

The Impact of the Negative Deposit Facility Rate on the Banking System

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Abstract: The main aim of the study is to investigate the repercussions of the monetary policy of negative interest rates conducted by the European Central Bank as a response to defective performance levels across the banking system during a time of economic trough afflicting European countries. The assumption under negative interest rates is that this should make monetary institutions more likely to issue credit, thus fighting loan contraction and creating a solid ground for proper money circulation and economic expansion. Simultaneously, this policy entails, for financial institutions, an extra payment due to their liquidity holdings at the ECB, in the form of deposits or current accounts. Nonetheless, it should be kept in mind, that the primary objective of the ECB is to seek price stability, and for this reason, in comparison, the lucrative purpose of the banking sector is a problem to put on the back burner. Under these circumstances, the amount of total payments carried out by the banking system of each 19 countries of the Monetary Union has been the object of the study to understand which countries are more or less sensitive to the policy. Furthermore, those figures are compared to the due forecasted payments to be done by each country's banking system on aggregate level after the recent implementation of a two-tier system for the liquidity held in the current accounts. The results show that a great disproportion exists in the affliction of negative interest rates across the banking system in different eurozone countries and that each of them will be differently affected by the two-tier system.

Keywords: Banking, Regulations Facilities, Sociology, Interest Rates.

INTRODUCTION

Taking into account the persistently low inflation and economic growth levels following the 2007 distressing crisis, the ECB deemed it necessary to adopt accommodative policies to increment money supply and boost economic stimulation (Arce, Posada and Mayordomo 2019).

In this prospect, the Governing Council dared to attempt financial development and price stability through the implementation of a non-traditional policy of negative interest rate for such long time and in such extensive area as the Eurozone, setting, on 18 September 2019, the deposit facility rate at minus 0.5%, and applying it also to the average reserve holdings in excess of the reserve requirements (Acharya, Eisert, Eufinger and Hirsch 2019).

One of the main consequences encountered was the massive rise of a disproportionate and unremunerative excess of liquidity with the Central Bank's reserves and deposits. This results in both the deprivation of potential profit and the load of an additional cost which banks should deal with (Angrick and Nemoto 2017).

Moreover, the ECB recently announced the implementation of a two-tier system, which is expected to allow, for a certain portion of the liquidity in surplus, a possible "escape route" from the negative interest rate (Draghi 2019).

In the following chapters, the different scenarios encountered across eurozone countries will be exposed, in terms of banks' payments to the ECB and repercussions on the profitability side firstly, and the forecasted amount of payment considering the two-tier system secondly. The negative interest rates policy is a relatively recent topic, and theoretical and empirical literature is almost silent regarding its efficiency and results in the long term (Drut 2019).

Negative interest rates were first fantasized and theorized in 1890 by Silvio Gesell but actually encountered in 1998, when Japanese credit institutions, under suspicion of insolvency, were charged to pay a premium in the interbank market (Caruana 2016).

Following, negative interest rates were embraced by other countries' Central Banks such as the Norges Bank, the Swiss NB, Sveriges Riksbank, Danmarks Nationalbank and the ECB.

However, in the academical World, there is no univocal opinion on the adequacy of this monetary manoeuvre. In the euro area, numerous working

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papers carried out by European monetary organizations, the International Monetary Fund, the Bank for International Settlement, several Credit Institutions, and various economic think tank, point out how the fixation of the deposit facility rate into negative territory could effectively support the economic growth, while on the other hand, other authors sustain that this policy can lead to inconvenient results and modify the normal operational life of the banking system, especially in the long term (Watts 2019).

Some researchers explain how, at the beginning of its implementation, the policy helped to approach ECB' price stability objective and support easier financial condition. However, low credit growth and the accumulation of excess liquidity by credit institutions (Angrick and Nemoto 2017; Drut 2019) triggered concerns about sustainable bank profitability and doubts about the adeptness of the policy in the event of a further decline of interest rates or the prolonged use of the policy. Some authors point out that further cuts in the deposit facility rate, as the marginal policy rate, jointly with excess reserves held by banks, can effectively lower the interbank rates, thus motivating banks to undertake greater risks to manage their portfolio rebalancing or even relying too much on the central bank (Watts 2019).

In a sample of United States and Canadian banks, Étienne Bordeleau and Christopher Graham (2010) found evidence that holding liquid assets until a certain level increases profitability, but when this level is exceeded, there is an inverse relationship between liquidity and profitability. This is because liquid assets, such as cash and government securities, commonly have a low return, thus holding them means an opportunity cost for the banks (Borio and Hofmann 2017).

Moreover, additional reductions of the deposit rate can intensify the shrink in profitability for banks and lead to lower capital ratios and unsustainable returns (Brand, Bielecki and Penalver 2018).

