LISBON SCHOOL OF ECONOMICS & MANAGEMENT
UNIVERSIDADE DE LISBOA

MASTER

MONETARY AND FINANCIAL ECONOMICS

MASTER´S FINAL WORK

DISSERTATION

BANKING SUPERVISION IN THE EUROPEAN UNION: THE CONFLICT BETWEEN MONETARY POLICY AND SUPERVISION

FREDERICO CAVALEIRO DE MENDONÇA

NOVEMBER - 2020

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SUPERVISION:

MARIA TERESA MEDEIROS GARCIA

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GLOSSARY

BIS – Bank of International Settlements

BCBS – Basel Committee on Banking Supervision

BCP – Basel Core Principles for Effective Banking Supervision

ECB – European Central Bank

EMU – Economic and Monetary Union

ESRB – European Systemic Risk Board

EU – European Union

FED – Federal Reserve Board

FSAP – Financial Sector Assessment Programme

IMF – International Monetary Fund

OLS – Ordinary Least Square

SRM – Single Resolution Mechanism

SSM – Single Supervisory Mechanism

VIF – Variance Inflation Factor

WB – World Bank

ABSTRACT, KEYWORDS AND JEL CODES

This dissertation analyses the banking supervision in the European Union and the possible conflict of interests between monetary policy and supervision due to the integration of banking supervision and regulation duties within the European Central Bank (ECB). The empirical section considers the topic on the supervision side, looking at the compliance with the Basel Core Principles (BCP) for effective supervision as a benchmark, trying to assess whether the banking supervision framework has significant impact on the best supervision practises. A sample of 22 countries and a cross-sectional analysis was considered. The results suggest that the supervisory structure has no significance on the compliance with the BCP. On the contrary, financial freedom is a significant variable.

KEYWORDS: Banking Supervision; Basel Core Principles Compliance; Central Banking; Euro Area; European Central Bank; Single Supervisory Mechanism.

JEL CODES: C10; C50; E52; G21; G28.

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1. INTRODUCTION

After the great financial crisis big changes happened in the banking policy and supervision within the European Monetary Union (De Rynck, 2014). A new paradigm came to life and Central Banks and supervisory authorities of the European Union (EU) members lost some of their powers to the European Central Bank (ECB). Following this new supervisory framework and with aim of further development of the European Monetary Union (EMU), new mechanisms were created, namely the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM) (Single Supervisory Mechanism, 2020).

The implementation of the SSM happened in 2014 with the intention of concentrating under the ECB umbrella the European banking supervision system and pursue greater financial stability, soundness of banks and further banking integration, a mandate that the ECB did not have and that joins to the initial one: price stability and safeguarding the value of the euro (European Central Bank, 2020).

This new approach is not unanimous and might bring to light some conflicts among these two mandates, being the most relevant one the possible conflict of interest between monetary policy and banking supervision, the main topic of this thesis.

After comparing the pros and cons of integrating the banking supervision within the ECB and the concentration of both functions under the same roof, this dissertation aims to look at some empirical evidence that might give a different perspective on the significance that this new framework may have on the effectiveness and quality of banking supervision and regulation.

To pursue the goal described above it was made the decision of looking at the Basel Core Principles for Effective Banking Supervision (BCP) as the main study object. The BCP were first issued in 1997 by the Basel Committee on Banking Supervision (BCBS), part of the Bank for International Settlements (BIS), and are used by countries as a benchmark to evaluate the quality of their banking supervisory and regulatory systems, regardless each country supervisory structure (BIS, 2012). There are regular assessments of the supervisors' compliance with this core principles by the International Monetary Fund

(IMF) and the World Bank (WB) through the Financial Sector Assessment Programme (FSAP) (BIS, 2012).

Considering a sample of 22 countries that had their FSAP released in the last six years, a compliance index was estimated to assess which ones comply the most with the core principles. After that, the sample was divided between the ones with the banking supervisory mandate integrated within the Central Bank and the ones which have a supervision agency independent from the Central Bank. From that, the focus was to analyse and assess which type of framework comply the most with the supervisory good practises.

Next, an econometric regression was performed to measure if the banking supervisory framework has any significance on the level of effectiveness and compliance of supervisors with the core principles for effective banking supervision. In other words, this econometric exercise tries to evaluate if the fact of the banking supervision being a mandate of the central bank, or not, has any impact on the compliance with the banking supervision best procedures. In this exercise the index of compliance with the BCP is the dependent variable and the key explanatory variable is a dummy that takes the value 1 if the banking supervisor is part of the Central Bank and 0 if it is not. In addition, the model also includes several other independent variables, as possible explanations of quality and effectiveness of banking supervision.

The dissertation follows the usual structure with the literature review, methods and data, the empirical analysis, and the conclusion.

2. LITERATURE REVIEW

The literature about the new Banking Supervision System, the Single Supervisory Mechanism (SSM) and all the other transformations that occurred regarding the institutional mandates of monetary policy and banking supervision is scarce and often outdated. With some exceptions, it is very difficult to find research papers published after 2014 (year the SSM came into force) that accurately replicate the outcome of these

reforms and the consequences of the possible conflict of interests between monetary policy and supervision.

After the great recession and sequent banking crisis, a new paradigm emerged and monetary and macroprudential policies started to be used for countercyclical management under the same roof (Smets, 2013). Monetary policy kept its focus on price stability, macroprudential policies took care of financial stability and microprudential policy concentrated on financial institutions (Smets, 2013). The same happened within the Economic and Monetary Union (EMU) but under the European Central Bank (ECB) umbrella, through institutions like the SSM, created with the purpose of concentrating supervision within the ECB and composed by a Supervisory Board, and the European Systemic Risk Board (ESRB), responsible for macroprudential supervision and systemic risk. This integration brought back an old discussion about what the Central Bank responsibilities should be and if a conflict of interests might exist.

One of the biggest arguments against the integration of the monetary policy and the banking supervision and regulation under the same roof, in this case the Central Bank, is the conflict mentioned above. According to Goodhart and Schoenmaker (1995) a good example to portrait this argument can be the willingness of the Central Bank's monetary policy arm to increase interest rates to control inflation and the regulatory and supervision one to be against due to the undesirable effects it might have on the profitability and solvency of the banking system. The ultimate consequence of this situation could be a loose or more flexible monetary policy to avoid adverse effects on the soundness of banks (Barth *et al.*, 2003; Beck and Gros, 2013). Furthermore, the Central Bank might get the idea that its main purpose is to protect banks and not the public interest (Haubrich, 1996) or even fall into the risk of being captured by the supervised banks, part of a very well organized sector (Masciandaro and Quintyn, 2016).

Following the same line of thinking, Winecoff (2014) presents another example, stating that standard monetary policy is countercyclical, expanding or restricting the money supply according to the state of the economy and that the opposite happens with some prudential regulatory policies which are pro-cyclical, like the minimum capital adequacy

ratios, to enforce banking discipline. This situation might be an obstacle for policymakers to manage a shock in the economy because pro-cyclical measures tend to restrict the banking activity when it is most needed.

But Hellwig (2014) looks at the conflict the other way around, considering an approach in which the monetary policy targets might dominate. Claiming that the Central Bank might use its microprudential supervisor mandate to pursue monetary policy purposes and impose measures on banks that might not be on the institutions' best interest, making them take additional risks.

In 2016, another step was taken towards a full banking union within the EMU with the creation of the Single Resolution Mechanism (SRM) which is today the central institution for bank resolution in the European Union and which is applied to banks under the SSM supervision (European Commission, 2020b). Before that, the support for the national banking systems was designed to come mostly from the domestic governments and central banks (Winecoff, 2014). Once more, this new mechanism is under the ECB rule, which places the lender of last resort and the supervisor under the same roof.

