Fiscal tensions and risk premium

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Abstract
The main goal of the paper is to analyse one-dimensional, isolated impact of particular variables which are used in the literature as explanatory variables for risk premium following fiscal tensions. Using Student’s t-tests, supplemented with ANOVA analysis, we study about a hundred likely determinants of the risk premium in 22 OECD countries over 1978–2017. We find that for deeper falls in the risk premium following fiscal tensions, the size of fiscal adjustments matters more than their composition. That said, expenditure-based fiscal adjustments are more effective in lowering the risk premium than tax-based ones. Fiscal adjustments can outweigh the effects of global risk aversion. Otherwise its low level or decline is needed for deep falls in the risk premium, suggesting there are time-breaks in relations between the risk premium and other factors. Supply-side reforms, especially of the labour market, are of help. The risk premium often responds to their very announcements, indicating that fiscal tensions do not necessarily delay payoffs from reform efforts. That said, our results are only of qualitative nature and do not warrant any conclusions as to mechanisms or causality.

Keywords Risk premium · Fiscal crisis · Fiscal adjustments · Reforms

JEL Classification E62 · G01 · H12 · H62 · H63
1 Introduction

Fiscal tensions are likely to be back. Since the outbreak of the COVID-19 pandemic, more than 50 countries have asked the International Monetary Fund (IMF) and the World Bank to suspend repayment of their loans or at least interest. Sovereign debt is skyrocketing all around the World from already elevated levels. In some countries, inclusive of the United States, it is expected to become higher than ever (even after the Second World War it was not as high). Soon, even more countries may struggle to cover their borrowing needs. This will put pressure on the risk premium they pay. Rising interest payments will add to fiscal tensions. Pandemic costs and efforts to mitigate them may bring off about another wave of crises, the fiscal ones.

Governments may soon face a serious problem of convincing creditors that lending to them is safe. Literature abounds in studies on fiscal adjustments, their sustainability, and impact on growth. The research on the risk premium following fiscal tensions is scarcer. We build on the former strand of the literature, especially as it comes to methodology and reference results, and contribute to the latter.

We investigate what works in lowering the risk premium following fiscal tensions and what doesn’t. We put a particular focus on fiscal adjustments’ composition and accompanying reforms, or more generally, factors found to sustain fiscal adjustments and reduce their costs in terms of aggregate demand. We examine how those factors work in reducing the risk premium following fiscal tensions. We also check if fiscal tensions delay payoffs from reform efforts. Put it differently, we verify whether these tensions undermine trust in the government so much that creditors become insensitive to its announcements and react only to actions (or their effects).

To identify fiscal tensions we extend Reinhart and Rogoff (2011) definition of fiscal crises by criteria based on Baldacci et al. (2011a), Baldacci et al. (2011b) and Cottarelli (2011). Fiscal crises narrowly defined are very rare among advanced economies. The extension allows us to study these economies and use long time series of both the risk premium and its likely determinants that are available for them. Our sample covers 22 OECD countries in the years 1978–2017. However, being aware of the discretion of the definition of fiscal tensions, we verify how robust our results are if we focus on periods of fiscal adjustments instead. Their identification is (much more) mature. We use the action-based method developed by Alesina and Ardagna (2013), Alesina et al. (2017), and Devries et al. (2011). Besides, we obviously check robustness of our findings to changes in definitions we apply.

Our approach to studying the risk premium builds on the framework often used in studies on fiscal adjustments, e.g. by Alesina and Ardagna (2013), Alesina et al. (2012) and many others. Using the same method, we can easily compare our results to theirs. Recall that we aim at verifying to what extent factors reducing the risk premium following fiscal tensions overlap with those that make fiscal adjustments sustainable and lower their costs.
The approach is very simple. Using Student’s t-tests, we compare averages of explanatory variables sub-sets distinguished by the risk premium changes. That is exactly what for example Alesina and Ardagna (2013) or Baldacci et al. (2011a, b) are doing, but we base our analysis on significantly broader set of variables (over 100 variables) and we supplement it with ANOVA analysis. The major drawback of our approach is that it provides only qualitative results. However, quantitative results for periods following fiscal tensions, when economy often does not work as usual, risks being of limited precision (and hence, reliability). Besides, to alleviate this drawback, we recall estimates from many other studies. Although those studies do not focus on fiscal tensions, the estimates allow one to form a view on order of magnitude of the impact of the factors that we find out significant. The strength of the approach is that it allows us to study any number of likely risk premium determinants and is robust to data gaps and non-linearities.

Nonetheless we have to stress that it has serious limitations, on top of only qualitative nature of results obtained. Most importantly, based on it, formulating any conclusions as to mechanisms or, especially, causality of any kind is not warranted. But this is not our goal: we simply aim at indicating which variables, used as explanatory variables in other studies, correlates with carefully identified fiscal stress and relaxation periods with different characteristics expressed in different risk premium dynamics.

The paper makes at least three contributions to the literature.

First, it examines a wide set of likely determinants of the risk premium. We check about a hundred of them, which is the vast majority that has ever been analysed.

Second, the paper focuses on periods of fiscal tensions. Understanding what influences the risk premium over exactly these periods is of particular importance. Success in reducing it may then bring particularly large gains while failure risks extreme pains. Although the literature points to a total of about a hundred risk premium determinants (see above), it does not address which of them play a key role in the periods of fiscal tensions.

Third, the paper combines two strands of the literature: one devoted to the risk premium determinants and the other concerning fiscal adjustments. In particular, it compares in what part risk premium determinants overlap over fiscal tensions with factors behind successful fiscal adjustments. Thus far, these two strands have largely developed in separation, even though they interrelate. Elevated risk premium should encourage fiscal adjustments, while their success or, conversely, failure, but also procrastination should affect the risk premium.

The remainder of the paper is organized as follows. Section two discusses (in more detail than above) the related literature. Section three presents our research strategy and briefly describes the data used. Section four provides the main findings and verifies their robustness. Section five concludes. The appendix, including figures and tables, follows.
2 Related literature

Our research primarily relates to the literature on risk premium determinants. They are very diverse. One can divide them into four main groups that relate to fiscal policy, monetary policy, institutional arrangements and macro environment respectively. Table 1 summarizes them. We briefly discuss them below. We draw from them in the next sections.

Taxes are the main source of government funding. Government’s ability to increase tax revenue reduces the risk of its default (Lemmen and Goodhart 1999). Tax law quality and its enforcement also matter as tax avoidance or evasion reduces that ability (von Hagen et al. 2002).

Deficit suggests that government can hardly finance all expenditure through taxes (Dumicic and Primorac 2011). Besides, it consumes domestic savings, as Ricardian equivalence hardly holds (Ardagna et al. 2007). Portfolio effect may also be at play as encouraging creditors to lend a larger part of their savings to the government may require a higher rate of return (Heppke-Falk and Hüfner 2004). Deficits accumulate in sovereign debt. The burden of servicing it crowds out other expenditure and thereby encourages government to default. Moreover, the government continuously rolls over its debt, which is not always easy or even possible (Dumicic and Primorac 2011).

As fiscal adjustments aim at reducing both deficit and debt burden (Guichard et al. 2007), they also reduce the risk premium. However, their effect also depends on how they affect growth (see below). Expenditure based adjustments widen the space to cover interest payments, while tax-based ones merely confirm its existence (Alesina and Perotti 1997). Cuts in social spending come across as more effective than in public investment as they are more likely to be growth-enhancing or, at least, growth-neutral (Agca and Igan 2013). They have also larger potential to signal the government’s determination to make public finances sustainable (Giavazzi and Pagano 1990).

As it comes to monetary policy, if inflation is high, it signals limited government’s ability to pay its liabilities through taxation or new debt (Cantor and Packer 1996). It reduces their real value while facilitating their repayment, as budget revenue is nominal and increases with inflation.

