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Original Scientific Paper

PIGS ECONOMIES: BAIL-OUT VS. BAIL-IN

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Abstract. *This paper analyzes bail-out and bail-in programs in the Eurozone periphery economies after the transformation of the global crisis into a debt crisis. Continuous rise of debt service costs was leading PIGS economies (Portugal, Ireland, Greece, Spain) either to abandon of Eurozone or to negotiate rescue programs. Using Panel corrected standard errors (PCSE) method, the research shows that bail-out programs had a negative effect on GDP growth in PIGS economies in the period 2011-2019, as the consequence of crowding-out effects. However, the results showed that bail-out programs could positively affect fiscal variables. An alternative solution is the bail-in mechanism, which is a sustainable mechanism that does not burden taxpayers. Based on examples of banks in Spain and Portugal, results show that using bail-in programs, panic and contagion effects could be avoided; however, in the case of future crisis, the effects of bail-in programs on the real economy still need to be examined.*

Key words: *PIGS Economies, Bail-out, Bail-in, Crisis.*

JEL Classification: G38, E44, H60.

1. INTRODUCTION

EU membership implies the harmonization of a significant number of economic policies, but one of the few that has maintained sovereignty is fiscal policy. Although fiscal policy is characterized by certain level of policy coordination in terms of partial harmonization of the tax system, and defined levels of fiscal deficit (3 % of GDP) and public debt (60 % of GDP), each member individually implements public spending

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policies. Therefore, it is not surprising that each country individually has different causes of excessive fiscal deficit.

As the global crisis escalated, EU countries were also affected to varying degrees. Although the global crisis was initiated in the mortgage market, it quickly spilled over into the real sector, and then transformed into a debt crisis, primarily in the PIGS countries (Portugal, Ireland, Greece, Spain). The specificity of these countries is reflected in their affiliation with the Eurozone - with the single monetary policy of the Eurozone, the only macroeconomic instrument for mitigating the consequences of the crisis was fiscal policy. The aim of this paper is to analyze the fiscal difficulties that PIGS countries faced during the crisis, as well as bail-out vs. bail-in programs used during the debt crisis.

The subject of the paper is the analysis of rescue mechanisms implemented in the PIGS countries in terms of bail-out programs in the period 2011-2019 using panel-data model, as well as examples of bail-in programs. The main hypothesis in the paper is that bail-out programs negatively influence GDP growth in the short term and that a long-term solution could be found in bail-in programs. Namely, using bail-in programs, instead of tax payers, banks could participate in bearing the costs of restoring a distressed bank and to prevent the negative spillover effects from the banking sector to countries' public debts.

The paper is structured as follows: after the introduction part, the second section presents a review of the literature on bail-out and bail-in programs and section tree shows the theoretical background of bail-out programs in terms of classification and consequences. The fourth section presents the fiscal positions of PIGS countries and the motivation for implementing bail-out programs. The fifth section shows the effects of the bail-out program using panel-data model, and bail-in program using example of Spain and Portugal. As part of the concluding remarks, recommendations were made to macroeconomic policy makers.

2. Literature Review

The complexity of the Eurozone debt crisis is explained in the Weber's (2015) paper, pointing out that it is not just a public debt crisis, but simultaneous growth crises, a labor market crisis, a balance of payments crisis, along with a public debt crisis. Failures during these crises were solved using bail-out programs from public funding equity in order to rescue debtholders (Block, 2010). More precisely, 'taxpayers have covered more than two-thirds of the cost of resolving and recapitalising financial institutions' (Philippon & Salord, 2017).

That was especially the case in PIGS economies. Schunknecht, Moutot, Rother, and Stark (2011) point to the justification of using the rescue mechanism in PIGS countries (Portugal, Ireland, Greece, and Spain) as solutions to unbridled public finances and growing public debt. Initially, Italy also belonged to this group of economies, which was analyzed in the work of Talani (2013), however, no rescue measures were implemented in Italy. Kickert & Ongaro (2019) propose resolving Greece's public debt at a supranational level. Pagoulatos (2019) wrote more about the rescue programs used in Greece. This paper discusses the effects of the applied bail-out mechanisms and the belt-tightening policy that is implied during the implementation of the program. Gurnani (2016) indicates the economic and financial situation in which Portugal found itself, as well as the process of implementing the rescue mechanism, emphasizing the efficiency of the program used. McDonagh (2017) and Whelan (2013) in their papers analyze the causes that led to the escalation of the fiscal deficit and which spilled over into the growth of public debt in Ireland. Also, the paper deals with the success of the applied rescue mechanism. Bagus, Raillo & Neira (2014a, 2014b) talk about the state's response in the form of a bail-out mechanism in Spain (Marti & Perez, 2016), using a partial rescue program whose funds were directed solely to help the banking sector. Further, they conclude that the effectiveness of the program used in Spain is questionable, hence analyzing the feasibility of a bail-in (Sanchez-Roger et al. 2018).

