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Debt development in Ireland and Spain: The same or different? Pre- and post-crisis analysis

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Abstract

The aim of this paper is to present the development of general government debt in two Eurozone countries: Ireland and Spain that suffered from serious imbalance in public finance during the last crisis. Prior to the crisis, both economies were developing well against the background of the whole Eurozone and had a relatively good situation in public finance. The genesis of the crisis was also quite similar in these two countries. The similarity of factors influencing the crisis and the pre-crisis high development of both economies were among the reasons for selection of these two countries to be compared. Thus, the article focuses on the outbreak of the crisis and the fiscal consolidation period of 2008-2015, however the pre-crisis analysis is also provided. The debt sustainability analysis carried out in the article shows the possibility of growing out of debt in both countries depending on the macroeconomic circumstances. Both Ireland and Spain have been aiming to achieve a primary surplus. Besides the similarity of pre-crisis conditions, in this respect, the progress was highly noticeable, especially in Ireland, where it resulted from a fiscal consolidation but also a high real GDP dynamics that supported the process. Due to this, Ireland has already managed to lower the debt-to--GDP ratio and put it on a downward path. Spain, on the contrary, has recorded a high debt-to-GDP ratio which is still on the upward path and is forecasted to continue until 2016.

Keywords: Ireland, Spain, fiscal consolidation, debt dynamics.
JEL Classification: E60, E62.

Introduction

In years 2008-2012, the Eurozone found itself in a deep financial and economic crisis. The crisis was caused by the accumulation of effects of many negative phenomena, such as the collapse of the mortgage market in the US in 2007-2008, high public debt and rampant expansion of bank credit in some Euro Area countries, excessive speculative investment in areas such as construction, real estate and financial services, as well as rapid growth in market prices of raw materials, petrol and food. But the most important factor differentiating the recent crisis from many earlier cyclical downturns was the excessive debt of both public and private sector, which led to a sharp drop in confidence in financial markets. Some countries have even stood on the verge of bankruptcy. Greece, Ireland and Portugal were forced to apply for financial assistance from international institutions. As a result, the crisis turned into a sovereign debt crisis. The combined effect of these developments was an increase in public debt on a scale not seen since the end of the World War II. Indeed, in years 2008-2012, the relation of public debt to GDP in the Eurozone increased from 68.5% to 91.3% and continued the upward trend until 2014. According to the most current forecasts, 2015 will be the first year when decrease in debt-to-GDP ratio in the Euro Area is expected [European Commission 2016a].

It should be noted that for some countries, the primary cause of the Eurozone sovereign debt crisis was not over-indebtedness of the public sector but an excessive emission of bank credit and over-indebtedness of the private sector. Ireland and Spain constitute examples of such countries. Despite significant differences in terms of structure and size of the economy between the two countries (Ireland and Spain), in the light of the recent crisis and its causes, there are some features in common that unities these countries. In both, the crisis was triggered in the real estate and in the construction market. In Spain the private sector generated an excessive debt in banks in order to invest in these market, whereas in Ireland there was an excessive and risky expansion of the banking sector financing investment mainly in those sectors. In addition, against the whole Eurozone, Ireland and Spain were one of the fastest growing countries. Ireland was developing three times faster and Spain two times faster than the Eurozone on average. Furthermore, in both countries the level of public debt in relation to GDP before the crisis was low respectively: 23.9% in Ireland and 35.5% in Spain – so well below the permissible limit of 60% of GDP. However, more detailed analysis carried out in this article leads to different results obscuring this positive fiscal picture resulting from the general indicators of debt and deficit-to-GDP ratios. It is to note that regardless of whether the primary cause

of the sovereign debt crisis was over-indebtedness of the public sector or the private sector, as a result of having to rescue domestic banks by governments, most of the debt ultimately goes to the public sector. Governments of both countries were forced to ask for international assistance.

However, what differs significantly the two countries apart is the course and pace of fiscal consolidation along with the accompanying process of growing out of debt. While the increase in debt-to-GDP ratio in Ireland was much higher (in years 2008-2012 debt increased by 78 pp.) than in Spain (in years 2008-2012 by 46 pp.), Ireland has already managed to lower it and put it on a downward path. Spain, on the contrary, records a high debt-to-GDP ratio which is still on the upward path [European Commission 2016a].

The major aim of this article is to demonstrate the development of general government debt in two Eurozone countries: Ireland and Spain. Secondly, the article attempts to diagnose the factors responsible for the given course and pace of fiscal consolidation aimed at growing out of debt. Finally, an analysis of sustainability of general government debt in Ireland and Spain is presented that includes three sensitivity scenarios.

In the article, the following thesis was assumed: the genesis of the recent crisis which turned into debt crisis was relatively similar both in Ireland and Spain, however, the impact of course and pace of fiscal consolidation on the process of growing out of debt significantly different.

The methodology focuses on the authors' analysis and assessment using research and professional experience. First of all, the analysis relies on the literature studies, research, available analytical reports as well as data and statistical analysis. The methodology assumed in the article is based on the well-correlated reports of the European Commission, OECD, IMF. Furthermore, in conclusion, some suggestions are provided which can also be treated as postulate for future research.