Given that inflation lowers real profits of creditors, they are likely to pay attention to monetary authorities independence which limits the risk of fiscal dominance (Haugh et al. 2009). Any arrangements that constrain the government’s discretion and improve its credibility seem to have similar effect (Kumar et al. 2007). They include the European Union membership (Luengnaruemitchai and Schadler 2007) and the Euro adoption (Kumar et al. 2007), even though the latter fails to strengthen fiscal discipline (Dumicic and Primorac 2011). Inside the euro area, the heterogeneity can be important notably between periphery and core countries (see Afonso et al. 2014). Other factors linked to monetary policy decisions, such as non-conventional monetary policy and its response to fiscal events also play a role (Afonso et al. 2018, 2020 or Afonso and Kazemi 2018).
| Factor                  | Publication                          | Countries          | Period            | Variable                                           | Impact on risk premium |
|-------------------------|--------------------------------------|--------------------|-------------------|----------------------------------------------------|------------------------|
| Government revenue      |                                      |                    |                   |                                                    |                        |
| Tax hikes               | Van Landschoot (2004)                | 7 EMU              | 1991–1999         | 1% increase in tax revenues                       | − 5 bps                |
|                         | Oliveira et al. (2012)               | 7 EMU              | 2000–2005         | 1p.p. increase in tax revenue as % of GDP         | − 27 bps               |
| Government spending     | Oliveira et al. (2012)               | 7 EMU              | 2000–2005         | 1p.p. increase in government spending as % of GDP | + 36 bps               |
|                         | Van Landschoot (2004)                | 7 EMU              | 1991–1999         | 1% increase in government spending                | + 12–18 bps            |
| Government consumption  | Born et al. (2015)                   | 38 emerging and developed | 1990–2014        | 1% cut in government consumption in fiscal stress | − 17 bps (long run)    |
|                         |                                      |                    |                   |                                                   | + 3 bps (short run)     |
|                         |                                      |                    |                   |                                                   | − 1 bps (long run)      |
|                         |                                      |                    |                   |                                                   | + 1 bps (short run)     |
| Social expenditure      | Dumicic and Primorac (2011)          | 8 new UE           | 2000–2010         | 1% increase in government spending                | + 6–13 bps             |
|                         | Oliveira et al. (2012)               | 7 EMU              | 2000–2005         | 1p.p. increase in social spending as % of GDP     | + 29 bps               |
| Government investment   | Van Landschoot (2004)                | 7 EMU              | 1988–1999         | 1% increase in government investment              | − 6–10 bps             |
| Unemployment            | V. Reinhart and Sack (2000)          | 19 OECD G7         | 1981–2000         | 1% increase in unemployment                       | + 18 bps               |
|                         |                                      |                    |                   |                                                   | + 36 bps               |
| Debt                    |                                      |                    |                   |                                                    |                        |
| Factor                  | Publication                        | Countries | Period         | Variable                                              | Impact on risk premium |
|------------------------|------------------------------------|-----------|----------------|-------------------------------------------------------|------------------------|
| Government debt        | Van Landschoot (2004)              | 7 EMU     | 1991–1999      | 1% increase in net debt                               | +2–4 bps               |
|                        | Dumicic and Primorac (2011)        | 8 new UE  | 2000–2010      | 1p.p. increase in debt to GDP ratio                   | irrelevant             |
|                        | Oliveira et al. (2012)             | 7 EMU     | 2000–2005      | 1p.p. increase in debt to GDP ratio                   | +49 bps                |
|                        | Engen and Hubbard (2005)           | USA       | 1976–2003      | 1p.p. increase in debt to GDP ratio                   | +3 bps                 |
|                        | Laubach (2009)                     | USA       | 1980–2009      | 1p.p. increase in debt to GDP ratio in fiscal projection | +3–4 bps               |
|                        | Ford and Laxton (1995)             | 9         | 1977–1997      | 1p.p. increase in debt to GDP ratio globally          | +14–49 bps (real 1-year rates) +15–27 bps real 1-year rates |
|                        | Codogno et al. (2003)              | 9 EMU     | n/a            | Debt to GDP ratio                                     | Small, statistically relevant increases for Austria, Italy and Spain |
|                        | Ardagna et al. (2007)              | 16 OECD   | 1960–2002      | Public debt                                           | Non-linear relationship +5–8 bps |
|                        | Chinn and Frankel (2003)           | G7        | 1998–2004      | 1% increase in net debt                               | +5–8 bps               |
|                        | Leigh et al (2010)                 | 17 OECD   | 1978–2010      | 1p.p. increase in debt to GDP ratio                   | −20 bps                |
|                        | Aizenman et al. (2013)             | 121       | 2005–2010      | 1 p.p. increase in public debt in relations to tax base | +14 bps                |
| Factor                  | Publication                  | Countries     | Period       | Variable                                      | Impact on risk premium                      |
|------------------------|------------------------------|----------------|--------------|-----------------------------------------------|---------------------------------------------|
|                        | Veld and Roeger (2013)       | 13 EU          | 2011         | 10p.p. increase in debt to GDP ratio          | Debt/GDP < 60%: irrelevant                  |
|                        |                              |                |              |                                               | Debt/GDP 60–90%: + 10 bps                  |
|                        |                              |                |              |                                               | Debt/GDP 90–120%: non-linear                |
|                        |                              |                |              |                                               | Debt /GDP > 120%: + 200 bps                |
|                        | Yuan and Pongsiri (2015)     | 36 developed   | 2005–2011    | 1p.p. increase in debt to GDP ratio           | +8 bps (CDS)                                |
|                        | Botta and Tori (2017)        | 28 developed   | 2007–2016    | Debt to GDP ratio and 10-year rate            | +4 bps for every 1 p.p. (monetary non-sovereign) |
|                        |                              |                |              |                                               | +0.7 bps for every 1 p.p. (monetary sovereign) |
|                        | De Grauwe and Ji (2013)      | Eurozone + 14 developed | 2000–2011 | 1p.p. increase in debt to GDP ratio          | + 7 bps (Eurozone, spread)                  |
|                        |                              |                |              |                                               | + 1 bps (monetary stand-alone, spread)      |
| Factor           | Publication                          | Countries | Period       | Variable                                                                 | Impact on risk premium                        |
|-----------------|--------------------------------------|-----------|--------------|--------------------------------------------------------------------------|-----------------------------------------------|
| Foreign debt    | Gruber and Kamin (2010)               | G7        | 1988–2007    | Increase in debt in accordance with fiscal projection for 2015          | +60 bps (USA)                                 |
|                 | Dumicic and Primorac (2011)           | 8 new UE  | 2000–2010    | 1p.p. increase in external debt                                         | Slightly less for G7                          |
|                 | Cantor and Packer (1996)              | 35        | 1992–1994    | Increase in external debt to exports ratio                              | Irrelevant                                    |
|                 |                                      |           |              |                                                                          | +60 bps                                       |
| Budget deficit  | Aizenman et al. (2013)                | 121       | 2005–2010    | 1p.p. increase in external debt to GDP ratio                            | +10–57 bps                                    |
|                 | Laubach (2009)                        | USA       | 1980–2009    | 1p.p. increase in budget deficit in relation to GDP in budget projection | +25 bps                                       |
|                 | Lindé (2001)                          | Sweden    | 1982–1996    | 1% increase in budget deficit                                           | +19–24 bps after 2 years (spread between long and short term interest rates) |
|                 | Gale and Orszag (2004)                | Literature review | 1% increase in projected budget deficit in relation to GDP | +20–60 bps                                   |
|                 | Canzoneri et al. (2002)               | USA       | 1960–2001    | 1% worse fiscal balance in projection for 5 to 10 years                  | +41–60 bps (spread between 10-year and 3-month rates) |
|                 | Dai and Philippon (2005)              | USA       | 1970–2003    | 1% increase in fiscal deficit sustained for 3 years                     | +20–60 bps                                   |
|                 | Thomas and Wu (2009)                  | USA       | n/a          | 1% increase in budget deficit in 5-year projection                      | +30–60 bps                                   |
|                 | Orr et al. (1995)                     | 17 OECD   | 1970–1994    | 1% increase in budget deficit                                           | +15 bps                                      |
| Factor                      | Publication                        | Countries      | Period          | Variable                                                                 | Impact on risk premium                                                                 |
|-----------------------------|------------------------------------|----------------|----------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Primary deficit            | V. Reinhart and Sack (2000)        | 19 OECD        | 1981–2000      | 1% better budget balance sustained in following years                   | − 9 bps (spread between 10-year and 3-month rates)                                      |
|                             |                                    |                |                |                                                                           | − 12 bps (spread between 10-year and 3-month rates)                                     |
|                             | Cantor and Packer (1996)           | 35             | 1992–1994      | Increase in budget deficit as percent of GDP                             | Increase in risk premium represented by worsening credit rating                          |
|                             | Aizenman et al. (2013)             | 121            | 2005–2010      | 1 p.p. increase in fiscal balance in relations to tax base               | −42–91 bps                                                                             |
|                             | Bernoth et al. (2006 and 2012)      | 12 EU          | 1991–2002      | 1 p.p. increase in fiscal deficit in relations to Germany               | + 3 bps                                                                                 |
|                             |                                    |                |                | 1-2 p.p. increase in fiscal deficit in relations to Germany               | + 5 bps                                                                                 |
|                             | Yuan and Pongsiri (2015)            | 36 developed   | 2005–2010      | 1 p.p. increase in fiscal balance                                       | − 18 bps                                                                               |
|                             | Cebula (2014)                      | USA            | 1960–2013      | 1 p.p. increase in fiscal deficit                                       | + 9 bps                                                                                |
|                             | Gale and Orszag (2004)             | USA            | 1950–2003      | 1% increase in primary deficit in relations to GDP                      | +40–70 bps                                                                             |
|                             | Ardagna et al. (2007)              | 16 OECD        | 1960–2002      | 1% increase in primary deficit                                          | + 10 bps                                                                               |
|                             | Botta and Tori (2017)              | 28 developed   | 2007–2016      | 1 p.p. increase in cyclically adjusted primary balance and 10-year rate | +36 bps (monetary non-sovereign)                                                     |
|                             |                                    |                |                |                                                                          | −14 bps (monetary sovereign)                                                          |
|                             | Yuan and Pongsiri (2015)            | 36 developed   | 2005–2010      | 1% increase in primary deficit                                          | irrelevant                                                                             |
| Factor                  | Publication                  | Countries   | Period     | Variable                                      | Impact on risk premium                  |
|------------------------|------------------------------|-------------|------------|-----------------------------------------------|------------------------------------------|
| Monetary policy        |                              |             |            |                                               |                                          |
| Money supply           | Cebula (2014)                | USA         | 1960–2013  | 1 p.p. increase in M2 money supply in t-1    | − 1 bps                                  |
| Currency               |                              |             |            |                                               |                                          |
| Exchange rate          | Yuan and Pongsiri (2015)     | 36 developed| 2005–2010  | 1 p.p. depreciation of local currency        | + 2 bps (ln(CDS Spread)) low statistical significance |
|                        | De Grauwe and Ji (2013)      | Eurozone + 14 developed | 2000–2011 | 1 p.p. increase in effective real exchange rate | + 1 bps (Eurozone, spread) + 0.1 bps (monetary stand-alone, spread) |
| EMU membership         | De Grauwe and Ji (2013)      | Eurozone + 14 developed | 2000–2011 | Difference between monetary stand-alone and dependent (EMU) countries | Interest rates in monetary dependent countries are more fragile to global and fundamental variables |
| Markets and regulations| Debt market liquidity        | Haugh et al. (2009) | 10 EMU     | Countries with less liquid government bond market | + 30–60 bps                              |
| Factor              | Publication                        | Countries       | Period          | Variable                                      | Impact on risk premium |
|---------------------|------------------------------------|-----------------|-----------------|-----------------------------------------------|------------------------|
| **Macro environment** |                                    |                 |                 |                                               |                        |
| Output growth       | Dumicic and Primorac (2011)        | 8 new UE        | 2000–2010       | 1% increase in GDP                           | − 4–6 bps             |
|                     | Cantor and Packer (1996)           | 35              | 1992–1994       | Output growth                                 | Increase in risk premium represented by worsening credit rating |
|                     | V. Reinhart and Sack (2000)        | 19 OECD         | 1981–2000       | Expected output growth higher than 1 p.p      | + 34 bps (spread between 10-year and 3-month rates) |
|                     |                                    | G7              |                 |                                               | + 35 bps (spread between 10-year and 3-month rates) |
|                     | Yuan and Pongsiri (2015)           | 36 developed    | 2005–2011       | 1p.p. increase in real GDP growth            | − 14 bps              |
|                     | Botta and Tori (2017)              | 28 developed    | 2007–2016       | Output growth                                 | positive              |
|                     | De Grauwe and Ji (2013)            | Eurozone + 14 developed | 2000–2011       | 1 p.p. increase in output growth             | − 7 bps (Eurozone, spread) |
|                     |                                    |                 |                 |                                               | − 2 bps (monetary stand-alone, spread) |
| Output gap          | Chinn and Frankel (2003)           | G7              | 1998–2004       | 1p.p. increase in output gap                 | + 11–44 bps           |
| Factor  | Publication                        | Countries | Period      | Variable                              | Impact on risk premium                  |
|---------|-----------------------------------|-----------|-------------|---------------------------------------|-----------------------------------------|
| Inflation | Landschoot (2004)                  | 7 EMU     | 1991–1999   | 1% increase in logarithm of inflation | +35–42 bps                              |
|         | Dumicic and Primorac (2011)        | 8 new UE  | 2000–2010   | 1 p.p. increase in inflation          | +3–4 bps (CDS)                          |
|         | Aizenman et al. (2013)             | 121       | 2005–2010   | 1 p.p. increase in inflation          | +30–39 bps (CDS)                        |
|         | Oliveira et al. (2012)             | 7 EMU     | 2000–2005   | 1 p.p. increase in inflation          | +93 bps                                 |
|         | Cantor and Packer (1996)           | 35        | 1992–1994   | Increase in inflation                 | Increase in risk premium represented by worsening credit rating |
|         | V. Reinhart and Sack (2000)        | 19 OECD   | 1981–2000   | 1 p.p. increase in inflation          | +25 bps (spread between 10-year and 3-month rates) |
|         |                                   | G7        | 1981–2000   |                                        | +28 bps (spread between 10-year and 3-month rates) |
|         | Oliveira et al. (2012)             | 7 EMU     | 2000–2005   | 1 p.p. increase in German government bonds yields | −43 bps                                 |
|         | Yuan and Pongsiri (2015)           | 36 developed | 2005–2011   | 1 p.p. increase in inflation          | +14–16bps ln(CDS Spread) (low statistical significance) |
| Reserves | Dumicic and Primorac (2011)        | 8 new EU  | 2000–2010   | 1% increase in currency reserves      | −4–8 bps                                |
| Factor                      | Publication                  | Countries       | Period       | Variable                                                                 | Impact on risk premium |
|----------------------------|------------------------------|-----------------|--------------|---------------------------------------------------------------------------|------------------------|
| Current account balance    | Landschoot (2004)            | 7 EMU           | 1991–1999    | 1% decrease in current account deficit                                     | −13–16 bps             |
|                            | Oliveira et al. (2012)       | 7 EMU           | 2000–2005    | Current account balance worse than Germany’s in previous year              | +136 bps               |
|                            | Orr et al (1995)             | 17 OECD         | 1970–1994    | 1% increase in current account deficit                                     | +15 bps                |
|                            | Yuan and Pongsiri (2015)     | 36 developed    | 2005–2011    | 1p.p. increase in current account balance                                 | irrelevant             |
|                            | Botta and Tori (2017)        | 28 developed    | 2007–2016    | Cumulated current account balance for 2007–2016                            | −5 bps. (monetary non-sovereign) |
|                            | De Grauwe and Ji (2013)      | Eurozone + 14 developed | 2000–2011 | 1 p.p. increase in accumulated current account/GDP ratio                 | −1 bps (Eurozone, spread) |
| EU membership              | Luengnaruemitchai and Schadler (2007) | 25 developed    | 1998–2006    | UE accession                                                              | −50–100 bps             |
|                            | Dumicic and Primorac (2011)  | 8 new EU        | 2000–2010    | Signing of Stability and Growth Pact                                       | Irrelevant (ln(CDS Spread)) |
|                            | Heppke-Falk and Hüfner (2004) | France, Italy, Germany |          |                                                                           | −3–8 bps (interest rate spread) |
| Crisis                     | Bruyckere et al. (2012)      | 16 European     | 2006–2011    | Fiscal and banking crisis in Europe                                       | Increase in correlation of risk premium between countries and banks, relationship stronger for countries with higher debt to GDP ratio |
| Industrial production      | Oliveira et al. 2012)        | 7 EMU           | 2000–2005    | 1% increase in logarithm of industrial production dynamics                | −24 bps                |
| Public finances transparency | Peat et al. (2015)           | 71              | 2005–2012    | No transparency in public finance                                         | +1–5 bps (CDS)         |
Effects of fiscal rules are found ambiguous. If they are to lower the risk premium, creditors have to believe that the government adhere to the rules. Such a belief is dubious, if the rules result in procyclical fiscal policy, which debt ceilings often do. Besides, governments can circumvent rules of any types (Wyplosz 2002) and fall in public finances’ transparency costs (Alesina 2010 and Peat et al. 2015).

Moving on to the macro environment, current account deficit means that domestic sectors depend on foreign savings (Oliveira et al. 2012). It increases a country’s vulnerability to external shocks, including the risk of sudden stops (Barrios et al. 2009; Cantor and Packer 1996; Dumicic and Primorac 2011). Hence, current account deficit decrease may be of help even if it results from a fall in import and not export increase (Gros 2013). Government’s ability to repay foreign debt depends on the strength of a local currency. If it appreciates, both foreign debt and its servicing costs in local currency fall (Ebner 2009).

All factors affecting economic growth simultaneously influence current and future tax revenue and sovereign debt burden (Oliveira et al. 2012). As the economy grows, so does the contribution of modern sectors to value added that is easier to tax, while the share of the traditional ones where tax evasion is relatively simple falls (Dumicic and Primorac 2011). Besides, growth is accompanied by a rising integration into international markets. This, on the one hand, helps the government cover its borrowing needs, and on the other hand, raises costs of default. The longer the credit history, the more to lose the government has in case of a default (Bulow and Rogoff 1989). Both lack of default and credit events have a very persistent effect on the risk premiums (Haugh et al. 2009).

According to some studies, international factors rather than domestic ones are the key determinants of the risk premium (see, e.g. Caceres et al. 2010). These studies suggest that risk aversion is of global nature and changes in the risk premium are not so much linked to changes in risk itself as to compensation required by creditors for taking it. This better explains contagion. Note that contagion can spread to both countries and sectors, as seen for example during the Global Financial Crisis (GFC; Attinasi et al. 2009).

Our research also relates to studies on fiscal adjustments, as we examine to what extent factors reducing the risk premium after fiscal tensions overlap with those that affect fiscal adjustments’ sustainability and their costs in terms of aggregate demand. Note that only a small part of those studies deals with the issue of the risk premium (see, e.g. Ahrend et al. 2006; Bi 2012; Gibert 2016).

Composition of adjustments matters (see, e.g. Barrell et al. 2012; Borys et al. 2014 or Boussard et al. 2012). Expenditure-based ones are more likely to be sustained and less likely to be costly in terms of aggregate demand than tax-based ones (see, e.g. Alesina and Perotti 1997; von Hagen et al. 2002 or Alesina and Ardagna 1998 or 2010).

Among expenditure, spending on wages and salaries has the weakest multiplier (see, e.g. Ardagna 2004). Social transfers go second (Barrell et al. 2012) and government consumption third (Auerbach and Gorodnichenko 2012) on that score. Public investment has the strongest multiplier (Auerbach and Gorodnichenko 2012) and is therefore suggested to be the last to be cut (Hagemann 2012). Note, however, that fiscal adjustments may differ in their effects depending on whether they
are accompanied by an expansionary or a contractionary monetary policy (see, e.g. Afonso and Jalles 2014 or Afonso and Martins 2016).

Thus, spending multipliers are not constant (Afonso and Leal 2020 or Favero and Karamysheva 2015). Most generally, they depend on economic conditions although the relationship is hardly unequivocal. They are low when the economy is growing fast (see, e.g. Alesina and Ardagna 2013). However, weak domestic demand in the period preceding fiscal adjustment does not necessarily raise its costs (see, e.g. Alesina and Perotti 1997 or Segura-Ubiergo et al. 2006). That said, spending multipliers generally increase during recessions (see, e.g. Auerbach and Gorodnichenko 2012; Gechert and Rannenberg 2018; Heimberger 2017, Müller 2014a or Müller 2014b). An adjustment can then even raise a sovereign debt burden due to aggregate demand falling faster than the debt (see, e.g. Fatás and Summers 2018). They may be particularly strong where short term interest rates are at the zero lower bound, or more generally, an effective lower bound (ELB), because of large spare capacity (see, e.g. DeLong and Summers 2012) or no crowding out effect (see, e.g. Christiano et al. 2011). The longer the ELB binds, the larger the multipliers (see, e.g. Eggertsson 2010 or Woodford 2011). However, they fall when government expenditure increases rapidly, a change in fiscal stance is perceived to be long-lasting (see, e.g. Cwik and Wieland 2011), sovereign debt affects lending rates via the risk premium (see, e.g. Corsetti et al. 2014) or the ELB binds because of economic agents’ pessimism (see, e.g. Mertens and Ravn 2014). Thus, fall in real interest rates is not necessary to avoid a deep aggregate demand contraction after fiscal adjustment (see, e.g. Giudice et al. 2003). Spending multipliers are stronger in large (see, e.g. Barell et al. 2012) or more closed economies (Born et al. 2013) with fixed exchange rate than in small open economies with free floating one. Export growth is a key factor for economic performance during the adjustment (see, e.g. Leigh et al. 2010). If the adjustment changes export via exchange rate, then this change can be partly offset by a change in a foreign currency debt burden. However, the latter effect hardly dominates the former, at least in the OECD countries where FX debt accounts for a small proportion of total debt (see, e.g. Lambertini and Tavares 2005). Spending multipliers fall with debt rising (Ilzetzki et al. 2013) and may even become negative when it exceeds a certain threshold. Some countries may have no choice but to cut expenditure (see, e.g. Padoan et al. 2012). Some claim that the so-called ‘expansionary austerity’ is then possible (see, e.g. Alesina et al. 2018; for critical view on that see, e.g. Botta and Tori 2018 or Guajardo et al. 2014). That said, during the sovereign debt crisis in the Euro area, they ranged from 1.2 to 1.5 according to some estimates (Gechert et al. 2019) and were much higher than policymakers assumed, at least at the beginning of the crisis (Belke et al. 2015).

Tax multipliers seem to change less than expenditure ones thus making tax hikes relatively more attractive in recessions (Blanchard and Leigh 2013). Indirect taxes have less negative multipliers than direct taxes (Barrell et al. 2012). Hence, an increase in the former may both improve fiscal stance and stimulate aggregate demand if accompanied by an appropriate reduction in the latter. The so-called ‘fiscal devaluation’ works (see, e.g. Cizkowicz et al. 2020).

Fiscal devaluation is an option to improve competitiveness especially for members of common currency areas (Mooij and Keen 2012). Elsewhere, especially in
countries with no firmly anchored inflation expectations, prices pushed up by an indirect tax hike can prompt the central bank to raise interest rates in spite of weak aggregate demand (see, e.g. Leigh et al. 2010). That said, the lack of control over monetary policy makes monetary union’s members more fragile to various shocks. The members resemble emerging economies issuing FX debt in this respect (see, e.g. De Grauwe and Ji 2012).

