

WORKING PAPER

Budgetary stability and structural reforms in Spain: lessons from the recession and options for the future

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Budgetary stability and structural reforms in Spain: lessons from the recession and options for the future*

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April, 2017

Abstract

We analyse the fiscal policy lessons from the recent recession in the Spanish economy and the options for the future. Our results indicate that budget balance and public debt trends showed clear signs of unsustainability between 2009 and 2011, with few alternatives available other than reducing the fiscal deficit. The results also highlight considerable costs in terms of GDP, employment, consumer spending and private investment, in order to sustain a much higher public debt level after the recession, as well as the fiscal advantages of introducing the appropriate reforms to reduce the structural unemployment rate. Our simulations show that this economic policy option would result in a significant increase in GDP per capita and public revenues, implying that the public debt to GDP ratio could return to pre-crisis levels without the need to increase the tax burden or cut public spending. We also highlight the need to complement reforms that increase employment and productivity with the opportunities that arise from the intense process of on-going technological and digital transformation, in order to reduce the gap between Spain and economies that are at the leading edge of public sector efficiency.

Keywords: fiscal policy, public debt, sustainability, structural reforms

JEL: E62, H62, H63.

* The authors thanks the comments and suggestions made by J. Cubero and J.C. Labrador. R. Doménech also thanks the financial support from the research projects ECO2014-53150-R and GVPROMETEO2016-097.

1 Introduction

In the current economic recovery following the longest and most intense recession in the history of Spanish democracy, the sustainability, the consolidation and the efficiency of the public sector, as well as the short and long-run effects of fiscal policy, are still at the centre of the economic policy debate. In 2008 and 2009, the consensus of many international organisations was the implementation of expansionary fiscal policies in order to best tackle the negative effects of the financial and the international trade crisis, which had an intensity similar to that of the Great Depression in the 1930s. In 2010, after Greece's first bailout, it was evident that other European countries, like Spain, could not sustain these expansionary policies, once the existing fiscal margins were exhausted. In May that year, Spain introduced a first fiscal adjustment, after the public deficit reached 11.2% of GDP in 2009. Just a year and a half later, the interaction between sovereign and banking risks in southern Europe, with risk premia soaring in two economies as important in the Eurozone as Spain and Italy, led to a second recession in Europe, known as the sovereign debt crisis.

This second recession made it necessary to intensify the fiscal consolidation process and created a financial fragmentation across countries in the Eurozone that, in August 2012, persuaded the ECB to implement a more intense and ambitious collection of unconventional policies, in order to reduce financial tensions in EMU countries. Although the economic recovery began in the second half of 2013, in 2016, nine years after the beginning of the financial crisis, Spain closed the fiscal year with a deficit of 4.6% of GDP, a public debt ratio of 99.4%, and with employment and GDP per capita levels still lower than those of 2007, by 10.8% and 3% respectively.

The current debate in Spain is centred around the pace of fiscal consolidation that needs to be adopted in the coming years, as well as on other key aspects of fiscal policy: the need of tax increases during the fiscal adjustment, public spending rationalisation, the extension of tax bases, the size of the public sector, or how to address the future sustainability of some components of the welfare state, such as pensions, health or long-term care, given the expected ageing of the Spanish population over the coming decades. These controversies in Spain contrast with the debate at the international level, where the two main areas of discussion have been the interaction between fiscal and monetary policies, in order to ensure the

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inflation targets of central banks (see, for example, Leeper and Leith, 2016 and Sims, 2016) and the relevance of fiscal stimuli to avoid a scenario of secular stagnation (DeLong and Summers, 2012, and Fatás and Summers, 2016).

The main objective of this paper is to offer an analysis of the challenges posed to the Spanish economy by public debt sustainability after the financial crisis, in an environment dominated by the uncertainty regarding real long-term interest rate levels and potential growth, both in Spain and in the other main advanced economies.

In Section 2, we analyse the sustainability of public debt during the recent crisis and the subsequent recovery, using an extended version of the theoretical framework proposed by Blanchard (1984). The evidence shows that the combinations of debt and budget balances during the recession were very close to becoming unsustainable. The discretionary fiscal tightening process was a slow one, consistent with the intention of affecting short-term growth as little as possible, and was balanced on a knife-edge. In other words, the fiscal adjustment was as slow as the financial markets allowed it to be, in order to finance maturities and the issuance of new debt. Although the sustainability of public accounts has improved in recent years, the risks still remain high, particularly if interest rates rise sharply (due to a less expansionary monetary policy or a change in market sentiment) and the potential growth of the Spanish economy is lower than expected.

Additionally, public debt has stabilised at around 100% of GDP, representing a high cost in terms of GDP per capita and employment, among other macroeconomic variables. This cost is estimated in Section 3 using REMS, a dynamic general equilibrium model of the Spanish economy (see Boscá et al, 2011).

As a complement to these results, in Section 4 we analyse the effects in the reverse direction, that is, we assess the effects of structural reforms aimed at increasing economic activity on public debt, revenues and expenditures. In particular, we analyse the simulated effects of a reduction in the structural unemployment rate. Given the current high structural unemployment and the existing productivity gap with respect to other advanced economies, with the appropriate policies Spain could continue to grow for decades, converging to countries with higher GDP per capita. In

this scenario, the risk of secular stagnation in other advanced economies would be a second-order problem in Spain. Greater rates of growth not only provide an important fiscal margin for manoeuvre, by expanding tax bases and thus increasing public revenues, but they also mitigate the problem of fiscal sustainability. Public debt would decrease more quickly and the level of primary surplus needed to stabilise the debt level would be lower. Therefore, to finance a given level of public spending in relation to GDP (which, at the same time, increases significantly in per capita terms), lower tax rates would be needed, with additional positive effects on economic activity and employment. Finally, Section 5 presents the main conclusions of this paper.