The structure of the paper is as follows. In the first section selected pre-crisis determinants of public finance imbalance in both countries are analyzed. In the next section public finance development prior to 2009 year is subject to analysis. In this section the focus is put on comparison of contribution of fiscal policy performance to the crisis. Third section provides consolidation paths undertaken in both economies and shows differences in conducting country-specific recovery plans. The fourth section deals with sustainability of general government debt in both countries whereas the last section demonstrates conclusions.

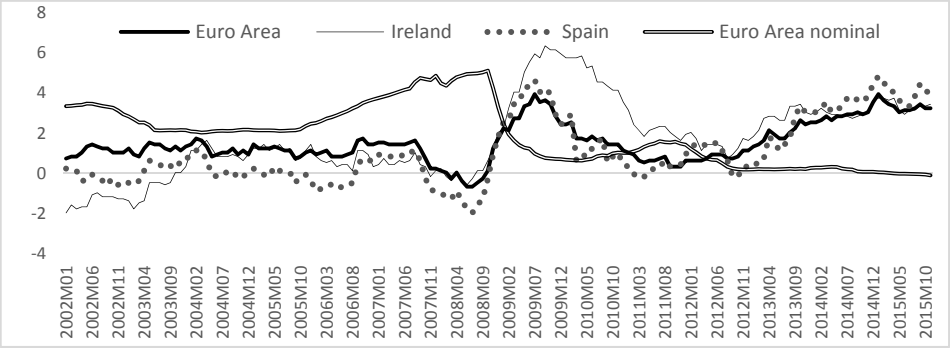
1. Selected determinants of imbalances: pre-crisis analysis

Spain and Ireland are two countries which entered into the crisis with low level of debt-to-GDP ratio. The situation was completely reversed during the crisis and these countries have suffered from huge imbalance in public finance. The range of the crisis was so vast in these countries and was transformed into the sovereign-debt crisis.

The path to crisis in both countries was quite similar. The analysis below emphasizes a joint factors which influenced the macroeconomic conditions of both economies. It mainly focuses on two determinants: the boom in real estate prices and the problem of fast growing credit. On the other hand, both economies, especially Ireland, have hard linkage with foreign markets, thus their openness tightened up the impact of the crisis on domestic markets.

The genesis of the crisis should be searched deeply – from the beginning of the Eurozone. The accession to the Eurozone gave both countries entrance to the cheap money. The European Central Bank – responsible for the value of the "Eurozone money" conducted a policy of low interest rates due to its initial impact on 12 different and independent economies. The access to the cheap money fuelled the demand for credit, especially in Ireland and Spain. Notably in Spain the real interest rates were negative before 2007 (Figure 1) and as result the credit was attractive for average Spanish citizen.

Figure 1. Real interest rates in Spain and Ireland on the background of the Eurozone

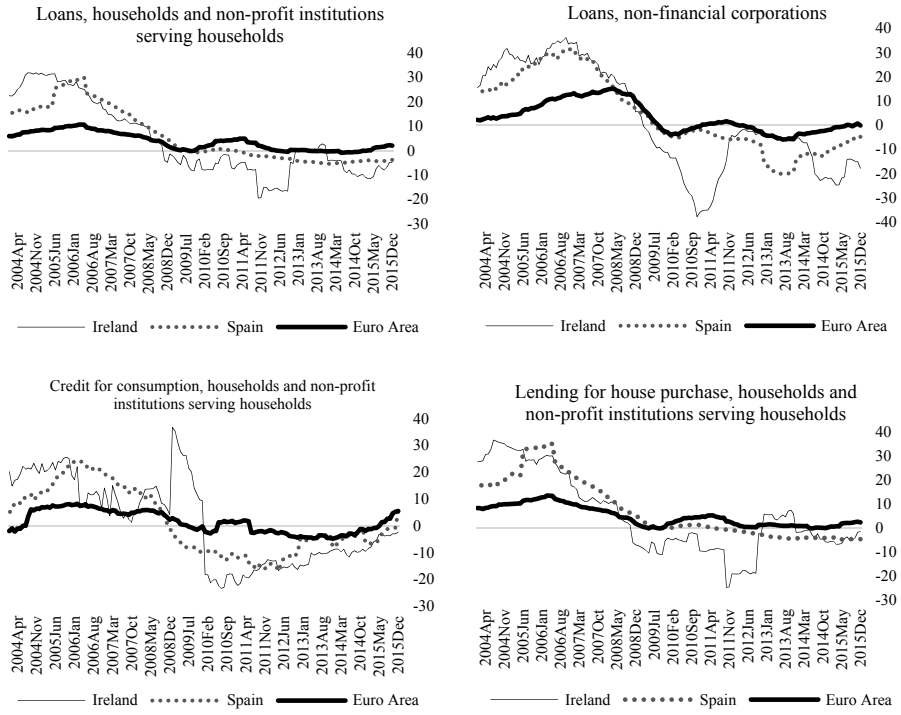


Source: Based on Eurostat database [www 3].

