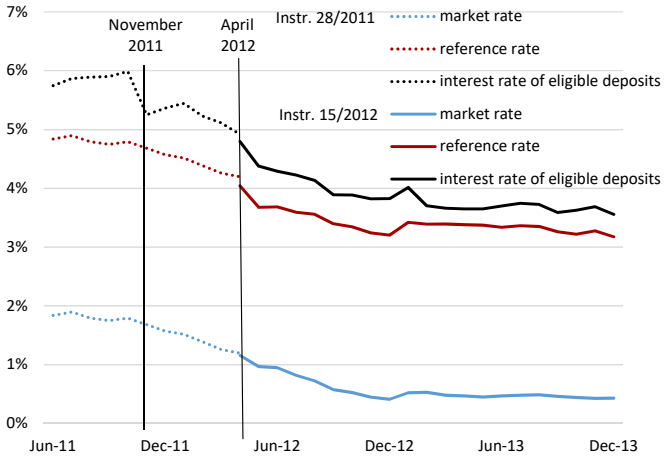

FIGURE 10: Superdeposits: Interest rates
Note: Interest rates were weighted by deposit amounts and maturities.

million in September 2012. This is relevant for a banking sector that at the time was very pressed to substantially increase the capital ratios.

Figure 10 and Figure 11 complement the information provided so far by presenting the evolution of interest rates associated with superdeposits placed with banks subjected to Banco de Portugal's supervision on capital requirements. All lines in Figure 10 were obtained by doubly weighting interest rates by amount and by maturity of each individual superdeposit. The slight downward discontinuities observed from March to April 2012 (in transition from the dotted to the continuous lines) reflect the change in spreads relative to market rates as indicated in Table 2.

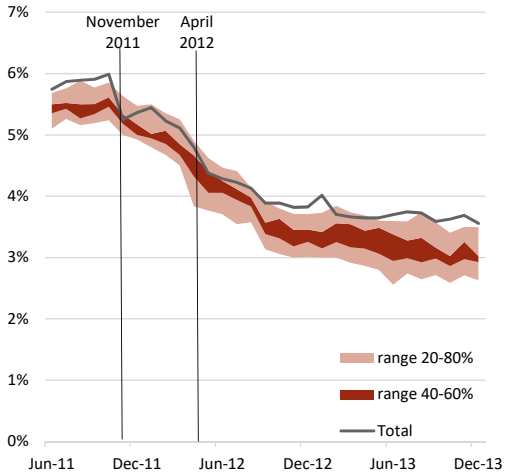

FIGURE 11: Superdeposits: Distribution of interest rates across banks

Notes: Banks are not weighted according to their size. "Total" corresponds to the the banking system excluding branches of banks incorporated in other member states.

Interestingly, we see in Figure 10 that interest rates of superdeposits kept a relatively constant spread over the market relevant rates during the period 2011-13, implying that the phasing out process of superdeposits did not take place through a gradual downward adjustment of spreads relative to market rates, but mostly through their declining amounts. In turn, Figure 11 presents the distribution by bank (non-weighted by bank size) of average interest rates of superdeposits, confirming the conclusion from Figure 8 that over the period 2011-13 there was significant heterogeneity across banks.[45]

Figure 12 allows comparing the amount[46] and interest rates[47] of superdeposits contracted by banks subjected to Banco de Portugal's supervision on capital requirements with those declared for monitoring purposes by branches of banks incorporated in other EU member states.[48] With the exception of two months (May and June 2012), the amounts of highly remunerated deposits placed with branches of European banks were not significant, thus implying that the leakage of deposits from banks subjected to Banco de Portugal' capital surcharge was rather limited (in amount and in time). It is worth noting the lack of leakage of deposits to banks incorporated in other EU countries even during 2013, when they were offering higher interest rates. Probably, more significant were investments promoted by banks away from deposits on banks' equity or debt, or on securities issues by related parties. Nevertheless, given the depositors' heightened aversion to risk at the time, the magnitude of these outflows to

45. The heterogeneity across banks explains why the (weighted) average interest rate of superdeposits is above the percentile 80 of the (non-weighted) distribution for some of the months.

46. Weighted by no. days / 365 days

47. Weighted both by amount and by maturity.

48. Notice that for the former banks, the values underlying Figure 11 are the same as presented in the left chart of Figure 7 and in Figure 10.