Overall, the primary purpose of the study is to analyze the repercussions of the monetary policy of negative interest rates performed by the European Central Bank as a reaction to defective performance levels across the banking system in the era of adverse economic issues. Furthermore, the outcomes are compared to the foreseen payments to be carried out by each country's banking system on aggregate level after the recent implementation of a two-tier system for

the liquidity held in the current accounts. Finally, due to the strict time the World is currently undergoing, we have attempted to make some feasible recommendations to boost monetary policy

METHODOLOGY

The study is based on a dialectical and worldview for the research conducted the main examination tools used have been individual banking data, national Central Banks' balance sheet, and the Statistical Warehouse of the ECB which offers data concerning the banking system and the standing facility volumes. The results obtained focus on the whole banking system of the European countries adhering to the Monetary Union, and not on a single banking group. More specifically, in order to understand which countries were most involved in the average surge of liquidity, the amount of liquidity in current accounts and deposits maintained monthly with the Central Bank, from the year 2016 to 2019, have been used as a point of reference. Regarding the two-tier system, it creates, as the name suggests, a distinction between one part of the liquidity in excess and another part, and assigning different rates of interest to each one.

The calculations conducted lead to find out the countries which most beneficiate from this system, keeping into account the reserve requirements, the amount of excess reserves and calculating the forecasted payments after the implementation of the system, and comparing these figures to the volumes of payments that should be done in the case of not the existence of the system

Liquidity Concentration among Euro Area Countries

The main consequence of the monetary policy of negative interest rates was an unexpected accumulation of liquidity. Since July 2012, the deposit facility rate was set to 0%, the amount of reserves held at the ECB largely exceeds the legal requirements, thus creating liquidity surplus which implies further contraction in loans release. Euro area banks are required to hold a certain amount of funds as reserves in their current accounts with the national central bank during the maintenance period. Until January 2012, banks had to hold at least 2% of certain liabilities, mainly customer deposits, considering both corporations and families, at their national central bank. Since then, the ratio has been reduced to 1%. Liquidity in surplus can be defined as the volume of the funds

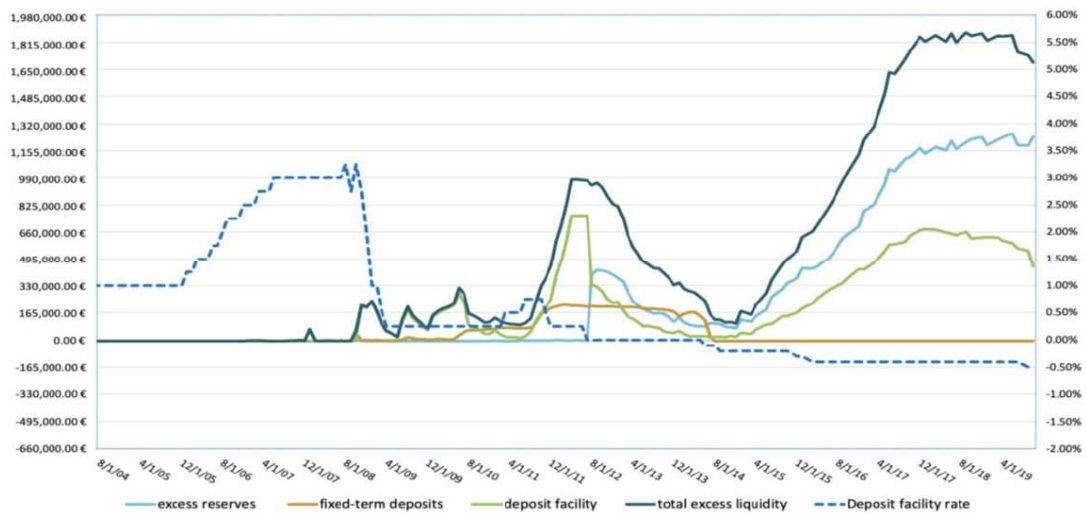


Figure 1: Total excess liquidity (millions of euro) and the deposit facility rate (%) in the eurozone.

Source: ECB Statistical Warehouse.

maintained by banks at the Central Banks, either on current accounts as reserves in excess of the minimum requirements, or through the deposit facility or the fixed-term deposit.

The net increase in excess liquidity in July 2012 is crystal clear. The amount of reserves in excess before the 11 July 2012 had stayed quite stable at the same level of around 1324 million of Euro on average. The volume of excess reserves rocket, reaching a peak equal to 432898 million of Euro the month after the announcement of the zero interest rate. After that moment, despite some downtrend during the end of 2014 and the beginning of 2015, the amount of excess liquidity grew until the end of 2019, when the amount reached 1255267 million of Euro at the beginning of November.

In comparison, the quantity of liquidity held by financial institutions in deposit facility with the ECB, at the level of 770573 millions of Euro on average during the month of July 2012, dropped dramatically to the amount of 343073 millions of Euro in August 2012. This amount of liquidity extended until January 2018, with a peak of 689154 million of Euro. Afterwards, the trend faced an overall decrease until the end of 2019.