In this article, real interest rates are simply calculated as a nominal 3-month money market interest rate reduced by monthly HICP (annual rate of change). The Figure 1 shows the sudden growth of such calculated real interest rates visible for all three areas in fourth quarter of 2009.

The low interest rates influenced the demand for loans. Figure 2 shows the growth rate of loans in both countries against the background of the average for the Euro Area. The conclusion is clear – before 2009 the growth rate of credit to non-financial corporations and households in both countries was much higher than for the Eurozone as a whole. But, on the other hand, after 2008 the decrease in the growth rate was considerably below the average rate for the Eurozone.

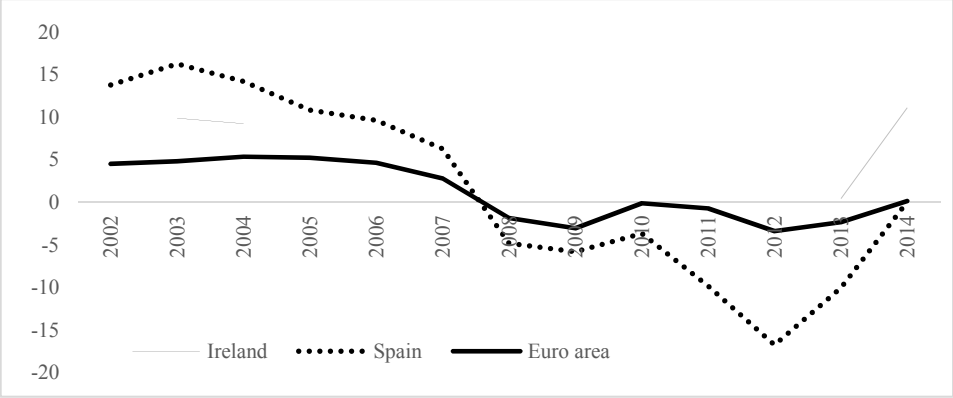
Figure 2. Growth rate of credit



Source: Based on ECB Statistical Data Warehouse [www 2].

It is interesting to look at the bottom right panel of Figure 2 which shows the growth rate of loans for house purchases. In years 2004-2006 the average growth rate in Spain amounted to 25%, in Ireland 30% whereas in the Eurozone only 10%. Thus, the constrained supply on the housing market and growing demand caused an increase in prices (Figure 3).

Figure 3. Real house prices (percentage change from previous year)



Source: Based on OECD database [www 4].

Before crisis both countries were one of the most growing economies in the Eurozone. According to the Eurostat database, the average growth rate of real GDP over years 2002-2007 was 5.4% in Ireland, 3.5% in Spain whereas in the Eurozone only 1.9%. The strong growth constituted a basis for development of a confidence to the financial sector. The prosperity was suddenly interrupted – in 2008 both economies after successful growth path achieved terrible troughs. The situation was difficult and both countries were forced to use fiscal policy tools to recover their economies.

2. Fiscal performance and its contribution to the crisis

An excessive expansion of the banking sector, the strong decline in GDP, with the collapse of asset prices on financial markets and real estate were neither the only nor major cause of profound deterioration in public finances in Europe. It was caused, i.a., by irresponsible fiscal policies pursued by governments before the crisis for purposes other than stabilizing the economy which was reflected in the maintenance of fiscal deficits for many years.

The levels of debt and deficit in many countries exceeded acceptable limits, recorded in the Treaty on the Functioning of the European Union (TFUE) and in the Stability and Growth Pact (SGP). Indeed, in years 1999-2007, Euro Area countries violated the deficit rule 35 times and the debt rule 54 times[1]. This simply means that the system of fiscal discipline adopted in the EU did not work. In years 1999-2007, the ratio of debt-to-GDP of the Eurozone amounted

[1] According to AMECO database [www 1].

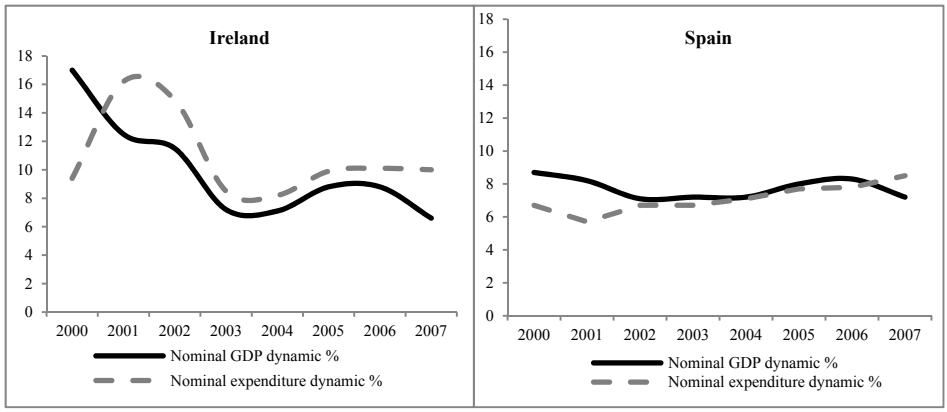
to 68% on average, whereas the deficit of general government −1.9% of GDP. Furthermore, even in the period of the greatest economic boom, the Eurozone failed to balance the general government sector, whereas the balance of the sector itself should be clearly positive and generate a surplus to be in line with the rules of art of conducting fiscal policy[2].