2 The sustainability of public debt

The starting point in our analysis of public debt sustainability is Blanchard's analytical framework (1984), extended to the case in which GDP growth and inflation are positive. Specifically, the budget restriction of the public sector budget can be expressed as follows:

$$\Delta d_t = \frac{r - \gamma}{1 + \gamma} d_{t-1} - t_t + g_t \quad (1)$$

where d , t and g are respectively public debt, revenues and primary expenditures in relation to GDP (therefore, $pb = t - g$ is the primary budget balance), r the nominal interest rate and γ the nominal GDP growth. We define t_{max} as the maximum level of revenues and g_{min} as the minimum level of public spending that are acceptable to society, so that the maximum level of sustainable debt is determined by:

$$d_{max} = \frac{1 + \gamma}{r - \gamma} (t_{max} - g_{min}) \quad (2)$$

This maximum debt level is closely related to the *fiscal limit* (see Andrés, 2016, Bi, 2012, Leeper and Walker, 2011, as well as the references therein) or the point beyond which the public sector does not have enough political capital to increase taxes or cut spending in order to stabilise the value of public debt. This is a stochastic limit that varies over time and across countries depending on their economic and institutional characteristics. The fiscal limit is proportionally higher depending on the maximum level of

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revenues that the economy can reach in relation to the level of expenditure that can be sustained, as shown in equation (2). It also takes into account future expenditure commitments (for example, those associated with ageing) and depends on the tax burden that society is willing to bear.

We assume that, in the absence of discretionary fiscal adjustments, the primary budget balance converges smoothly to its maximum level according to the following expression:

$$\Delta(t_t - g_t) \leq \alpha [(t_{max} - g_{min}) - (t_{t-1} - g_{t-1})] \quad (3)$$

where α is the speed of convergence towards the maximum level of the primary budget balance.

Equations (1) and (3) determine the dynamics of the public debt and the budget balance. The phase diagram is shown in Figure 1. The convergence path to the stationary state in which the primary budget balance and public debt reach their maximum sustainable level is given by the line AA' , whose equation is represented by:²

$$pb_t = t_t - g_t = \left(\frac{r - \gamma}{1 + \gamma} + \alpha \right) (d_t - d_{max}) + (t_{max} - g_{min}) \quad (4)$$

This line separates out the debt and primary budget balance combinations into two regions. Above the line AA' , the primary budget balance increases more rapidly than public debt, meaning that eventually a steady state is reached (on the line OA'), in which the primary budget balance is positive (surplus) and the public debt to GDP ratio remains constant ($\Delta d = 0$). Below this line, the opposite happens: public debt increases more rapidly than the primary budget balance, following a trajectory in which public accounts are not sustainable.

Figure 1 represents the combinations of Spain's primary budget balance and public debt from 1995 to 2020, using the forecasts of the *Stability Programme 2017-2020*. In this figure, the line AA' has been calibrated using the following assumptions. First, taking Greece's experience in the most recent recession as a good example, we considered that the maximum level of sustainable debt represents 150% of GDP. Second, we assume that

² The roots of the system determined by equations (1) and (3), with equality, are $r - \gamma / (1 + \gamma)$ and $-\alpha$. Equation (4) is the characteristic equation associated with the root α .

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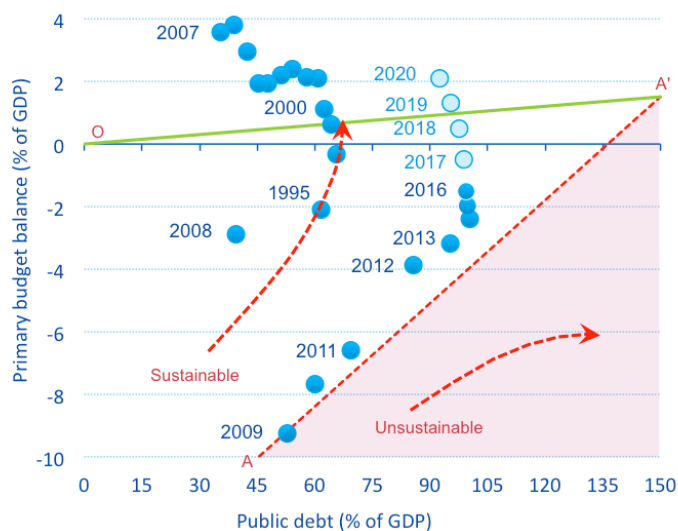


Figure 1: Public debt and primary budget balance over GDP. Spain, 1995-2020. Source: own elaboration from INE and MINHAFP, Stability Programme 2017-2020.

$(r - \gamma)/(1 + \gamma)$ is equal to 1%, the average from 2002 to 2015, and that $\alpha = 0.1$. In other words, we assume that the primary budget balance reduces the distance to its maximum level by 10% each year.³ Under these assumptions, the maximum level of the primary budget balance is then given by:

$$t_{max} - g_{min} = \left(\frac{r - \gamma}{1 + \gamma} \right) d_{max} = 1.5\% \quad (5)$$

Using these hypotheses, line AA' shows that debt and primary budget balance combinations from 2009 to 2011 were tightly balancing on a knife-edge, at risk of falling into the area featuring unsustainable dynamics. Between 2012 and 2014, the situation marginally improved. It was only from 2015 onwards when a change in the trend was noticeable, as the debt ceased to grow while the primary budget balance continued to improve. If the Government's forecasts prove accurate and the fiscal targets set by the European Commission in late 2016 are met, the primary budget balance

³ Given that the value of α is the main determinant of the slope of line AA', Figure 1 shows that the calibrated value of this parameter offers a good approximation of the adjustment made from 2009 to 2015.

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will go from -1.5% in that year to -0.5% in 2017, with additional improvements from 2018 onwards.⁴

Figure 1 vividly illustrates the complex and serious situation experienced by Spanish public accounts during the worst period of the financial crisis, particularly if we consider that an increase in interest rates and/or a reduction in potential growth would have shifted line AA' upward, thus significantly increasing the probability of default. In such a setting, the economy would have entered a scenario of self-fulfilling prophecies, in which the expectation of debt unsustainability would have increased risk premia (as happened in 2011 and 2012), further fuelling the process. In this situation, the only possible response in order to escape from an unsustainable path was the implementation of discretionary fiscal adjustment measures to improve the budget balance far above the level implied by equation (3), as occurred, for example, in 2012.

In sharp contrast to some experts and a sector of public opinion, who, in those years considered fiscal policy to be unnecessarily restrictive, the evidence in Figure 1 shows just the opposite: the discretionary fiscal adjustment was very gradual and slow, in an attempt to affect short-term growth as little as possible and at the limit of what markets would tolerate in order to finance public debt. After recording an 11.2% GDP deficit in 2009, meaning that 27 of every 100 euros of expenditure were financed through public debt, seven years later this number was reduced to 4.3% of GDP. Nevertheless, almost 11 of every 100 euros of public spending are still financed through the issuance of new debt.