On the other hand, as opposite to bail-out programs, governments across Europe introduced bail-in programs. Dewatripont (2014), discusses in his paper the positive and negative effects of the bail-in mechanism. Micossi et al. (2016) believe that new principles and restructuring of the banking sector can prevent excessive risk-taking by bankers and solve the issue of moral hazard. Furthermore, Conlon & Cotter (2013) and Avogouleas & Goodhart (2015) discuss that topic as well. Also, Pandolfi (2018) considers that moral hazard can be completely eradicated by applying a bail-in mechanism. On the other hand, Bodellini (2018) agrees in his work with this view, but suggests that it is not possible for bail-in to completely replace the bail-out mechanism. Sommer (2014) advocates bail-in because his opinion is that 'successful bail-in has only a marginal effect on competition, and that an unsuccessful bail-in only eliminates a competitor, without creating a bigger one'. Namely, according to Regulation (EU) No 806/2014 of the European Parliament and of the Council of July 15th 2014 bail-in as a tool is introduced in EU legislative. 'Formal resolution about bail-in regimes means participation of bank creditors in bearing the costs of restoring a distressed bank (Bowman, 2016) and include heavy restrictions on taxpayer support' (Beck, et al. 2017). Therefore, in a crisis depending on the specific situation and in line with the applicable legal framework, the Single Resolution Board (SRB) reserves the right to intervene (Single Resolution Board 2020). The aim of new bank resolution is to 'solve the trade-off between imposing market discipline and minimizing the effects of bank failure on the rest of the financial system and the real economy' (Beck, 2011). 'Imposing market discipline implies avoiding the negative impact of bail-outs and public guarantees on bank risk-taking' (Dam & Koetter, 2012). While 'this new tool hypothetically lets banks fail without resorting to public funding, the European regime also allows for extraordinary public support under certain conditions' (Schoenmaker 2017). Hence, (Bates & Gleeson, 2015) 'bail-in should operate through a private contract, but the power to initiate bail-in and determine the extent of write-offs and fees incurred should be entrusted to a competent public authority'.

3. Theoretical Background of Bail-Out Mechanisms: Types and Consequences

In analyzing the bail-out mechanisms, 'it is important to distinguish the concepts of bail-out' and stimulating the economy. According to Block (2010), two aforementioned terms represent different government actions, the first representing urgent efforts to prevent an impending collapse or to assist sectors that have already encountered difficulties and cannot overcome them, while the second one is fiscal stimulus is order to create economic growth. Bail-out represents narrower action than stimulation, in the sense that the government can take general actions that enable economic growth, while the use of the bail-out mechanism is mainly focused on certain sectors. The bail-out could be said to represent direct one-time actions carried out through the purchase of debts or shares. On the other hand, fiscal stimulation is carried out through the encouragement of businesses or individuals either in general or through the purchase of individual assets (assets) or investment.

According to Block (2010), there are five types of bail-outs:

1. **Profitable bail-out**, means that the government represents an intermediary between vulnerable companies, without spending budget funds. The government assists in finding a solution to overcome the problem, and in such circumstances can even profit, given that 'all administrative costs are covered by interest and fees and that all loans are repaid in full'.

2. **Bail-out with low or no cost**, by implementing such a program most governments help market players by adjusting to market conditions that can relax the business environment and thus help different sectors to overcome difficulties. The government can take actions that are risk-free if it opts for an intermediary role between investors and private lenders. Or to take slightly riskier actions in which it represents a guarantor for private loans.

3. **Bail-out financed from special funds**, the implementation of this program requires the creation of real costs. The implementation of this mechanism requires the establishment of funds, in which earmarked funds will be collected from which the bail-out will be financed. The disadvantage may be the lack of necessary resources when requiring a switch to another form of bail-out.

4. **Bail-out financed from general government revenues**, by applying this mechanism, significantly higher funds are available compared to the previous method, which brings a certain advantage. However, the disadvantage of this form of bail-out financing must not be ignored. Expecting state intervention with bail-out programs, companies as well as the banking sector are more willing to take much riskier moves, because they rely on the help of the state if something goes wrong. Another disadvantage of this form of bail-out is that the costs of its financing are borne by all taxpayers, not just those who have direct or indirect benefits.

5. **Combined bail-out** can be financed by a combination of earmarked funds allocated to special funds and general tax revenues, which gives some flexibility in the implementation of bail-out programs.

It is important to consider the consequences, i.e. the costs of such actions, which is not an easy task since each action is specific to itself. The assessment of the costs and the most transparent costs of bail-outs can hardly be comprehensively considered, given that borrowers may not fully repay the amount of borrowed state funds. The risk, and thus the costs of applying the bail-out mechanism, vary in relation to different types of loans and investment programs, and also depend from one borrower to another. Government intervention in the banking sector becomes necessary when illiquidity occurs due to the gap between short-term loans and long-term investments, in which case a combination of bail-out guarantees and central bank guarantees is applied. According to Bagus, Julian and Neira (2014), the consequences of a bail-out can be as follows:

1. **Non-discriminatory bail-out**: governments should not be guided by the premise that all banks or companies are too big to fail; a thorough analysis of the sustainability of certain systems should be performed and only then resort to the bail-out mechanism as a tool to save companies, a bank or the state in order to justify the invested funds and in order not to lay the foundations for the creation of new problematic market players. The new round of rescuing troubled actors who survived only thanks to state interventions actually represents the hidden costs of the bail-out program.

2. **Crowding-out of private savings**: bail out is mainly financed by increasing public debt through the issuance of government bonds, in which savers invest. In that way, the capital market dries out even more, because the use of special funds prevents the free functioning of the credit market. This further aggravates the situation, as the effects spill

over into both the stock market and the real estate market, increasing the demand for bail-out fund expansion, thus not only inadequately wasting scarce resources but also squeezing out private consumption.