Against this background, the outbreak of the crisis in countries as in Ireland but also later in Spain turned out to be a real shock for the Eurozone as it realized that even very prudent and disciplined fiscal policies may not protect against sovereign debt crisis, if allowed to an excessive expansion of the banking sector.

Indeed, in years 1999-2007, fiscal balance in both Ireland and in Spain on average was even positive: in Ireland 1.6% of GDP and in Spain 0.2% of GDP accordingly whereas the general government debt in relation to GDP much lower than the acceptable limit (TFUE): 31% in Ireland and 48% in Spain, respectively. Based on the general picture the fiscal policy in both countries could be assessed unambiguously as countercyclical.

However, more detailed analysis leads to different results obscuring this positive fiscal picture. In Ireland, total expenditure increased by almost 11% annually on average in years 2000-2007 (see Figure 4).

Figure 4. Nominal GDP dynamic in % and nominal expenditure dynamic in % in Ireland and Spain in pre-crisis period



Source: Based on Eurostat database [www 3].

Despite high nominal GDP dynamic, the expenditure-to-GDP ratio increased from 31% in 2000 to 36% in 2007. In this period of time, social transfers, the public sector wage bill and public investment noticed particularly strong

[2] For debate on the counter-cyclical economic policy (including fiscal policy) in the context of the recent crisis see e.g. [IMF 2008; OECD 2010].

growth rates. For instance, compensation of employees increased by 12.5% annually on average reflecting both higher public sector wage increases and an expansion of public employment. As regards to social expenditure, it doubled between 2000-2007 and increased its share in total expenditure from 25% to 28%. Out of this growth, old age pension, family and children benefits doubled in that period either. Although unemployment benefits amounted to only 13% of social spending in 2000-2007 due to very low unemployment levels, the benefit rates doubled which had negative consequences when unemployed rates increased sharply during the crisis [European Commission 2011]. As a result of the expansionary fiscal policy in years 2000-2007, the budget surplus shrank rapidly from the record of 4.6% of GDP in 2000 to 0.3% in 2007.

In turn, total expenditure in Spain did not grow quite as fast as in Ireland in years 2000-2007. The average growth rate of nominal GDP slightly exceeded the growth rate of nominal expenditure (see Figure 4).

As a result, the expenditure-to-GDP ratio remained almost unchanged and amounted to 39.1% in 2000 and 38.9% in 2007. Prior to the outbreak of the crisis, in years 2005-2007 the budget showed a surplus of almost 2% of GDP annually on average. However, during the boom period, government expenditures also increased significantly, and, as a result, the government savings increased at a slower pace than revenues. Indeed, as demonstrated by recent developments in public finance, the net lending position of the government proved insufficient to accommodate the disappearance of the extraordinary revenues on which this position was based [European Commission 2012].

Only the economic downturn and decline in the property market revealed a structural weaknesses of public finances in Ireland and Spain which were "covered" by very high revenues resulting from the favorable phase of the business cycle and transactions in asset markets, particularly in real estate, driven by an increase in private sector debt. In Ireland in 2005-2007, despite tax-decreasing measures introduced with an estimated effect of 0.5% of GDP annually the revenue-to-GDP ratio remained almost unchanged and amounted to 35.8% of GDP in 2000 and 36.2% of GDP in 2007. The extraordinary increase in both indirect and direct taxes between 2002 and 2006 explains that phenomena.

As European Commission points out, this growth can be attributed to revenues directly related to the property market, in particular: stamp duties (part of indirect taxes), taxes on holding gains (part of income taxes) as well as the value-added tax on new houses. The share of property-related revenue in total tax revenue increased from 8.4% in 2002 to 18% in 2006. In addition, the housing boom stimulated higher economic activity in other sectors so that overall eco-

nomic growth and tax revenue were higher than would have been the case in a "sustainable growth" scenario [European Commission 2011].

In case of Spain, the situation was similar. The revenue-to-GDP ratio even increased from 38.1% of GDP in 2000 to 40.9% of GDP in 2007. The composition of economic growth is part of the explanation. Private consumption, investment in dwellings and corporate profits were the main drivers of the "boom" of indirect and corporate tax revenues over the last decade. For instance, VAT related to housing grew by 19% per year since 1995 on average. As a result, it accounted for 7% of total indirect tax revenues or 1% of GDP in 2006, which corresponds to an average elasticity to GDP of 2.7. Furthermore, it is worth noticing that no substantial legislative changes affecting VAT were implemented in years 1995-2006. Consequently, the bulk of the increase in revenues from VAT on housing would be explained by the increase in the tax base [European Commission 2007].