In fact, maintaining the debt to GDP ratio sustainable would have required a far more onerous fiscal adjustment –or else a full Greek-style bailout–, if it had not been for the monetary policy implemented by the ECB from 2012 onwards. Together with the banking union, ECB's quantitative easing and other non-conventional measures have been extremely beneficial for the Spanish economy in terms of reducing risk premia and

⁴ Figure 1 also shows that the reaction of the primary budget balance to the debt level is neither uniform nor constant over time, suggesting a shift of the relationship between the two variables towards the steady state level of debt, which are higher after the last recession. This evidence suggests that estimates of the primary budget balance reaction function to public debt (see, for example, Bohn, 1998) should take into account the possibility of changes in the steady state level of debt.

the financial cost of both public and private debt.

How do our results contrast with other recent proposals regarding the pace of fiscal consolidation? The evidence that we present in this section is in line with other previous analyses (see, for example, Buti and Carnot, 2016 and Andrés and Doménech, 2015 and 2013a, among many others). Spain still needs to record a primary structural surplus in order to stabilise public debt. This is also consistent with the idea that consolidation needs to be gradual and stable over time in order to succeed, hindering economic growth as little as possible. As Blanchard has argued (2011), the proverb “slow and steady wins the race” applies perfectly to the challenge of reducing the Spanish public deficit.

Nevertheless, it is more interesting and indeed more controversial to compare our interpretation of the Spanish evidence with that of other economists, whose theories have been used to defend the need to postpone fiscal adjustment and to implement even more expansionary fiscal policies. The political appeal of opponents for what they called “self-defeating austerity” is undeniable, although its coherence should be subject to critical scrutiny.

To this end, we focus on recent studies that question the fiscal consolidation during the crisis and that have received great attention. For example, DeLong and Summers (2012) argue that in economies in recession, with nominal short-term interest rates close to zero, high unemployment, excess capacity and a certain degree of hysteresis, an increase in public expenditures may have expansionary effects that may become self-financing without the need to increase public debt in the medium and long term. Assuming that a fiscal expansion may lead to a short-term increase in output through the fiscal multiplier (μ), which in turn results in greater revenues given by the tax burden (τ), and the fact that there is partial hysteresis, which means that a fraction (η) of present growth persists over time, DeLong and Summers (2012) show that the necessary condition to ensure that the fiscal impulse keeps the public debt to GDP ratio constant can be expressed as follows:

$$r - \gamma \leq \frac{\eta\tau\mu}{1 - \tau\mu} \quad (6)$$

DeLong and Summers’ calibration of the parameters in equation (6)

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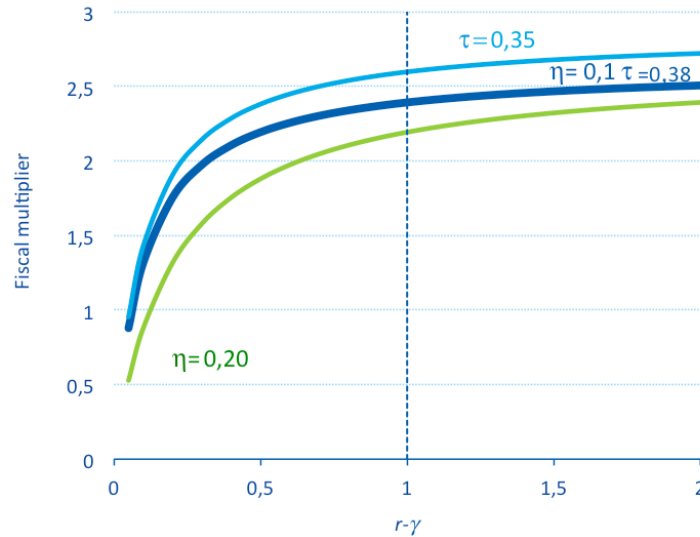


Figure 2: Fiscal multiplier values that stabilise public debt in relation to GDP in terms of $r - \gamma$ values, of the hysteresis parameter and the tax burden level.

for the case of the US shows that there are multiple combinations that meet this condition. Nevertheless the authors argue that this result cannot be generalised, and that economies with a high-risk premium do not have enough margin of manoeuvre to take advantage of their proposal. On the contrary, in countries in which public revenues and expenditures are inconsistent with each other, fiscal adjustment is unavoidable.

This was the case for the Spanish economy during the recession, as can be seen in Figure 2. This graph shows the fiscal multiplier ratio required to meet the condition set by equation (6) for different values of $r - \gamma$, when $\eta = 0.1$ (the average value of the DeLong and Summers calibration) and $\tau = 38\%$, which approximates the average level of public revenues over GDP. When $r - \gamma$ is equal to 1%, like the average from 2002 to 2015, the fiscal multiplier should be greater than 2.39, well above its most frequent values (see, for example, Andrés and Doménech, 2013b) and also above the multipliers estimated by Blanchard and Leigh (2013) during the recent recession. Condition in equation (6) holds for fiscal multipliers between 1 and 1.5, such as those estimated for Spain by Hernández de Cos and Moral-Beneito (2016), only when $r - \gamma$ approaches to zero.

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In a more realistic scenario, in which Spain has a positive risk premium with Germany, it is difficult to justify that financial repression would have maintained interest rates artificially low such that $r - \gamma$ would have been close to zero. When the risk premium is high, a more prudent approach is to avoid an expansionary fiscal policy and to implement structural reforms, which would simultaneously increase potential growth (γ) and reduce the risk premium. Figure 2 also shows that the reduction in the tax burden to 35% of GDP, as happened during the recession, increases the fiscal multiplier required to meet the condition in equation (6) to 2.6. Fiscal multipliers greater than 2 are still required even if we double the value of the hysteresis ($\eta = 0.2$), a value which is difficult to justify in the long term, particularly when excess capacity decreases as a result of the economic recovery.

Related to the previous point, we should highlight that Figure 2 assumes that the risk premium remains constant. If, in a more realistic scenario, we relax this assumption taking into account how the risk premium increased between 2011 and 2012, Spain had no opportunity of stabilising the public debt to GDP ratio with expansionary fiscal policies. On the contrary, as we have argued before, this strategy would only have resulted in a greater increase of public debt and in higher private and public sector financing costs. At the end of the day, this would have implied the unsustainability of public debt.

In a more recent research, Fatás and Summers (2016) find a positive correlation between the GDP forecasting errors for 2009 and 2012 in a sample of 34 advanced economies, using IMF projections from its *World Economic Outlook* of April 2007. When they extend the 2007 forecasts to 2015 and 2021, using average growth rates for the period from 2000 to 2012, they find that both the forecasting error in 2015 and the difference between the projection for 2021 and the forecast for 2016 have a positive correlation with the forecasting error for 2009. In other words, Fatás and Summers find a very high persistence (hysteresis) in the unexpected fall of GDP between 2007 and 2009. Thus, almost a decade after the outbreak of the financial crisis, real and potential GDP continue to be considerably lower than the levels extrapolated from their pre-crisis trends.