3. **Moral gambling**: a non-discriminatory bail-out program further deepens the problem of moral hazard, the consequences of which will be difficult to control in the future. What leads to moral hazard and what does it represent? If the states, the private sector, banks or individuals are aware that whatever moves they have taken and in whatever difficulties they have fallen, the state will stand behind them and will not allow them to fail, such knowledge enables them to take even greater risks that in the future may lead to unsolvable situations - collapse, i.e. increase the financial resources needed to save the system, i.e. rescue costs.

4. **Regulation of decision-making**: most bail-out programs simultaneously carry with them capital injections into the entity being rescued, thus narrowing the space for management's independent decision-making. Such circumstances not only complicate the business, but can significantly jeopardize the business and further survival of the company.

5. **The problem of exit strategy**: some bail-out programs involve the government becoming the majority owner of the entity (e.g., financial institutions) it is rescuing. As the majority owner, the government makes business decisions that often coincide with political interests, which significantly jeopardizes the business. Fortunately, such situations are short-lived, as most governments want to exit these arrangements. The moment you go out can be a problem. Going out too early can destabilize the financial system again, while a late exit can incapacitate or even disperse management that cannot make strategic decisions on its own. Such circumstances lead mainly to a decline in the value of shares on the stock exchange, a decrease in profits, a decline in competitiveness and losses for all internal and external stakeholders.

6. **Uncertainty of the regime**: represents a continuation of the previous problem, and was defined by Robert Higgs, as uncertainty as to what the future economic order will look like, especially how private property will be treated by the state. The uncertainty regime discourages long-term savings and investments that are essential for economic recovery.

4. WHY BAIL-OUT? RE-EXAMINING FISCAL POSITION OF PIGS ECONOMIES

PIGS economies were unable to control their public finances during the debt crisis. Continuous rise of debt service costs was leading either to abandonment of Eurozone or to negotiating rescue programs. The option of abandoning the euro would mean a return to weak national currencies, which would further open space for speculative attacks that would deepen the already existing problem. Consequently, PIGS economies have decided to accept rescue packages from several programs: European Financial Stability Facility (EFSF), European Financial Stabilization Mechanism (EFSM), European Stability Mechanism (ESM). However, the Eurozone peripheral economies received different amounts from bail-out programs in different periods, due to different fiscal situations in each economy.

The pre-crisis situation in Portugal can be defined as anemic, because economic growth was almost invisible and public revenues were insufficient. The economy in such a state is facing a crisis, which implies a threefold increase in the deficit in just one year from 3.7% of GDP in 2008 to 9.9% of GDP in 2009 (Figure 1). The government primarily tried to respond to the crisis by the leader of the expansionary fiscal policy introduced with the aim of boosting the overall economy. Consumption growth is stimulated by the growth of disposable income and the reduction of taxes. Through this policy, an attempt was made to reduce the recession gap, increase aggregate demand and reduce unemployment. However, such a policy did not give the desired results, the expansive policy is characterized by the accumulation of public debt, which is why the unlimited use of the heating policy is not sustainable. In order to avoid further accumulation of public debt, Portugal was forced to turn to bail-out programs in 2011, which, in addition to funds, also included painful fiscal adjustments. Structural reforms were supposed to restore the country's credibility, which would ensure access to the international capital market in the short term. The bail-out program involved primarily a reduction in government expenditures, which meant a reduction in government spending, while reducing the volume of government administration (by 1% annual reduction in government employees), as well as reducing government employees' salaries with increasing its efficiency. Further restrictions related to the health sector, education, unemployment benefits and social transfers. On the revenue side of the budget, it was necessary to reform the tax system, which was done by increasing the base for property and income taxes, VAT rates were increased, and there were also increases and compensations for health care. A significant part of the Portuguese economy was still in the hands of the state, and the signing of the program insisted on increasing the efficiency and competitiveness of the economy, which meant privatization, which provided additional income for the state. The bankruptcy of one bank threatened the collapse of the entire banking sector, as soon as the entire financial sector was endangered, which needed a significant pumping of funds in order to ensure its survival.

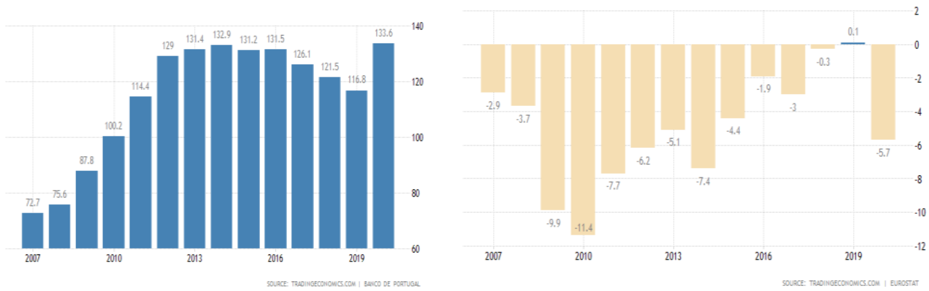

Fig. 1 Fiscal deficit/surplus and public debt in Portugal in period 2007-2020
Source: https://tradingeconomics.com/

Ireland was one of the members that was forced to sign bail-out programs financed by the ECB and the IMF. At that time, in addition to the approved funds, it had to accept adjustments through fiscal consolidation. The crisis has hit the country hard, which has been characterized by low taxes and low social transfers. In the short period after the onset of the crisis, GDP fell by 4.5%, the decline in GNP was far greater as a result of its connection to exports and foreign ownership of the sector. Domestic demand also declined. A complete debacle occurred in the labor market, where from a country with an extremely low unemployment rate of 4.5% (2000s) after the crisis the rate rose to 15%. Public debt from the pre-crisis level of 23% of GDP reached the level of 119.5% of GDP in 2012 (Figure 2). The deficit escalated to 32% of GDP in 2012, because the banking sector was saved that year.