Summing up, the perception of a large portion of the increase in tax-revenues as permanent, rather than temporary, was not conducive to motivate governments to more decisive actions in order to reduce the fiscal imbalances, despite very favorable economic conditions. On the contrary, the growing budget revenues were accompanied by expansionary spending policy in both countries and notably in Ireland. It is not surprising therefore, that the imbalance of public finances was fully revealed, when the financial crisis and the ensuing shock to the economy led to a strong decline in revenues, which in turn was reflected in a significant increase in the public finance deficit and jumping growth of public debt.

3. Fiscal consolidation paths – a general overview

The strong decline in GDP, with the collapse of asset prices on financial markets and real estate contributed to a significant decline in tax revenues. This factor, as well as the adoption by many governments stimulus packages to boost economy and provide support for the financial sector led to a significant increase in the public finance deficit and public debt. However, as argued in previous chapter, it should be noted that a significant increase in public finance imbalances and lack of fiscal sustainability was not only due to exceptionally strong effect of the economic recession caused by the outbreak of the financial crisis, but also by inadequate fiscal policies implemented in the period before the crisis.

In some Euro Area countries, further deepening of the fiscal imbalances led additionally to a crisis of confidence, which significantly raised the cost of fi-

nancing their debt and exacerbated these unfavorable trends. The most indebted countries found themselves on the brink of bankruptcy. In 2010, three countries, i.e. Greece, Ireland and Portugal, were forced to apply for financial assistance from international institutions. In addition, the risk of destabilization of the situation significantly increased in a much more important from an economic point of view, the Eurozone member states, including mainly Italy and Spain.

3.1. Spain

Before crisis, the debt-to-GDP ratio in Spain was one of the lowest in the Eurozone and position of public finances looked as a stable. However, the main problem was the cyclicality of the revenues received from real estate market. The economic contraction caused a huge unemployment and as result an increase in automatic stabilizers – unemployment benefits and, on the other hand, a need for a big amounts of funds allocated for stabilization. The problem of economic instability was based on the real economy and factors influencing the increase in unemployment and decrease in real GDP. European Commission [2012] pointed out that the recent crisis exposed weaknesses in the Spanish growth pattern, which, in reality, was based on a credit-driven domestic demand boom.

The fiscal consolidation[3] in Spain has been based on measures focusing on reducing expenditure (the main effort in first stage of consolidation processes was paid on the expenditure side) and improving the tax system efficiency. The short overview of actions taken is presented in OECD report [OECD 2015]. According to it, the main spending-side measures were focused on: (i) public sector wage restraint (e.g. including limitation of holidays and absences, pay freeze), (ii) making spending on health and education more efficient, and (iii) reform of the pension system (e.g. by increasing the retirement age, changing the valorization rule). The tax-side measures were mainly concentrated on (i) fighting frauds and reforms of the tax system through reduction in direct taxation and increase the inflows from environmental taxation, (ii) fiscal devaluation. Key revenue-side measures of consolidation span were as follows: temporary (in period 2012-2014) increase in personal income tax rate, CIT rate, real estate property rate and VAT tax rates (increase in standard VAT rate from 18% to 21% and increase in the reduced VAT rate from 8% to 10%), introduction a new environmental tax and some new taxes like lottery taxes. During years 2015-2016 several new measures have been planned: decrease in PIT rates in order to protect households disposable income (including the change of the PIT system),

[3] For example, Alesina and Ardagna [2010] based on panel of OECD countries found that spending cuts were much more effective than tax increases on large fiscal consolidations.

decrease in CIT rate, introduction of new social security benefits aimed at reducing unemployment, increasing demand for work and fostering new jobs and works.

In July 2012, in Spain the financial-sector programme was entered into force t, aimed at ensuring the long-term resilience of the Spanish banking sector. The programme assumed up a 100 billion euro assistance for recapitalization and restructuring of Spanish bank's sector for a period of 18 months [European Commission 2012]. Nowadays, the result of this aid has some effects: the restructuring of the country's banking sector is progressing well and this sector has continued to stabilize, however, there is a significant imbalances – private indebtedness is perceived to remain high [European Commission 2015c].

The medium-term strategy [European Commission 2015b] is to provide a growth-driven reduction of the deficit. Annual real GDP growth is projected to be around 2.9% in both 2015 and 2016, and around 3.0% in years 2017-2018. The increasing growth rate of GDP will be associated with projected decline in unemployment rate (from 24.4% in 2014 to 15.6% in 2018) which will be still above the pre-crisis period. The unemployment rate was very high during crisis period. According to Eurostat data, the unemployment rate in Spain increased from 8.2% in 2007 to 26.1% in 2013 (the increase by more than three times over 2007-2013). The crisis had serious impact on the real economy in Spain, the real GDP per capita growth rate was −4.7 in 2009, −0.7 in 2010, −0.3 in 2011, −1.7 in 2012. The severe situation in the real economy strengthened the imbalance in public finance.