Taking into account the facts described above, Masciandaro and Quintyn (2016) state that regulated institutions, knowing that their supervisor can bail them out, might fall into moral hazard through a higher propensity for risk-taking, something that could be avoided if the supervisor were different from the liquidity manager. Furthermore, an intervention is always something very costly and that can seriously tarnish the reputation of the supervisor, in this case responsible for the monetary policy too. This fact might produce forbearance and procrastination from the central bank's supervision mechanism, to avoid the kind of problems described above (Hellwig, 2014).

The loss of independence might be another conundrum. Beck and Gros (2012) and Lastra and Goodhart (2016) focus on this point due to the ECB growing responsibilities and power, which might make it more vulnerable to political pressures. Specifically, due to situations where the Central Bank can interfere in the functioning of the member states banking system, bank resolutions and capitalizations. Moreover, the fact that the representatives from national supervisory authorities (members of the Supervisory

Board of the SSM) might not be political independent or have the same level of independence as a Central Bank has might be judged as a problem. On the other hand, the opposite might happen, and the Central bank might become too powerful and with limited accountability to legislatures and governments.

When the SSM was implemented there was a concern to ensure that there was going to exist a real separation between the monetary policy and the supervision duties. According to Beck and Gros (2012), the legislation is explicit and there should be a "Chinese wall" between both functions, the separation principle, but in reality it may not be quite like that. Within the SSM, the decision-making process is based on the Supervisory Board draft decisions, which are later applied by the ECB Governing Council "under the non-objection procedure" (Single Supervisory Mechanism, 2020). Furthermore, the Supervisory Council itself is composed by five ECB representatives and representatives of national supervisors, largely the same institutions which are also part of the Governing Council.

Following the line of thinking of Lastra and Goodhart (2016), both duties should be seen as complementary and that is the real reason why they were moved under the ECB umbrella. One can even say that the separation principle itself goes against most of the advantages that the combination could create, such as access to more and better information, more capacity to handle moments of crisis, take benefit from the ECB independence, better resources allocation and access to a more "qualified staff" (Di Noia and Di Giorgio, 1999; Barth *et al.*, 2003; Beck and Gros, 2013; Lima, 2017).

Furthermore, it's not unanimous which framework should be followed, combination or separation, and empirical studies on the subject are sometimes contradictory. Di Noia and Di Giorgio (1999) found out that the inflation rate is higher and more volatile in countries where the supervision is a task of the Central Bank. They also found, although with preliminary results, that countries with supervision within the Central Bank tend to have a more protected and less efficient banking system. On the contrary, Lazopoulos, Lima and Gabriel (2016) conclude that their empirical findings do not support the

banking supervisory framework of an economy has a statistically significant impact on inflation.

Barth *et al.* (2003) took another approach and opted for doing a cross-country analysis of the banking supervisory framework and banks performance. Their results do not provide an outcome which allow them to say that a specific banking supervision structure has impact on banking performance, they point out that maybe the discussion should be focused on other aspects. On the other hand, the Winecoff (2014) results support the separation of supervisory tasks from the Central Bank, arguing that banks act less prudent when they expect favoured policies from the Central Bank, stating that capital adequacy ratios are higher when the supervision is not enforced by the Central bank. Barth *et al.* (2002) results on the impact of the banking supervision framework on bank safety and soundness also favour separation, stating that banks supervised by the Central Bank tend to have more non-performing loans.

Looking now to a very specific research paper, focused on the American Federal Reserve (FED), Ioannidou (2005) conclusions on the possible effect of monetary policy on the central bank's role as supervisor show that when the FED tightens its monetary policy it becomes less rigorous on supervision affairs. One reason for that might be a possible compensation from the Central Bank to the banking system for the extra effort it is demanding or even due to the need of stability in the financial system.

Finally, there are several arguments for and against integration and, as Hellwig (2014) argues, supervision is an administrative activity, very different from monetary policy, which might raise questions about culture, procedure and even judicial doubts. But considering the difficult circumstances in which the integration of supervision under the ECB was done, and following Schnabel (2016), one can say that, at the time, the ECB was probably the only institution capable of acting. Beck and Gros (2012) corroborate with this view, and consider that the situation of crisis the European Union lived at the time, due to the excessive interdependence between the sovereign credit and banking systems (Véron, 2011), overcome most of the arguments against the supervision

integration and that only an independent institution as the ECB could be assigned with the job.

3. METHODS AND DATA

The Basel Core Principles for Effective Banking Supervision (BCP) are the basis of the empirical section of this dissertation. Focusing on the banking supervision in the European Union and considering the work developed by Arnone and Gambini (2006), the compliance of the supervisors with the BCP was chosen as the way to assess if there is a possible impact on the quality and effectiveness of banking supervision due to its integration within the central bank.

The BCP were first issued in 1997 by the BIS and today are an aggregation of 29 core principles for effective banking supervision[1] seen as a fundamental tool to assess the quality of banking supervisory systems and to understand what should be improved by supervisors. The principles are divided in two sections: supervisory powers, responsibilities and functions; and prudential regulations and requirements (BIS, 2012).

Following the Arnone and Gambini (2006) methodology, the index of BCP compliance was estimated based on the results of the most recent FSAP reports from the IMF and the WB, for each country. As the main idea is to capture the effectiveness of the SSM and similar supervision frameworks, the time considered was between 2014 (year the SSM came into force) and 2020. In this period, 22 countries were assessed once, although in different years, constituting our sample: Australia, The Bahamas, Brazil, Canada, China, Denmark, Euro Area, Georgia, Hong Kong, India, Japan, South Korea, Moldova, New Zealand, Peru, Russia, South Africa, Switzerland, Thailand, Turkey, the United Kingdom and the United States of America. In this exercise the euro area, which is the group of EU members that adopted the euro as their currency (European Commission, 2020a), will be treated as a country, being one of the 22 countries evaluated. Moreover, due to data limitations, all data concerning the independent

[1] See Table A. I in the appendix.

variables are relative to the year in which the $bcpindex$ was estimated for each country or the previous year or two.

In the FSAP reports, all the 29 core principles were assessed and scored according to Table I. Using the values of each principle (each grade was given a value from 0 to 3), the results of each country were aggregated and normalized in order to estimate the dependent variable, an index of compliance with the core principles ranging from 0 to 1, the variable $bcpindex$.

TABLE I
ASSESSMENT GRADES ON THE BASEL CORE PRINCIPLES FOR EFFECTIVE BANKING SUPERVISION

C – Compliant	3
LC – Largely Compliant	2
MNC – Materially Non-Compliant	1
NC/NA – Non-Compliant/Not Applicable	0

Source: BIS (2012)

The calculation results of the index of compliance with the core principles are in Table II.

TABLE II
BASEL CORE PRINCIPLES FOR EFFECTIVE BANKING SUPERVISION INDEX BY COUNTRY (2014-2019)

Australia (2019) (IMF, 2019a)	0.862	**Korea (2014)** (IMF and WB, 2014)	0.667
The Bahamas (2019) (IMF, 2019b)	0.828	**Moldova (2016)** (IMF and WB, 2016a)	0.552
Brazil (2018) (IMF and WB, 2018a)	0.828	**New Zealand (2017)** (IMF and WB, 2017a)	0.609
Canada (2014) (IMF, 2014a)	0.920	**Peru (2018)** (IMF and WB, 2018c)	0.828
China (2017) (IMF and WB, 2017b)	0.828	**Russia (2016)** (IMF and WB, 2016b)	0.690
Denmark (2014) (IMF, 2014b)	0.747	**South Africa (2015)** (IMF, 2015a)	0.908
Euro Area (2018) (IMF, 2018)	0.644	**Switzerland (2014)** (IMF, 2014d)	0.874
Georgia (2015) (IMF and WB, 2015)	0.759	**Thailand (2019)** (IMF and WB, 2019)	0.943
Hong Kong (2014) (IMF, 2014c)	0.966	**Turkey (2017)** (IMF and WB, 2016c)	0.782
India (2018) (IMF and WB, 2018b)	0.782	**United Kingdom (2016)** (IMF, 2016)	0.897
Japan (2017) (IMF, 2017)	0.805	**United States of America (2015)** (IMF, 2015b)	0.874

Source: FSAP reports and the author's own calculations

Firstly, the 22 countries sample was divided according to its supervisory framework, the ones where the Central Bank is responsible for banking supervision (13) and the ones where it is not (9)[2] (Table III). Further, a simple and descriptive analysis of some parts of the data was performed considering the two sub-samples, with a special focus on the $bcpindex$ and its relationship with the different supervisory frameworks considered. A T-test comparing the $bcpindex$ means of the two sub-samples of countries was performed.