During the 2000s, public expenditures flourished, but were cut short in the short term, because otherwise, due to a deficit of 20%, public debt would have accumulated to 180% of GDP. The Irish government decided to raise revenues, but twice less in relation to the reduction of expenditures, which ultimately did not produce the desired effect because the collected state revenues were 4 times less than expected. The reduction in spending resulted in a decline in investment projects, which were mostly financed from domestic public-private partnerships, as it took over the financing from EU funds. Two years after the crisis, it was necessary to set priorities and investments in capital projects were halved. Also, a significant amount of funds intended for education, health, households and public transport has been reduced in order to redirect these funds to encourage entrepreneurship and business. As one of the important austerity measures, the reforms also required dramatic reductions in public sector employees, and in order to mitigate social offers, incentives for voluntary retirement were offered (around 5%). The employment ban also came into force, mostly in the health and social sectors, while the state administration did not feel significant cuts. It was necessary for the public sector to increase efficiency, to achieve much more with less investment, which mostly referred to government agencies ('especially in the field of social protection').

When analyzing the revenue side of the budget, the question of revenue sustainability arises for two reasons. First, in the pre-crisis period, the government carried out various write-offs of receivables from industry, in order to reduce the burden on companies, encourage economic growth, and thus reduce the nature of taxes. Thanks to that decision, Ireland faced the crisis with almost 50% less taxpayers, which resulted in a significant reduction in budget funds. The second reason is that economic growth relied almost entirely on tax revenues, thus the entire tax system suffered heavy burdens. Such circumstances have put the Irish economy at a disadvantage due to the constant changes in tax revenues that have been reflected in the destabilization of the entire country. The consequences of the recession were first felt by rising unemployment, and then by falling tax revenues due to declining employment. In the Irish case, it was almost impossible to increase tax rates or carry out any reforms to existing taxes in order to raise more funds. Ireland had to resort to creating new taxes, due to the fact that the increase in the corporate tax discourages future investors from investing capital, and thus discourages industrial development.

According to Whelan (2013), impressive growth is the result of a fundamental increase in productivity and the achievement of labor market flexibility that have been a wind in the back of growth and economic strengthening, which set Ireland apart from other EU members who have not done so well with reforms. The deficit in 2015 was within the allowed limits, and such a trend continued in 2016 when it amounted to 0.7% of GDP, and in 2019, Ireland achieved a budget surplus of 0.5% of GDP (Figure 2). Such a result is attributed to revenues collected that were above expectations. Given the positive results of the fiscal deficit, there was a drastic reduction in debt observed in 2014 when it amounted to 104.1%, and in 2019 it was within the allowable amount of public debt and amounted to 58.8% of GDP. The moment of continuous decline, which was expected in the coming period, although it is very possible that this trend will change due to the corona virus pandemic, continued in 2016 when it amounted to 0.7% of GDP, and in 2019, Ireland achieved a budget surplus of 0.4% of GDP. All this thanks to the collected revenues that are above expectations. Given this situation, a drastic reduction in debt was observed in 2014, when it amounted to 104.1%, and in 2019 it was within the limits of the allowed amount of public debt and amounted to 57.4% of GDP in line with the trend of continuous decline, which was expected in the coming period, although it is very possible that this trend will change due to the corona virus pandemic.

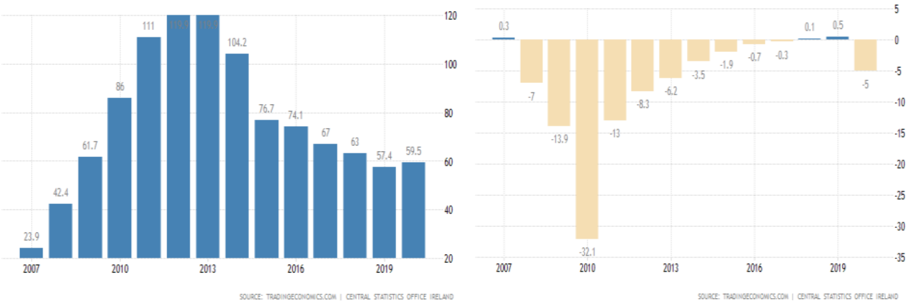

Fig. 2 Fiscal deficit/surplus and public debt in Ireland in period 2007-2020
Source: https://tradingeconomics.com/

The crisis that occurred in 2008 shook the already unstable public finances of Greece. The reason that brought Greece to that position is the long-standing fiscal deficit that has accumulated public debt to such an extent that Greece has become the most indebted member of the EU.