The problem is that, once created, excess liquidity remains at the Central Bank and there is no way out. A single bank can reduce its excess liquidity, for example by lending to other banks, buying assets or transferring funds on behalf of its clients, but in any case, the banking system as a whole cannot: liquidity always ends up in another bank and after that in an account at the Central Bank. It is a closed system by definition.

Even though the liquidity surplus started to decline sharply after 2012, it ascended again, in March 2015 following the launch of the asset purchase program, which has provided additional monetary accommodation at a time when the interest rates could not be lowered much more. In this occasion, excess liquidity resulted mechanically from measures taken by the Euro system, and continued to expand until today. Forecasting the trend which will be faced for the next months, it is possible to state that, considering the recent Governing Council decisions regarding intensive accommodative monetary policy, the excess liquidity will still follow an upward trend. As a consequence of excess liquidity, market interest rates have stayed low. This means it is cheaper for companies and people to borrow money, thus helping the economy recover from the financial and economic crisis, and allowing the banking system to build up liquidity buffers. The peculiar aspect is that the accumulation of liquidity in surplus is not linear among the countries of the Euro area, but, indeed, it is limited in a few ones, such as Germany, Netherlands and France.

The following table promptly displays where excess liquidity is concentrated and help understand in which countries it is predominantly distributed.

For the calculation of excess liquidity, the data used regard current accounts covering minimum reserves, and deposits held monthly with the respective national central bank by each country’s financial institutions within the euro area, from the beginning of 2016 until September 2019.

If just considering the above-mentioned countries, Germany, Netherlands and France, we would reach

Table 1: Euro Countries Excess Liquidity in 2016, 2017, 2018 and 2019 (millions of euro)

Year	AUSTRIA	BELGIUM	CYPRUS	GERMANY	ESTONIA	SPAIN
2016	€ 22,061.00	€ 49,103.43	€ 8,376.00	€ 360,689.43	€ 2,927.00	€ 27,352.43
2017	€ 36,516.25	€ 82,505.83	€ 9,577.08	€ 589,136.33	€ 3,294.75	€ 73,151.83
2018	€ 42,133.83	€ 102,104.83	€ 11,235.25	€ 657,210.58	€ 3,965.83	€ 110,868.58
2019	€ 41,517.00	€ 86,115.22	€ 11,378.00	€ 649,505.78	€ 4,453.44	€ 107,815.00
TOTAL	€ 142,228.08	€ 319,829.32	€ 40,566.33	€ 2,256,542.12	€ 14,641.03	€ 319,187.85

Year	FINLAND	FRANCE	ITALY	GREECE	NETHERLANDS	PORTUGAL
2016	€ 70,067.14	€ 295,903.57	€ 42,077.14	€ 1,132.71	€ 186,884.29	€ 4,414.14
2017	€ 93,771.00	€ 420,715.25	€ 109,478.25	€ 1,338.83	€ 212,465.25	€ 8,235.17
2018	€ 96,014.17	€ 458,790.83	€ 102,235.75	€ 3,378.58	€ 233,468.00	€ 11,881.83
2019	€ 98,246.44	€ 497,310.33	€ 87,552.89	€ 3,294.00	€ 186,351.89	€ 12,266.56
TOTAL	€ 358,098.75	€ 1,672,719.99	€ 341,344.03	€ 9,144.13	€ 819,169.42	€ 36,797.70

Year	LITHUANIA	IRELAND	SLOVAKIA	SLOVENIA	LUXEMBURG	MALTA	LATVIA
2016	€ 1,886.14	€ 17,177.14	€ 1,141.29	€ 2,367.14	€ 75,161.29	€ 2,432.29	€ 3,850.14
2017	€ 2,827.58	€ 18,679.83	€ 1,235.42	€ 2,732.17	€ 97,229.17	€ 3,508.75	€ 4,360.92
2018	€ 4,095.42	€ 22,889.42	€ 1,397.17	€ 3,080.58	€ 120,210.00	€ 4,251.75	€ 4,802.00
2019	€ 5,231.89	€ 23,837.44	€ 1,523.22	€ 3,265.78	€ 124,477.44	€ 4,693.00	€ 4,580.56
TOTAL	€ 14,041.03	€ 82,583.84	€ 5,297.09	€ 11,445.67	€ 417,077.90	€ 14,885.79	€ 17,593.62

Sources: ECB's Statistical Warehouse.