According to the latest Stability Programme Update 2015-2018 [2015], the first year with primary surplus will be 2016 and at the end of presented programme (i.e. 2018 year) it should reach 2.2% of GDP. Up to 2016, Spain must make effort to meet its commitment to reduce deficit to 2.8% of GDP. The main source of achieving this goal is to constraint spending growth. However, the latest European Commission [2015b] assessment of the stability programme points out the country's effort to reduce the headline deficit under the excessive deficit procedure and emphasizes that the stability programme is based on favorable growth assumption, thus the unexpected development of the economic situation may worsen the target's achievement. According to the European services forecast, the deficit is expected to be higher than assumed in the programme.

Despite the actions taken, Spain is still perceived as a country with potential high medium-term sustainability risk [European Commission 2016a].

3.2. Ireland

Ireland is an example of country with good experience in fiscal consolidation, which was achieved in the '90s. Thus, the situation in public finance was relatively good in the pre-crisis period. The main factor affecting a domestic credit boom before crisis was the construction sector and housing market [European Commission 2011]. The turmoil on the banking sector caused that Irish economy needed a help and assistance. The Government took up actions to strengthen bank's capital. The scale of the imbalance was so large (deficit in 2010 increased to 32.3% GDP) and as result the authorities decided to request for financial assistance from the European Union and IMF in 2010 and prepared National Recovery Plan 2010-2014 [European Commission 2011]. The financial assistance to Ireland was provided from 2011 until the end of 2013. The total financing support was determined on €85 billion for the period 2010-2013. Now this country is subject to Post-Programme Surveillance which will last at least until 2031. According to the recent report [European Commission 2016b] Ireland in 2014 was one of the fastest growing economy in the Euro Area and its economic situation was positive. The financial sector performance continues to improve and stabilize and the positive is the observance of the progress in conducting structural reforms. However, the report intimates that the recent fiscal policy decisions in Ireland are determined by the current political context.

The improvement was possible thanks to suitable consolidation. Recently, the fiscal consolidation in Ireland has been based mainly on the expenditure-side measures [see: OECD 2015]. It is to note that in Ireland many solutions undertaken within a fiscal consolidation notably since 2010 stemmed from comprehensive spending reviews conducted [Postuła 2014]. The key spending-side measures are as follows: (i) cut in public sector payroll cost (including both: the reduction in staff and the pay cuts) and reduction in social welfare benefits and other expenditures, (ii) conduct of the spending reviews programs, (iii) implement efficiency measures in order to better management of expenditure. The revenue-side measures are conducted mainly as a result of reduction of public revenues obtained from housing market and from income taxes. The authorities decided to implement new levies and charges, provide changes in tax system, especially in the context of general switching the taxation system from direct to indirect form.

According the European Commission assessment of the stability program [2015c] the annual growth rate of GDP is projected to be 4.0% in 2015, 3.2% in years 2017-2018 and around 3.0% in both 2019 and 2020. The reduction in the unemployment rate will be one of the direct effects of projected growth. Accord-

ing to the mentioned document, the unemployment rate in Ireland is projected to decline from 11.3% in 2014 to 6.9% in 2020. Based on Eurostat data, during the crisis time the unemployment rate increased from 4.7% in 2007 to 14.7% in 2012. Thus, the reduction between 2012-2020 is estimated to be around 7.8 pps. The Commission assessment [European Commission 2015c] points out that the fiscal effort over years 2011-2015 is estimated to be below what is recommended (based on the estimated changes in the structural balance). However, on the other side, the cumulated yield of the individual permanent consolidation measures taken in years 2011-2015 is projected to amount to around 9.5% of GDP, which is also the cumulative fiscal effort recommended by the Council. Thus, taken fiscal effort probably have been realized in line with general recommendations.

Ireland is a country with potential high medium-term sustainability risk [European Commission 2016c]. The country has introduced a range of reforms which weaken the impact and implications of population ageing on public finance [Stability Programme Update 2015]. The assessment of the latest the stability program [European Commission 2015c] assumes a timely correction of the excessive deficit, however, based on the European services forests and taking into account the no-policy-change assumption the realization of the MTO may face a significant deviation from the required adjustment path.

4. Sustainability of general government debt in Ireland and Spain

Even though there is no formula that allows a clean additive decomposition of changes in the debt ratio into the most interesting underlying factors, such as interest rates, inflation, fiscal adjustment, etc., the following equation, however, comes close to it [Escolano 2010]:

$$d_t - d_{t-1} = \frac{i_t}{1+ y_t} d_{t-1} - \frac{y_t}{1+ y_t} d_{t-1} + p_t \quad (1)$$

where:

d_t – debt at the end of period *t*, as a ratio to GDP at *t*;
d_{t-1} – debt at the end of period *t* − *1*, as a ratio to GDP at *t* – *1*;
i_t – nominal interest rate in period *t*; paid in period *t* on the debt stock outstanding at the end of *t* – 1;
y_t – nominal GDP growth rate between t – 1and t;
p_t – primary deficit in *t*, as a ratio to GDP at *t*.