The main culprit for bringing Greece to the brink of bankruptcy is an expansive fiscal policy that enabled the creation of a constant fiscal deficit (around 10%). Such a policy is made possible thanks to domestic and foreign funds due to easier access to the capital market. At the same time, economic growth in Greece has slowed significantly, leading to a further increase in public debt because interest rates on borrowed funds for refinancing were higher than the rate of economic growth. In addition, the state appears as a guarantor of private loans. The aforementioned reasons, along with the spillover effects of the Global Crisis, undoubtedly led to an unprecedented crisis after 2008. Figure 3 shows that in 2009 fiscal deficit was 15.1% of GDP, while public debt increased to the level of 175.2 % of GDP in 2011. The bail-out programs that followed meant only one thing - new borrowing with a policy of tightening the belt. The implementation of the first structural reforms aimed at stabilizing public finances and stimulating competitiveness did not yield results, thus deepening the recession. In order to overcome the crisis, it had to reform almost every segment of the economy, starting with the labor market, it was necessary to make it more competitive, flexible, but also cheaper (proposal to reduce health and social protection programs, abolish the thirteenth salary ...). Another significant reform related to the tax system- it was required that the tax policy be better defined and simpler, which would achieve greater efficiency and reduce tax evasion. The positive effects of the bail-out programs were recognized in 2016 in terms of achieving a budget surplus (0.2 % of GDP), while the level of debt was kept at a very high level (about 180 % of GDP). The crisis caused by the Covid-19 pandemic in 2020 deepened crisis in public finances again.

Public finances in Spain have been in good condition in the pre-crisis period, given that there was a budget surplus and the low levels of public debt, satisfying the prescribed limits. Marti and Perez (2016) indicated that the situation in which Spain faced the crisis was harmless, given that the public debt in 2007 was at its historical minimum with amount of only 35% of GDP and fiscal surplus of 1.9 % of GDP (Figure 4), which made Spain one of the least indebted members at the time.

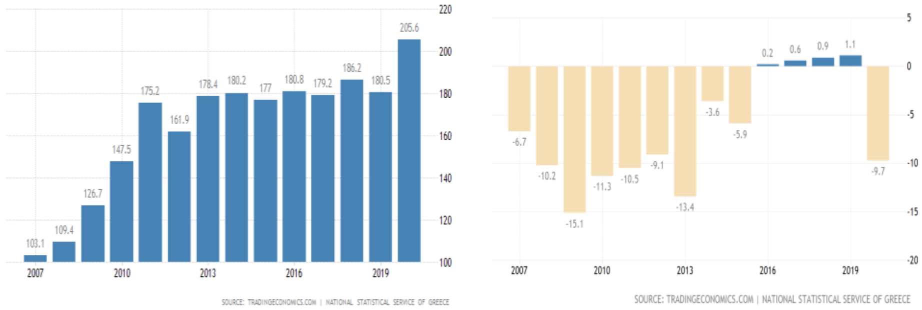

Fig. 3 Fiscal deficit/surplus and public debt in Greece in period 2007-2020
Source: https://tradingeconomics.com/

The consequences of the crisis can be explained in three periods, with the first most obvious consequence being an economic decline of 9%. The first period represents a steep decline in economic activity (2008/9), the second is a period of stagnation (2010/11), and the third period is marked by a recession (2011/13). The negative five-year development of economic activity caused a decline in aggregate demand, which led to mass layoffs, and the spillover effect. Moreover, the crisis in the banking sector led to a fall in real estate prices. The solution to the problems brought by the crisis appeared in three answers, the first is the phase in which there was an increase in revenues with a decrease in expenditures, the second is the phase of fiscal consolidation and the third answer is the most decisive adoption of sharp and restrictive measures that will enable successful fiscal consolidation. Initially, ambitious structural reforms were attempted that involved the implementation of expansionary fiscal policies to help potential product growth. However, the use of such an inadequate policy led to a historically high fiscal deficit, which was recorded in 2009, amounting to 11.3% of GDP (Figure 4). The second response related to fiscal consolidation, which required a policy of tightening the belt, large layoffs in the public sector, reducing investment, freezing salaries and pensions to relieve public finances and reduce expenditures (by 1% of GDP per year) and thus reduced an undesirably large deficit. Strict measures did not give the desired results, but caused an even stronger decline in economic activity, introducing the Spanish economy

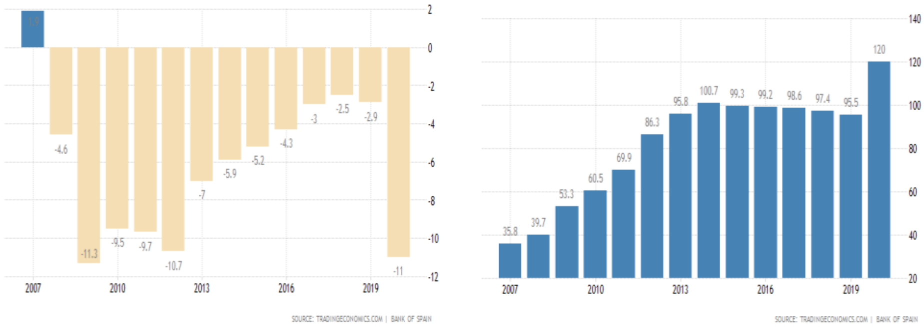

Fig. 4 Fiscal deficit/surplus and public debt in Spain in period 2007-2020
Source: https://tradingeconomics.com/

into another recession. Spain was in a very unenviable position at the time, hit by two recessions at the same time, which forced it to take even tougher measures of fiscal consolidation and to make a trade-off between growth and social equality in order to overcome the undesirable situation. After the application of bail-out programs in 2012 and 2013, fiscal deficit is reduced to 2.5 % of GDP in 2018, while public debt is kept at around 95 % of GDP in the period before the pandemic crisis (Figure 4).