Some claim (see, e.g. Ardagna 2004; Alesina and Ardagna 2013; Borys et al. 2014; Mertens and Ravn 2014 or Perotti 2011) that supply side policies can mitigate fiscal adjustments costs. In particular, product market deregulation, if properly implemented, can increase consumption. Labour market liberalization can weaken wage pressure, thereby improving domestic firms’ competitiveness and their ability and propensity to invest. Restricting various interest groups’ rights, given how politically difficult it is, helps convince creditors of the government’s determination to sustain fiscal adjustment via so-called ‘signalling effect’. Lastly, these policies are devoid of the risk of ingraining pessimism, if it is responsible for aggregate demand weakness.

The literature on fiscal adjustments deals only with the part of fiscal tensions that prompted authorities to respond. It does not refer to the rest of them, i.e. those tensions that the authorities (strive to) ignore, betting for resurrection. We are interested in fiscal tensions at large. Thus our study also relates to the literature on fiscal crises. They are most often defined as events of default on payments of sovereign debt, repudiation, or debt restructuring into terms less favourable to creditors than originally set (Reinhart and Rogoff 2011). One extends the basic definition to cover more cases of sovereign debt unsustainability. The following are especially considered to be symptoms of fiscal crises: use of international financial aid, inflation significantly above average, and a sharp increase in bond yields (see Baldacci et al. 2011a; Baldacci et al. 2011b; and Pescatori and Sy 2007). Cottarelli (2011) adds to this list criteria that relate to sovereign debt, budget and current account deficits, GDP growth, and other types of crisis. In particular, banking crises are found to precede fiscal crises (see, e.g. Claessens and Kose 2013).

### 3 Research strategy and data

We use the simplest possible measure of the risk premium, that is the spread between the yield on 10-year zero-coupon government bonds and the risk-free rate. We approximate the risk-free rate with the respective yield in Switzerland. This is the only country in our sample without any fiscal tensions identified. It had the lowest yield for most of the period considered and the least volatile, especially between 1978 and 1985, when a large part of identified fiscal tensions occurred. The bonds considered have similar parameters except for currency of issuance. FX issues are mainly denominated in US dollar or euro, account for only a small fraction of global sovereign debt market, are often illiquid, and first of all uncommon among advanced economies that we study (c.f., e.g. Burger and Warnock 2006).

The measure of the risk premium we use is the most common in the literature, as it allows to study a large sample of countries over a long period (see, e.g. Afonso
et al 2015; Haugh et al 2009; Oliveira et al. 2012 or Peter and Grandes 2005). Its weakness is that it covers the whole bunch of risks (that are interrelated and partly overlap). In addition to the three most often discussed, i.e. credit risk (Lemmen and Goodhart 1999), liquidity risk (Fabozzi 2015) and time premium (Bernanke 2013), it contains inflation risk (Hördahl and Tristani 2012), downgrade risk (Fabozzi 2015), rollover risk (Bocola and Dovis 2019) and credit spread risk (Barrios et al. 2009). We cannot use CDS spreads that are devoid of this weakness and due to that have become a more and more popular measure of the risk premium in recent years (see, e.g. Aizenman et al. 2013; Barrios et al. 2009; Caceres et al. 2010; Yuan and Pongsiri 2015). The data on CDS is available since 2005 (at the earliest) and their market gained liquidity only in 2008, that is long after most fiscal tensions we identify occurred.

We consider a given year to be a period of fiscal tensions if the following three criteria are jointly met:

(i) long-term interest rates increase by at least one-tenth;
(ii) sovereign debt increases by at least 1.5% GDP in at least one year in a four-year period starting a year before the rate increase;
(iii) at least one of the following happens:

- in a given, preceding or following year inflation increases by one third and exceeds 2% or exchange rate depreciates by 10%;
- in a given or preceding year a crisis of other types, as defined by Reinhart and Rogoff (2011), breaks out.

As mentioned in the introduction, we extend the definition of fiscal crises by criteria based on Baldacci et al. (2011a), Baldacci et al. (2011b) and Cottarelli (2011). However, we assume much lower numerical values than those studies do. We calibrate the values so that our definition would embrace in particular events in Greece, Ireland, Italy, Portugal and Spain in 2011. If we used typical values, it would cover neither these nor similar events. However, as our definition is less stringent, we prefer a notion of ‘fiscal tensions’ to one of ‘fiscal crisis’ that the above studies use. Due to all that discretion, we check how robust our results are, if we study fiscal adjustments instead. We identify them, as mentioned in the introduction, using an action-based method developed by Alesina and Ardagna (2013), Alesina et al. (2017) and Devries et al. (2011).

Once we identify fiscal tensions, we divide the years around them into two types of periods: ‘stress’ periods and ‘relaxation’ periods. They cover the years of risk premium sharp increase and its deceleration or fall respectively. The ‘stress’ period starts up to two years before a year of identified fiscal tensions and lasts until the strongest one-year increase in the risk premium. The ‘relaxation’ period follows and lasts until the risk premium falls to the initial level or another ‘stress’ period begins.

1 To the periods of fiscal tension identified by our definition we add two, which it does not capture but are discussed in the literature. They occurred in the United States in 1994 and Spain in 1995 (Hauptmeier et al. 2007).
We focus on the latter periods, but we verify the robustness of our findings to a change in the definition of the ‘stress’ period and, as a result, the ‘relaxation’ period. Namely, we alternatively assume that the former lasts until the risk premium reaches its local maximum.

Our sample covers 22 OECD countries in years 1978–2017. It is described in more details by figure A in supplementary materials. The figure summarizes fiscal tensions and their sources, presents changes in long term interest rates and sovereign debt, and indicates ‘relaxation’ periods.

The method we use to establish factors influencing the risk premium following fiscal tensions is fairly simple. It is similar to that often used in studies on fiscal adjustments (see, e.g. Alesina and Ardagna 2013 or Alesina et al. 2012), as we want to compare our results with theirs. Namely, using the Student’s t-tests, we compare averages of explanatory variables sub-sets distinguished by risk premium changes in ‘relaxation’ periods below and above median respectively. Note that risk premium changes below median stand for its deeper falls. We compare three pairs of averages corresponding to three groups of years: a year before, of and after deeper falls in the risk premium respectively. This allows us to examine whether factors that favour or, conversely, counteract the falls in the risk premium over ‘relaxation’ periods work with a lag, instantaneously or in advance. Seen from a different angle, we study initial conditions, deeper falls themselves, as well as possible signalling effects of factors announced but not yet introduced.

Based on previous studies (discussed in Section two), we examine about a hundred likely determinants of the risk premium. Table 2 contains the full list of variables studied and their data sources, while Table 3 presents their descriptive statistics.

As it comes to main fiscal variables, we adjust them for the cyclical component. We use the procedure proposed by Blanchard (1993), as many studies on fiscal adjustments do (see, e.g. Alesina and Perotti 1997 or Alesina et al. 2012). Since cyclical adjustment truncates the sample due to missing data, we report results for both raw and cyclically adjusted data (the latter are marked as ‘c.a.’) However, we treat the conclusions based on unadjusted data with great caution.

We check the robustness of our findings in several ways. First, we tighten the definition of deeper falls in the risk premium. We define them as changes from the first quartile. Second, we examine to what extent our findings result from a possible presence of outliers. Although for advanced economies such observations do not reflect poor data quality and their removal could, therefore, be questioned (High 2000), it would also not be justified to generalize results which are only valid in extreme cases. We consider a given observation as an outlier if it deviates from the mean by not less than three standard deviations (c.f. Osborne and Overbay 2004). Third and fourth, as mentioned above, we modify the definition of ‘stress’ period and – as a

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2 To make sure that links between the risk premium and the fiscal variables are not spurious and merely reflect a dependence of both on economic activity, we additionally carry out two-way factorial ANOVA analysis. We analyse the risk premium in four possible combinations of economic activity and a given fiscal variable. We can provide the results upon request.
result – ‘relaxation’ period; we also verify whether factors shaping the risk premium change, if one studies periods of fiscal adjustments instead, as defined by Alesina and Ardagna (2013), Alesina et al. (2017) and Devries et al. (2011). Fifth, we alter the examination of the role of initial conditions. For this purpose, we assign to each year of ‘relaxation’ period the value of the variable considered from the last year of the relevant ‘stress’ period.3

4 Results and their robustness

Table 4 provides the baseline results. It follows that the risk premium after fiscal tensions fell more in countries with lower government revenue, especially from taxes on goods and services, including VAT, and lower government expenditure, including social spending, which is particularly difficult to cut. Deeper falls in the risk premium were preceded by VAT increases, which cause relatively little distortions, and cuts in primary expenditure, resulting in an improvement in the primary balance. In case of remaining changes in the risk premium, VAT receipts decreased, primary expenditure increased, and the primary balance deteriorated.

3 We are aware that such an approach overestimates the statistical significance of the results obtained, for it overstates the number of observations. Otherwise, however, the sample would be severely truncated. Any missing data on the risk premium would eliminate a given ‘relaxation’ period instead of just one annual observation. Before deciding, we weighed up both these problems.
### Table 2  Variable definitions

| Variable                          | Description                                                                 | Source                          | Comment                                                                                                                                 |
|----------------------------------|-----------------------------------------------------------------------------|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| **Fiscal adjustment**            |                                                                             |                                 | No data for Greece, Norway and New Zealand                                                                                                                                                   |
| Fiscal adjustment                | 1 for adjustment year, 0 in remaining cases                                 | Devries et al. (2011); Alesina et al. (2017) |                                                                                                                                         |
| Beginning of the adjustment      | 1 for first year of adjustment, 0 for the rest                              |                                 |                                                                                                                                         |
| Size of adjustment               | % GDP,                                                                      |                                 |                                                                                                                                         |
| Spending cuts                    | 0 for years with no consolidation                                          |                                 |                                                                                                                                         |
| Tax hikes                         |                                                                             |                                 |                                                                                                                                         |
| Share of spending cuts in consolidation | The size of expenditure cuts to the size of consolidation              |                                 | Consolidations with more than 50% of their value achieved by tax increases were considered tax-based. Remaining consolidations were classified as expenditure-based |
| **Revenue**                      |                                                                             |                                 |                                                                                                                                         |
| Government revenue               | % GDP                                                                       | Mauro et al. (2013)             | To 2011; total general government revenue                                                                                             |
|                                 |                                                                             | Eurostat                        | From 2012; total general government revenue                                                                                           |
| VAT revenue                      |                                                                             | OECD Statistics                 | Value added taxes                                                                                                                     |
| Goods and services taxation      |                                                                             |                                 | All taxes on goods and services                                                                                                       |
| Income taxation                  |                                                                             |                                 | All taxes on income and profits                                                                                                       |
| CIT                              |                                                                             |                                 | Corporate income tax                                                                                                                 |
| Capital gains taxation           |                                                                             |                                 | Taxes on capital gains of individuals                                                                                                 |
| Property taxation                |                                                                             |                                 | Taxes on property                                                                                                                     |
| Financial transaction taxation   |                                                                             |                                 | Taxes on financial and capital transactions                                                                                           |
| Social contributions             |                                                                             |                                 | Social security contributions                                                                                                         |
| Variable             | Description              | Source                                      | Comment                                      |
|----------------------|--------------------------|---------------------------------------------|----------------------------------------------|
| **Expenditure**      |                          |                                             |                                              |
| Government expenditure | % GDP                   | Mauro et al. (2013)                         | To 2011; total general government expenditure |
|                      |                          | Eurostat                                   | From 2012; total general government expenditure |
| Primary expenditure |                          | Mauro et al. (2013)                         | To 2011                                     |
|                      |                          | Own calculations                           | From 2012; difference between government expenditure and debt servicing cost |
| Government consumption | % GDP                   | WDI                                         | General government final consumption expenditure |
| Government investment | Current prices LCU      | OECD Statistics                             | Gross fixed capital formation; used to calculate government investment to GDP ratio |
| Government payroll   | % GDP                    | Eurostat                                   | From 1990; general government compensation of employees |
| Transfers            | % government expenditure | Cusack (1998)                              | To 1996, fills gaps in Eurostat data         |
| Social spending      | % GDP                    | OECD Statistics                             | From 1990; subsidies and other transfers    |
|                      |                          | Samanni et al. (2012)                      | General government social expenditure        |
| **Sovereign debt**   |                          |                                             |                                              |
| Fiscal rules         | Indicator, higher value means stricter fiscal rules | European Commission                       | European countries from 1990; standardized fiscal rules index |
| Debt                 | % GDP                    | Reinhart and Rogoff (2011)                 | To 2010                                     |
|                      |                          | WDI                                        | From 2011; central government debt          |
| Primary balance      |                          | Mauro et al. 2013                          | To 2011; general government primary balance |
| Variable                          | Description                                      | Source                              | Comment                                                               |
|----------------------------------|--------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------|
| IMF WEO                          | From 2012; general government primary balance    |                                     |                                                                       |
| Debt servicing cost              | % GDP                                            | IMF WEO                             | From 2012; interest paid on sovereign debt calculated as difference between balance and primary balance |
| Mauro et al. (2013)              | To 2011; interest paid on sovereign debt          |                                     |                                                                       |
| Monetary policy                  |                                                  |                                     |                                                                       |
| Short term interest rate         | 3 M interest rate                                 | OECD Statistics                     |                                                                       |
| M3                               | Index: 2010 = 100                                 |                                     | Broad Money (M3)                                                      |
| Central bank independence        | Indicator, higher means stronger independence     | Garriga (2016)                      | From 1979 To 2012                                                    |
| Exchange rate                    | Exchanged rate                                   | BIS                                 | BIS effective exchange rate (EER); narrow indices                     |
| Exchange rate regime             | 3-way classification used (float, fix, intermediate) | Levy-Yeyati and Sturzenegger (2016) | Index 3-Way Classification                                            |
| EMU                              | 1 for European monetary Union Members, 0 for the rest of countries | Own calculations                    |                                                                       |
| Markets and regulations          |                                                  |                                     |                                                                       |
| Degree of economic globalization | Indicator, higher means more integrated           | Teorell et al. (2018)               | To 2014; Economic Globalization Index                                |
| Unemployment                     | % labor force                                     | OECD Statistics                     | Unemployment rate                                                     |
| Unit labor cost                  | Index: 2005 = 100                                 |                                     |                                                                       |
| Employment protection            | Indicator, higher means stronger protection       |                                     | From 1985 to 2015; strictness of employment protection – individual and collective dismissals (regular contracts) |
| Union density                    | % workers belonging to labor unions               |                                     |                                                                       |
| Variable                              | Description                                                | Source                        | Comment                                      |
|---------------------------------------|-------------------------------------------------------------|-------------------------------|----------------------------------------------|
| Retirement age                        | Average effective retirement age                            | OECD Statistics               |                                              |
| Government bond market capitalization | % GDP                                                       | Beck et al. (1999)            | To 1999; public bond market capitalization   |
| Barriers to entry                     | Value between 0 and 3, higher means lower barriers          | Detragiache et al. (2008)    | To 2005                                      |
| Degree of privatization               | Value between 0 and 3, higher means lower percentage of banks owned by the government |                                              |                                              |
| Degree of financial market reform     | Financial Reform Index, normalized to be between 0 and 1; higher means higher degree of reforms |                                              |                                              |
| Quality of government                 | Indicator with values between 0 and 1 taking into account corruption, quality of the law and bureaucracy | Teorell et al. (2018)        | From 1984; ICRG indicator of Quality of Government |
| Financial markets openness            | Indicator, higher means more opened financial markets       | Chinn and Ito (2006)         | Updated to 2015; Chinn-Ito index             |