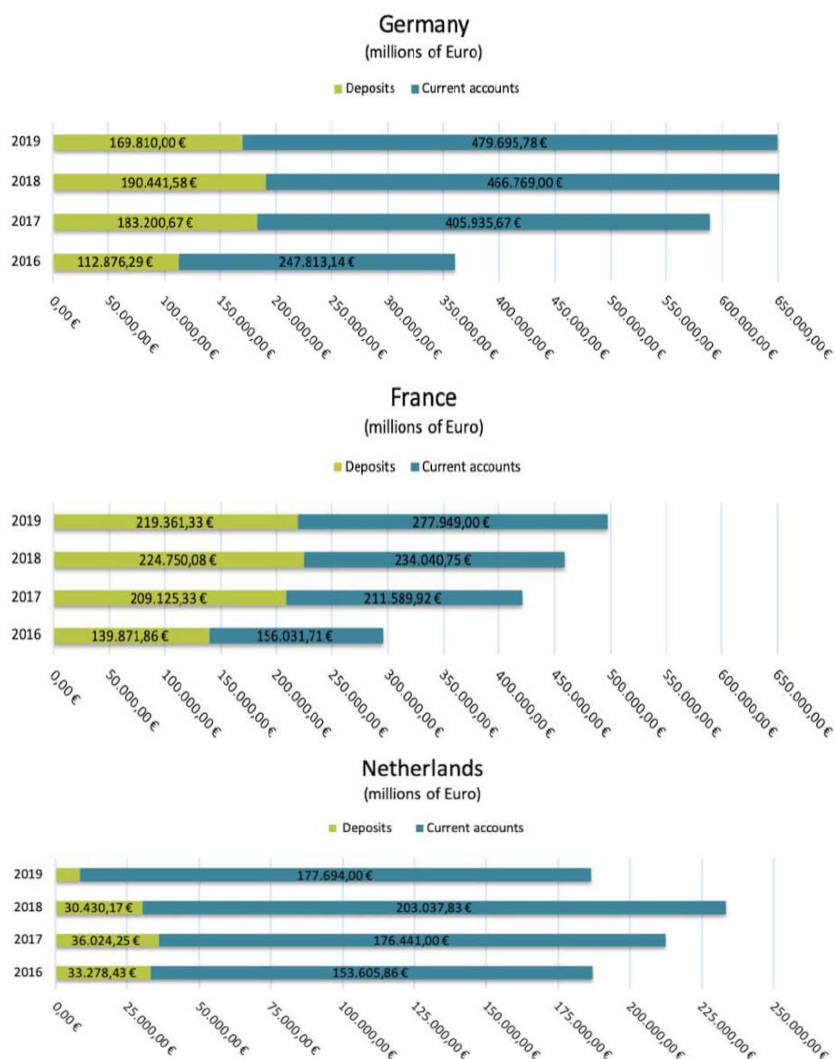


Figure 2: Excess liquidity of German, French and Dutch financial institutions.

Source: ECB Statistical Warehouse.

accumulated liquidity in excess of 70%, against a 30% of excess liquidity accumulated by the credit institutions in the remaining sixteen countries belonging to the Monetary Union. These figures are better expressed by allotting them into the amount of average liquidity held in the deposit facility on one hand, and current accounts on the other hand.

In those countries, high amounts of cash, or cash equivalents, detained as excess liquidity can be translated into different aspects of a bank's operational structure.

First of all, it connotes a solid banking organization, since only established banks can bear additional taxation, without overly affecting their return indicators. In this regard, it is important to note the position of the major banks at the level of the euro system, which overall belong to the countries in which most of the liquidity is concentrated.

An important consideration to make is that banks in lower-rated countries may find it more attractive to invest liquidity inflows in domestic bonds or foreign assets with higher returns than the deposit facility rate. At the same time, banks in higher-rated countries often face internal risk limits preventing them to opt for low-risk domestic investments that ordinarily offer lower returns than the deposit structure and thus make holdings in excess liquidity more attractive.

Total Payments to the ECB

Moving the attention to the annual average value of the charges paid by banks to the ECB during years

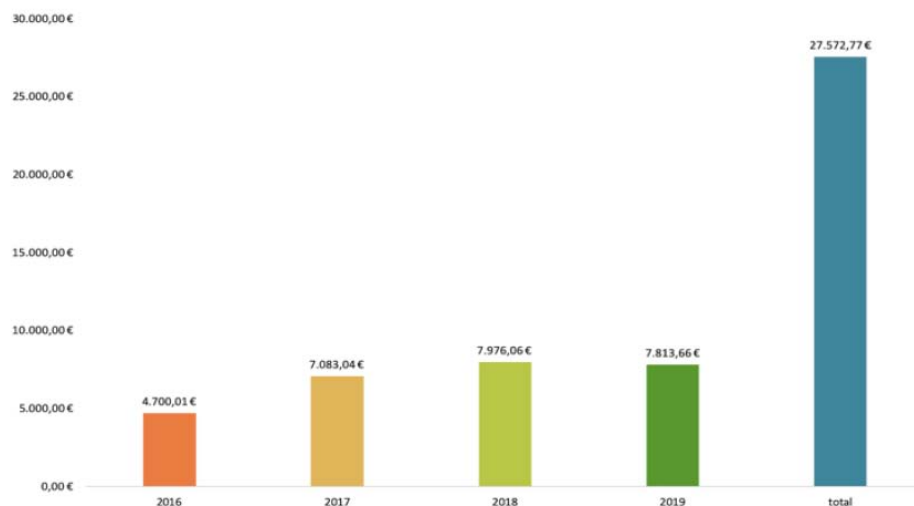


Figure 3: Annual payment of the Eurosystem financial institutions.