5. Effects of Rescue Programs in PIGS Economies

5.1. Bail-out

The Eurozone has faced both a banking crisis and a public debt crisis in many Eurozone member states. To overcome the difficulties, a bail-out mechanism was used to support European Central Bank (ECB). According to Bagus, Julian and Neira (2014), ‘through various mechanisms and financial instruments, shadow banking was highly represented, by attracting short-term funds from the money market, investments were made in long-term assets, such as long-term securities (ABS - assets backed securities), i.e. the most important of them mortgage securities (MBS - mortgage backed securities)’. This behavior of the banking system was possible given that in that period there was an enormous supply of credit, which with low interest rates involved in securities trading not only the financial sector but also other individuals and institutions that were willing to take risks for high yields. Eventually, a financial bubble was created, which had no coverage, which led to the collapse of the credit market. In the last quarter of 2008, ‘central banks replaced the interbank sector’ and redistributed short-term assets instead between banks that have funds and those that crave them. Another measure of the bail-out program to rescue the banking system was the direct injection of funds into financial institutions in order to prevent further bankruptcies and stabilize the credit market. These interventions require certain costs, which, if not directed, can prolong the crisis, which leads to the creation of new costs, i.e. the system is introduced into a vicious circle without a way out. Finally, PIGS economies plus Cyprus have decided to accept rescue packages from several programs: European Financial Stability Facility (EFSF), European Financial Stabilization Mechanism (EFSM), European Stability Mechanism (ESM). Yearly amounts of bail-out programs in PIGS economies are presented in table 1.

Table 1 Bail-out programs in billion euros per years and disbursed amount

Year	Ireland	Portugal	Spain	Greece	
Source	EFSF	EFSF	ESM	ESM	EFSF
2011	€ 8.17 bn	€ 8.11 bn	0	0	0
2012	€ 4.56 bn	€ 11.36 bn	€ 39.46 bn	0	€ 14.32 bn
2013	€ 5.66 bn	€ 6.60 bn	€ 1.86 bn	0	€ 2.53 bn
2014	0	€ 6.25 bn	0	0	€ 8.30 bn
2015	0	0	0	€ 21.42 bn	0
2016	0	0	0	€ 10.30 bn	0
2017	0	0	0	€ 8.50 bn	0
2018	0	0	0	€ 21.70 bn	0
Total	€ 18.41 bn	€ 27.33 bn	€ 41.33 bn	€ 61.93 bn	€ 18.41 bn
Disbursed amount	-	7.32 %	42.61 %	3.35 %	7.71 %
Repayment until	2042	2040	2027	2060	2070

Source: author, using: https://www.esm.europa.eu/assistance/programme-database/programme-overview

The ESM and EFSF programs have paid off a total of €289 billion to PIGS economies. Table 1 shows that percentage of disbursed amount is highest in Spain (42.61 % of total amount), while in Ireland is still zero. 'The last active programme is the ESM programme for Greece, concluded in August 2018'. Maturity is the highest in Greece using EFSF program dating up to 2070. 'The long loan maturities and favourable interest rates enabled PIIGS economies to carry out necessary reforms'. Those reforms would allow them 'to return to market financing and economic growth'. Therefore, we check the correlation between bail-out programs and GDP growth and bail-out programs' correlation with other fiscal variables (Table 2).

Table 2 Correlation between variable bail-out, GDP growth and other fiscal variables in PIGS economies in the period 2011-2019

	GDP growth	Deficit	Debt	Interest	Exp	Rev
PIGS	-0,392	-0,256	0,613	-0,519	0,539	0,502
Ireland	-0,253	-0,940	0,787	0,650	0,879	0,740
Portugal	-0,452	-0,646	-0,149	0,510	0,523	-0,176
Greece	-0,576	-0,463	-0,369	-0,088	0,534	0,030
Spain	-0,373	-0,645	-0,276	0,182	0,698	-0,205

Source: Author

Correlation analysis shows that bail-out programs are negatively correlated with GDP growth in PIGS economies on average, as well as in each economy. In relation to fiscal variables, it could be concluded that between bail-out programs and fiscal deficit exists negative relationship meaning that with the introduction of bail-out mechanisms, fiscal deficit could be reduced. Correlation with public debt shows heterogeneous results, on average, public debt increases with the increase of bail-out programs, as well as public expenditure.

With the aim to check whether the relationship between bail-out and GDP growth is significant, we estimated panel-data model for the four PIGS economies in the period 2011-2019. In order to have robust results, we used Panel corrected standard errors (PCSE) method, where the dependent variable is GDP growth and independent bail-out and other fiscal variables (Table 3).