**Macro environment**

| Variable                              | Description                                                | Source                        | Comment                                      |
|---------------------------------------|-------------------------------------------------------------|-------------------------------|----------------------------------------------|
| GDP                                   | In current prices, LCU                                      | WDI                           | For calculation purposes                     |
| Output gap                            | % potential output                                          | OECD Statistics               | Output gap of the total economy              |
| Exports                               | % GDP                                                       | WDI                           | Exports of goods and services                |
| Savings                               | % GDP                                                       | WDI                           | Gross savings                                |
| Investment                            |                                                            |                                | Gross fixed capital formation               |
| Consumption                           |                                                            |                                | Final consumption expenditure               |
| Inflation                             | % (year on year)                                            | OECD Statistics               | Consumer prices                              |
| Industrial production                 | Index, 2010 = 100                                           | OECD Statistics               |                                              |
| Current account balance               | % GDP                                                       | WDI                           |                                              |
### Table 2 (continued)

| Variable               | Description                                      | Source                                      | Comment                                                                 |
|------------------------|--------------------------------------------------|----------------------------------------------|--------------------------------------------------------------------------|
| Crisis                 | 1 for crisis years, 0 for the rest               | Reinhart and Rogoff (2011)                  | To 2010; inflation, currency crash, currency debasement, banking crisis |
| UE membership          | 1 for members, 0 for non-members                 | Own calculations                            |                                                                          |
| VIX                    | Implied market volatility                        | Bloomberg Professional                      | From 1990; CBOE Volatility Index                                        |
| Memo: Long term interest rates | Average yield on 10-years government bond or other described as long-term | WDI                                         |                                                                          |
### Table 3  Descriptive statistics

|                              | N     | Min  | Max   | Mean  | SD   |
|------------------------------|-------|------|-------|-------|------|
| **Fiscal consolidation**     |       |      |       |       |      |
| Fiscal consolidation (dummy) | 819   | 0.00 | 1.00  | 0.25  | 0.43 |
| Size of consolidation (% GDP)| 819   | −0.75| 4.74  | 0.26  | 0.67 |
| Spending cuts (% GDP)        | 819   | −0.29| 3.71  | 0.16  | 0.44 |
| Tax hikes (% GDP)            | 819   | −0.75| 3.40  | 0.11  | 0.36 |
| Share of spending cuts in total consolidation (%)| 206   | 0.00 | 1.00  | 0.53  | 0.36 |
| **Revenue**                  |       |      |       |       |      |
| Government revenue (% GDP)   | 798   | 12.59| 60.55 | 42.11 | 8.98 |
| VAT (% GDP)                  | 789   | 0.00 | 10.01 | 5.62  | 2.86 |
| Goods and services taxation (% GDP) | 798 | 3.57 | 16.89 | 10.53 | 2.88 |
| Income taxation (% GDP)      | 717   | 2.07 | 26.27 | 10.83 | 4.57 |
| CIT (% GDP)                  | 788   | 0.00 | 12.60 | 2.83  | 1.48 |
| Capital gains taxation (% GDP)| 731   | 0.00 | 1.70  | 0.10  | 0.26 |
| Property taxation (% GDP)    | 798   | 0.30 | 7.33  | 1.93  | 0.97 |
| Financial transactions taxation (% GDP) | 801 | 0.00 | 1.95  | 0.48  | 0.35 |
| Social contributions (% GDP) | 719   | 0.01 | 19.17 | 9.74  | 4.32 |
| **Expenditure**              |       |      |       |       |      |
| Government expenditure (% GDP)| 787 | 12.83| 71.72 | 45.16 | 8.51 |
| Primary expenditure (% GDP)  | 787   | 12.68| 66.04 | 41.39 | 8.17 |
| Government consumption (% GDP)| 719 | 12.01| 27.94 | 20.03 | 3.17 |
| Government investment (% GDP)| 383  | 1.50 | 5.90  | 3.50  | 0.90 |
| Government Payroll (% GDP)   | 654   | 7.00 | 20.45 | 12.37 | 2.58 |
| Transfers (% expenditure)    | 488   | 12.20| 82.22 | 56.95 | 16.48 |
| Social spending (% GDP)       | 787   | 6.77 | 34.20 | 20.24 | 5.52 |
| **Debt**                     |       |      |       |       |      |
| Fiscal rules (indicator)     | 364   | −0.95| 3.41  | 0.04  | 0.89 |
| Debt (% GDP)                 | 779   | 4.48 | 218.32| 55.59 | 34.81|
| Primary Balance (% GDP)      | 819   | −28.18| 20.57 | 0.72  | 4.09 |
| Debt servicing cost (% GDP)  | 819   | −2.47| 12.66 | 3.67  | 2.49 |
| **Monetary policy**          |       |      |       |       |      |
| Short term interest rate (p.p.)| 688 | 0.00 | 23.31 | 6.12  | 4.76 |
| M3 (index)                   | 354   | 2.15 | 170.89| 57.37 | 40.43|
| Central bank independence (indicator) | 720 | 0.08 | 0.80  | 0.49  | 0.21|
| **Exchange rate**            |       |      |       |       |      |
| Exchange rate (dummy)        | 819   | 32.72| 763.65| 108.89| 54.27|
| Fixed regime (dummy)         | 779   | 0.00 | 1.00  | 0.28  | 0.45 |
| Intermediate regime (dummy)  | 779   | 0.00 | 1.00  | 0.13  | 0.34 |
| Floating regime (dummy)      | 779   | 0.00 | 1.00  | 0.57  | 0.50 |
| EMU (dummy)                  | 819   | 0.00 | 1.00  | 0.28  | 0.45 |
| **Markets and regulations**  |       |      |       |       |      |
| Degree of economic globalization (indicator) | 745 | 34.63 | 97.25 | 73.11 | 13.20|
| Unemployment (%)             | 745   | 1.46 | 27.47 | 7.77  | 4.09 |
While VAT increases helped to lower the risk premium, increases in other taxes, including income taxes, did not. No signalling effect was associated with changes in fiscal variables. As governments under pressure of fiscal tensions did not differ in their promises to alleviate them, it was only the implementation of the promises that reduced the risk premium.

Fiscal adjustments, as defined by Alesina and Ardagna (2013), Alesina et al. (2017), and Devries et al. (2011), preceded most of the deeper falls in the risk premium and a minority of the remaining changes. Those adjustments were also on average more than twice as strong in the former case as in the latter. The composition of the adjustments was similar. In both cases, expenditure cuts outweighed tax increases. However, the deeper falls in the risk premium were preceded and accompanied by twice as large expenditure cuts.

Sovereign debt did not differ significantly between periods of deeper falls in the risk premium and its remaining changes. Fiscal rules did not play any role either, which is understandable given that they did not prevent fiscal tensions. However, tightening fiscal rules in response to fiscal tensions helped to lower the risk

| Table 3 (continued) |
|---------------------|
|                      | N  | Min | Max  | Mean | SD  |
| Unit labour cost     | 765| 23.19| 161.05| 79.29| 26.54|
| Employment protection (indicator) | 575| 0.26 | 5.00 | 2.15 | 0.93 |
| Union density (%)    | 753| 0.00 | 87.40| 38.55| 20.70|
| Retirement age       | 778| 56.70| 70.66| 62.79| 2.58 |
| Government bond market capitalization (% GDP) | 437| 4.24 | 218.86| 45.56| 27.77|
| Barriers to entry (indicator) | 580| 0.00 | 3.00 | 2.24 | 0.97 |
| Degree of privatization (indicator) | 580| 0.00 | 3.00 | 1.85 | 1.14 |
| Degree of financial market reform (indicator) | 580| 0.10 | 1.00 | 0.73 | 0.25 |
| Quality of government (indicator) | 819| 0.00 | 1.00 | 0.72 | 0.35 |
| Financial markets openness (indicator) | 779| −1.90| 2.37 | 1.66 | 1.10 |

**Macro environment**

| Change in GDP (%)         | 798| −11.70| 35.00 | 2.30 | 3.30 |
| Output gap (%)            | 657| −18.43| 9.84  | −0.53| 3.19 |
| Exports (% GDP)           | 799| 6.98  | 124.64| 33.37| 18.48|
| Savings (% GDP)           | 663| 4.87  | 41.69 | 23.11| 5.17 |
| Investment (% GDP)        | 799| 11.52 | 37.22 | 22.85| 3.52 |
| Consumption (% GDP)       | 779| 45.32 | 91.67 | 75.66| 5.62 |
| CPI (%)                   | 798| −4.48 | 28.78 | 4.40 | 4.79 |
| Change in industrial production (%) | 816| −21.00| 36.90 | 1.90 | 4.50 |
| Current account balance (% GDP) | 663| −14.65| 16.19 | −0.13| 4.48 |
| Crisis (dummy)            | 578| 0.00  | 1.00  | 0.42 | 0.49 |
| EU (dummy)                | 819| 0.00  | 1.00  | 0.61 | 0.49 |
| VIX                       | 559| 11.04 | 31.79 | 19.51| 5.84 |
| Memo: Long term interest rate (%) | 742| −0.07 | 27.55 | 6.97 | 4.54 |
### Table 4: Determinants of changes in the risk premium following fiscal tensions. Baseline results

|                          | \( T^{-1} \) | \( T \) | \( T+1 \) |
|--------------------------|-------------|--------|----------|
|                          | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( N_{<M} \) | \( N_{>M} \) | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( N_{<M} \) | \( N_{>M} \) | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( N_{<M} \) | \( N_{>M} \) |
| **Fiscal consolidation** | 0.18 | 0.08 | 0.06 | 77 | 84 | 0.09 | 0.18 | 0.12 | 74 | 83 | 0.10 | 0.14 | 0.37 | 72 | 83 |
| **Start of consolidation** | 0.56 | 0.38 | 0.02 | 77 | 84 | 0.57 | 0.45 | 0.13 | 74 | 83 | 0.54 | 0.53 | 0.89 | 72 | 83 |
| **Consolidation (% GDP)** | 0.73 | 0.32 | 0.00 | 76 | 82 | 0.66 | 0.48 | 0.2 | 72 | 82 | 0.53 | 0.60 | 0.67 | 68 | 82 |
| **Size of expenditure cuts (% GDP)** | 0.41 | 0.18 | 0.01 | 76 | 82 | 0.47 | 0.23 | 0.02 | 72 | 82 | 0.40 | 0.39 | 0.90 | 68 | 82 |
| **Size of tax hikes (% GDP)** | 0.32 | 0.14 | 0.02 | 76 | 82 | 0.19 | 0.25 | 0.47 | 72 | 82 | 0.13 | 0.21 | 0.27 | 68 | 82 |
| **Share of expenditure cuts in total consolidation (%)** | 0.52 | 0.55 | 0.78 | 42 | 30 | 0.61 | 0.51 | 0.23 | 40 | 36 | 0.69 | 0.58 | 0.14 | 35 | 43 |
| **Budget revenue (% GDP)** | 41.52 | 44.60 | 0.01 | 93 | 93 | 41.77 | 44.63 | 0.02 | 92 | 93 | 41.63 | 44.71 | 0.01 | 91 | 93 |
| **Change in government revenue (% GDP)** | 0.52 | 0.00 | 0.93 | 93 | 93 | 0.35 | 0.03 | 0.06 | 92 | 93 | -0.05 | 0.08 | 0.42 | 91 | 93 |
| **Budget revenue c.a. (% GDP)** | 40.10 | 43.43 | 0.00 | 74 | 81 | 40.38 | 43.39 | 0.01 | 76 | 80 | 40.10 | 43.40 | 0.00 | 77 | 83 |
| **Change in budget revenue c.a. (% GDP)** | 0.29 | 0.02 | 0.21 | 73 | 77 | -0.02 | -0.07 | 0.81 | 73 | 80 | -0.31 | -0.13 | 0.41 | 76 | 80 |
| **VAT revenue (% GDP)** | 4.86 | 5.61 | 0.10 | 92 | 93 | 4.89 | 5.63 | 0.10 | 92 | 93 | 5.03 | 5.67 | 0.16 | 92 | 93 |
| **Change in VAT (% GDP)** | 0.16 | -0.04 | 0.03 | 92 | 93 | 0.12 | 0.03 | 0.27 | 91 | 93 | 0.14 | 0.05 | 0.35 | 91 | 92 |
| **Revenue from VAT c.a. (% GDP)** | 4.79 | 5.63 | 0.08 | 74 | 81 | 4.98 | 5.66 | 0.16 | 76 | 80 | 5.02 | 5.82 | 0.08 | 77 | 83 |
| **Change in VAT c.a. (% GDP)** | 0.14 | -0.05 | 0.04 | 73 | 77 | 0.07 | 0.02 | 0.57 | 73 | 80 | 0.04 | 0.09 | 0.69 | 76 | 80 |
| **Taxation of goods and services (% GDP)** | 10.17 | 10.59 | 0.30 | 93 | 93 | 10.2 | 10.64 | 0.28 | 92 | 93 | 10.22 | 10.66 | 0.28 | 91 | 93 |
| **Change in the tax of goods and services (% GDP)** | 0.09 | -0.06 | 0.05 | 93 | 93 | 0.08 | 0.05 | 0.63 | 92 | 93 | 0.08 | 0.02 | 0.44 | 91 | 93 |
| **Taxation of goods and services c.a. (% GDP)** | 9.66 | 10.37 | 0.10 | 74 | 81 | 9.76 | 10.34 | 0.18 | 76 | 80 | 9.81 | 10.48 | 0.13 | 77 | 83 |
| **Change in the tax of goods and services c.a. (% GDP)** | 0.01 | -0.07 | 0.21 | 73 | 77 | -0.04 | 0.02 | 0.43 | 73 | 80 | -0.01 | 0.00 | 0.93 | 76 | 80 |
| **Income tax revenues (% GDP)** | 10.87 | 10.80 | 0.90 | 90 | 92 | 10.74 | 10.78 | 0.95 | 90 | 92 | 10.64 | 10.77 | 0.84 | 90 | 91 |
| **Change in income tax (% GDP)** | 0.04 | 0.02 | 0.79 | 90 | 92 | -0.07 | -0.02 | 0.54 | 89 | 92 | -0.10 | -0.07 | 0.68 | 89 | 91 |
| **Income tax revenue c.a. (% GDP)** | 9.87 | 10.50 | 0.31 | 72 | 80 | 10.08 | 10.47 | 0.53 | 74 | 79 | 10.05 | 10.54 | 0.42 | 75 | 82 |
| **Change in income tax c.a. (% GDP)** | 0.01 | 0.03 | 0.86 | 71 | 76 | -0.05 | -0.04 | 0.92 | 71 | 79 | -0.03 | -0.12 | 0.32 | 74 | 79 |
| **CIT (% GDP)** | 2.57 | 2.72 | 0.52 | 90 | 92 | 2.48 | 2.61 | 0.56 | 90 | 92 | 2.53 | 2.57 | 0.86 | 90 | 91 |
| **Change in CIT (% GDP)** | -0.06 | -0.05 | 0.91 | 90 | 92 | -0.06 | -0.1 | 0.55 | 89 | 92 | 0.05 | -0.04 | 0.21 | 89 | 91 |
| **CIT c.a. (% GDP)** | 2.69 | 2.56 | 0.41 | 72 | 80 | 2.60 | 2.5 | 0.53 | 74 | 79 | 2.61 | 2.44 | 0.28 | 75 | 82 |
| **Change to CIT c.a. (% GDP)** | -0.01 | -0.09 | 0.22 | 71 | 76 | -0.07 | -0.07 | 0.92 | 71 | 79 | 0.01 | -0.04 | 0.41 | 74 | 79 |
| **Capital gains tax (% GDP)** | 0.11 | 0.07 | 0.26 | 84 | 85 | 0.11 | 0.08 | 0.35 | 84 | 85 | 0.12 | 0.08 | 0.31 | 84 | 84 |
Table 5: Determinants of changes in the risk premium following fiscal tensions. Robustness check: tightened definition of deeper falls in the risk premium