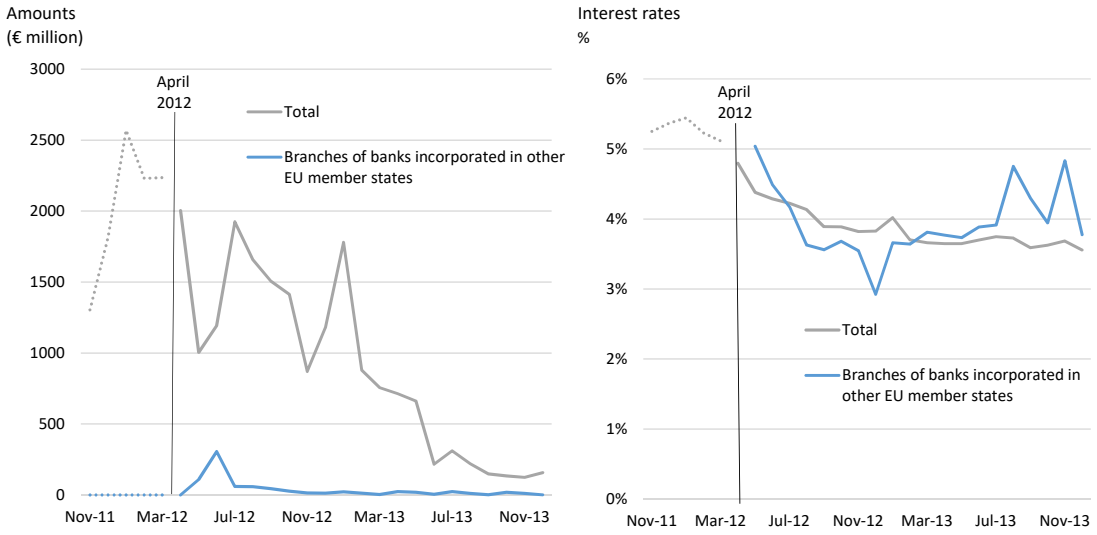

FIGURE 12: Superdeposits: Distribution of Interest rates across banks

Notes: Banks are not weighted according to their size. Total" corresponds to the the banking system excluding branches of banks incorporated in other member states.

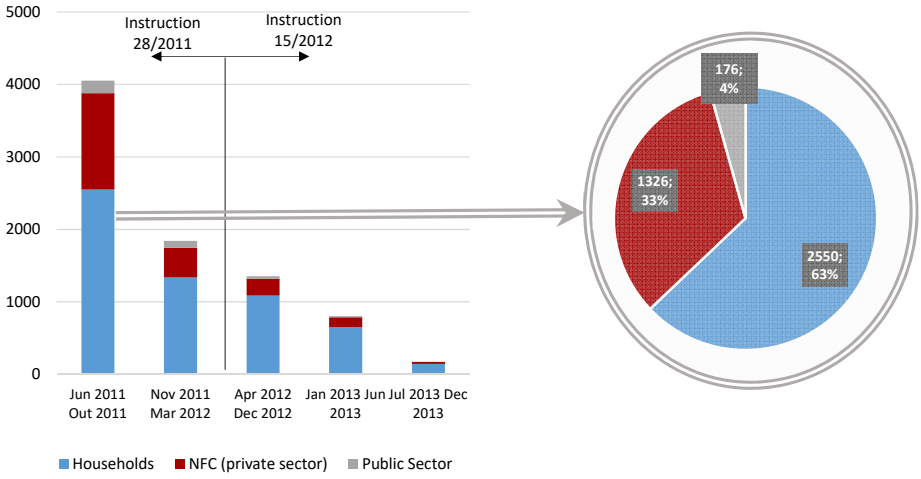

FIGURE 13: Superdeposits by institutional sector of the depositor (€ million, based on monthly data, excl. branches of banks incorporated in other EU member states)

Notes: Public sector is defined as general government entities and state-owned companies. Amounts are weighted by maturity (no. days / 365). The value for a period is the non-weighted monthly average in that period.

securities other than deposits never led the overall stock of deposits to decline during the relevant period.

Before concluding, we look at the breakdown of superdeposits by institutional sector of the depositor (Figure 13 and Figure 14). In the months leading to Banco de Portugal's decision, more specifically in the period June-October 2011, when weighting by maturity, household deposits represented 63% of the deposits with

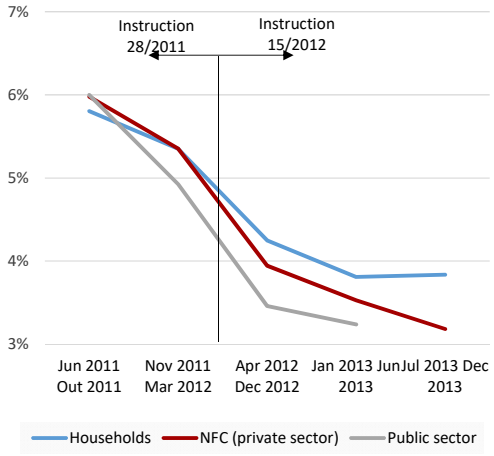

FIGURE 14: Interest rates of superdeposits by institutional sector of the depositor (excludes branches of banks incorporated in other EU member states)

Notes: Public sector is defined as general government entities and state-owned companies. Interest rates are doubly weighted by amount and maturity.

remuneration deemed excessive (i.e. bearing interest at a rate over 300 bp higher than the relevant Euribor rate), while deposits of non-financial corporations represented 33%, the remaining 4% being deposits by public sector entities.[49] It is also worth noting that, in the phasing-out process of superdeposits, household deposits proved to be more resilient, fading more gradually than the deposits of the other two institutional sectors. Deposit rates contracted with households also declined more slowly.