In a second exercise, Fatás and Summers (2016) find that the projection based on the information in April 2010 of the expected fiscal adjust-

ments between 2010 and 2011 correlates with the forecasting error for 2011 GDP growth (thus confirming the results of Blanchard and Leigh, 2013), and also with the GDP forecasting error for the following years. Fatás and Summers (2016) interpret these results as a permanent effect on GDP of the fiscal consolidation between 2010 and 2011. According to their results, each GDP percentage point of fiscal adjustment between 2010 and 2011 caused a 1% reduction in GDP in 2015 and an even higher figure for the 2021 forecast.

Given this finding, the hysteresis parameter in equation (6) should be equal to or greater than one, making it more likely that a fiscal expansion could potentially stabilise or even reduce the level of public debt in relation to GDP, instead of increasing this ratio, at least during the recent recession. In terms of Figure 2, where the parameter for hysteresis is equal to 1, the fiscal multiplier needed to satisfy condition (6) is $\mu = 1.32$ when $r - \gamma = 1\%$, although it would still need to be greater than 2 for values of $r - \gamma \geq 3.1\%$. In these circumstances, the relevant question is: why is it that in many countries there was no other alternative than applying a fiscal consolidation in response to higher risk premia and the tightening of financial conditions? In Fatás and Summers words, if their results are correct and both governments and markets had agreed with the logic of their arguments, expansionary fiscal policies should have continued from 2010 onwards, thus reducing the public debt to GDP ratio.

There are various possible answers to this question, which are complementary to each other. Firstly, in many cases, fiscal adjustment post-2010 was nothing other than a partial reversion to the fiscal stimuli applied in 2008 and 2009. In the case of Spain, Figure 3 shows that total public expenditures with and without interest payments in 2016 were higher than their levels prior to the recession (6% and 3.4% respectively), while public revenues were 10% lower than their 2007 level. Although Spain implemented expansionary fiscal policies in 2008 and 2009, the ensuing increase in public deficit and debt fuelled the belief in financial markets that continuing with these policies would put public accounts on an unsustainable and explosive path, instead of stabilising public debt.

Secondly, as we have argued before, these beliefs accelerated the dynamic of a self-fulfilling prophecy: above certain fiscal limits, higher risk premia stop expansionary policies from reducing public debt levels, even

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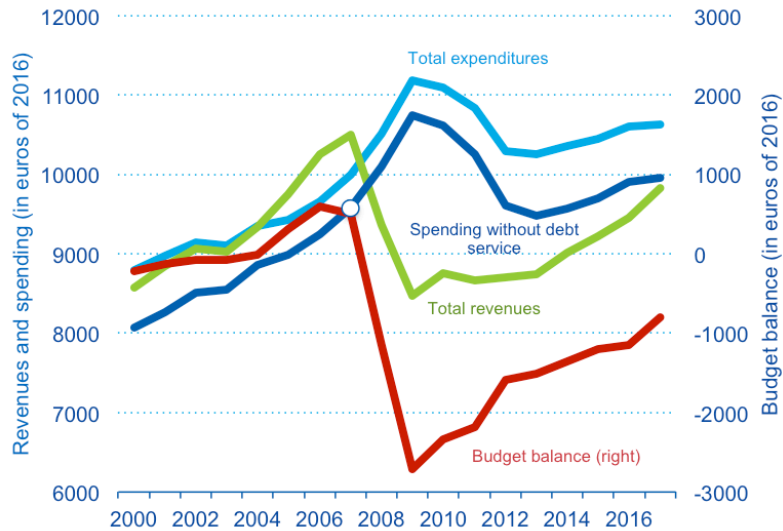


Figure 3: Public expenditures, revenues and budget balance per capita, in euros of 2016.
 Source: own elaboration from INE, IGAE and MINHAFP.

for large fiscal multipliers and hysteresis parameters.

Thirdly, markets may have serious doubts regarding the value of fiscal multipliers in the short, medium and long term, bearing in mind the widespread distribution of values found in the economic literature. In the specific case of Spain, the results pointed to a fiscal multiplier equal to 1.4 in times of recession that drops to 0.6 in calm periods (see Hernández de Cos and Moral-Benito, 2016). In fact, when the same exercise as that carried out by Blanchard and Leigh (2013) was repeated, with the forecasting errors and fiscal adjustments for Spain's regions, it was found that the fiscal multiplier was close to 1 (see Figure 5 in BBVA Research, 2013). In these conditions, an analysis of debt sustainability between 2010 and 2012, undertaken by an analyst who had to evaluate a strategy of investing in public debt using these multipliers would have concluded that the expansionary fiscal policy being implemented by Spain at that time was in serious danger of destabilising the public debt.

Fourthly, the underlying causes of the financial crisis in Spain (macroeconomic imbalances, the bursting of property and credit bubbles, the increase of external debt, etc.) could easily have led to diminished growth

expectations in the short, medium and long term for a number of years. More than being a consequence of the persistent effects of fiscal adjustments, the realignment of expectations concerning growth potential was the cause of the subsequent fiscal consolidation (and also of the delayed restructuring of the banking system). This consolidation was postponed as much as possible, while hopes for a change in the economic cycle remained, before many of the imbalances had begun to be corrected, until the inevitable happened, with Spain teetering on the brink of losing access to markets, as had happened previously to Greece, Ireland and Portugal. Hence, the need to adopt extraordinary fiscal adjustment measures in May 2010, when it became clear that the expansionary measures implemented in 2008 and 2009 would not suffice to ward off a recession, which was much more intense than initially expected. In this scenario, there may be a problem of reverse causality in Fatás and Summers' results (2016).

Furthermore, the tightening of market conditions was accompanied by a loss of credibility with regard to fiscal policy: repeated negative surprises in terms of deviations from public deficit forecasts, the realisation that a significant part of public revenue prior to the recession (at least 3% of GDP) was dependent on an unsustainable growth model, the recognition of an accumulation of large debts with the suppliers to various public administration bodies (especially true in the case of Spain's regional governments and local administrations), which were not reflected in the level of debt in accordance with the excessive deficit procedure and, as an especially relevant element in the eyes of the markets, the expectation that the public sector would have to bail out the majority of Spain's savings banks due to their solvency problems. The interaction between sovereign and bank risk ended up creating a vicious circle from which it was impossible to escape with expansionary fiscal policies and without implementing an ambitious yet rigorous fiscal consolidation.