This equation indicates that the change in the debt ratio equals the impact of interest (positive) and nominal GDP growth (negative), plus the contribution of the primary deficit. After simplification[4]:

$$d_t - d_{t-1} = p_t + d_{t-1}[\frac{i_t - y_t}{1 + y_t}] \quad (2)$$

The equation (2) shows that the change in debt-to-GDP ratio is a sum of primary fiscal deficit and so called snow ball effect which expresses the combined effect of the interest rate of government bonds and the growth rate of nominal GDP on debt-to-GDP ratio. Maintaining a constant debt-to-GDP ratio requires that left side of equation (2) must equal zero. The condition to stabilize the debt-to-GDP ratio at a specified debt level is to ensure that:

$$-p_t = d_{t-1}[\frac{i_t - y_t}{1 + y_t}] \quad (3)$$

Equation (3) indicates that the condition for stability of the debt-to-GDP ratio requires that the relation of primary deficit to GDP equals the snow ball effect. Indeed, the public debt does not grow, if the primary deficit is compensated by the surplus of growth of nominal GDP above the average nominal interest of debt. In other words, the debt ratio will increase indefinitely if nominal interest rate exceeds the growth rate of nominal GDP, unless the primary budget is in sufficient surplus to compensate for that. Very often, in order to stop the process of increasing debt, not only a primary balance shall be achieved, but also a primary surplus. This is the case many European countries are experiencing now. Hence, crucial for the debt dynamic is a sign of expression $(i_t - y_t)$. In turn, the primary fiscal balance is the best available proxy for the overall fiscal picture within government's control. The primary balance consists of government revenue less spending excluding the debt cost servicing and it is the most accurate reflection of the government's fiscal policy decisions.

According to equation (3), the value of primary balance needs to equal its right side in order to stabilize the debt-to-GDP ratio. However, with high and positive value of expression $(i_t - y_t)$ stabilizing the debt-to-GDP ratio requires to maintain not only a primary balance but also a sufficient primary surplus. In years 2009-2015, both Ireland and Spain have been aiming to achieve a primary surplus. In this respect, the progress has been highly noticeable notably in Ireland and has been a result of conducting a fiscal consolidation. Table 1 presents a sustainability of general government debt in both countries including three sensitivity scenarios in order to better illustrate the changes in relation to the required level of primary balance in accordance with equation (3).

[4] It was assumed that the impact of so-called stock-flow adjustment factor equals zero in this equation.

Table 1. Sustainability of general government debt in Ireland and Spain

Country	Primary balance as % of GDP		Threshold of primary balance beyond which the debt starts to fall as % of GDP			
	2009	Forecast 2015[a]	Forecast 2015[b]	Scenario 1[b]	Scenario 2[c]	Scenario 3[d]
Ireland	−11.8	1.5	−7.1	−5.4	−6.2	−4.5
Spain	−9.3	−1.8	−2.1	−0.3	−1.2	0.7

[a] Based on European Economic Forecast, Winter 2016, Institutional Paper 020, European Commission 2016.
[b] Scenario 1 reflects lower inflation and real GDP rates by 1.0 pp. compared to Forecast 2016.
[c] Scenario 2 reflects higher government long term interest rates by 1.0 pp. compared to the data for 2015 (Eurostat).
[d] Scenario 3 reflects higher inflation and real GDP rates by 1.0 pp. compared to Forecast 2016 and higher government long term interest rates by 1.0 pp. compared to the data for 2015 (Eurostat).

Source: Own calculations.

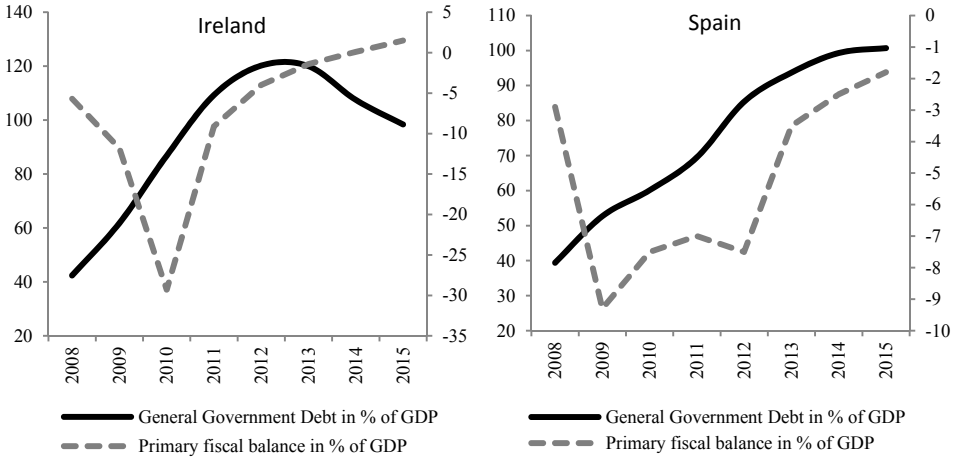
In with equation (3), the value of primary balance forecasted for both countries in 2015 is sufficient to start to lower the debt-to-GDP ratio, notably in Ireland and in Spain slightly[5]. In turn, scenario 1 assumes lower inflation and real GDP rates by 1.0 pp. compared to the latest forecast of European Commission for 2016. In this case, the value of primary balance beyond which the debt starts to fall increases significantly in Spain which means that the forecasted value of primary balance would not be event sufficient to level off the debt-to-GDP ratio. Scenario 2 assumes higher government long term interest rates by 1.0 pp. compared to the data for 2015. In this case, the value of primary balance beyond which the debt starts to fall increases slightly but less than in scenario outlined above. In turn, in scenario 3 which reflects higher inflation and real GDP rates by 1.0 pp. compared to the Forecast 2016 and higher government long term interest rates by 1.0 pp. shows that Ireland has still a great room beyond the value of primary balance in accordance with equation (3) which enables the debt to fall. On the other hand, if this scenario realizes, Spain would have to generate a primary surplus of 0.7% of GDP to be in line with equation (3). This will require further fiscal consolidation measures.