7. Concluding remarks

The paper described the motivation and documented the effects of the capital surcharge imposed by Banco de Portugal in October 2011, and later adjusted and reinforced in April 2012, on banks offering superdeposits (i.e. deposits with a remuneration deemed excessive). The motivation for this measure was macroprudential, as it addressed a significant financial stability concern, although at the time the current institutional framework of macroprudential policy was not yet in place.

In 2011, Portuguese banks were aggressively trying to raise more funds through deposits, in a context of very unfavorable macroeconomic conditions. Excessive competition for deposits was amplifying bank losses by raising interest expenses. Furthermore, the higher deposit rates were passing-through to the loan rates, thus contributing to further deepen the recession and deteriorate the loans portfolios of

49. Although not directly comparable, at end-October 2011, the share of household deposits and of non-financial corporations deposits in the overall stock of deposits of residents excluding financial institutions was 73.1% and 18.6%, respectively (source: Portuguese monetary and financial statistics published by Banco de Portugal).Public sector is here defined as general government entities and state-owned companies.

banks. In the months following Banco de Portugal intervention, deposit rates started to decline and so did the amount of superdeposits.

It is always hard to prove the existence of causality, and in the case under examination the Portuguese economy was experiencing changing conditions which may help in large part to explain the return of deposit rates to more normal levels. Indeed, at about the same time that Banco de Portugal decided to impose the capital surcharge, money market interest rates began to decline and the ECB considerably widened the eligibility of assets accepted as collateral for its refinancing operations. Moreover, by end-2011 there were negotiations between the troika, the Portuguese government and some of the largest banking groups for the public recapitalization of the latter, which eventually took place in June 2012 and January 2013 and undoubtedly also eased liquidity concerns of those banks. Nevertheless, the evidence discussed in the paper suggests that the imposition of the capital surcharge contributed to contain the war for deposits amongst Portuguese banks.

As to the concrete specification of the policy measure, directly penalizing the own funds of banks offering superdeposits was considered preferable to raising the associated contributions to the deposit insurance fund, as in Spain, in particular because directly penalizing banks' own funds did not exempt deposits above €100,000 from the penalty.

It is worth emphasizing that the very particular and problematic circumstances under which the capital surcharge was applied impeded the materialization of the risks reported in the economic and financial literature as being potentially associated with policy measures controlling deposit rates.[50] It is often argued by critics of deposit rates ceilings that, while preventing destructive competition amongst banks for deposits, they facilitate cartel behavior and may result from the capture of the regulator by bankers who use the ban on competition to serve their private interest. In general terms, these critics may have a point but in Portugal in the years 2011-2012 banks were sorely pressed by the deep recession affecting the economy, the dire state of the public finances and the contraction in international capital inflows. This was not the environment for a bank cartel to extract rents from a policy measure which restraints competition in the deposit market.

Another criticism of deposit rate controls is that they muddy the waters for monetary policy-making. There is merit in the argument for a country with its own currency. However, Portugal being a small economy participating in a vast area with common currency and monetary policy, the argument seems to be irrelevant.

More relevant are the warnings about the potential reduction of deposits in the presence of interest rates significantly constrained by ceilings when close substitutes to deposits are available. This 'leakage' of deposits may be serious and put pressure on bank liquidity. Again, due to the specific economic conditions at the time and the consequential heightened risk perception and aversion by Portuguese households and companies, the imposition of the capital surcharge on banks offering superdeposits did

50. This issue of Banco de Portugal's *Economic Studies* includes a synopsis on deposit interest rate ceilings.

not lead to an overall reduction of deposits, in spite of the occasional episodes of savings flowing out from deposits to securities of under-perceived riskiness (e.g. investments promoted by the banks on their own equity or debt, or on securities issues by related parties).

Finally, a criticism raised in the literature against deposit rate ceilings is that these controls may have undesirable allocative and distributive consequences. According to this criticism, deposit rate ceilings may discriminate against the small savers who cannot earn market interest rates from their savings, being impeded by the significant minimum denominations of market instruments and by their own unfamiliarity and ignorance on the functioning of capital markets. This is particularly true when the ceilings or the penalty only apply to deposits below a given amount, but as mentioned, in the period when the capital surcharge on banks was in force in Portugal, it was being applied both to small and large depositors, and there were no worthy investment alternatives for them. Therefore, the concern about its distributive consequences was rather muted.

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