3 The effect of public debt on economic growth

Public debt may be sustainable at very different debt to GDP ratios. We should, therefore, ask whether it is relevant or not to stabilise public debt at a high or low level, bearing in mind its effects on growth, employment and other economic variables. In other terms, once the sustainability of

public debt has been assured, it is extremely relevant to analyse to what extent economic activity is affected by specific combinations of the primary budget balance and the steady level of public debt, represented on line OA' in Figure 1 and which satisfy the following equation:

$$d^* = \frac{1 + \gamma}{r - \gamma} (t^* - g^*) \quad (7)$$

where the asterisk represents the steady state levels of the public debt, revenues and expenditures in relation to GDP.

Numerous studies have analysed to what extent economic growth (γ) is affected by the level of public debt, particularly after the huge increase during recent recession and the controversy regarding the threshold levels of debt estimated by Reinhart and Rogoff (2010, 2012 and 2013), above which public debt hinders growth. As a summary of this extensive literature (see, for example, Doménech and García, 2013, or the survey by Panizza and Presbitero, 2013), we can draw the following conclusions:

- In general, public debt negatively affects economic growth, after controlling for a wide set of additional factors and taking into account potential problems of public debt endogeneity and reverse causality.⁵ These effects tend to be statistically significant and economically relevant: a 10 pp increase in the public debt to GDP ratio implies, on average, 0.2% less growth in per capita income.
- The effects of public debt on growth tend to be non-linear (e.g., Checherita and Rother, 2012), although the threshold levels above which these effects become negative change over time and from country to country. We cannot conclude that the 90% threshold for public debt estimated by Reinhart and Rogoff (2010), above which growth falls off, is a universal law that is constant over time (see, for example, Chudik et al, 2017). Given the enormous differences between countries in the levels, structure and efficiency of public expenditures and revenues, it would have been counterintuitive to find that the threshold above which public debt impairs growth was the same for all economies and periods.

⁵ See, for example, Woo and Kumar (2015), who address this potential endogeneity problem estimating a system GMM and testing the validity of their instruments.

- The research focusing on the bidirectional causality relationship between public debt and growth has turned up more widely varying results. This might be due to the fact that these studies do not take properly into account the heterogeneity across countries and periods, in contrast to the research that analyses just the effects of public debt on growth. Some studies only find growth effects on public debt (for example, Lof and Malinen, 2014 and Puente-Ajovín and Sanso-Navarro, 2015), while others (Ferreira, 2016 and Chudik et al, 2017) find that causality runs in both directions. In the latter case, economies would end up in a vicious circle: greater debt impairs growth, which additionally leads to an increase in public debt. These higher levels of public debt and slower growth would in turn imply a need to ensure greater primary budget balance surpluses in order to stabilise debt.

Woo and Kumar (2015) have analysed in great detail the impact of public debt on economic growth in a sample of 38 countries (both emerging and advanced economies) over four decades, controlling for the main drivers of long-term growth and using estimation techniques that take into account potential problems of endogeneity. Given that all specifications include the initial per capita income as an explanatory variable, the results show the long-term effects of public debt on the level of per capita income in steady state. Using the 89 coefficients estimated for public debt (which are negative in 92.1% of cases), it is possible to recover their long-run effect on per capita income, taking into account the estimated speed of convergence to the steady state.⁶ Figure 4 shows the estimated density function of the effect of a 10 pp increase in public debt on GDP per capita. It is interesting to note that the mean of the distribution is -0.08% (the median is -0.07%), as the calibrated effect by Elmendorf and Mankiw (1999).

These negative effects are mainly due to the distortions caused by the taxes needed to sustain the higher level of public debt, given the level of public expenditures. Equation (7) clearly shows that even if the interest rate and growth differential ($r - \gamma$) remains constant, given an exogenous value of γ , any increase of d^* should be matched by an increase of t^* . An-

⁶ It can be demonstrated that the long-term effect is determined by $\beta/\ln(1 - \alpha)/t$ where β is the coefficient of public debt against GDP, α is the initial per capita income and t is the time span (4 years in the case of the estimate proposed by Woo and Kumar, 2015).

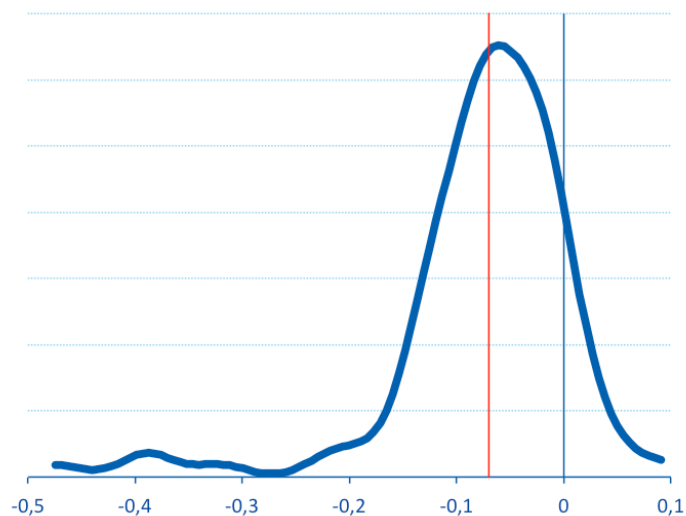


Figure 4: *The density function of the estimated long-term effects on per capita GDP of a 10 pp increase in the public debt to GDP ratio. The red vertical line represents the median of distribution. Source: own elaboration from Woo and Kumar (2015).*

other way of understanding this condition is that the inter-temporal budget constraint implies that public debt is equal to the net present value of future surpluses.⁷ Additionally, if $r - \gamma$ increases as the levels of public debt grow (for example, as a consequence of a higher risk premium), ever-greater tax increases will be necessary.

In order to quantify the effects of the higher tax burden needed to stabilise public debt, we have used REMS, a DSGE model proposed by Boscá et al, (2011) for the Spanish economy, to simulate the response of the main macroeconomic aggregates to a permanent increase in the public debt to GDP ratio, as that produced between 2007 (when it stood at 36% of GDP) and 2016 (close to 100%), assuming that public expenditures to GDP remain constant and that, in the most favourable scenario, the risk premium increases just 5 basis points for every 10 percentage points of increase in the debt to GDP ratio. Extending previous results by Doménech and García (2013), we have considered five possible scenarios depending on alterna-

⁷ As Bohn (2007) indicates, this condition does not imply that public revenue and expenditure are co-integrated.