TABLE III
SUPERVISORY FRAMEWORKS ACROSS THE SAMPLE

Banking Supervision	Freq.	Percent	Cum.
Non-CB	9	40.91	40.91
CB	13	59.09	100.00
Total	22	100.00	

Source: Author's own calculations with Stata

Secondly, to capture the relationship between the supervisory framework and the compliance with the BCP, a cross-sectional analysis was performed, carrying out an OLS regression with robust standard errors. For a better and more effective comparison and analysis, all the nine independent variables are standardized, as most variables are presented in different scales. The standardized coefficients make the scale of the regressors irrelevant and put the variables *"on equal footing"* (Wooldridge, 2012).

The econometric model is:

$$bcpindex = \beta_0 + \beta_1 cbsupervision + \beta_2 deposit + \beta_3 specialization + \beta_4 inflation + \beta_5 fiscal + \beta_6 banksize + \beta_7 freedom + \beta_8 finanfreedom + \beta_9 instdev + \beta_{10} FSAP + u \quad (1)$$

[2] See Table A. II in the appendix.

Table IV presents the description of the variables.

TABLE IV
VARIABLE DESCRIPTIONS

Dependent		
$bcpindex$	Normalized index of compliance with the BCP	
Independent		**Expected Impact**
$cbsupervision$	=1 if the central bank is responsible for banking supervision, 0 if not	**+/-**
$deposit$	=1 if exists a deposit guarantee scheme, 0 otherwise	**+**
$specialization$	=1 if the bank supervisor is specialized in banking supervision alone, 0 otherwise	**+/-**
$inflation$	Inflation, 3 years average measured by annual growth rate of the GDP implicit deflator in percentage	**-**
$fiscal$	General government fiscal balance in GDP percentage	**+**
$banksize$	Claims on domestic real nonfinancial sector by deposit money banks as a share of GDP	**+**
$freedom$	Freedom in The World Index	**+**
$finanfreedom$	Financial Freedom Index	**+**
$instdev$	Institutional Development Indicator	**+**
$FSAP$	Number of years since the first FSAP assessment	**+/-**

Concerning the independent variables, the $cbsupervision$ explanatory variable is a dummy that takes the value 0 if the Central Bank is not the Banking Supervisor and the value 1 if the Central Bank is responsible for banking supervision or has a considerable role.

Other two dummy variables were defined. One takes the value 0 if a country does not have a system of deposit insurance and the value 1 if it does ($deposit$). This variable has the aim of capture one of the preconditions for effective banking supervision from the BIS (2012), an appropriate level of systemic protection. The other dummy takes the value 0 if the banking supervisor is not specialized in banking supervision alone and the value 1 if it is ($specialization$).

Following another precondition for effective banking supervision from the BIS (2012), sound and sustainable macro policies, two other control variables were defined. One of them is the $inflation$ measured by the average annual growth rate of the GDP implicit

deflator (in percentage) in the three years prior to the most recent FSAP report from each country, data from the World Bank (2020). The other one is $fiscal$, which represents the fiscal balance of governments in the year the $bcpindex$ was estimated or, due to data limitations, in the previous year or two, using data from IMF (2020).

Considering Arnone and Gambini (2006) and previous research from one of the authors, which already confirmed that the development of the banking sector has a positive effect on the compliance with the BCP, it was included a variable to control the banking sector size effects, $banksize$. This variable considers the claims on domestic real nonfinancial sector by deposit money banks as a share of GDP (Beck *et al.*, 2019).

Furthermore, two control variables considering freedom were defined. One of them reflects general freedom through an index ranging from 0 to 2 ($0-$ not free, $1-$ partly free and $2-$ free) which considers political rights and civil liberties, $freedom$ (Freedom House, 2014, 2015, 2016, 2017). The second one captures financial freedom through an index ranging from 0 to 100 which reflects bank efficiency and the level of independence of the financial sector from governments, $finanfreedom$ (Miller *et al.*, 2014, 2015, 2016, 2017)

Moreover, a variable based on Doumpos, Gaganis and Pasiouras (2015) was constructed to capture the institutional development of each country ($instdev$). This indicator was calculated as the average of six governance indicators ranging from -2.5 and 2.5 assessed by the Worldwide Governance Indicators 2014, 2015, 2016 and 2017 (Kaufmann, Kraay and Mastruzzi, 2010; Kaufmann and Kraay, 2019). Finally, there is one variable which reflects the number of years past since the first FSAP report released for each country (FSA).

Table V displays the descriptive statistics concerning the dataset[3] created for the empirical analysis, where the number of observations is higher than the number of variables, following the guidelines of Hair *et al.*(2013).

[3] See Table A. III and Figures 1, 2, 3, 4, 5 and 6 in the appendix.

TABLE V
DESCRIPTIVE STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max
bcpindex	22	.8103123	.1183259	.5517241	.999284
cbsupervis~n	22	.5909091	.5032363	0	1
deposit	22	.8636364	.3512501	0	1
specializa~n	22	.3181818	.4767313	0	1
inflation	22	3.000735	2.390453	-.2580435	8.961636
fiscal	22	-2.240909	2.742203	-7.9	3.6
banksize	22	113.6113	56.61597	32.55642	257.2248
freedom	22	1.545455	.7385489	0	2
finanfreedom	22	64.35407	18.91893	20	90
instdev	22	.6627312	.886687	-.7175956	1.860599
FSAP	22	8.045455	4.664734	0	14

Source: Author's own calculations with Stata.

4. ANALISYS

Following the literature review and all the pros, cons and different outcomes of research papers and publications about the different banking supervisory frameworks, it became clear that there is not an optimal way of assessing which one is more effective or compliant with the best practises of supervision. Considering the topic of this dissertation, it was decided to approach the possible conflict of interest between central banking and supervision from the side of supervision. As mentioned in the previous section, it was calculated an index, based on the methodology of Arnone and Gambini (2006), to assess the level of compliance of the 22 countries of the sample, with the core principles for effective supervision. The $bcpindex$ values are shown in Table II and the frequency of each supervisory framework across the sample in Table III.

The analysis of Tables II and III allow us to conclude that almost all countries have high values, since the $bcpindex$ ranges from 0 to 1, and that roughly 60% of the sample have their Central Bank responsible for banking supervision.

One can notice that there are five countries whose index values are below 0.7, the worst scores from all sample. All these five countries but one, The Republic of Korea, have their Central Bank as the entity responsible for banking supervision. The Euro Area is one of these 5 countries of the sample.

Considering the 22 observations, the mean of the $bcpindex$ is 0.81 with a standard deviation of about 0.12.

Looking at Table VI, it is possible to demonstrate that the mean of the $bcpindex$ is very similar whether the Central Bank acts as a supervisor or not. The sub-sample which represents the countries where banks are supervised by the Central Bank has a mean of 0.809, the one where the opposite happens the mean is 0.812. One can say that both values are almost the same, but looking at the standard deviation of each sub-sample it is possible to confirm that it has almost twice the value when banking supervision is performed by the Central Bank (CB sample).