|                         | T−1 |        |        |        | T        |        |        | T+1        |        |        |        |        |        |        |        |        |        |        |        |        |        |
|-------------------------|-----|--------|--------|--------|----------|--------|--------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|        |
|                         | Δs < Q1 | Δs > Q1 | p-val | N > Q1 | N < Q1   | Δs < Q1 | Δs > Q1 | p-val | N > Q1 | N < Q1 | Δs < Q1 | Δs > Q1 | p-val | N > Q1 | N < Q1 | Δs < Q1 | Δs > Q1 | p-val | N > Q1 | N < Q1 |
| Fiscal consolidation    | 0.13 | 0.55   | 0.44  | 0.22   | 0.98     | 0.55   | 0.44   | 0.22 | 0.98 | 0.55 | 0.44 | 0.22 | 0.98 | 0.55 | 0.44 | 0.22 | 0.98 | 0.55 | 0.44 | 0.22 |
| Start of consolidation  | 0.91 | 0.44   | 0.25  | 0.05   | 0.91     | 0.44   | 0.25   | 0.05 | 0.91 | 0.44 | 0.25 | 0.05 | 0.91 | 0.44 | 0.25 | 0.05 | 0.91 | 0.44 | 0.25 | 0.05 |
| Consolidation (% GDP)   | 0.46 | 0.38   | 0.36  | 0.60   | 0.46     | 0.38   | 0.36   | 0.60 | 0.46 | 0.38 | 0.36 | 0.60 | 0.46 | 0.38 | 0.36 | 0.60 | 0.46 | 0.38 | 0.36 | 0.60 |
| Size of expenditure cuts (% GDP) | 0.43 | 0.57   | 0.15  | 0.20   | 0.43     | 0.57   | 0.15   | 0.20 | 0.43 | 0.57 | 0.15 | 0.20 | 0.43 | 0.57 | 0.15 | 0.20 | 0.43 | 0.57 | 0.15 | 0.20 | 0.43 |
| Size of tax hikes (% GDP) | 0.44 | 0.25   | 0.05  | 0.91   | 0.44     | 0.25   | 0.05   | 0.91 | 0.44 | 0.25 | 0.05 | 0.91 | 0.44 | 0.25 | 0.05 | 0.91 | 0.44 | 0.25 | 0.05 | 0.91 | 0.44 |
| Share of expenditure cuts in total consolidation (%) | 0.43 | 0.57   | 0.15  | 0.20   | 0.43     | 0.57   | 0.15   | 0.20 | 0.43 | 0.57 | 0.15 | 0.20 | 0.43 | 0.57 | 0.15 | 0.20 | 0.43 | 0.57 | 0.15 | 0.20 | 0.43 |
| Budget revenue (% GDP)  | 0.49 | 0.38  | 0.00  | 0.91   | 0.49     | 0.38   | 0.00   | 0.91 | 0.49 | 0.38 | 0.00 | 0.91 | 0.49 | 0.38 | 0.00 | 0.91 | 0.49 | 0.38 | 0.00 | 0.91 | 0.49 |
| Change in government revenue (% GDP) | 0.68 | 0.46  | 0.00  | 0.91   | 0.68     | 0.46   | 0.00   | 0.91 | 0.68 | 0.46 | 0.00 | 0.91 | 0.68 | 0.46 | 0.00 | 0.91 | 0.68 | 0.46 | 0.00 | 0.91 | 0.68 |
| Budget revenue c.a. (% GDP) | 0.41 | 0.29  | 0.00  | 0.91   | 0.41     | 0.29   | 0.00   | 0.91 | 0.41 | 0.29 | 0.00 | 0.91 | 0.41 | 0.29 | 0.00 | 0.91 | 0.41 | 0.29 | 0.00 | 0.91 | 0.41 |
| Change in budget revenue c.a. (% GDP) | 0.10 | 0.15  | 0.00  | 0.91   | 0.10     | 0.15   | 0.00   | 0.91 | 0.10 | 0.15 | 0.00 | 0.91 | 0.10 | 0.15 | 0.00 | 0.91 | 0.10 | 0.15 | 0.00 | 0.91 | 0.10 |
| VAT revenue (% GDP)     | 0.50 | 0.31  | 0.00  | 0.91   | 0.50     | 0.31   | 0.00   | 0.91 | 0.50 | 0.31 | 0.00 | 0.91 | 0.50 | 0.31 | 0.00 | 0.91 | 0.50 | 0.31 | 0.00 | 0.91 | 0.50 |
| Change in VAT (% GDP)   | 0.18 | 0.15  | 0.00  | 0.91   | 0.18     | 0.15   | 0.00   | 0.91 | 0.18 | 0.15 | 0.00 | 0.91 | 0.18 | 0.15 | 0.00 | 0.91 | 0.18 | 0.15 | 0.00 | 0.91 | 0.18 |
| Revenue from VAT c.a. (% GDP) | 0.41 | 0.29  | 0.00  | 0.91   | 0.41     | 0.29   | 0.00   | 0.91 | 0.41 | 0.29 | 0.00 | 0.91 | 0.41 | 0.29 | 0.00 | 0.91 | 0.41 | 0.29 | 0.00 | 0.91 | 0.41 |
| Change in VAT c.a. (% GDP) | 0.11 | 0.15  | 0.00  | 0.91   | 0.11     | 0.15   | 0.00   | 0.91 | 0.11 | 0.15 | 0.00 | 0.91 | 0.11 | 0.15 | 0.00 | 0.91 | 0.11 | 0.15 | 0.00 | 0.91 | 0.11 |
| Taxation of goods and services (% GDP) | 10.67 | 10.29 | 0.42  | 139    | 10.67    | 10.29  | 0.42   | 139 | 10.67 | 10.29 | 0.42 | 139 | 10.67 | 10.29 | 0.42 | 139 | 10.67 | 10.29 | 0.42 | 139 | 10.67 |
Table 6  Determinants of changes in the risk premium following fiscal tensions. Robustness check: outliers removed

| Fiscal consolidation | $T_{-1}$ | $T$ | $T_{+1}$ |
|---------------------|---------|-----|---------|
| Start of consolidation | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| **Fiscal consolidation** | | | | | | | | | | | | | | | | |
| Start of consolidation | 0.45 | 0.32 | 0.07 | 93 | 93 | 0.43 | 0.39 | 0.55 | 93 | 93 | 0.38 | 0.46 | 0.26 | 92 | 93 |
| Consolidation (% GDP) | 0.37 | 0.24 | 0.10 | 86 | 91 | 0.31 | 0.31 | 0.96 | 86 | 89 | 0.28 | 0.35 | 0.36 | 88 | 87 |
| Size of expenditure cuts (% GDP) | 0.18 | 0.14 | 0.40 | 85 | 92 | 0.21 | 0.15 | 0.27 | 86 | 90 | 0.16 | 0.21 | 0.40 | 86 | 86 |
| Size of tax hikes (% GDP) | 0.13 | 0.07 | 0.08 | 86 | 90 | 0.09 | 0.12 | 0.18 | 90 | 87 | 0.10 | 0.12 | 0.53 | 92 | 90 |
| Share of expenditure cuts in total consolidation (%) | 0.52 | 0.55 | 0.78 | 42 | 30 | 0.61 | 0.51 | 0.23 | 40 | 36 | 0.69 | 0.58 | 0.14 | 35 | 43 |
| **Budget revenue (% GDP)** | 41.52 | 44.60 | 0.01 | 93 | 93 | 41.77 | 44.63 | 0.02 | 92 | 93 | 41.63 | 44.71 | 0.01 | 91 | 93 |
| Change in government revenue (% GDP) | 0.37 | 0.00 | 0.03 | 91 | 93 | 0.35 | 0.03 | 0.06 | 92 | 93 | 0.03 | 0.08 | 0.70 | 90 | 93 |
| Budget revenue c.a. (% GDP) | 40.31 | 43.96 | 0.00 | 86 | 87 | 40.44 | 43.88 | 0.00 | 88 | 86 | 40.10 | 43.91 | 0.00 | 88 | 89 |
| Change in budget revenue c.a. (% GDP) | 0.26 | 0.01 | 0.19 | 83 | 83 | 0.01 | −0.10 | 0.55 | 84 | 86 | −0.29 | −0.10 | 0.34 | 87 | 86 |
| VAT revenue (% GDP) | 4.86 | 5.61 | 0.10 | 92 | 93 | 4.89 | 5.36 | 0.10 | 92 | 93 | 5.03 | 5.67 | 0.16 | 92 | 92 |
| Change in VAT (% GDP) | 0.06 | −0.04 | 0.06 | 90 | 93 | 0.03 | 0.03 | 0.95 | 89 | 93 | 0.05 | −0.01 | 0.16 | 89 | 91 |
| Revenue from VAT c.a. (% GDP) | 5.07 | 5.78 | 0.12 | 85 | 87 | 5.17 | 5.82 | 0.14 | 87 | 86 | 5.26 | 5.93 | 0.12 | 88 | 88 |
| Change in VAT c.a. (% GDP) | 0.07 | −0.06 | 0.02 | 81 | 83 | −0.01 | 0.04 | 0.48 | 81 | 86 | 0.00 | 0.01 | 0.87 | 85 | 84 |
| Taxation of goods and services (% GDP) | 10.17 | 10.59 | 0.30 | 93 | 93 | 10.20 | 10.64 | 0.28 | 92 | 93 | 10.22 | 10.66 | 0.28 | 91 | 93 |
| Change in the tax of goods and services (% GDP) | 0.02 | −0.04 | 0.31 | 90 | 92 | 0.00 | 0.03 | 0.66 | 87 | 92 | 0.03 | −0.01 | 0.48 | 87 | 91 |
| Taxation of goods and services c.a. (% GDP) | 9.84 | 10.44 | 0.13 | 86 | 87 | 9.90 | 10.43 | 0.18 | 88 | 86 | 9.94 | 10.56 | 0.12 | 88 | 89 |
| Change in the tax of goods and services c.a. (% GDP) | 0.01 | −0.09 | 0.13 | 83 | 83 | −0.04 | 0.03 | 0.31 | 83 | 86 | 0.00 | 0.01 | 0.96 | 86 | 86 |
| Income tax revenues (% GDP) | 10.87 | 10.64 | 0.70 | 90 | 91 | 10.74 | 10.62 | 0.85 | 90 | 91 | 10.64 | 10.61 | 0.96 | 90 | 90 |
| Change in income tax (% GDP) | 0.04 | 0.02 | 0.79 | 90 | 92 | −0.07 | −0.02 | 0.54 | 89 | 92 | −0.10 | −0.07 | 0.68 | 89 | 91 |
| Income tax revenue c.a. (% GDP) | 10.29 | 10.32 | 0.96 | 83 | 85 | 10.59 | 10.30 | 0.62 | 85 | 84 | 10.54 | 10.45 | 0.88 | 86 | 86 |
| Change in income tax c.a. (% GDP) | 0.00 | 0.03 | 0.82 | 81 | 82 | −0.08 | −0.03 | 0.57 | 81 | 85 | −0.04 | −0.11 | 0.42 | 85 | 84 |
|                         | $T_{-1}$ |           |           |           | $T$          |           |           |           | $T_{+1}$ |           |           |           |
|-------------------------|----------|-----------|-----------|-----------|--------------|-----------|-----------|-----------|----------|-----------|-----------|-----------|
|                         | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| **CIT (\% GDP)**        | 2.41     | 2.40      | 0.95     | 88       | 88       | 2.31     | 2.33      | 0.91     | 88       | 88       | 2.38     | 2.27      | 0.38     | 88       | 87       |
| Change in CIT (\% GDP)  | -0.06    | -0.07     | 0.94     | 90       | 90       | -0.06    | -0.07     | 0.85     | 89       | 91       | 0.09     | -0.04     | 0.05     | 88       | 91       |
| **CIT c.a. (\% GDP)**   | 2.75     | 2.59      | 0.32     | 81       | 82       | 2.68     | 2.55      | 0.39     | 83       | 81       | 2.72     | 2.47      | 0.11     | 84       | 83       |
| Change to CIT c.a. (\% GDP) | 0.01   | -0.06     | 0.34     | 80       | 80       | -0.01    | -0.04     | 0.64     | 81       | 84       | 0.07     | -0.00     | 0.28     | 84       | 84       |
| **Capital gains tax (\% GDP)** | 0.09 | 0.05      | 0.16     | 82       | 83       | 0.10     | 0.04      | 0.04     | 83       | 82       | 0.09     | 0.03      | 0.02     | 82       | 80       |
| Change in capital gains tax (\% GDP) | 0.00 | 0.00      | 0.88     | 83       | 83       | 0.01     | 0.01      | 0.87     | 82       | 83       | 0.00     | 0.01      | 0.73     | 82       | 83       |
| **Capital gains tax c.a. (\% GDP)** | 0.12 | 0.07      | 0.15     | 76       | 77       | 0.13     | 0.07      | 0.13     | 78       | 76       | 0.12     | 0.09      | 0.32     | 78       | 79       |
| Change in capital gains tax c.a. (\% GDP) | -0.00 | 0.01      | 0.20     | 74       | 74       | 0.01     | 0.01      | 0.53     | 74       | 77       | 0.01     | 0.01      | 0.83     | 79       | 76       |
| **Tax on property (\% GDP)** | 2.00  | 1.78      | 0.07     | 93       | 93       | 2.01     | 1.77      | 0.05     | 93       | 93       | 2.02     | 1.80      | 0.07     | 92       | 93       |
| Change in tax on property (\% GDP) | -0.01 | -0.03     | 0.50     | 93       | 93       | 0.04     | -0.01     | 0.07     | 92       | 93       | 0.02     | 0.02      | 0.81     | 91       | 93       |
| **Tax on property c.a. (\% GDP)** | 1.99  | 1.78      | 0.09     | 86       | 87       | 2.02     | 1.79      | 0.07     | 88       | 86       | 2.03     | 1.81      | 0.07     | 88       | 89       |
| Change in tax on property c.a. (\% GDP) | 0.01  | -0.01     | 0.37     | 83       | 83       | 0.03     | 0.01      | 0.41     | 84       | 86       | 0.02     | 0.02      | 0.83     | 87       | 86       |
| **Financial transaction tax (\% GDP)** | 0.45  | 0.46      | 0.70     | 92       | 92       | 0.44     | 0.45      | 0.83     | 92       | 93       | 0.44     | 0.45      | 0.81     | 92       | 92       |
| Change of the financial transaction tax (\% GDP) | -0.02 | -0.03     | 0.66     | 92       | 92       | -0.00    | -0.02     | 0.16     | 91       | 92       | 0.00     | 0.00      | 0.99     | 91       | 92       |
| **Financial transaction tax c.a. (\% GDP)** | 0.54  | 0.51      | 0.58     | 85       | 86       | 0.54     | 0.52      | 0.76     | 87       | 86       | 0.54     | 0.53      | 0.85     | 88       | 88       |
| Change in tax on financial transactions c.a. (\% GDP) | -0.01 | -0.02     | 0.80     | 83       | 82       | -0.00    | 0.00      | 0.96     | 83       | 85       | 0.00     | 0.02      | 0.28     | 87       | 85       |
| **Social contributions (\% GDP)** | 8.43  | 9.96      | 0.06     | 93       | 93       | 8.44     | 10.08     | 0.05     | 93       | 93       | 8.49     | 10.17     | 0.04     | 92       | 93       |
| Change in social contributions (\% GDP) | 0.12  | 0.06      | 0.24     | 93       | 93       | 0.13     | 0.12      | 0.81     | 92       | 93       | 0.07     | 0.09      | 0.70     | 91       | 93       |
| **Social contributions c.a. (\% GDP)** | 8.59  | 10.03     | 0.06     | 86       | 87       | 8.46     | 10.15     | 0.03     | 88       | 86       | 8.37     | 10.01     | 0.03     | 88       | 89       |
| Change in social contributions c.a. (\% GDP) | 0.05  | 0.03      | 0.80     | 84       | 83       | 0.04     | 0.05      | 0.89     | 84       | 86       | 0.00     | 0.01      | 0.84     | 87       | 86       |
| **Government expenditure (\% GDP)** | 45.81 | 47.49     | 0.15     | 92       | 93       | 46.25    | 48.31     | 0.08     | 91       | 93       | 46.13    | 48.50     | 0.05     | 91       | 92       |
|                        | \(T_{-1}\) | \(T\) | \(T_{+1}\) |
|------------------------|-------|-------|--------|
|                        | \(\Delta s < M\) | \(\Delta s > M\) | \(p\)-val | \(N_{<M}\) | \(N_{>M}\) | \(\Delta s < M\) | \(\Delta s > M\) | \(p\)-val | \(N_{<M}\) | \(N_{>M}\) | \(\Delta s < M\) | \(\Delta s > M\) | \(p\)-val | \(N_{<M}\) | \(N_{>M}\) |
| Change in government expenditure (% GDP) | 0.54 | 0.75 | 0.52 | 90 | 91 | 0.59 | 0.81 | 0.49 | 89 | 93 | 0.11 | 0.17 | 0.86 | 89 | 91 |
| Government expenditure c.a. (% GDP) | 43.29 | 45.72 | 0.04 | 85 | 87 | 43.34 | 45.91 | 0.04 | 87 | 86 | 42.87 | 46.02 | 0.01 | 88 | 88 |
| Change in government expenditure c.a. (% GDP) | 0.22 | 0.48 | 0.44 | 81 | 83 | -0.16 | 0.26 | 0.22 | 83 | 86 | -0.58 | -0.19 | 0.24 | 87 | 85 |
| Primary expenditure (% GDP) | 41.37 | 43.77 | 0.03 | 92 | 93 | 41.66 | 44.49 | 0.01 | 91 | 93 | 41.54 | 44.73 | 0.01 | 91 | 92 |
| Change in primary expenditure (% GDP) | 0.33 | 0.63 | 0.34 | 89 | 91 | 0.36 | 0.72 | 0.24 | 88 | 93 | 0.10 | 0.22 | 0.68 | 89 | 91 |
| Primary expenditure c.a. (% GDP) | 39.71 | 42.72 | 0.01 | 85 | 87 | 39.70 | 43.06 | 0.00 | 87 | 86 | 39.30 | 43.23 | 0.00 | 88 | 88 |
| Change in Primary expenditure c.a. (% GDP) | 0.39 | 0.46 | 0.85 | 82 | 83 | -0.12 | 0.37 | 0.14 | 83 | 86 | -0.48 | 0.02 | 0.12 | 87 | 85 |
| Government consumption (% GDP) | 20.05 | 20.77 | 0.09 | 81 | 87 | 20.09 | 21.07 | 0.03 | 80 | 87 | 20.02 | 21.22 | 0.01 | 79 | 87 |
| Change in government consumption (% GDP) | 0.02 | 0.31 | 0.02 | 81 | 87 | 0.05 | 0.30 | 0.04 | 80 | 87 | -0.07 | 0.14 | 0.10 | 79 | 87 |
| Government investment (% GDP) | 0.03 | 0.04 | 0.61 | 34 | 55 | 0.03 | 0.04 | 0.45 | 33 | 59 | 0.03 | 0.03 | 0.83 | 32 | 61 |
| Change in government investment (% GDP) | -0.00 | 0.00 | 0.21 | 30 | 53 | -0.00 | -0.00 | 0.67 | 33 | 55 | 0.00 | -0.00 | 0.13 | 32 | 59 |
| Public sector wages (% GDP) | 12.17 | 12.16 | 0.98 | 81 | 82 | 12.21 | 12.36 | 0.70 | 78 | 80 | 12.18 | 12.49 | 0.45 | 77 | 76 |
| Change in public sector wages (% GDP) | 0.02 | 0.08 | 0.49 | 79 | 79 | -0.02 | 0.14 | 0.04 | 76 | 78 | -0.03 | -0.00 | 0.73 | 75 | 74 |
| Transfers (% government expenditure) | 54.46 | 58.67 | 0.21 | 42 | 66 | 55.48 | 59.12 | 0.28 | 42 | 67 | 55.57 | 60.06 | 0.17 | 44 | 66 |
| Change in transfers (% government expenditure) | 0.45 | 0.14 | 0.70 | 31 | 63 | 0.75 | -0.11 | 0.14 | 39 | 63 | 0.58 | 0.16 | 0.43 | 41 | 64 |
| Transfers c.a. (% government expenditure) | 54.02 | 59.11 | 0.09 | 42 | 65 | 54.90 | 58.20 | 0.29 | 42 | 67 | 55.30 | 58.40 | 0.33 | 44 | 66 |
| Change of c.a. transfers (% government expenditure) | 0.55 | -0.19 | 0.36 | 31 | 63 | 0.68 | -0.09 | 0.04 | 39 | 63 | 0.70 | -0.37 | 0.07 | 41 | 64 |
| Social expenditure (% GDP) | 19.88 | 21.76 | 0.02 | 93 | 93 | 20.31 | 22.31 | 0.02 | 92 | 93 | 20.47 | 22.73 | 0.01 | 91 | 93 |
| Change in social expenditure (% GDP) | 0.28 | 0.33 | 0.71 | 91 | 89 | 0.31 | 0.51 | 0.15 | 88 | 92 | 0.20 | 0.33 | 0.33 | 90 | 91 |
| Social expenditure c.a. (% GDP) | 18.71 | 20.87 | 0.01 | 86 | 87 | 18.95 | 21.24 | 0.01 | 88 | 86 | 18.94 | 21.38 | 0.00 | 88 | 89 |
| Change in social expenditure c.a. (% GDP) | 0.13 | 0.46 | 0.04 | 84 | 83 | 0.21 | 0.30 | 0.56 | 84 | 86 | 0.08 | 0.19 | 0.40 | 87 | 86 |
### Table 6 (continued)