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Table 1: *Effects of a permanent increase in public debt from 36% to 100% of GDP*

	<i>All taxes</i> (1)	<i>Indirect taxes</i> (2)	<i>Labour income tax</i> (3)	<i>Social contributions</i> (4)	<i>Capital income tax</i> (5)
<i>GDP</i>	-5.5	-2.4	-3.6	-6.6	-14.2
<i>Private consumption</i>	-4.8	-2.9	-4.1	-8.3	-6.2
<i>Investment</i>	-6.7	-1.4	-2.0	-3.3	-35.8
<i>Employment</i>	-3.1	-2.3	-3.6	-6.3	1.4
<i>Public revenues</i>	4.8	6.3	5.6	4.3	1.2

tive changes in the tax structure. In the first, we assume that all tax rates increase in the same proportion, while in the others, only one of the four tax rates analysed increased: indirect taxes, labour income tax (excluding social security contributions), social security contributions and capital income tax.

Table 1 shows the results in terms of percentage deviations with respect to the baseline scenario in which public debt remains stable at 36% of GDP, thus requiring lower tax rates. The first column of Table 1 shows that stabilising the debt at 100% of GDP and proportionally increasing all tax rates (allowing for a 4.8% increase in public revenue) leads to a 5.5% fall in GDP in the long term, a 3.1% fall in (full-time equivalent) employment, a 4.8% fall in private consumption and a 6.7% fall in investment. This result implies that for each 10 pp increase in public debt, GDP falls 0.8%, a very similar effect to those found by Woo and Kumar (2015) and Elmendorf and Mankiw (1999), as we have discussed previously.

In the case of opting exclusively for higher indirect taxation (Column 2), the negative effects are reduced by almost half (except for employment, where the fall is 25% lower). This result, reflected by the significant increase in revenues, confirms that indirect taxation has the least distortionary effects. Distortion increases in the case of higher labour income taxes and social security contributions, reaching maximum levels in the case of capital income taxes, as shown in Column 5. In this case, GDP would fall 14.2% with respect to the baseline. In this last scenario, investment would de-

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crease by 35.8% in steady state. The consequent wealth and substitution effects would result in a slight increase in employment⁸. This would result in a partial substitution of capital with labour, but at the cost of much lower productivity and real wages.

The comparison between Columns 2 and 4 is very interesting, as it shows the relevance of the tax structure and its effects on economic activity. If we choose to stabilise the public debt ratio by increasing indirect taxes instead of raising social security contributions, the economic results would unambiguously be more positive: higher GDP, higher private consumer spending, greater investment, more employment and higher tax revenue. Although this result was obtained with a constant debt ratio (rather than constant revenues), the logic of the fiscal devaluation proposal is confirmed (see, for example, Boscá, Doménech and Ferri, 2013 and Farhi, Gopinath and Itskhoki, 2014, or the Expert Commission on the Reform of the Spanish Tax System, 2014). This is one important structural reform that the public sector may implement in Spain to increase employment and GDP per capita.

Summing up, the Spanish economy needs to gradually reduce its public debt to GDP ratio, thus avoiding the consolidation of an excessively high level of debt, in order to prevent: (1) the distortionary costs of higher taxes, (2) an Italy-type scenario in which a public debt to GDP ratio higher than 100% has hindered growth, requiring permanent primary surpluses and depriving fiscal policy of a stabilising capacity, and (3) an insufficient room for manoeuvre in the case of future shocks. The best strategy to ensure this objective is to increase potential growth in order to reduce the public debt to GDP ratio via a twofold effect. Firstly, higher growth increases public revenues, which allow for primary surpluses that reduce debt, even with increased public expenditures. Secondly, higher growth also improves debt dynamics through the denominator effect. Against the alternative of stabilising public debt at such high levels that severely impinge upon per capita income and employment, the most intelligent fiscal consolidation would consist of implementing structural reforms that increase potential growth, which in turn would alleviate the heavy burden of public debt.

⁸ The substitution effect stems from the rise of the relative cost of capital with respect to labour.

4 The effects of structural reforms on debt sustainability

Once the consequences of public debt on economic activity have been explored, in this section we evaluate the effects in the opposite direction showing that higher growth accelerates the consolidation of public accounts, improves the room for policy manoeuvre and reduces debt levels more rapidly.

The evidence for the years 1995 to 2007 in Figure 1 provides a first approximation to this question, although in this figure it is impossible to distinguish to what extent the improvement in Spain's fiscal position was the result of economic growth or of discretionary fiscal consolidation measures. It is, therefore, necessary to have an estimate of the structural budget balance once the effects of the business cycle have been removed. Although the literature regarding the decomposition of the budget balance and its cyclical and structural components is very large (see, for example, Mourre et al, 2013, and the references cited therein), with procedures that use very detailed information of revenues and expenditures, we can use a reasonable and simple approximation through the following expression:

$$pb_t - pb_t^* = \phi(u_t - u_t^*) + \varepsilon_t \quad (8)$$

where pb is the budget balance compared to GDP, u is the unemployment rate, ε is an error term, with the asterisk denoting the structural components of the variables. The parameter ϕ , which may vary over time (Corrales, Doménech and Valera, 2002 find that it varies depending on the size of the public sector, affecting its role as an automatic stabiliser), measures the sensitivity of the cyclical component of the budget balance to cyclical unemployment ($u_t - u_t^*$).

Figure 5 shows the preliminary evidence of the relationship between the budget balance and cyclical unemployment.⁹ After the fiscal adjustment of 1995, from 1996 to 2007 practically all improvements in the deficit to GDP ratio (from -5.5% to 1.9%) can be explained by the decrease in cyclical

⁹ The cyclical unemployment rate is estimated following Doménech (2013), who simplifies the unobservable components models of Doménech and Gómez (2006) to just three variables: GDP, the unemployment rate and the investment rate. Estimates of the cyclical unemployment from 2017 onwards should be taken with caution.