TABLE VI
TWO SAMPLE T-TEST FOR THE BCP INDEX

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
Non-CB	9	.8122605	.0249042	.0747126	.7548313	.8696898
CB	13	.8089635	.0399766	.1441376	.721862	.896065
combined	22	.8103123	.0252272	.1183259	.7578495	.862775
diff		.003297	.0525715		-.1063651	.1129592

diff = mean(Non-CB) - mean(CB) t = 0.0627
Ho: diff = 0 degrees of freedom = 20

Ha: diff < 0 Ha: diff != 0 Ha: diff > 0
Pr(T < t) = 0.5247 Pr(|T| > |t|) = 0.9506 Pr(T > t) = 0.4753

Source: Author's own calculations with Stata.

Table VI presents the two-sample t-test confirming in a more accurately way the point discussed above. Looking at the null hypothesis on the table, which is the two means

being equal or the difference between them being zero, it is possible to verify that there is statistical evidence that the considered means are different at a confidence level of 95%. At this point there is a small difference on the level of compliance of each sub sample, favouring the framework in which the Central Bank does not have supervisory powers, but that does not allow us to look at this test as conclusive enough.

To pursue a more concluding output on the impact and significance of the supervisory frameworks in the compliance with the BCP, the second part of this empirical analysis consists of a cross-sectional study, using ordinary least squares (OLS) regression with robust standard errors. The dependent variable is the $bcpindex$, and the key explanatory variable is the $cbsupervision$ besides other 9 independent variables (as presented in Table IV).

TABLE VII
OLS RESULTS WITH ROBUST STANDARD ERROS. STANDARDIZED INDEPENDENT VARIABLES. DEPENDENT VARIABLE: *BCPINDEX*

Linear regression

Number of obs	= 22
F(10, 11)	= 2.27
Prob > F	= 0.0969
R-squared	= 0.5711
Root MSE	= .10707

bcpindex	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
cbsupervision	-.0304127	.0356017	-0.85	0.411	-.1087714	.0479461
deposit	.0034502	.0347143	0.10	0.923	-.0729555	.0798558
specialization	.0267096	.0331061	0.81	0.437	-.0461564	.0995755
inflation	-.0160584	.0359428	-0.45	0.664	-.095168	.0630512
fiscal	-.1714396	.0675962	-2.54	0.028	-.3202178	-.0226614
banksize	.0140384	.0405966	0.35	0.736	-.075314	.1033909
freedom	-.1434429	.0577226	-2.49	0.030	-.2704895	-.0163964
finanfreedom	.1618975	.0646764	2.50	0.029	.0195456	.3042494
instdev	.0432592	.0811226	0.53	0.604	-.1352904	.2218088
FSAP	-.0137563	.0305371	-0.45	0.661	-.080968	.0534554
_cons	.8103123	.0228273	35.50	0.000	.7600697	.8605549

Source: Author's own calculations with Stata

Table VII displays the results of the regression. Not all the independent variables had the expected impact[4], although five of them confirmed the expected effect on the dependent variable:$deposit$, $inflation$, $banksize$, $finanfreedom$ and $instdev$.

Another outcome is that half of the variables revealed to have a negative impact on the $bcpindex$, being $deposit$, $specialization$, $banksize$, $finanfreedom$ and $instdev$ the exceptions. This fact supports the idea that to strength the compliance of the supervisor, factors such as a system of deposit insurance, the supervisor being specialized in the banking sector alone, the development and size of the banking sector, the freedom lived in the financial sector or the development of institutions and governance are important.

From all the independent variables, there are three significant at a 95% level of confidence, being $fiscal$ and $freedom$ two of them. These two variables present negative coefficients, meaning that both have a negative impact on the $bcpindex$. Regarding the $fiscal$ variable, it was not expected that a healthy fiscal situation with positive fiscal balances would have a negative impact on the dependent variable. Likewise, the anticipated effect of $freedom$ was positive. Indeed, it was not anticipated that political rights and civil liberties could have an adverse effect on the compliance with the core principles for effective banking supervision. So, maybe the model needs to be refined.

Concerning the$finanfreedom$ variable, this first estimation confirms that high efficiency and independence from government in the banking sector has a positive impact and significance in the compliance with the best practises in banking supervision.

The key explanatory variable has no significance at all, with a high *p-value*. In case of significance, one could say, due to its negative coefficient, that the Central Bank being responsible for banking supervision deteriorates the level of compliance with the BCP.

The interpretation of a regression results must take in consideration the correlation among the independent variables. The simplest way to assess it is through a correlation matrix, since high correlations are the first signal of collinearity (Hair *et al.*, 2013). High

[4] See Table III.

correlation between these variables is called multicollinearity and one solution for this possible problem might be dropping independent variables (Wooldridge, 2012).

Multicollinearity might produce several impacts on the estimation, as affecting the predictive ability of the regression model and the estimation of the regression coefficients and statistical significance tests. Other impacts might be the difficulty to understand the real effects of each independent variable (Hair *et al.*, 2013).

Table VIII presents the correlation matrix between variables.

TABLE VIII
CORRELATION MATRIX

(obs=22)

	bcpindex	cbsupe~n	deposit	specia~n	inflat~n	fiscal	banksize
bcpindex	1.0000						
cbsupervis~n	-0.0140	1.0000					
deposit	0.3094	-0.3306	1.0000				
specializa~n	-0.0435	0.5684	-0.2973	1.0000			
inflation	-0.2038	0.2960	-0.0104	0.1582	1.0000		
fiscal	-0.1099	-0.2715	-0.1099	-0.0114	-0.3734	1.0000	
banksize	0.2160	-0.2954	0.0447	-0.1112	-0.5273	0.6111	1.0000
freedom	-0.0624	-0.1398	-0.2503	-0.1107	-0.3168	-0.0637	-0.0316
finanfreedom	0.1739	-0.2041	-0.0912	-0.1304	-0.4555	0.6552	0.4635
instdev	0.1314	-0.2141	-0.1775	-0.2265	-0.7113	0.5467	0.5748
FSAP	0.0507	0.0489	0.1493	-0.2638	0.0564	0.1878	0.2031

	freedom	finanf~m	instdev	FSAP
freedom	1.0000			
finanfreedom	0.5574	1.0000		
instdev	0.6036	0.8319	1.0000	
FSAP	-0.2702	0.0914	0.1034	1.0000

Source: Author's own calculations with Stata.

Looking at the correlation matrix above, it is possible to notice that the correlation coefficient of the variables $fiscal$ and $freedom$ is negative and the only ones going against the initially expected impact[5]. It was not foreseen that positive fiscal balances,

[5] See Table III.

political rights and civil liberties would have an adverse effect on the dependent variable. Furthermore, it exists reasonable correlation between some of the independent variables but some values stand out, the correlation coefficients between $freedom$, $finanfreedom$ and $isntdev$, for example. One can verify that the variable $fiscal$ also presents several high coefficients.

A measure of multicollinearity is the variance inflation factor (VIF), which directly expresses the degree of multicollinearity into an impact on the estimation process. It is in the hands of researchers to determine an acceptable degree of collinearity because most defaults or recommended thresholds still allow for substantial collinearity (Hair *et al.*, 2013).

TABLE IX
VARIANCE INFLATION FACTOR

Variable	VIF	1/VIF
instdev	11.73	0.085259
finanfreedom	7.36	0.135920
freedom	6.61	0.151307
fiscal	5.81	0.172190
inflation	2.97	0.336318
cbsupervis~n	2.80	0.356550
banksize	2.61	0.383665
specializa~n	2.26	0.442831
deposit	1.70	0.588703
FSAP	1.55	0.646799
Mean VIF	4.54	

Source: Author's own calculations with Stata.