The analysis in the Table 1 only confirms that the sign and value of primary balance in accordance with equation (3) is highly sensitive about the sign and value of expression $(i_t - y_t)$.

Figure 5 demonstrates the path of fiscal primary surplus (right axis) and government debt (left axis) for Ireland and Spain during times of the crisis's outbreak and fiscal consolidation conducted by governments.

[5] It is to notice that in case of Ireland for 2015 the real GDP dynamic is forecasted at even 6.9%, whereas in Spain at 3.2% [see European Commission 2016a]. This factor enables Ireland to lower debt-to-GDP ratio with maintaining such large primary deficit.

Figure 5. The general government debt as a % of GDP (left axis) and primary balance as % of GDP (right axis) in Ireland and Spain



Source: Based on Eurostat database and European Commission [2016a].

It is to underline that an increase in debt-to-GDP ratio in Ireland was much higher (in years 2008-2012 debt increased by 78 pp.) than in Spain (in years 2008-2012 by 46 pp.), however, as a result of fiscal consolidation and high real GDP growth, Ireland has already managed to lower it and put it on a downward path. Spain, on the contrary, records a high debt-to-GDP ratio which is still on the upward path and is forecasted to continue until 2016 [European Commission 2016a].

Conclusions

This article analyses the determinants and development of debt dynamics in two Eurozone countries: Ireland and Spain. Both economies suffered from sovereign-debt crisis which was caused by similar factors. The main conclusions are as follows.

Genesis of the crisis was focused mainly on the boom in the real estate and construction markets. The scale of the crisis was strengthened by the low interest rates and as a result, the economic growth based on the credit-driven path. Before the crisis both economies seemed to achieve a high level of fiscal performance, however, this was resulted from the extraordinary revenues from the real estate market and very favorable economic conditions. On the other hand, the growing budget revenues were accompanied by expansionary spending policy in both countries and notably in Ireland. The imbalance of public finances was

fully revealed, when the financial crisis and the ensuing shock to the economy led to a strong decline in revenues, which in turn was reflected in a significant increase in the public finance deficit and jumping growth of public debt. The crisis impacted Spain stronger than Ireland, mainly due to substantial influence of real economy (especially decrease in employment rate and real GDP growth rate).

Besides the similar factors influencing the debt crisis, the established consolidation path caused different effects on these economies. The range of the fiscal imbalances was deeper in Ireland, however this country has demonstrated better fiscal performance. Admittedly, Ireland and Spain were under special assistance programs, however the financial support helped to break the negative situation and strengthened the effects of consolidation.

The debt sustainability analysis carried out in the article shows the potential possibility of growing out of debt in both countries depending on the macroeconomic circumstances. Both Ireland and Spain have been aiming to achieve a primary surplus. In this respect, the progress has been highly noticeable notably in Ireland and has been a result of conducting a fiscal consolidation but also a high real GDP dynamics that supported the process. Due to this, Ireland has already managed to lower the debt-to-GDP ratio and put it on a downward path. Spain, on the contrary, records a high debt-to-GDP ratio which is still on the upward path and is forecasted to continue so until 2016. Undoubtedly, higher unemployment rate and slower GDP dynamic than in Ireland slow down start of the processes of growing out of debt by Spain.

The analysis carried out in the article delivers some universal applications and lessons for the policy making. First of all, it is to note that regardless of whether the primary cause of the sovereign debt crisis was over-indebtedness of the public sector or the private sector, as a result of having to rescue domestic banks by governments, most of the debt ultimately goes to the public sector. Due to this, the growth of credit in the private sector must be under control by the regulators notably in the environment of very low interest rates. Moreover, definitely the fiscal policy needs to be countercyclical, however, even achieving a high level of fiscal performance resulted from extraordinary revenues from a particular fast developing market and very favorable economic conditions requires scrutiny and undertaking relatively early measures focused on uncovering the real reasons for this state of affairs. Finally, the outbreak of financial and economic crisis which then turned into a sovereign debt crisis is the final proof of the need to return to the concept of maintaining a continued fiscal discipline. This indicates a strong need for further research on how to conduct the fiscal policy notably in regime of one single currency but also on how to design a sufficient regulatory framework for Eurozone countries.

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