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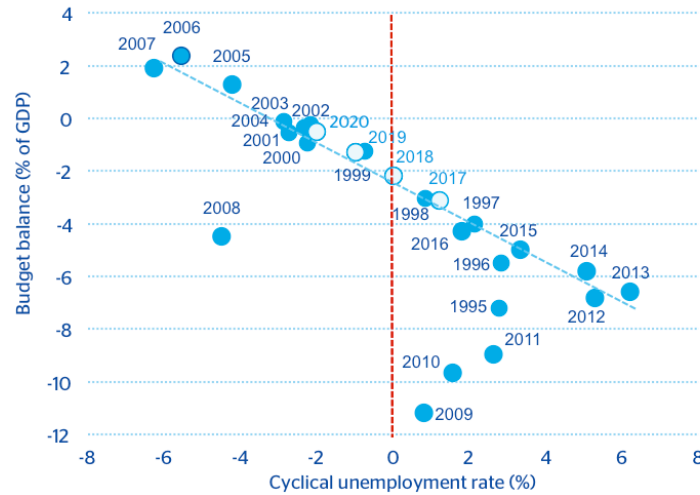


Figure 5: Cyclical unemployment rate and the budget balance to GDP ratio, Spain 1995-2019. Source: own elaboration from INE, IGAE and MINHAFP, Stability Programme 2017-2020.

cal unemployment. The line with negative slope fits all of these years quite well. The slope is equal to the average of ϕ (0.75), which is to say that, for every 8 percentage points of reduction in the cyclical unemployment rate, the cyclical deficit falls 6 percentage points of GDP. Using this line, we can project each year on the vertical line for the zero cyclical unemployment to obtain an estimate of the structural budget balance. As all years from 1996 to 2007 produce a similar projection, we can conclude that the structural fiscal deficit stood slightly above 2% of GDP. The business cycle was, therefore, the main factor behind the reduction of the debt to GDP ratio (in fact, nominal debt increased slightly over this period), which, together with the fall in interest rates as a result of the integration of Spain in the Eurozone, reduced the debt burden, with the subsequent improvement in the primary budget balance. In other words, with scarcely any discretionary fiscal adjustment, the business cycle was enough to reduce the debt to GDP ratio and increase the primary budget balance, thus moving the Spanish economy towards the top left corner of Figure 1.

Based on equation (8), it is possible to permanently improve the bud-

get balance (i.e., a decrease of pb_t^*) with a reduction of the structural unemployment rate (u_t^*), which on average has been close to 15.5% between 1995 and 2016. Given the estimated value of ϕ , a reduction of structural unemployment to 7.5% (which would be still higher than in Germany or the US) would allow an improvement in the structural budget balance of 6 percentage points of GDP. This margin of manoeuvre could be used to balance the budget (2 pp) and to implement different public policies, including those needed to tackle the challenges posed by an ageing population.

Obviously, this reduction in the structural unemployment rate could not be achieved overnight, but rather gradually and only if a wide range of structural reforms is introduced as proposed, for example, by Andrés and Doménech (2015) and BBVA Research (2016). This does not represent a serious constraint. Firstly, because the aim of budgetary stability is a medium to long-term objective. Secondly, because in the transition towards a permanently lower unemployment rate, it is possible to control what percentage of year-on-year fiscal margins should be used either to consolidate public accounts or assigned to other public policies.

In order to quantitatively illustrate the effects of a reduction of 8 percentage points in the structural unemployment rate (from 15.5% to 7.5%), we have used REMS again to simulate this change, implementing a similar assumption to those used by Andrés et al (2011). Firstly, we assume that improvements in the labour market regulations reduce duality and temporary employment, meaning that the separation rate (i.e., the percentage of employees that lose their job during each period) falls significantly. Secondly, better active labour market policies give rise to a substantial increase in the efficiency of matching processes between vacancies and unemployed people.¹⁰ Thirdly, with the exception of unemployment benefits, which change in proportion to the fall of the structural unemployment rate, other public spending items (public consumption, investment and transfers) remain constant in GDP terms. Fourthly, the fiscal rule proportionally reduces all tax rates according to changes in the level of public debt. Fifth and finally, in addition to the permanent fall in unemployment, one of the collateral effects of structural reforms that increase GDP consists of reducing the level

¹⁰ In terms of the REMS parameters, we reduce the quarterly separation rate (σ) and increase the parameter that determines the efficiency of the matching process until the structural unemployment rate falls permanently from 15.5% to 7.5%.

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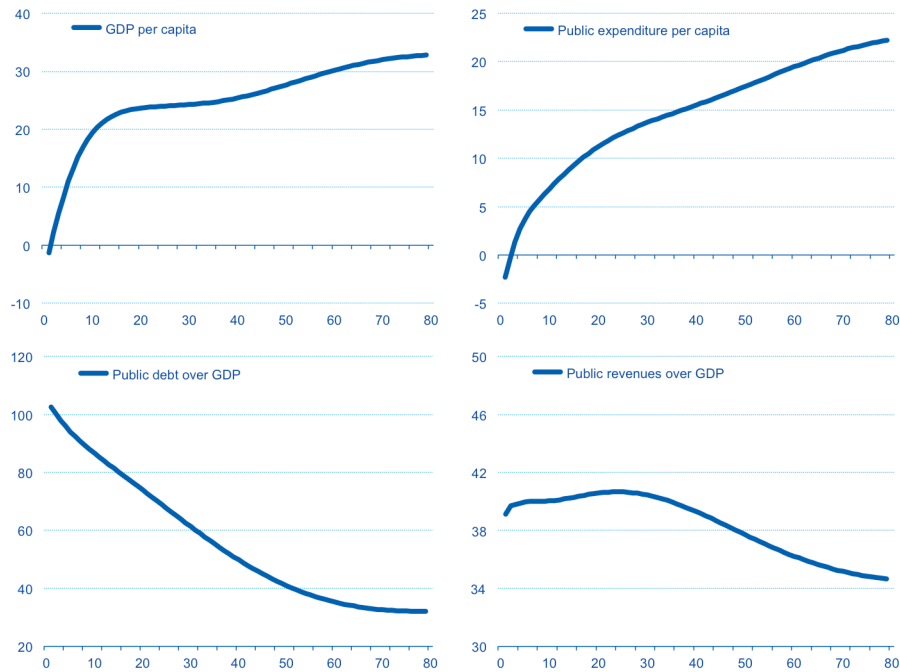


Figure 6: *The effects of a permanent reduction in the structural unemployment rate from 15.5% to 7.5% on GDP and public expenditures (excluding unemployment benefits), accompanied by a fiscal consolidation that reduces the level of public debt from 100% to 36% of GDP. The horizontal axis represents quarters.*

of public debt from 100% to 36% of GDP, reversing the increase that took place over the last recession.