|                          | $T_{-1}$ |               |               |               | $T$          |               |               |               | $T_{+1}$       |               |               |
|--------------------------|----------|---------------|---------------|---------------|-------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                          | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| Debt (% GDP)             |          |               |               |               | 54.93 | 52.89 | 0.66 | 90 | 92 | 56.29 | 55.87 | 0.93 | 89 | 92 | 58.47 | 58.56 | 0.99 | 89 | 92 |
| Change in debt (% GDP)   |          |               |               |               | 2.17 | 2.13 | 0.95 | 90 | 91 | 2.33 | 2.76 | 0.49 | 89 | 92 | 2.01 | 2.52 | 0.39 | 88 | 91 |
| Change in debt (%)       |          |               |               |               | 0.04 | 0.04 | 0.80 | 90 | 90 | 0.04 | 0.05 | 0.67 | 88 | 91 | 0.04 | 0.05 | 0.47 | 89 | 89 |
| Fiscal rules             |          |               |               |               | −0.11 | 0.12 | 0.16 | 33 | 57 | 0.05 | 0.16 | 0.53 | 31 | 58 | 0.21 | 0.25 | 0.85 | 30 | 57 |
| Change of fiscal rules   |          |               |               |               | 0.05 | 0.02 | 0.43 | 24 | 54 | 0.04 | 0.02 | 0.55 | 29 | 56 | 0.07 | 0.04 | 0.51 | 30 | 55 |
| Primary balance (% GDP)  |          |               |               |               | 0.06 | 0.27 | 0.68 | 92 | 90 | −0.04 | 0.01 | 0.92 | 92 | 92 | 0.15 | −0.04 | 0.71 | 92 | 93 |
| Change in primary balance (% GDP) | 0.18 | −0.43 | 0.04 | 92 | 87 | −0.01 | −0.37 | 0.23 | 92 | 87 | 0.16 | −0.07 | 0.43 | 90 | 89 |
| Primary balance c.a. (% GDP) | 0.37 | 0.49 | 0.83 | 85 | 84 | 0.67 | 0.43 | 0.68 | 86 | 84 | 0.82 | 0.47 | 0.58 | 86 | 88 |
| Change in primary balance c.a. (% GDP) | 0.18 | −0.62 | 0.01 | 83 | 79 | 0.13 | −0.35 | 0.11 | 84 | 83 | 0.24 | −0.12 | 0.21 | 86 | 84 |
| Cost of debt service (% GDP) | 4.19 | 3.72 | 0.12 | 90 | 93 | 4.41 | 3.81 | 0.06 | 91 | 93 | 4.58 | 3.76 | 0.02 | 92 | 93 |
| Change in the cost of debt service (% GDP) | 0.18 | 0.11 | 0.21 | 91 | 92 | 0.10 | 0.07 | 0.64 | 91 | 92 | 0.03 | −0.03 | 0.38 | 91 | 89 |

**Monetary policy**

|                          |               |               |               |               |               |               |               |               |               |               |               |               |
|--------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Short-term rate (p.p.)   | 8.48 | 6.37 | 0.00 | 80 | 86 | 7.37 | 6.08 | 0.08 | 83 | 86 | 7.09 | 4.91 | 0.00 | 79 | 86 |
| Change in short-term interest rate (%) | −0.34 | 0.04 | 0.19 | 77 | 86 | −1.28 | −0.45 | 0.00 | 80 | 85 | −0.83 | −1.05 | 0.39 | 76 | 84 |
| Change in short-term interest rate (p.p.) | −0.05 | 0.04 | 0.08 | 80 | 85 | −0.18 | −0.15 | 0.36 | 81 | 85 | −0.15 | −0.14 | 0.83 | 78 | 86 |
| Change in M3 (%)         | 0.10 | 0.08 | 0.32 | 38 | 27 | 0.09 | 0.08 | 0.50 | 39 | 28 | 0.08 | 0.07 | 0.71 | 41 | 27 |
| Central bank independence  | 0.44 | 0.56 | 0.00 | 86 | 92 | 0.42 | 0.56 | 0.00 | 81 | 92 | 0.42 | 0.56 | 0.00 | 79 | 89 |
| Change of central bank independence | 0.00 | 0.00 | 0.30 | 85 | 92 | 0.00 | 0.00 | 0.91 | 80 | 91 | −0.00 | 0.00 | 0.09 | 76 | 89 |
| Exchange rate            | −0.01 | −0.00 | 0.63 | 93 | 91 | −0.01 | −0.01 | 0.63 | 93 | 91 | −0.01 | 0.00 | 0.07 | 90 | 93 |
| Fixed regime             | 0.24 | 0.29 | 0.43 | 92 | 93 | 0.27 | 0.27 | 0.93 | 91 | 93 | 0.26 | 0.26 | 0.97 | 91 | 92 |
| Floating regime          | 0.55 | 0.55 | 0.94 | 92 | 93 | 0.53 | 0.59 | 0.39 | 91 | 93 | 0.56 | 0.64 | 0.27 | 91 | 92 |
| Intermediate regime      | 0.21 | 0.16 | 0.43 | 92 | 93 | 0.20 | 0.14 | 0.30 | 91 | 93 | 0.18 | 0.09 | 0.08 | 91 | 92 |

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| Table 6 (continued) | T−1 | T | T+1 |
|---------------------|-----|-----|-----|
|                     | Δs < M | Δs > M | p-val | N< M | N> M | Δs < M | Δs > M | p-val | N< M | N> M | Δs < M | Δs > M | p-val | N< M | N> M |
| Labour market       |       |       |       |     |     |       |       |       |     |     |       |       |       |     |     |     |
| Unemployment (%)    | 7.97  | 7.06  | 0.07  | 79   | 85   | 8.47  | 7.59  | 0.10  | 83   | 84   | 8.75  | 8.10  | 0.20 | 84   | 86   |
| Change in unemployment (p.p.) | 0.48  | 0.08  | 0.03  | 83   | 82   | 0.47  | 0.50  | 0.87  | 84   | 85   | 0.16  | 0.45  | 0.12 | 87   | 85   |
| Change in unit labour cost (%) | 0.02  | 0.02  | 0.52  | 92   | 93   | 0.03  | 0.01  | 0.10  | 90   | 93   | 0.01  | 0.03  | 0.17 | 87   | 93   |
| Labour protection   | 1.87  | 2.29  | 0.01  | 57   | 74   | 1.82  | 2.27  | 0.00  | 61   | 75   | 1.80  | 2.24  | 0.00 | 61   | 78   |
| Change in labour protection | −0.00 | −0.00 | 0.81  | 49   | 72   | −0.00 | 0.00  | 0.17  | 51   | 72   | −0.00 | −0.00 | 0.95 | 56   | 74   |
| Unions density      | 38.70 | 37.80 | 0.75  | 88   | 92   | 37.87 | 37.46 | 0.89  | 88   | 90   | 37.05 | 37.23 | 0.95 | 86   | 90   |
| Change in unions density | −0.02 | −0.01 | 0.29  | 88   | 90   | −0.02 | −0.01 | 0.02  | 85   | 90   | −0.03 | −0.01 | 0.01 | 84   | 89   |
| Retirement age      | 62.55 | 61.80 | 0.07  | 78   | 81   | 62.53 | 61.75 | 0.06  | 77   | 82   | 62.37 | 61.75 | 0.12 | 76   | 83   |
| Change in retirement age | −0.08 | −0.01 | 0.33  | 78   | 79   | −0.06 | −0.00 | 0.41  | 76   | 80   | −0.16 | 0.01  | 0.02 | 75   | 81   |
| Markets and regulation |       |       |       |     |     |       |       |       |     |     |       |       |       |     |     |     |
| Degree of integration with global markets | 71.67 | 75.87 | 0.01  | 85   | 91   | 74.21 | 76.23 | 0.02  | 85   | 91   | 72.68 | 76.73 | 0.01 | 80   | 91   |
| Change in degree of integration with global markets | 0.62  | 0.47  | 0.50  | 84   | 91   | 0.74  | 0.36  | 0.10  | 85   | 90   | 0.75  | 0.50  | 0.26 | 80   | 91   |
| Competitiveness of the economy |       |       |       |     |     |       |       |       |     |     |       |       |       |     |     |     |
| Change in competitiveness of the economy | −0.01 | −0.00 | 0.73  | 89   | 90   | −0.00 | −0.01 | 0.13  | 88   | 90   | −0.02 | 0.01  | 0.01 | 89   | 89   |
| Capitalization of government bond market (% GDP) | 40.51 | 41.41 | 0.84  | 36   | 67   | 40.13 | 41.71 | 0.72  | 38   | 65   | 40.95 | 43.31 | 0.58 | 40   | 66   |
| Change in capitalisation of the government bond market (%) | 1.41  | 0.74  | 0.38  | 25   | 65   | 0.93  | 1.84  | 0.19  | 34   | 64   | 0.81  | 1.70  | 0.22 | 38   | 64   |
| Entry barriers      | 1.96  | 2.20  | 0.15  | 75   | 60   | 2.05  | 2.28  | 0.15  | 75   | 60   | 2.20  | 2.33  | 0.39 | 75   | 60   |
| Change in entry barriers |       |       |       |     |     |       |       |       |     |     |       |       |       |     |     |     |
| Degree of privatisation | 1.73  | 1.83  | 0.61  | 75   | 60   | 1.76  | 1.82  | 0.77  | 75   | 60   | 1.83  | 1.80  | 0.89 | 75   | 60   |
| Change in the degree of privatisation |       |       |       |     |     |       |       |       |     |     |       |       |       |     |     |     |
Table 6 (continued)