Table IX confirms the doubt that arise from the correlation matrix and one can see that the variables $instdev$, $finanfreedom$, $freedom$ and $fiscal$ present the highest VIF values, which leads to the decision of dropping the $freedom$ and $instdev$ variables, *ceteris paribus*.

The new econometric model is:

$$bcpindex = \beta_0 + \beta_1 cbsupervision + \beta_2 deposit + \beta_3 specialization + \beta_4 inflation + \beta_5 fiscal + \beta_6 banksize + \beta_7 finanfreedom + \beta_8 FSAP + u \quad (2)$$

Table IX presents the output of a second OLS regression with robust standard errors. The dependent variable remains the $bcpindex$, the same happens with the key explanatory variable, the $cbsupervision$, but in total there are only 8 independent variables, since two variables were dropped due to multicollinearity. The new correlation matrix and VIF calculations can be found in the appendix[6].

TABLE X

OLS RESULTS WITH ROBUST STANDARD ERROS. STANDARDIZED INDEPENDENT VARIABLES. DEPENDENT VARIABLE: *BCPINDEX*

Linear regression

Number of obs	= 22
F(8, 13)	= 1.55
Prob > F	= 0.2328
R-squared	= 0.3197
Root MSE	= .12404

bcpindex	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
cbsupervision	.0102591	.033581	0.31	0.765	-.0622881	.0828064
deposit	.0384302	.0360887	1.06	0.306	-.0395347	.1163951
specialization	.0130684	.0379216	0.34	0.736	-.0688562	.094993
inflation	-.0109587	.0278646	-0.39	0.700	-.0711564	.0492391
fiscal	-.0662963	.0447759	-1.48	0.163	-.1630288	.0304362
banksize	.0403928	.0418051	0.97	0.352	-.0499216	.1307072
finanfreedom	.0472641	.0248087	1.91	0.079	-.0063319	.10086
FSAP	.0037533	.0300998	0.12	0.903	-.0612733	.0687798
_cons	.8103123	.026445	30.64	0.000	.7531813	.8674433

Source: Author's own calculations with Stata.

Considering the new estimation results in Table X, one can verify that all variables had the expected impact[7] except $fiscal$, which kept the negative coefficient. Considering

[6] See tables A. IV and A. V in the appendix.
[7] See Table III.

the estimations from Arnone and Gambini (2006), one can verify that the variable $inflation$ also presents a negative coefficient, as expected by the authors, and the same happens with $specialization$, what differs from this exercise. On the other hand, $fiscal$ has a positive coefficient.

Comparing the outcome of this model with the previous one, an important difference stands out, the key explanatory variable has now a positive coefficient. On the one hand, it would mean that the Central Bank being responsible for banking supervision has a positive impact in the compliance with the BCP, but on the other hand, again, it has no statistical significance.

The $finanfreedom$ variable kept its positive coefficient and reinforces the analysis based on the outcome of the first estimation. It kept its significance, but now at a level of confidence of 90%.

Another change is that the variable $fiscal$ lost its significance but keeping its negative coefficient. So, further research is needed.

5. CONCLUSION

The literature review suggests that conflicts between monetary policy, one of the main tasks of the ECB, and supervision might arise when both functions are under the same roof, but it also shows that it is possible to take advantages of concentration. There is no unanimous process to assess if these conflicts have any significant impact on the level of effectiveness and compliance of supervisors. In addition, there is no conclusion on which supervisory framework is the more effective to conduct the monetary, the supervisory, and the regulatory duties.

The empirical section of this dissertation approached the issue on the supervision side and tried to assess which supervisory framework complies the most with core principles for effective supervision and if the framework itself has any significance in the compliance levels.

On the one hand, there was an attempt of using the most recent data available and the Euro Area was treated as a country, creating the possibility of being compared to other jurisdictions. On the other hand, due to the lack of FSAP reports published during the analysed period, the number of countries was limited to 22. There were also several limitations to access to update data and, in the end, the low $R - Squared$ showed that some of the independent variables may not fit this exercise.

Moreover, part of the outcome was not expected, specifically the negative impact of the variable $fiscal$, which captures the general governments fiscal balance, on the compliance with the BCP. Further research is needed but one can suggest that this result happens due to some of the data limitations.

One important conclusion is the significance of the $finanfreedom$ variable, which determines that high efficiency and independence from government in the banking sector have a positive impact and significance in the compliance with the BCP.

Furthermore, the key explanatory variable has a positive coefficient, which means that the Central Bank being responsible for banking supervision would have positive impact in the compliance with the BCP if it had statistical significance. The results show that the supervisory framework seems not to have any impact on the compliance from the supervisor, unlike financial freedom.

In conclusion, one can say that this exercise is a first attempt to empirically address the role of the supervisory framework and it does not allow us to assess which one may be the optimal, since the supervisory structure does not have statistical significance.

For future research, the same empirical exercise should be performed but with a higher number of countries and other independent variables.

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APPENDIX

TABLE A. I

THE BASEL CORE PRINCIPLES FOR EFFECTIVE BANKING SUPERVISION

	Supervisory powers, responsibilities and functions	
1	Responsibilities, objectives and powers	An effective system of banking supervision has clear responsibilities and objectives for each authority involved in the supervision of banks and banking groups. A suitable legal framework for banking supervision is in place to provide each responsible authority with the necessary legal powers to authorise banks, conduct ongoing supervision, address compliance with laws and undertake timely corrective actions to address safety and soundness concerns.
2	Independence, accountability, resourcing and legal protection for supervisors	The supervisor possesses operational independence, transparent processes, sound governance, budgetary processes that do not undermine autonomy and adequate resources and is accountable for the discharge of its duties and use of its resources. The legal framework for banking supervision includes legal protection for the supervisor.
3	Cooperation and collaboration	Laws, regulations or other arrangements provide a framework for cooperation and collaboration with relevant domestic authorities and foreign supervisors. These arrangements reflect the need to protect confidential information.
4	Permissible activities	The permissible activities of institutions that are licensed and subject to supervision as banks are clearly defined and the use of the word "bank" in names is controlled.
5	Licensing criteria	The licensing authority has the power to set criteria and reject applications for establishments that do not meet the criteria. At a minimum, the licensing process consists of an assessment of the ownership structure and governance (including the fitness and propriety of Board members and senior management) of the bank and its wider group, and its strategic and operating plan, internal controls, risk management and projected financial condition (including capital base). Where the proposed owner or parent organisation is a foreign bank, the prior consent of its home supervisor is obtained.
6	Transfer of significant ownership	The supervisor has the power to review, reject and impose prudential conditions on any proposals to transfer significant ownership or controlling interests held directly or indirectly in existing banks to other parties.
7	Major acquisitions	The supervisor has the power to approve or reject (or recommend to the responsible authority the approval or rejection of), and impose prudential conditions on, major acquisitions or investments by a bank, against prescribed criteria, including the establishment of cross-border operations, and to determine that corporate affiliations or structures do not expose the bank to undue risks or hinder effective supervision.
8	Supervisory approach	An effective system of banking supervision requires the supervisor to develop and maintain a forward-looking assessment of the risk profile of individual banks and banking groups, proportionate to their systemic importance; identify, assess and address risks emanating from banks and the banking system as a whole; have a framework in place for early intervention; and have plans in place, in partnership with other relevant authorities, to take action to resolve banks in an orderly manner if they become non-viable.
9	Supervisory techniques and tools	The supervisor uses an appropriate range of techniques and tools to implement the supervisory approach and deploys supervisory resources on a proportionate basis, taking into account the risk profile and systemic importance of banks.