Figure 6 shows the main results of this simulation in deviations from the initial steady state. The upper left panel represents the increase in percentage terms of GDP per member of the working-age population, firstly as a consequence of the fall in unemployment and subsequently due to the lower tax rates needed to sustain a lower level of the public debt to GDP ratio, which is represented in the lower left panel. The bottom right panel shows that, as a result of the reduced level of public debt in the long term and the drop in unemployment benefits, tax revenues over GDP fall to 35%, which approximately accounts for slightly less than a third of the increase in GDP per capita. As a result of the reduction of structural unemployment and greater GDP, per capita public spending increases by 22.6% in

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the long term. In short, this simulation illustrates the impact of an intelligent fiscal consolidation in which structural reforms reduce the public debt to GDP ratio and increase per capita income, without the need to increase the tax burden or to cut public spending. On the contrary, with suitable measures in place to reduce structural unemployment, fiscal consolidation is consistent with increasing per capita public expenditures and reducing fiscal pressure, as we have seen.

The effects of the simulation shown in Figure 6 are just an example of the infinite combinations of increases to public spending and lower taxes in the convergence process to the new steady state. Similarly, complementary reforms that increase the overall productivity of the aforesaid factors will have effects that are qualitatively like those shown in Figure 6.

Increases in labour productivity at the aggregate level should also be accompanied by more efficient public administrations, capitalising on the opportunities that arise from the on-going technological and digital transformation process, in order to reduce the gap with economies that are at the leading edge of public sector efficiency. Such improvements in the efficiency of public administrations will allow the government to offer better public services with lower costs for taxpayers, obtaining additional resources for other public policies such as pensions, health and old-age and long-term care, which will increase over the coming decades as a consequence of Spain's ageing population. The challenge for the public sector undoubtedly consists of appropriately combining improved efficiency in the provision of public services with the structural reforms that are needed to reduce structural unemployment and increase productivity, therefore, obtaining a significant volume of additional public revenues to finance higher levels of per capita spending, as shown in Figure 6.

In addition to the resources available as a result of the technological and digital transformation process of public administrations, higher levels of public sector efficiency would increase the willingness to accept a higher tax burden, as Andrés and Doménech (2016) argue. Figure 7 shows that, with the exception of two clear outliers like Italy and Greece, there is a high positive correlation (0.81) between public sector efficiency and public revenues as a percentage of GDP. This correlation suggests that before increasing the tax burden it would be wise to improve the efficiency and quality of public services, waiting for an increase in the willingness of tax-

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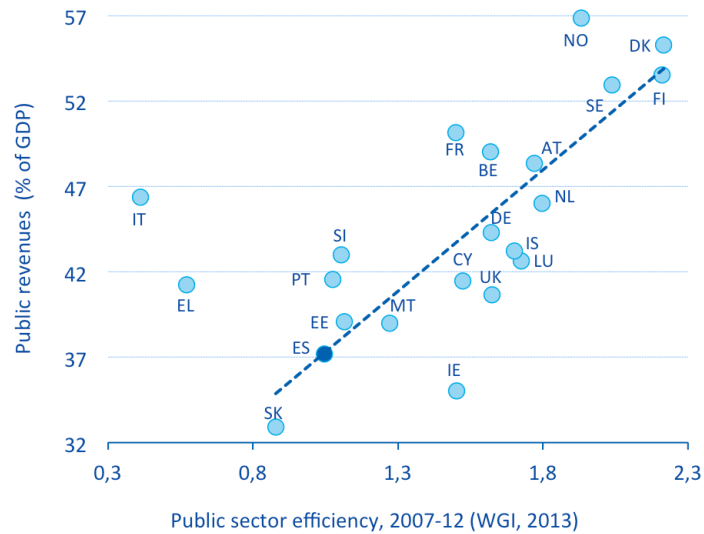


Figure 7: Efficiency and size of the public sector. Source: Andrés and Doménech (2016).

payers to pay higher taxes in order to finance better public services. When this happens, the economy moves towards the upper right corner of Figure 7. If, on the contrary, a greater tax burden is implemented without first improving efficiency, the public sector may end up moving in the opposite direction towards the position of Greece and Italy.

5 Conclusions

We have analysed the lessons to be learnt from the recent recession with regard to budgetary stability in the Spanish economy and the fiscal options for the future. Among these lessons, three deserve special mention. Firstly, as our results clearly show, the sustainability of public accounts was on a knife-edge from 2009 to 2011. Only from 2012 onwards do we see a dynamic in which the primary budget balance and public debt move slowly towards stability, although risk levels continue to be high.

Secondly, in answer to the criticisms made of the implemented fiscal consolidation, which some have even come to call “austericide”, the Spanish economy had few alternatives to deficit reduction. The degree of freedom available consisted solely in modulating the composition of the ad-

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justment and in implementing structural reforms to recover tax revenues through an increase in employment and economic activity. Having continued with the fiscal expansion, expecting that public spending policies would generate higher revenues and become self-financing with opposite results to those already obtained in 2008 and 2009, would have unavoidably led to a bailout or a restructuring of public debt. On the contrary, throughout these years of fiscal consolidation, Spain was reducing its fiscal deficit at the edge of the existing margins. In fact, the fiscal adjustment implemented was the minimum required and the one strictly necessary, seeking a difficult equilibrium between harming economic growth as little as possible in the short term and, at the same time, ensuring the credibility of the public sector in financial markets, in order to finance the gross issuance of public debt. As we have seen, the implementation of fiscal adjustments that minimise its short-term effects on growth means transferring significant costs to the future in terms of income, employment, and private consumption and investment, as a result of the higher taxes needed to sustain a much higher level of public debt.

Given such perspectives, and this is the third lesson from our analysis, future fiscal policy options will require a strengthening of the fiscal margin, ensuring a primary budget surplus and gradually reducing public debt, mainly through structural reforms that improve the tax structure (for example, a fiscal devaluation), reducing structural unemployment and temporary employment, and improving aggregate productivity. Our results show that reducing structural unemployment would result in a significant increase in per capita income and in public revenues, meaning that the public debt to GDP ratio could return to its pre-crisis levels, without the need to increase the tax burden or to cut public spending. Increases in aggregate productivity are also a responsibility of the public sector, which should capitalise on the opportunities that arise from the on-going process of technological and digital transformation in order to reduce the gap with economies that are at the leading edge of public sector efficiency. More than a fiscal policy option, this is a pressing need if we wish to ensure that the Spanish economy returns to the path of convergence to the levels of prosperity and well-being in the most advanced societies.

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