Table 3 Estimation of bail-out programs impact on GDP growth using method PCSE in PIGS economies in the period 2011-2019

Dependent variable: Growth of GDP	Panel corrected standard errors (PCSE)			
Independent variables	Coefficient	Panel-corrected standard error	Z	p>z
Constant	144.384	$7.51e^{-10}$	-2.15	0.032
Bail-out	$-1.61e^{-10}$	2.23919	-4.70	0.000
Interest	-10.52727	7.72467	18.69	0.000
R – squered	0.4578			
Wald test	22.10 (0.000)			
Nember of observations	36			
Number of groups	4			

Source: Author

The results indicate that bail-out programs determine growth of GDP significantly, with negative effect in the short-run. Moreover, growth of GDP is signifinately loaded by interest payments, meaning that interest payments influence negative growth of GDP. Therefore, we could confirm hypothesis that bail-out programs were not generators of economic growth in the period 2011-2019, although bail-out programs had effects on fiscal deficit reduction.

5.2. Bail-in: Example of Spain and Portugal

Considering all the consequences of the applied bail-out programs, one can conclude that bail-out is a very expensive and unsustainable mechanism, especially when it comes to resolving banking crises. For this reason, the EU has set up a fund that will provide a sustainable mechanism that will not burden taxpayers at the same time. An alternative to the bail-out mechanism is the bail-in mechanism. The bail-in mechanism represents overcoming problems through private funds. ‘The Treaty principles and the new discipline of state aid and the restructuring of banks provide a solid framework for combating moral hazard and removing incentives that encourage excessive risk-taking by bankers’ (Micossi, Bruzzone and Cassell, 2016). In 2014, the EU established the Fund as part of the Single Resolution Mechanism, which is financed from bank contributions. The single resolution mechanism is directly responsible for resolving the problems of individual banks and banking groups, under the supervision of the ECB. The authorized institution has the power to sell the assets of endangered banks and thus provide it with further operations, by establishing "bad banks" the liquidity of endangered banks would be provided, in such a way that bad receivables and loans would be purchased from them. The measures also allow the conversion of receivables into shares. In order for bail-in to be truly feasible and convincing (Sanchez-Roger et al., 2018), ‘it is necessary for banks to ensure a minimum level of bail-in available funds that are convertible into shares or stakes’. Also, the bail-in mechanism enables the bank to write off debts or some other items in liabilities with its own funds, and in that way the endangered bank is relieved. There are two ways to implement the bail-in mechanism, by operating in the free market (Bagus, Rallo and Niera, 2014): through the conversion of debt into capital and through the growth of the value of shares / stakes through the capital market. The first mechanism is a typical form of bank reorganization, in which debt is converted into capital. In this way, for example, the bank is recapitalized, which enables the entity to continue to operate until long-term assets mature (long-term receivables are collected). The application of this mechanism solves one of the problems of bail-out, enables the survival of only those entities that are able to fight for a market position and strengthen their competitiveness (Sommer, 2014), there are no protected ones that are 'too big to fail', it also prevents squeezing out private savings. However, this mechanism according to Pandolfi (2018) does not solve the problem of moral hazard. The second mechanism is the growth of the value of shares / stakes in the capital market. This increases the bank's capital, ‘which helps short-term refinancing of debts, and prevents the suspension of payments’. ‘Private refinancing of short-term debts has several advantages’, and they are: they do not have to be non-discriminatory, it is arbitrarily decided which bank will be saved, the problem of moral hazard is solved (Bodellini, 2018) and the problem of conflict of interest between management and government is solved. The only problem that cannot be solved is the squeezing out of private consumption. According to Bagus, Rallo and Niera (2014), there are certain deviations from the standard bail-in compared to the one that can be implemented in a real situation. First, guaranteed deposits (up to € 100,000) cannot be converted into shares. Second, deposits of small and medium-sized enterprises, as well as deposits of the European Investment Bank have an advantage over deposits of large corporations, thus freeing up more room for maneuver. Third, secured liabilities, in the form of government bonds or mortgage securities, are not subject to exchange. Fourth, the liabilities of a failing company belonging to employees cannot be converted into shares. Fifth, interbank debts shorter than 7 days and all securities used in daily interbank operations cannot be exchanged for shares. For above mentioned reasons, Bates, Gleeson (2015) believe that the 'relevant instruments should ensure that the bail-in operates through a private contract, but the power to initiate bail-in and determine the extent of write-offs and fees incurred should be entrusted to a competent public authority'.