10	Supervisory reporting	The supervisor collects, reviews and analyses prudential reports and statistical returns from banks on both a solo and a consolidated basis, and independently verifies these reports through either on-site examinations or use of external experts.
11	Corrective and sanctioning powers of supervisors	The supervisor acts at an early stage to address unsafe and unsound practices or activities that could pose risks to banks or to the banking system. The supervisor has at its disposal an adequate range of supervisory tools to bring about timely corrective actions. This includes the ability to revoke the banking licence or to recommend its revocation.
12	Consolidated supervision	An essential element of banking supervision is that the supervisor supervises the banking group on a consolidated basis, adequately monitoring and, as appropriate, applying prudential standards to all aspects of the business conducted by the banking group worldwide.
13	Home-host relationships	Home and host supervisors of cross-border banking groups share information and cooperate for effective supervision of the group and group entities, and effective handling of crisis situations. Supervisors require the local operations of foreign banks to be conducted to the same standards as those required of domestic banks.
	Prudential regulations and requirements	
14	Corporate governance	The supervisor determines that banks and banking groups have robust corporate governance policies and processes covering, for example, strategic direction, group and organisational structure, control environment, responsibilities of the banks' Boards and senior management, and compensation. These policies and processes are commensurate with the risk profile and systemic importance of the bank.
15	Risk management process	The supervisor determines that banks have a comprehensive risk management process (including effective Board and senior management oversight) to identify, measure, evaluate, monitor, report and control or mitigate all material risks on a timely basis and to assess the adequacy of their capital and liquidity in relation to their risk profile and market and macroeconomic conditions. This extends to development and review of contingency arrangements (including robust and credible recovery plans where warranted) that take into account the specific circumstances of the bank. The risk management process is commensurate with the risk profile and systemic importance of the bank.
16	Capital adequacy	The supervisor sets prudent and appropriate capital adequacy requirements for banks that reflect the risks undertaken by, and presented by, a bank in the context of the markets and macroeconomic conditions in which it operates. The supervisor defines the components of capital, bearing in mind their ability to absorb losses. At least for internationally active banks, capital requirements are not less than the applicable Basel standards.
17	Credit risk	The supervisor determines that banks have an adequate credit risk management process that takes into account their risk appetite, risk profile and market and macroeconomic conditions. This includes prudent policies and processes to identify, measure, evaluate, monitor, report and control or mitigate credit risk (including counterparty credit risk) on a timely basis. The full credit lifecycle is covered including credit underwriting, credit evaluation, and the ongoing management of the bank's loan and investment portfolios.
18	Problem assets, provisions and reserves	The supervisor determines that banks have adequate policies and processes for the early identification and management of problem assets, and the maintenance of adequate provisions and reserves.
19	Concentration risk and large exposure limits	The supervisor determines that banks have adequate policies and processes to identify, measure, evaluate, monitor, report and control or mitigate concentrations of risk on a timely basis. Supervisors set prudential limits to

		restrict bank exposures to single counterparties or groups of connected counterparties.
20	Transactions with related parties	In order to prevent abuses arising in transactions with related parties and to address the risk of conflict of interest, the supervisor requires banks to enter into any transactions with related parties on an arm's length basis; to monitor these transactions; to take appropriate steps to control or mitigate the risks; and to write off exposures to related parties in accordance with standard policies and processes.
21	Country and transfer risks	The supervisor determines that banks have adequate policies and processes to identify, measure, evaluate, monitor, report and control or mitigate country risk and transfer risk in their international lending and investment activities on a timely basis.
22	Market risks	The supervisor determines that banks have an adequate market risk management process that takes into account their risk appetite, risk profile, and market and macroeconomic conditions and the risk of a significant deterioration in market liquidity. This includes prudent policies and processes to identify, measure, evaluate, monitor, report and control or mitigate market risks on a timely basis.
23	Interest rate risk in the banking book	The supervisor determines that banks have adequate systems to identify, measure, evaluate, monitor, report and control or mitigate interest rate risk in the banking book on a timely basis. These systems take into account the bank's risk appetite, risk profile and market and macroeconomic conditions.
24	Liquidity risk	The supervisor sets prudent and appropriate liquidity requirements (which can include either quantitative or qualitative requirements or both) for banks that reflect the liquidity needs of the bank. The supervisor determines that banks have a strategy that enables prudent management of liquidity risk and compliance with liquidity requirements. The strategy takes into account the bank's risk profile as well as market and macroeconomic conditions and includes prudent policies and processes, consistent with the bank's risk appetite, to identify, measure, evaluate, monitor, report and control or mitigate liquidity risk over an appropriate set of time horizons. At least for internationally active banks, liquidity requirements are not lower than the applicable Basel standards.
25	Operational risk	The supervisor determines that banks have an adequate operational risk management framework that takes into account their risk appetite, risk profile and market and macroeconomic conditions. This includes prudent policies and processes to identify, assess, evaluate, monitor, report and control or mitigate operational risk on a timely basis.
26	Internal control and audit	The supervisor determines that banks have adequate internal control frameworks to establish and maintain a properly controlled operating environment for the conduct of their business taking into account their risk profile. These include clear arrangements for delegating authority and responsibility; separation of the functions that involve committing the bank, paying away its funds, and accounting for its assets and liabilities; reconciliation of these processes; safeguarding the bank's assets; and appropriate independent internal audit and compliance functions to test adherence to these controls as well as applicable laws and regulations.
27	Financial reporting and external audit	The supervisor determines that banks and banking groups maintain adequate and reliable records, prepare financial statements in accordance with accounting policies and practices that are widely accepted internationally and annually publish information that fairly reflects their financial condition and performance and bears an independent external auditor's opinion. The supervisor also determines that banks and parent companies of banking

		groups have adequate governance and oversight of the external audit function.
28	Disclosure and transparency	The supervisor determines that banks and banking groups regularly publish information on a consolidated and, where appropriate, solo basis that is easily accessible and fairly reflects their financial condition, performance, risk exposures, risk management strategies and corporate governance policies and processes.
29	Abuse of financial services	The supervisor determines that banks have adequate policies and processes, including strict customer due diligence rules to promote high ethical and professional standards in the financial sector and prevent the bank from being used, intentionally or unintentionally, for criminal activities.

Source: BIS (2012)

TABLE A. II

BANKING SUPERVISOR BY COUNTRY

Australia	Non-CB	**Korea**	Non-CB
The Bahamas	CB	**Moldova**	CB
Brazil	CB	**New Zealand**	CB
Canada	Non-CB	**Peru**	Non-CB
China	Non-CB	**Russia**	CB
Denmark	Non-CB	**South Africa**	CB
Euro Area	CB	**Switzerland**	Non-CB
Georgia	CB	**Thailand**	CB
Hong Kong	CB	**Turkey**	Non-CB
India	CB	**United Kingdom**	CB
Japan	Non-CB	**United States of America**	CB