Source: ECB Statistical Warehouse.

2016, 2017, 2018 and 2019, these figures were calculated multiplying the annual average current accounts, covering the reserve requirements, and deposits by the deposit facility rate equal to negative 0.4% until 19 September 2019, and negative 0.5% afterwards.

Regarding the amount of average monthly liquidity accumulated across all financial institutions located in the Euro system, the total number, summing all data since 2016 until 2019, amounts to 27.6 billion of euro. In 2016 alone, this figure was equal to 4.7 billion, growing up to 7.1 in 2017 and 7.9 billion in 2018. In 2019, we faced a slightly lower amount equal to 7.8 billion.

Germany, France, Netherlands, Luxemburg, Spain, Finland, Italy and Belgium represent the countries with the highest percentage of surplus liquidity. In fact, if compared to the other Monetary Union countries where excess liquidity fluctuated between an average of 3 and 6 percent from year to year.

Austria, Cyprus, Estonia, Greece, Lithuania, Ireland, Portugal, Slovakia, Slovenia, Malta and Latvia did not accumulate such a remarkable value of excess liquidity. At a general level, their liquidity represented approximately a percentage lower or roughly equal to 2 percent of the surplus liquidity between the countries within the Monetary Union.

At this point, one may think that with the large sums of capital paid out, the profitability of the financial institutions would be negatively affected.

Actually, it is not possible to assert that the banking system reacted undesirably to the policy put in place by the ECB with lower profits.

Observing on aggregate level the main financial ratios which describe profit results and those that define capital quality, there are evident signs of recovery since the crisis of 2007. At the euro system level, it can be said, in general, that the situation has tended to improve since the years of the crisis up to 2019.

Certainty, the bank sector had to realize some changes, regarding deep cuts on employees and the number of operating branches, and increment income deriving from net fees and commissions, nevertheless no real sign of impairment can be seen or connected with negative interest rate policy.

Implementation of the Two-Tier System and its Consequences

The minimum reserve system is set out through different reserve coefficients which determine the level of liquidity to be kept as a reserve maintained in the national bank of the country in which the financial institution is located. The main balance sheet accounts to consider, to calculate the reserves base, are overnight deposits, deposits with an agreed maturity or period of notice up to two years, debt securities issued with a maturity up to two years, and money market paper. On these accounts the reserve coefficient applied, which was equal to 2% until year 2012, has been changed to 1% of the above-mentioned liabilities.

The Governing Council of the European Central Bank has decided to introduce, starting from 30

October 2019, a two-tier system for the remuneration of reserves, which exempts part of the excess liquidity holdings of credit institutions from the negative remuneration at the rate applicable to the deposit facility.

This modus operandi takes its cue from the BoJ system, which already introduced a three-tier system in 2016, whereby a positive interest rate, a zero-interest rate and a negative interest rate are applied to different categories of excess liquidity respectively.

The ECB's decision to follow closely aims to support the monetary transmission of banking policy, while preserving the positive contribution of negative rates to the accommodative monetary policy position and the continued and sustained convergence of inflation to the ECB's objective.

More specifically, the system will apply to excess liquidity held in current accounts with the Eurosystem, but will not apply to holdings in the deposit with the ECB. The multiplier applicable to the excess reserves during the maintenance period is set to 6. The size of the exempt level is determined on the basis of average end-of-day balances in institutions' reserve accounts during a maintenance period.

The excess liquidity above six times the amount of the reserves is remunerated at an annual rate of 0%.

It is possible to notice that France and Italy show the largest numbers, meaning that their deposits held are way higher than the other countries of the euro system. Indeed, the French minimum reserves, equal to € 41704 millions of Euro, and the Italian ones, equal to € 26148 millions of Euro. Thinking about it, those