|                                | \( T_{-1} \) | \( T \) | \( T_{+1} \) |
|--------------------------------|--------------|----------|-------------|
|                                | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( N_{<M} \) | \( N_{>M} \) | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( N_{<M} \) | \( N_{>M} \) | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( N_{<M} \) | \( N_{>M} \) |
| Degree of financial market reform | 0.70        | 0.73     | 0.47       | 75 | 60 |
| Change in the degree of financial market reform | 0.02        | 0.02     | 0.54       | 74 | 59 |
| Quality of government | 0.68        | 0.71     | 0.59       | 93 | 93 |
| Change in the quality of government | -0.00       | 0.00     | 0.67       | 84 | 92 |
| Openness of financial markets | 1.61        | 1.81     | 0.23       | 92 | 93 |
| Change in the openness of financial markets | 0.03        | 0.02     | 0.39       | 87 | 92 |
| **Macroeconomic environment** | | | | |
| GDP growth (%) | 0.06 | 0.05 | 0.31 | 91 | 92 |
| Output gap (% GDP) | -0.83 | 0.39 | 0.04 | 64 | 74 |
| Change in the output gap (p.p.) | -0.73 | -0.54 | 0.57 | 62 | 70 |
| Exports (% GDP) | 29.74 | 34.96 | 0.03 | 90 | 93 |
| Change in exports (% GDP) | 0.56 | 0.32 | 0.52 | 93 | 93 |
| Savings (% GDP) | 20.75 | 23.54 | 0.00 | 67 | 73 |
| Change in savings (% GDP) | -0.03 | -0.39 | 0.18 | 66 | 71 |
| Investment (% GDP) | 22.29 | 23.27 | 0.05 | 89 | 92 |
| Change in investment (% GDP) | -0.53 | -0.27 | 0.17 | 91 | 92 |
| Consumption (% GDP) | 77.12 | 75.91 | 0.11 | 92 | 93 |
| Change in consumption (% GDP) | 0.14 | 0.44 | 0.19 | 92 | 93 |
| Inflation (p.p.) | 5.51 | 3.68 | 0.00 | 91 | 89 |
| Change in inflation | -0.00 | -0.00 | 0.41 | 89 | 91 |
| Change in industrial production (%) | | | | |
| Current account balance (% GDP) | -0.39 | -0.45 | 0.93 | 68 | 71 |
| Change in current account balance (% GDP) | 0.57 | -0.01 | 0.04 | 66 | 73 |
Table 6 (continued)

|                         | $\Delta s^\text{<}M$ | $\Delta s^\text{>}M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s^\text{<}M$ | $\Delta s^\text{>}M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s^\text{<}M$ | $\Delta s^\text{>}M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
|-------------------------|-----------------------|-----------------------|---------|----------|----------|-----------------------|-----------------------|---------|----------|----------|-----------------------|-----------------------|---------|----------|----------|
| Crisis                  | 0.50                  | 0.57                  | 0.41    | 66       | 79       | 0.36                  | 0.57                  | 0.01    | 66       | 79       | 0.41                  | 0.39                  | 0.86    | 66       | 71       |
| Banking crisis          | 0.21                  | 0.21                  | 0.94    | 82       | 85       | 0.21                  | 0.27                  | 0.34    | 82       | 85       | 0.19                  | 0.21                  | 0.67    | 81       | 85       |
| Stock market crisis     | 0.24                  | 0.42                  | 0.01    | 82       | 85       | 0.18                  | 0.29                  | 0.09    | 82       | 85       | 0.15                  | 0.13                  | 0.73    | 81       | 85       |
| Inflation crisis        | 0.24                  | 0.42                  | 0.01    | 49       | 69       | 18.59                 | 22.64                 | 0.00    | 52       | 70       | 18.01                 | 21.82                 | 0.00    | 53       | 70       |
| VIX                     | 19.10                 | 22.17                 | 0.01    | 49       | 69       | 18.59                 | 22.64                 | 0.00    | 52       | 70       | 18.01                 | 21.82                 | 0.00    | 53       | 70       |
| Change of VIX           | −0.09                 | 0.06                  | 0.00    | 38       | 57       | −0.05                 | −0.03                 | 0.66    | 46       | 61       | −0.04                 | −0.02                 | 0.73    | 51       | 68       |
| European Union Membership|                       |                       |         |          |          |                       |                       |         |          |          |                       |                       |         |          |          |

The analyzed determinants are divided into groups. The columns $\Delta s^\text{<}M$ and $\Delta s^\text{>}M$ contain the average level of variable considered for the periods in which the risk premium change was lower and higher than median change respectively. All significant differences of 10% are bolded. The columns $N_{<M}$ and $N_{>M}$ indicates the number of observations qualified for comparison. Their different values result from gaps in data. Cyclically adjusted variables are marked with "c.a."
| Table 7  | Determinants of changes in the risk premium following fiscal tensions. Robustness check: modified definition of periods of ‘stress’ and, consequently ‘relaxation’ |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | $T_{-1}$                                                                                                                                  | $T$                                                                 | $T_{+1}$                                                                 |
|          | $\Delta s < M$  $\Delta s > M$  $p$-val  $N_{<M}$  $N_{>M}$  | $\Delta s < M$  $\Delta s > M$  $p$-val  $N_{<M}$  $N_{>M}$  | $\Delta s < M$  $\Delta s > M$  $p$-val  $N_{<M}$  $N_{>M}$  |
| Fiscal consolidation | 0.16  0.08  0.09  80  80  | 0.06  0.20  0.01  80  80  | 0.08  0.11  0.43  80  79  |
| Start of consolidation | 0.49  0.31  0.02  80  80  | 0.45  0.41  0.63  80  80  | 0.41  0.45  0.57  80  79  |
| Consolidation (% GDP) | 0.66  0.23  0.00  80  80  | 0.52  0.41  0.37  80  80  | 0.43  0.46  0.83  80  79  |
| Size of expenditure cuts (% GDP) | 0.38  0.13  0.00  80  80  | 0.37  0.23  0.15  80  80  | 0.33  0.30  0.80  80  79  |
| Size of tax hikes (% GDP) | 0.28  0.10  0.01  80  80  | 0.16  0.18  0.77  80  80  | 0.10  0.15  0.36  80  79  |
| Share of expenditure cuts in total consolidation (%) | 0.52  0.56  0.67  25  39  | 0.62  0.54  0.35  33  36  | 0.70  0.60  0.26  36  32  |
| Budget revenue (% GDP) | 40.82  44.52  0.00  80  80  | 40.99  44.60  0.00  80  79  | 40.95  44.44  0.01  80  78  |
| Change in government revenue (% GDP) | 0.58  −0.05  0.00  80  80  | 0.29  0.08  0.22  80  79  | 0.08  −0.16  0.17  80  78  |
| Budget revenue c.a. (% GDP) | 39.54  44.05  0.00  76  75  | 39.65  44.02  0.00  75  78  | 39.38  43.79  0.00  77  77  |
| Change in budget revenue c.a. (% GDP) | 0.37  −0.06  0.06  72  74  | −0.04  −0.07  0.91  75  74  | −0.18  −0.27  0.71  75  77  |
| VAT revenue (% GDP) | 4.60  5.59  0.04  80  79  | 4.66  5.59  0.06  80  79  | 4.81  5.71  0.06  80  79  |
| Change in VAT (% GDP) | 0.19  −0.04  0.03  80  79  | 0.15  0.00  0.09  80  78  | 0.15  0.11  0.75  80  78  |
| Revenue from VAT c.a. (% GDP) | 4.83  5.78  0.05  76  74  | 4.96  5.79  0.08  75  77  | 5.05  5.96  0.05  77  77  |
| Change in VAT c.a. (% GDP) | 0.19  −0.07  0.02  72  73  | 0.11  0.00  0.23  75  73  | 0.09  0.13  0.74  75  77  |
| Taxation of goods and services (% GDP) | 10.02  10.41  0.38  80  80  | 10.04  10.45  0.34  80  79  | 10.04  10.50  0.30  80  78  |
| Change in the tax of goods and services (% GDP) | 0.10  −0.03  0.09  80  80  | 0.09  0.05  0.60  80  79  | 0.08  0.04  0.67  80  78  |
| Taxation of goods and services c.a. (% GDP) | 9.64  10.37  0.09  76  75  | 9.75  10.35  0.17  75  78  | 9.75  10.48  0.09  77  77  |
| Change in the tax of goods and services c.a. (% GDP) | 0.05  −0.08  0.14  72  74  | 0.01  0.02  0.85  75  74  | 0.04  0.05  0.86  75  77  |
| Income tax revenues (% GDP) | 10.70  10.63  0.92  80  77  | 10.56  10.55  0.98  80  77  | 10.48  10.41  0.91  80  77  |
| Change in income tax (% GDP) | 0.06  −0.01  0.49  80  77  | −0.07  −0.08  0.89  80  76  | −0.09  −0.14  0.54  80  76  |
| Table 7 (continued) | $T_{-1}$ | $T$ | $T_{+1}$ |
|---------------------|---------|-------|---------|
|                     | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| Income tax revenue c.a. (% GDP) | 10.24 | 10.48 | 0.71 | 76 | 72 | 10.58 | 10.44 | 0.83 | 75 | 75 |
| Change in income tax c.a. (% GDP) | 0.02 | 0.01 | 0.71 | 72 | 71 | -0.08 | -0.05 | 0.80 | 75 | 71 |
| CIT (% GDP) | 2.48 | 2.69 | 0.37 | 80 | 77 | 2.40 | 2.60 | 0.41 | 80 | 77 |
| Change in CIT (% GDP) | -0.05 | -0.02 | 0.06 | 80 | 77 | -0.05 | -0.10 | 0.53 | 80 | 76 |
| CIT c.a. (% GDP) | 2.90 | 2.88 | 0.95 | 76 | 72 | 2.82 | 2.82 | 0.99 | 75 | 75 |
| Change to CIT c.a. (% GDP) | 0.02 | -0.02 | 0.01 | 72 | 71 | -0.01 | -0.07 | 0.48 | 75 | 71 |
| Capital gains tax (% GDP) | 0.10 | 0.11 | 0.95 | 75 | 72 | 0.11 | 0.10 | 0.97 | 75 | 72 |
| Change in capital gains tax (% GDP) | -0.01 | 0.01 | 0.33 | 75 | 72 | 0.00 | -0.00 | 0.72 | 75 | 71 |
| Capital gains tax c.a. (% GDP) | 0.13 | 0.13 | 1.00 | 71 | 67 | 0.13 | 0.13 | 0.93 | 70 | 70 |
| Change in capital gains tax c.a. (% GDP) & 0.01 & 0.01 & 0.19 & 67 | 66 & 0.01 & 0.00 & 0.80 | 70 | 66 & 0.01 & 0.00 & 0.64 | 70 | 70 |
| Tax on property (% GDP) | 2.01 | 1.81 | 0.14 | 80 | 80 | 2.03 | 1.81 | 0.11 | 80 | 80 |
| Change in tax on property (% GDP) | -0.01 | -0.02 | 0.66 | 80 | 80 | 0.02 | -0.00 | 0.64 | 80 | 80 |
| Tax on property c.a. (% GDP) | 2.00 | 1.82 | 0.19 | 76 | 75 | 2.03 | 1.84 | 0.15 | 75 | 78 |
| Change in tax on property c.a. (% GDP) | -0.00 | -0.01 | 0.89 | 72 | 74 | 0.04 | 0.01 | 0.31 | 75 | 74 |
| Financial transaction tax (% GDP) | 0.44 | 0.44 | 0.94 | 80 | 79 | 0.44 | 0.42 | 0.72 | 80 | 79 |
| Change of the financial transaction tax (% GDP) | -0.02 | -0.03 | 0.52 | 80 | 79 | 0.00 | -0.01 | 0.14 | 80 | 78 |
| Financial transaction tax c.a. (% GDP) | 0.56 | 0.47 | 0.10 | 76 | 74 | 0.56 | 0.47 | 0.15 | 75 | 77 |
| Change in tax on financial transactions c.a. (% GDP) | -0.01 | -0.02 | 0.52 | 72 | 73 | 0.01 | 0.01 | 0.89 | 75 | 73 |
| Social contributions (% GDP) | 8.39 | 10.15 | 0.04 | 80 | 80 | 8.40 | 10.24 | 0.04 | 80 | 80 | 8.45 | 10.26 | 0.04 | 80 | 79 | 869 | 896 | 869 | 896
|                         | $T_{-1}$ |          |          | $T$        |          |          | $T_{+1}$ |          |          |          |          |          |          |
|-------------------------|----------|----------|----------|------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|                         | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| Change in social contributions (% GDP) | 0.13 | 0.07 | 0.34 | 80 | 80 | 0.00 | 0.08 | 0.61 | 80 | 80 | −0.06 | 0.02 | 0.59 | 80 | 79 |
| Social contributions c.a. (% GDP) | 8.35 | 10.16 | 0.03 | 76 | 75 | 8.15 | 10.25 | 0.01 | 75 | 78 | 8.11 | 10.17 | 0.01 | 77 | 77 |
| Change in social contributions c.a. (% GDP) | 0.04 | 0.04 | 0.97 | 72 | 74 | 0.05 | 0.01 | 0.62 | 75 | 74 | 0.01 | −0.04 | 0.41 | 75 | 77 |
| Government expenditure (% GDP) | 45.43 | 47.63 | 0.08 | 80 | 79 | 45.66 | 48.33 | 0.04 | 80 | 78 | 45.35 | 48.37 | 0.02 | 80 | 78 |
| Change in government expenditure (% GDP) | 0.41 | 1.07 | 0.16 | 80 | 79 | 0.35 | 0.71 | 0.37 | 80 | 78 | −0.31 | 0.03 | 0.36 | 80 | 78 |
| Government expenditure c.a. (% GDP) | 42.39 | 46.44 | 0.00 | 76 | 74 | 42.50 | 46.51 | 0.00 | 75 | 77 | 41.87 | 46.40 | 0.00 | 77 | 77 |
| Change in government expenditure c.a. (% GDP) | 0.01 | 0.93 | 0.05 | 72 | 73 | −0.27 | 0.15 | 0.27 | 75 | 73 | −0.63 | −0.35 | 0.42 | 75 | 77 |
| Primary expenditure (% GDP) | 40.84 | 43.87 | 0.01 | 80 | 79 | 40.91 | 44.55 | 0.00 | 80 | 78 | 40.62 | 44.69 | 0.00 | 80 | 78 |
| Change in primary expenditure (% GDP) | 0.28 | 0.99 | 0.12 | 80 | 79 | 0.21 | 0.68 | 0.22 | 80 | 78 | −0.29 | 0.14 | 0.24 | 80 | 78 |
| Primary expenditure c.a. (% GDP) | 38.77 | 43.42 | 0.00 | 76 | 74 | 38.76 | 43.65 | 0.00 | 75 | 77 | 38.21 | 43.60 | 0.00 | 77 | 77 |
| Change in Primary expenditure c.a. (% GDP) | 0.05 | 0.97 | 0.05 | 72 | 73 | −0.24 | 0.28 | 0.16 | 75 | 73 | −0.55 | −0.16 | 0.24 | 75 | 77 |
| Government consumption (% GDP) | 19.85 | 20.93 | 0.02 | 72 | 70 | 19.56 | 21.19 | 0.00 | 72 | 70 | 19.42 | 21.23 | 0.00 | 72 | 69 |
| Change in government consumption (% GDP) | −0.02 | 0.43 | 0.00 | 72 | 70 | −0.29 | 0.27 | 0.08 | 72 | 70 | −0.43 | 0.03 | 0.15 | 72 | 69 |
| Government investment (% GDP) | 0.03 | 0.04 | 0.66 | 50 | 27 | 0.03 | 0.04 | 0.20 | 52 | 27 | 0.03 | 0.04 | 0.32 | 54 | 26 |
| Change in government investment (% GDP) | −0.00 | 0.00 | 0.00 | 48 | 23 | −0.00 | 0.00 | 0.04 | 50 | 27 | −0.00 | −0.00 | 0.54 | 52 | 26 |
| Public sector wages (% GDP) | 12.14 | 11.84 | 0.47 | 70 | 69 | 12.17 | 12.02 | 0.74 | 68 | 66 | 12.08 | 12.06 | 0.97 | 65 | 65 |
Table 7 (continued)