Source: FSAP reports

TABLE A. III

DATASET

Country	*bcpindex*	*cbsupervision*	*deposit*	*specialization*	*inflation*	*fiscal*	*banksize*	*freedom*	*finanfreedom*	*instdev*	*FSAP*
Australia (2019*)	0,862	0	1	0	0,89%	-1,7%	140,47%	2	90	1,54	11
Bahamas (2019*)	0,828	1	1	1	3,30%	-5,5%	70,71%	2	70	0,65	4
Brazil (2018*)	0,828	1	1	0	6,44%	-7,9%	105,26%	2	50	-0,20	5
Canada (2014)	0,920	0	1	0	1,71%	0,2%	120,10%**	2	80	1,65	6
China (2017)	0,828	0	1	0	1,88%	-3,8%	174,53%	0	20	-0,33	6
Denmark (2014)	0,747	0	1	0	1,43%	1,1%	182,88%	2	90	1,72	0
Euro Area (2018*)	0,644	1	0	1	1,05%	-1%	86,79%	2	65,79	1,10	0
Georgia (2015)	0,759	1	1	0	3,80%	-3,8%	50,71%	1	60	0,35	14
Hong Kong (2014)	0,966	1	1	1	2,74%	3,6%	257,22%	1	90	1,51	11
India (2018*)	0,782	1	1	1	3,10%	-6,4%	68,35%	2	40	-0,13	4
Japan (2017)	0,805	0	1	0	0,73%	-3,1%	157,51%	2	60	1,35	14
Korea (2014)	0,667	0	1	0	1,06%	0,4%	137,29%	2	80	0,77	11
Moldova (2016)	0,552	1	1	1	7,20%	-1,5%	32,56%	1	50	-0,42	11
N. Zealand (2017)	0,609	1	0	0	2,51%	1,3%	157,73%	2	80	1,86	13
Peru (2018*)	0,828	0	1	0	3,13%	-2,9%	41,52%	2	60	-0,10	0
Russia (2016)	0,690	1	1	0	5,86%	-3,7%	61,74%	0	30	-0,72	13
S. Africa (2015)	0,908	1	0	1	5,62%	-4,8%	77,66%	2	60	0,19	6
Switzerland (2014)	0,874	0	1	0	-0,26%	-0,3%	172,00%	2	80	1,84	12
Thailand (2019*)	0,943	1	1	1	1,79%	-0,4%	138,96%	0	60	-0,27	8
Turkey (2017)	0,782	0	1	0	8,96%	-2,2%	72,94%	1	60	-0,47	10
UK (2016)	0,897	1	1	0	1,52%	-3,3%	130,07%	2	80	1,43	13
USA (2015)	0,874	1	1	0	1,57%	-3,6%	59,27%	2	70	1,25	5

*Due to data limitations, the data used to create the independent variables are based on the year 2017.

** Proxy value, due to data limitations, estimated based on the average of the deposit money bank assets as a percentage of GDP of the member countries of G7 (France, Germany, Italy, Japan, the United Kingdom and the United States).

Source: Author's own calculations.

TABLE A. IV
CORRELATION MATRIX

(obs=22)

	bcpindex	cbsupe~n	deposit	specia~n	inflat~n	fiscal	banksize
bcpindex	1.0000						
cbsupervis~n	-0.0140	1.0000					
deposit	0.3094	-0.3306	1.0000				
specializa~n	-0.0435	0.5684	-0.2973	1.0000			
inflation	-0.2038	0.2960	-0.0104	0.1582	1.0000		
fiscal	-0.1099	-0.2715	-0.1099	-0.0114	-0.3734	1.0000	
banksize	0.2160	-0.2954	0.0447	-0.1112	-0.5273	0.6111	1.0000
finanfreedom	0.1739	-0.2041	-0.0912	-0.1304	-0.4555	0.6552	0.4635
FSAP	0.0507	0.0489	0.1493	-0.2638	0.0564	0.1878	0.2031

	finanf~m	FSAP
finanfreedom	1.0000	
FSAP	0.0914	1.0000

Source: Author's own calculations with Stata.

TABLE A. V
VARIANCE INFLATION FACTOR

Variable	VIF	1/VIF
fiscal	2.59	0.386039
cbsupervis~n	2.13	0.469254
banksize	2.02	0.494035
finanfreedom	2.00	0.499603
specializa~n	1.93	0.518323
inflation	1.62	0.617692
FSAP	1.40	0.713420
deposit	1.25	0.797458
Mean VIF	1.87	

Source: Author's own calculations with Stata.

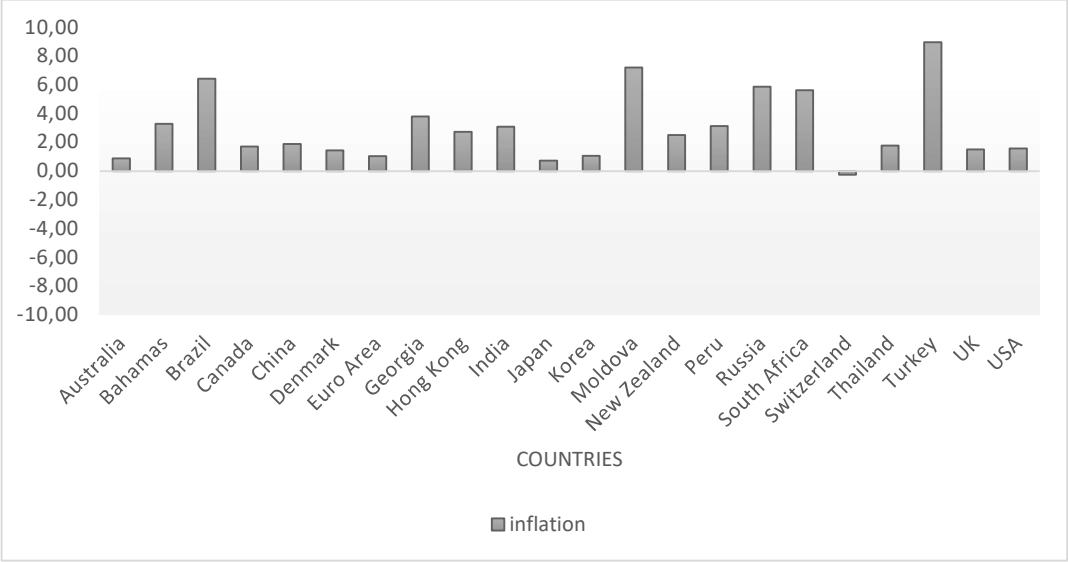

FIGURE 1 – Inflation, 3 years average measured by the annual growth rate of the GDP implicit deflator (%).

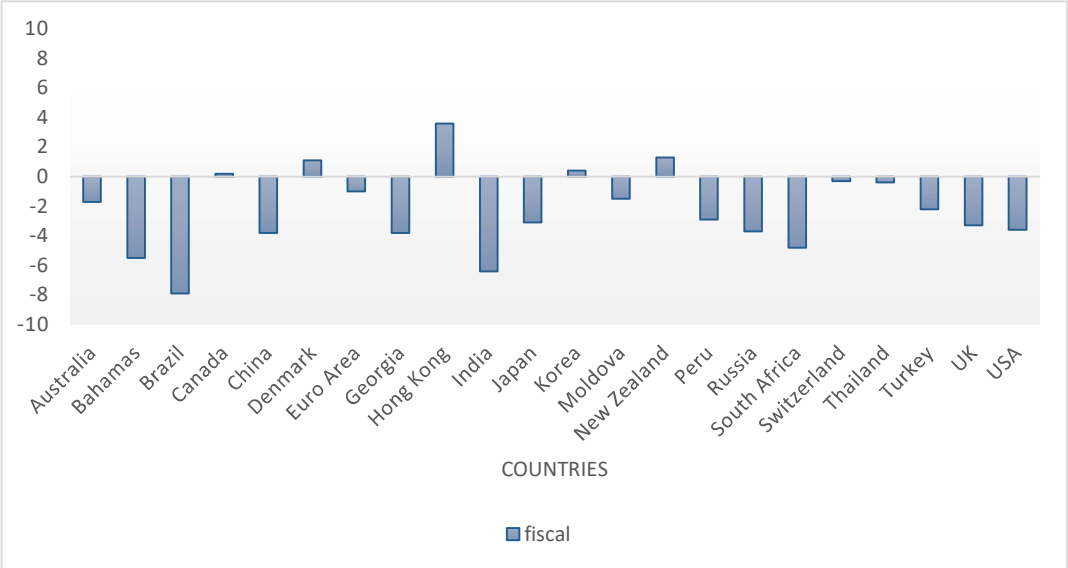

FIGURE 2 - General government fiscal balance to GDP (%).