Table 2: Average Reserve Requirements and Reserve in Excess by Country, 2019

	AUSTRIA	BELGIUM	CYPRUS	GERMANY	ESTONIA
Reserve requirements	4,276.00 €	5,794.00 €	319.00 €	5,746.00 €	474.00 €
Reserve in excess	39,136.22 €	24,702.78 €	6,890.78 €	479,695.78 €	4,453.44 €
	SPAIN	FINLAND	FRANCE	ITALY	GREECE
Reserve requirements	1,900.00 €	2,884.00 €	41,704.00 €	26,148.00 €	594.00 €
Reserve in excess	97,460.33 €	60,431.00 €	277,949.00 €	79,022.89 €	2,208.44 €
	NETHERLANDS	PORTUGAL	LITHUANIA	IRELAND	SLOVAKIA
Reserve requirements	7,944.00 €	1,543.00 €	486.00 €	4,751.00 €	358.00 €
Reserve in excess	177,694.00 €	12,265.44 €	5,231.89 €	14,756.78 €	1,476.89 €
	SLOVENIA	LUXEMBURG	MALTA	LATVIA	
Reserve requirements	1,018.00 €	198.00 €	372.00 €	341.00 €	
Reserve in excess	3,265.78 €	66,364.00 €	3,570.89 €	4,580.56 €	

numbers represent 1% of mainly the deposits accounts held by the bank's customers, facing the widespread propensity of French and Italian citizen to store money into low rate remunerating deposits with banks, pursuing minimal risk investments.

Following in order, the Netherlands hold € 7944 millions of Euro as compulsory reserves, Belgium and Germany hold reserve requirements of nearly € 5794 and € 5746 millions of Euro respectively. The amount of reserves in Ireland, Austria, Spain, Finland and Portugal range between € 4751 and € 1543 millions of Euro. In the remaining euro countries, the reserves did not exceed € 1018 millions of Euro.

The next step regards the comparison between the amounts of reserve requirements with the amount of liquidity held at ECB in the current accounts covering the minimum compulsory reserves, in order to quantify the discrepancy existing between the two measures. The revelatory proportions between these two amounts can be better expresses in terms of percentage of excess reserves represented by the reserve requirements. In Luxemburg the mandatory reserves represent only the 0.30 % of total liquidity in excess of the reserve requirements, revealing an unexpected proportion.

In Germany average mandatory reserves represent 1.2% of the excess liquidity in the current accounts, while in Spain reserves are equal to 1.95% of the excess liquidity in the current accounts. These mentioned countries display the higher volume of excess liquidity held in the current accounts compared to the much lower amount of reserve requirements imposed by ECB.

In Cyprus and in the Netherlands this percentage is equal to around 4.5% of the excess liquidity, while in the remaining countries the percentage is much higher, as in Austria, Estonia, France and Portugal, where the reserve requirements represent averagely the 12% of the excess liquidity in current accounts. This relationship is way higher in Belgium, Italy, Greece, Ireland, Slovakia and Slovenia, where the reserve requirements accounted for a range between 15 and 33 percent of excess liquidity.

As stated before, according to the two-tier system, to the liquidity in excess of the current accounts it applies the deposit facility rate, of negative 0.5%, while to the supplementary part of liquidity in surplus it applies an interest rate equal to 0%. In other words, the first part, calculated as six times the volume of the reserve requirements of the financial institution during one maintenance period, will receive a negative remuneration, while the residual part will be treated as it was liquidity in the mandatory reserve requirement, with a null remuneration. It can be deduced that the higher the disproportion between the volume of liquidity equal to six times the mandatory reserves, displayed in yellow in the chart, compared to the reserve in excess, displayed in blue in the chart, the more advantageous it will be for the financial institution.

The maximum disproportion encountered can be observed in Germany, where the difference between the excess reserves and the obligatory reserves is equal to € 445219.79 millions of Euro.

Following there is the Netherlands, whose difference between excess reserves and the reserve requirements is equal to € 130030 millions of Euro. As

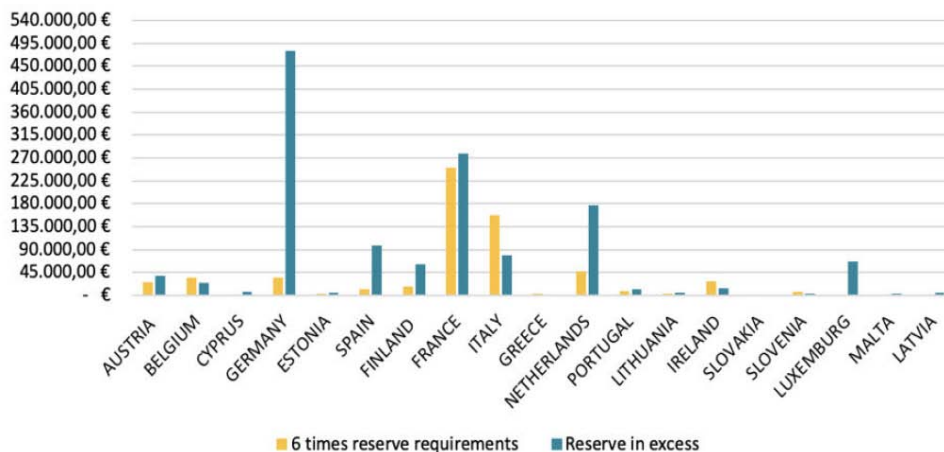


Figure 4: Reserves in excess compared to six times the reserve requirements, 2019.