On the example of Spain, Bagus, Rallo and Niera (2014) tried to decipher the question whether the application of the bail-in mechanism would be significantly more efficient and cheaper 'in relation to the application of the bail-out program' for the recovery of the Spanish banking system. They considered several consequences of bail-out that could have been avoided if bail-in had been applied. First, the application of a partial bail-out to assist the banking sector directly violated the Maastricht Treaty, which prohibits the application of bail-out programs to national governments. Funds have been provided to Spain from the funds for the recapitalization of the banking system, which endangers trust in the Treaties and EU laws. On the other hand, bail-in mehazinam in no way violates European rules of the game. Second, bail-out assistance is provided from taxpayer-funded funds. Citizens' contributions help the recovery of mostly private capital, from which the owners benefit the most. Such a situation undoubtedly leads to the already mentioned moral hazard. Bank owners, as well as their managers, are more willing to take the risk, knowing that possible damages will be compensated from the pockets of citizens. In this way, a transfer is made from the poor to the rich. Also, not only is there a distribution between different levels of society within one state, but there is a distribution of tax revenues from one state to another, which undermines certain national conflicts and tensions. These negative consequences would simply be overcome by a bail-in mechanism, financing funds from bank contributions, which would serve to help vulnerable banks. Third, as mentioned, the bail-in mechanism would prevent the emergence of a moral hazard in which profits are collected by the owners of capital, while losses are paid by taxpayers. Fourth, the application of the bail-out mechanism in the process of rescuing the banking sector leads to an increase in public debt, the consequences of which are again borne by taxpayers. Private consumption is being squeezed out, and this is best reflected in the decline in economic activity. In the case of bail-in mechanisms and recapitalization from private funds, the inflow of foreign capital would be enabled, which would ensure not only the recovery of banks but also economic growth. Fifth, the bail-out program makes it difficult for banks to make decisions, the management does not have the freedom to manage according to its preferences, but acts according to government instructions, which further complicates the inflow of capital. Sixth, the previously changed problem of exit strategy can seriously jeopardize the banking system and destabilize it again, all problems related to the moment of withdrawal of the public sector from the bank management are simply eliminated by the bail-in mechanism since private investors become new bank owners. Seventh, uncertainty about the future was also contributed to by the growth of public debt as well as private debt caused by the rescue of the banking sector. There is also the uncertainty of the euro, which can significantly affect the crowding out of both domestic and foreign investments. These problems could be alleviated if not completely overcome by applying bail-in, because primarily there would be no increase in debt, but there would be a conversion of debt into shares, which would slow down borrowing, and long-term savings and investments would be encouraged.

Another example is the Portugueese case. In Portugal the bail-in mechanism was applied to Banco Espírito Santo. As Beck, Da-Rocha-Lopez and Silva (2017) and Bowman (2016) write, Resolution Banco Espirito Santo aimed to preserve the healthy tissue of the bank, by transferring bad debts and low-quality assets to a 'bad bank'. On the other hand, the new bank has been established, whose capital was fully financed by the combined funds of the Portuguese Bank Rehabilitation Fund from 2012 and a loan from 8 banks. Other collectible receivables were transferred to the new bank. By applying the bail-in mechanism, borrowers and depositors were protected. Although the application of the bail-in mechanism in the case of Portugal has had negative implications for real indicators, rising unemployment and declining investment, it can be said that panic and the collapse of the financial market were successfully avoided.

Namely, the European Commission has proposed a framework that enables the rescue of banks that would be on the verge of collapse in the future through the bail-in mechanism (Conlon & Cotter, 2013). Many economies also tend to introduce, or have already introduced, a bank bail-in mechanism, which would mean that the bail-in mechanism assumes a superior role over the bail-out mechanism (Avogouleas & Goodhart, 2015). However, the positive and negative sides of the initiative need to be examined in more detail so that the bail-out mechanism is completely supplanted by the bail-in mechanism (Dewatripont, 2014).

6. CONCLUSIONS

This paper analyzes the rescue programs of the Eurozone periphery economies after the transformation of the global crisis into a debt crisis. The research showed that negative effect of this type of assistance is related to source of finance, namely, bail-out programs are financed by taxpayers, moral gambling, regulation of decision-making, exit strategy and crowding-out of private savings. As the bail-out programs are mainly financed by increasing public debt, crowding-out of private savings and investments indicate decline in GDP. This theoretical assumption is confirmed using panel-data model. Namely, negative effect of bail-out program on GDP growth is estimated using Panel corrected standard errors (PCSE) method in PIGS economies in the period 2011-2019. The results showed that bail-out programs could positively affect fiscal variables, however, bail-out programs do not provide economic growth and positive effects on the real economy.

Considering all the consequences of the applied bail-out programs, it could be concluded that bail-out is a very expensive and unsustainable mechanism, especially when it comes to resolving banking crises. An alternative solution to the bail-out is the bail-in mechanism, which is a sustainable mechanism that will not burden taxpayers at the same time. Since bail-in is still not frequently used, previous experiences on the example of banks in Spain and Portugal show that by using bail-in programs panic and contagion effects could be avoided, however, in the case of future crisis, the effects of bail-in programs on the real economy still need to be examined.

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PIGS EKONOMIJE: BAIL-OUT VS. BAIL-IN

Ovaj rad analizira bail-out i bail-in mehanizme u perifernim ekonomijama evrozone nakon transformacije globalne krize u dužničku krizu. Stalni rast troškova servisiranja duga uslovio je ekonomije PIGS (Portugal, Irska, Grčka, Španija) ili da napuste evrozonu ili da pregovaraju o bail-out programima. Korišćenjem metode korigovanih standardnih grešaka (PCSE), istraživanje pokazuje da bail-out programi negativno utiču na rast BDP-a u PIGS ekonomijama u periodu 2011-2019, kao posledica crowding-out efekata. Međutim, rezultati su pokazali da bail-out programi mogu pozitivno uticati na fiskalne varijable. Alternativno rešenje je bail-in mehanizam, predstavlja održivi mehanizam koji ne opterećuje poreske obveznike. Na osnovu primera banaka u Španiji i Portugaliji, rezultati pokazuju da bi se korišćenjem bail-in programa mogli izbeći efekti panike i prelivanja, međutim, u slučaju buduće krize, efekti bail-in programa na realnu ekonomiju dalje moraju biti ispitani.

Ključne reči: *PIGS ekonomije, bail-out, bail-in, kriza*.