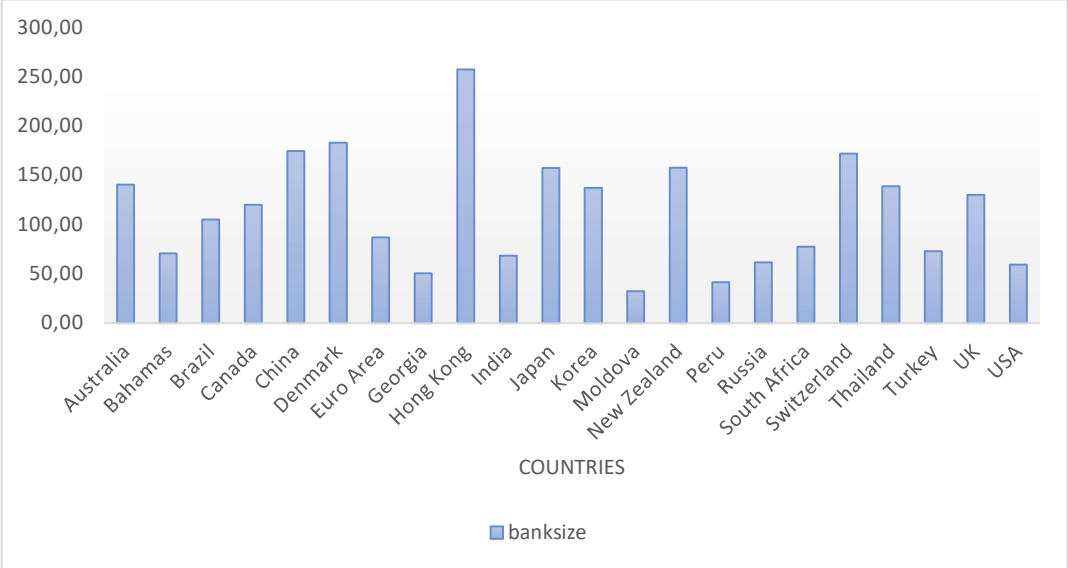

FIGURE 3 - Deposit money bank assets to GDP (%).

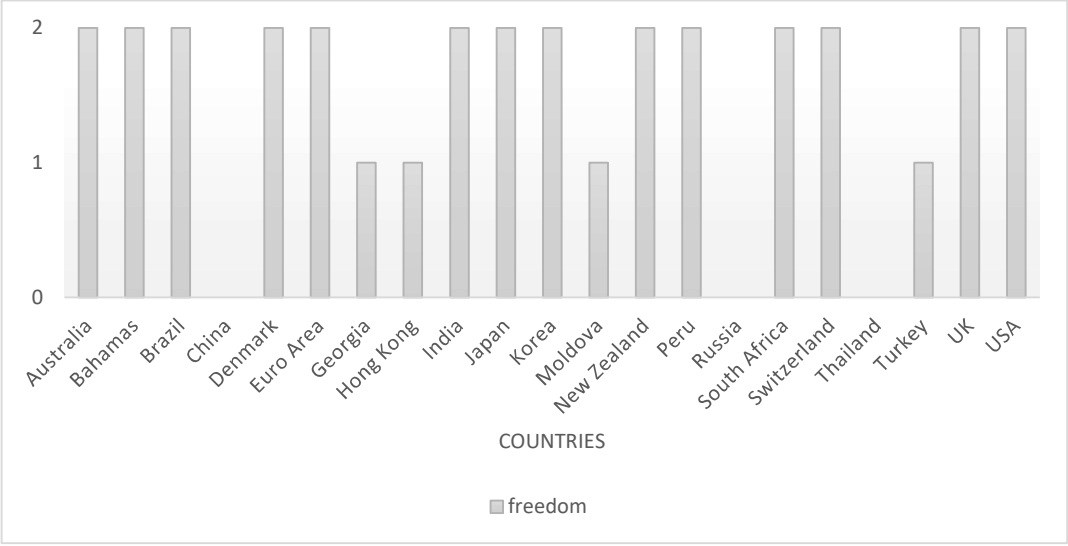

FIGURE 4 – Freedom in the World Index.

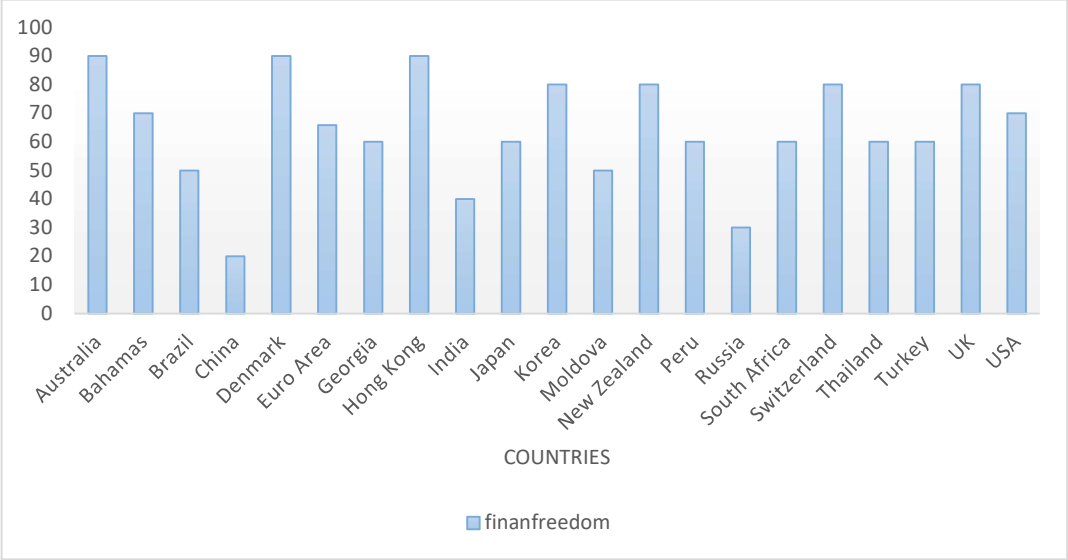

FIGURE 5 – Index of Economic Freedom.

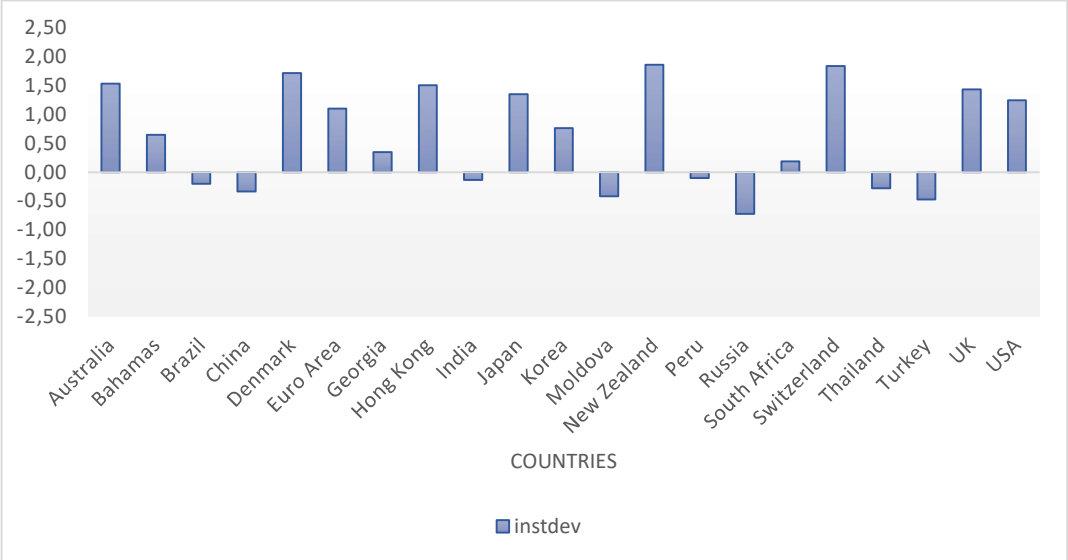

FIGURE 6 – Worldwide Governance Indicators.