Source: ECB Statistical Warehouse.

Table 3: Amount of Excess Reserves at Negative Rate Compared to Excess Reserves at Zero Rate

	AUSTRIA	BELGIUM	CYPRUS	GERMANY	ESTONIA
Excess reserves at negative rate	25,656.00 €	34,764.00 €	1,914.00 €	34,476.00 €	2,844.00 €
Excess reserves at 0% rate	13,480.22 €	(10,061.22) €	4,976.78 €	445,219.78 €	1,609.44 €

	SPAIN	FINLAND	FRANCE	ITALY	GREECE
Excess reserves at negative rate	11,400.00 €	17,304.00 €	250,224.00 €	156,888.00 €	3,564.00 €
Excess reserves at 0% rate	86,060.33 €	43,127.00 €	27,725.00 €	(77,865.11) €	(1,355.56) €

	NETHERLANDS	PORTUGAL	LITHUANIA	IRELAND	SLOVAKIA
Excess reserves at negative rate	47,664.00 €	9,258.00 €	2,916.00 €	28,506.00 €	2,148.00 €
Excess reserves at 0% rate	130,030.00 €	3,007.44 €	2,315.89 €	(13,749.22) €	(671.11) €

	SLOVENIA	LUXEMBURG	MALTA	LATVIA
Excess reserves at negative rate	6,108.00 €	1,188.00 €	2,232.00 €	2,046.00 €
Excess reserves at 0% rate	(2,842.22) €	65,176.00 €	1,338.89 €	2,534.56 €

Source: ECB Statistical Warehouse.

a consequence, this amount of liquidity will not be taxed at the ECB negative interest rate.

In such countries as Belgium, Italy, Greece, Ireland, Slovakia and Slovenia, considering the aggregate situation of the set of financial institutions in the country, the volume of liquidity in surplus of current accounts is not as large as six times the reserve requirements. This leads to the fact that in these countries, considering the average condition of financial institutions, the two-tier system will not take place, therefore there will be only one part, negatively taxed, of liquidity in surplus, as it was before the existence of this system.

In the following table, the amount of liquidity in excess of reserve requirements is divided into two parts, one to which a negative interest rate will be applied, and the other one to which a null interest rate will be applied.

It is important, at this point, to remember that the calculations observed refer to the whole sample of financial institutions located within the eurozone countries but they may be concretely dissimilar from the liquidity reality of every single financial institution situation, and therefore different portions of their current accounts in excess would take advantage of the two-tier system. The former and following results, for this reason are featuring the comprehensive situation for all the financial institutions under the direct or indirect surveillance of the ECB.

The following table illustrates the amount paid by all institutions in the 19 countries of the eurozone on their liquidity volume held in the current accounts covering the minimum reserve requirements system with the ECB.

The payments are classified between the amount owing to the ECB before and after the implementation of the two-tier system. As stated before, countries as

Table 4: Payments on Excess Reserves by Country, 2019

	AUSTRIA	BELGIUM	CYPRUS	GERMANY	ESTONIA
Payments with 2-tier system	102.62 €	98.81 €	7.66 €	137.90 €	11.38 €
Payments without 2-tier system	156.54 €	98.81 €	27.56 €	1,918.78 €	17.81 €

	SPAIN	FINLAND	FRANCE	ITALY	GREECE
Payments with 2-tier system	45.60 €	69.22 €	1,000.90 €	316.09 €	8.83 €
Payments without 2-tier system	389.84 €	241.72 €	1,111.80 €	316.09 €	8.83 €

	NETHERLANDS	PORTUGAL	LITHUANIA	IRELAND	SLOVAKIA
Payments with 2-tier system	190.66 €	37.03 €	11.66 €	59.03 €	5.91 €
Payments without 2-tier system	710.78 €	49.06 €	20.93 €	59.03 €	5.91 €

	SLOVENIA	LUXEMBURG	MALTA	LATVIA
Payments with 2-tier system	13.06 €	4.75 €	8.93 €	8.18 €
Payments without 2-tier system	13.06 €	265.46 €	14.28 €	18.32 €

Source: ECB Statistical Warehouse.

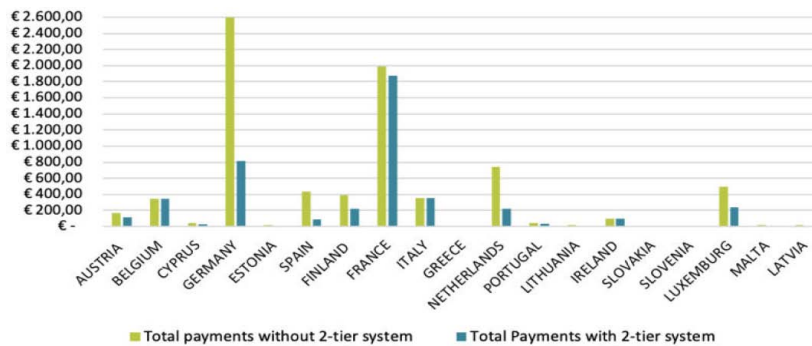


Figure 5: Total payments with and without the application of the 2-tier system.

Source: ECB Statistical Warehouse.

Belgium, Italy, Greece, Slovakia, Slovenia and Ireland will still pay the same amount to park their money at the ECB. Countries such as Germany, Spain, Finland, Netherlands and Luxembourg will end up paying much less if compared with the previous figures.

If taking into account the whole liquidity situation, inclusive of both the current accounts with the two-tier system and the deposit facility, the situation, using 2019 data, is expressed in the bar chart above.

In total, the Netherlands, Germany and Spain will end up by paying on excess liquidity respectively 69.8%, 68.55%, and 79.8% less than what was paid before the introduction of the two-tier system.

Luxemburg, Latvia, Cyprus, Finland and Lithuania will pay nearly between 50% and 40% less than before and Austria, Estonia, Portugal and Malta will pay nearly between 36% and 28% less.

France will not gain a vast advantage by paying 5.5% less of what was paid before the two-tier system.

Countries as Germany, Luxemburg, Spain and the Netherlands, will certainly take advantage of the two-tier system for their liquidity condition, as opposed to other countries, such as Belgium, Italy, Greece, Slovakia, Slovenia and Ireland, for whom, at aggregate level, no difference than before will be detected.

CONCLUSION

In summary, this paper seeks to contribute to the existing literature by delving into the dynamics of transmission of the monetary policy of the European Central Bank and its results on the banking system of the eurozone. The evidence shows that even though negative interest rates have the possibility to incentivize banks and other financial institutions to widen the issue of loans to households and

corporations, on the other hands they represent an extra payment that banks have to deal with.

Besides, the main financial indicators show that the overall situation for the euro area has improved since the years of the crisis, both on banks' profitability and capital quality terms. Notwithstanding this general trend, it is important to observe that the development has been slow and that the growth rate is relatively modest and not in line with pre-crisis level.

At this point, some recommendations concerning the future prosperity of the euro system banks can be made. The two main environments banks must coexist with are the internal political environment of the bank itself and the one that surrounds it. Both must set adequate conditions for growth to take place in a positive direction. The Central Bank certainly has the mandate to regulate and harmonize the surrounding environment, however there are several variables that are difficult to control and manage.

Internally, if European banks want to have a productive and competitive future, they will have to rely on the soundness of their accounts. In this regard, an important step is to reform the rules relating to sovereign debt, to which European banks are worriedly exposed and to prevent the economy from falling into a vicious cycle.

Concerning the diversification of the portfolio of financial institutions, an important consideration regards the fall at European level of the practice of securitization of credits. Although the reasons for the financial crisis are often linked with securitization, this practice, if used with prudence and conscience, is a source of financing and risk sharing.

Another aspect that requires further intervention is the third pillar of the banking sector on the possibility of

creating a single European guarantee of bank deposits, or a common system to protect savers who own up to one hundred thousand euros in a bankrupt bank. The implementation of this system remains a distant prospect, causing difficulties in cross-border consolidation and poor bank integration. A closer Banking Union would contribute to enhance consolidation, improve depositors' trust in the Banking Union and give strength to the Monetary Union.

To conclude, it is possible to state that certainly, during the period in which the negative interest rate policy was conducted, banks' propensity to release credit only partially widened, banks have had to undergo strong changes in terms of the business model, and the economy has moderately strengthened.

Although this set of factors listed above is not a sign of financial prosperity, it is certainly not said that the causes are necessarily and entirely due to a negative interest rate policy as, in absence of this monetary policy, perhaps the euro area economy would reverse in even worse conditions. Whether or not this monetary policy has led to more positive than negative conclusions is an impossible question to prove. No study can, with extreme precision, prove how the economy would have acted in different circumstances with different stimulations.

LIMITATIONS

During the process of writing this thesis the data search process has led to some limitations. The number of institutions within the euro system embody an extremely large sample to analyze individually, and records concerning their reserve requirements are part of sensitive data not readily available. Therefore, the results of the research refer to the entire sample of banks belonging to the euro system under the direct or indirect supervision of the ECB. The data used in this paper refer to the balance sheet elements communicated by the National Central Banks to the ECB and represent the aggregate of all the accounts of the individual banks operating in a euro system country. For this factor, it is important to note that the calculations and results obtained are simply a general

average of the monetary union countries. This implies that the individual situation of each bank, even if located within the countries under scrutiny, could in reality deviate widely from what was expressed with data at the aggregate level.

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