|                          | $T_{-1}$ |         |         | $T$      |         |         | $T_{+1}$ |         |         |
|--------------------------|----------|---------|---------|----------|---------|---------|----------|---------|---------|
|                          | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| Change in public sector wages (% GDP) | 0.02 | 0.06 | 0.81 | 70 | 69 | 0.03 | -0.02 | 0.78 | 68 | 66 | -0.09 | -0.16 | 0.68 | 65 | 65 |
| Transfers (% government expenditure) | 53.49 | 59.88 | 0.08 | 59 | 35 | 54.64 | 61.29 | 0.06 | 59 | 35 | 54.79 | 61.94 | 0.04 | 60 | 37 |
| Change in transfers (% government expenditure) | 3.22 | -0.32 | 0.09 | 57 | 25 | 0.83 | 1.41 | 0.76 | 59 | 32 | -0.06 | 0.61 | 0.52 | 59 | 35 |
| Transfers c.a. (% government expenditure) | 52.98 | 59.11 | 0.07 | 59 | 35 | 53.98 | 59.84 | 0.08 | 59 | 35 | 54.52 | 59.93 | 0.10 | 60 | 37 |
| Change of c.a. transfers (% government expenditure) | 3.07 | -0.67 | 0.07 | 57 | 25 | 0.77 | 0.74 | 0.98 | 59 | 32 | 0.06 | 0.01 | 0.96 | 59 | 35 |
| Social expenditure (% GDP) | 19.69 | 21.82 | 0.02 | 80 | 80 | 20.00 | 22.33 | 0.01 | 80 | 79 | 20.10 | 22.61 | 0.01 | 80 | 78 |
| Change in social expenditure (% GDP) | 0.33 | 0.55 | 0.18 | 80 | 80 | 0.40 | 0.51 | 0.52 | 80 | 79 | 0.19 | 0.28 | 0.59 | 80 | 78 |
| Social expenditure c.a. (% GDP) | 18.23 | 21.10 | 0.00 | 76 | 75 | 18.34 | 21.44 | 0.00 | 75 | 78 | 18.35 | 21.49 | 0.00 | 77 | 77 |
| Change in social expenditure c.a. (% GDP) | 0.08 | 0.52 | 0.00 | 72 | 74 | 0.14 | 0.26 | 0.45 | 75 | 74 | 0.07 | 0.10 | 0.83 | 75 | 77 |
| Debt (% GDP) | 58.76 | 53.71 | 0.34 | 80 | 79 | 59.86 | 56.57 | 0.53 | 80 | 78 | 61.41 | 59.05 | 0.65 | 80 | 78 |
| Change in debt (% GDP) | 2.55 | 2.66 | 0.89 | 80 | 79 | 2.59 | 2.86 | 0.69 | 80 | 78 | 1.55 | 2.49 | 0.20 | 80 | 78 |
| Change in debt (%) | 0.05 | 0.07 | 0.45 | 80 | 79 | 0.06 | 0.08 | 0.38 | 80 | 78 | 0.04 | 0.06 | 0.44 | 80 | 78 |
| Budgetary rules | -0.13 | 0.08 | 0.23 | 52 | 27 | 0.20 | 0.12 | 0.74 | 52 | 26 | 0.52 | 0.18 | 0.16 | 52 | 26 |
| Change of budgetary rules | 0.31 | 0.07 | 0.06 | 50 | 21 | 0.36 | 0.05 | 0.02 | 52 | 26 | 0.32 | 0.06 | 0.05 | 52 | 26 |
| Primary balance (% GDP) | 0.11 | 0.65 | 0.39 | 80 | 80 | 0.16 | 0.05 | 0.86 | 80 | 80 | 0.40 | -0.25 | 0.24 | 80 | 79 |
| Change of primary balance (% GDP) | 0.49 | -1.04 | 0.00 | 80 | 80 | 0.04 | -0.60 | 0.10 | 80 | 80 | 0.26 | -0.30 | 0.11 | 80 | 79 |
| Primary balance c.a. (% GDP) | 0.77 | 0.65 | 0.87 | 76 | 75 | 0.87 | 0.37 | 0.50 | 75 | 78 | 1.20 | 0.20 | 0.16 | 77 | 77 |
| Primary balance change c.a. (% GDP) | 0.52 | -1.03 | 0.00 | 72 | 74 | 0.19 | -0.35 | 0.14 | 75 | 74 | 0.33 | -0.12 | 0.17 | 75 | 77 |
| Cost of debt service (% GDP) | 4.58 | 3.76 | 0.02 | 80 | 80 | 4.72 | 3.79 | 0.01 | 80 | 80 | 4.71 | 3.68 | 0.01 | 80 | 79 |
|                          | T−1  | T   | T+1  |
|--------------------------|------|-----|-----|
|                          | Δs < M | Δs > M | p-val | N< M | N> M | Δs < M | Δs > M | p-val | N< M | N> M |
| Change in the cost of debt service (% GDP) | 0.13 | 0.08 | 0.53 | 80 | 80 | 0.14 | 0.03 | 0.10 | 80 | 80 | −0.03 | −0.10 | 0.42 | 80 | 79 |
| **Monetary policy**      |      |     |     |    |    |      |      |      |    |    |      |      |      |    |    |    |
| Short-term rate (p.p.)   | 9.16 | 6.32 | 0.00 | 76 | 71 | 7.84 | 5.54 | 0.00 | 77 | 73 | 7.71 | 4.63 | 0.00 | 77 | 69 |
| Change in short-term interest rate (%) | −0.39 | −0.23 | 0.63 | 76 | 69 | −1.44 | −0.89 | 0.05 | 76 | 71 | −0.78 | −0.91 | 0.69 | 77 | 67 |
| Change in short-term interest rate (p.p.) | −0.10 | 263.13 | 0.34 | 76 | 69 | 281.49 | −0.20 | 0.30 | 76 | 71 | −0.12 | −0.13 | 0.94 | 77 | 67 |
| Amendment M3 (%)         | 0.10 | 0.11 | 0.94 | 26 | 35 | 0.10 | 0.08 | 0.44 | 26 | 35 | 0.08 | 0.08 | 0.97 | 26 | 35 |
| Central bank independence | 0.42 | 0.57 | 0.00 | 80 | 73 | 0.40 | 0.57 | 0.00 | 80 | 68 | 0.41 | 0.57 | 0.00 | 79 | 67 |
| Review of central bank independence | 0.00 | 0.00 | 0.16 | 80 | 73 | 0.00 | 0.00 | 0.94 | 80 | 68 | 0.02 | 0.00 | 0.10 | 79 | 67 |
| **Exchange rate**        |      |     |     |    |    |      |      |      |    |    |      |      |      |    |    |    |
| Fixed regime             | 0.25 | 0.26 | 0.89 | 80 | 79 | 0.27 | 0.26 | 0.92 | 80 | 78 | 0.24 | 0.24 | 0.93 | 80 | 78 |
| Floating regime          | 0.57 | 0.54 | 0.69 | 80 | 79 | 0.54 | 0.63 | 0.27 | 80 | 78 | 0.58 | 0.66 | 0.27 | 80 | 78 |
| Intermediate regime      | 0.18 | 0.20 | 0.72 | 80 | 79 | 0.19 | 0.11 | 0.16 | 80 | 78 | 0.18 | 0.09 | 0.09 | 80 | 78 |
| EMU                      | 0.16 | 0.41 | 0.00 | 80 | 80 | 0.16 | 0.41 | 0.00 | 80 | 80 | 0.15 | 0.41 | 0.00 | 80 | 79 |
| **Labour market**        |      |     |     |    |    |      |      |      |    |    |      |      |      |    |    |    |
| Unemployment (%)         | 9.90 | 7.08 | 0.00 | 76 | 75 | 10.03 | 7.60 | 0.00 | 75 | 79 | 9.91 | 8.10 | 0.01 | 77 | 78 |
| Change in unemployment (p.p.) | 0.64 | 0.21 | 0.07 | 72 | 74 | 0.13 | 0.57 | 0.25 | 75 | 75 | −0.24 | 0.37 | 0.10 | 75 | 78 |
| Change in unit labour cost (%) | 0.02 | 0.02 | 0.93 | 80 | 80 | 0.03 | 0.02 | 0.36 | 80 | 79 | 0.03 | 0.03 | 1.00 | 80 | 78 |
| Labor protection         | 1.85 | 2.26 | 0.02 | 68 | 50 | 1.87 | 2.23 | 0.04 | 69 | 55 | 1.85 | 2.21 | 0.03 | 72 | 55 |
| Changing the labor protection | −0.02 | −0.00 | 0.05 | 66 | 44 | 0.00 | −0.00 | 0.39 | 68 | 45 | −0.00 | −0.00 | 0.77 | 69 | 50 |
| The importance of trade unions | 37.26 | 36.54 | 0.81 | 80 | 75 | 36.35 | 36.09 | 0.93 | 78 | 75 | 35.41 | 35.63 | 0.94 | 79 | 73 |
| Change in unions density | −0.02 | −0.01 | 0.42 | 78 | 75 | −0.02 | −0.01 | 0.03 | 78 | 72 | −0.03 | −0.01 | 0.00 | 78 | 71 |
| Retirement age           | 62.49 | 61.66 | 0.07 | 68 | 67 | 62.44 | 61.68 | 0.09 | 69 | 66 | 62.25 | 61.71 | 0.22 | 70 | 65 |
Table 7 (continued)

|                           | $T_{-1}$ |       |       | $T$     |       |       | $T_{+1}$ |       |       |
|---------------------------|----------|-------|-------|---------|-------|-------|----------|-------|-------|
|                           | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| Change in retirement age  | 0.10     | 0.02  | 0.14  | 67      | 67     | 0.07  | 0.05     | 0.13    | 68     | 66     |
| Markets and regulation    |          |       |       |         |       |       |          |       |       |
| Degree of integration with global markets | 70.40 | 77.21 | 0.00  | 78      | 74     | 71.25 | 77.49    | 0.00    | 79     | 74     |
| Change of degree of integration with global markets | 0.71 | 0.30  | 0.09  | 78      | 73     | 0.85  | 0.34     | 0.03    | 78     | 74     |
| Competitiveness of the economy | 103.12  | 110.92 | 0.49  | 80      | 80     | 99.53 | 104.96   | 0.45    | 80     | 79     |
| Change in competitiveness of the economy | −0.02  | −0.02 | 0.87  | 80      | 80     | −0.01 | −0.02    | 0.17    | 80     | 79     |
| Capitalization of government bond market (% GDP) | 42.05 | 39.55 | 0.60  | 61      | 29     | 41.78 | 41.20    | 0.90    | 60     | 32     |
| Change in the capitalisation of the government bond market (%) | 2.68  | 0.64  | 0.02  | 59      | 19     | 0.85  | 1.97     | 0.13    | 60     | 28     |
| Entry barriers            | 2.00     | 2.25  | 0.15  | 52      | 67     | 2.10  | 2.33     | 0.19    | 52     | 67     |
| Change of entry barriers  | 0.12     | 0.12  | 0.95  | 52      | 67     | 0.10  | 0.08     | 0.64    | 52     | 67     |
| Degree of privatisation   | 1.73     | 1.90  | 0.41  | 52      | 67     | 1.76  | 1.88     | 0.56    | 52     | 67     |
| Change of the degree of privatisation | 0.00  | 0.02  | 0.52  | 52      | 67     | 0.03  | −0.02    | 0.10    | 52     | 67     |
| Degree of financial market reform | 0.71  | 0.76  | 0.27  | 52      | 67     | 0.75  | 0.78     | 0.41    | 52     | 67     |
| Change of the degree of financial market reform | 0.03  | 0.01  | 0.15  | 52      | 67     | 0.03  | 0.02     | 0.25    | 52     | 67     |
| Quality of government     | 0.70     | 0.76  | 0.27  | 80      | 80     | 0.74  | 0.81     | 0.15    | 80     | 80     |
| Change of the quality of government | 0.10 | 0.01  | 0.01  | 80      | 80     | 0.04  | 0.05     | 0.76    | 80     | 80     |
| Openness of financial markets | 1.60  | 1.91  | 0.08  | 80      | 79     | 1.65  | 1.96     | 0.06    | 80     | 78     |
### Table 7 (continued)

|                           | $T_{-1}$ | $T$ | $T_{+1}$ |
|---------------------------|----------|-----|----------|
|                           | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| Change in the openness of financial markets | 0.07 | 0.03 | 0.47 | 80 | 79 | 0.05 | 0.05 | 0.84 | 80 | 78 |
| Macroeconomic environment |
| GDP growth (%) | 0.07 | 0.05 | 0.08 | 80 | 80 | 0.06 | 0.04 | 0.05 | 80 | 79 |
| Output gap (% GDP) | $-2.40$ | 0.48 | 0.00 | 68 | 59 | $-3.20$ | $-0.94$ | 0.00 | 69 | 65 |
| Change in the output gap (p.p.) | $-0.76$ | $-1.15$ | 0.35 | 67 | 53 | $-0.88$ | $-1.44$ | 0.14 | 68 | 59 |
| Exports (% GDP) | 31.20 | 35.76 | 0.14 | 80 | 80 | 31.02 | 36.04 | 0.12 | 80 | 80 |
| Change in exports (% GDP) | 0.60 | $-0.16$ | 0.06 | 80 | 80 | $-0.17$ | 0.28 | 0.43 | 80 | 80 |
| Savings (% GDP) | 20.77 | 24.00 | 0.00 | 61 | 59 | 20.94 | 23.41 | 0.01 | 61 | 58 |
| Change in savings (% GDP) | 0.03 | $-0.81$ | 0.01 | 61 | 58 | $-0.00$ | $-0.59$ | 0.07 | 61 | 58 |
| Investment (% GDP) | 21.93 | 23.14 | 0.03 | 80 | 80 | 21.45 | 22.41 | 0.07 | 80 | 79 |
| Change in investment (% GDP) | $-0.78$ | $-0.30$ | 0.03 | 80 | 80 | $-0.61$ | $-0.74$ | 0.51 | 80 | 79 |
| Consumption (% GDP) | 76.06 | 75.79 | 0.83 | 80 | 80 | 74.65 | 76.03 | 0.38 | 80 | 80 |
| Change in consumption (% GDP) | $-1.04$ | 0.33 | 0.24 | 80 | 80 | $-1.41$ | 0.24 | 0.16 | 80 | 80 |
| Inflation (p.p.) | 5.93 | 4.04 | 0.02 | 80 | 80 | 4.43 | 3.69 | 0.28 | 80 | 79 |
| Change in inflation | $-0.01$ | $-0.00$ | 0.60 | 80 | 80 | $-0.02$ | $-0.00$ | 0.00 | 80 | 79 |
| Change in industrial production (%) | 0.01 | $-0.00$ | 0.12 | 80 | 80 | $0.01$ | $-0.00$ | 0.09 | 80 | 80 |
| Current account balance (% GDP) | $-0.41$ | 0.41 | 0.29 | 61 | 59 | 0.12 | 0.71 | 0.42 | 61 | 58 |
| Change in current account balance (% GDP) | 0.88 | $-0.18$ | 0.00 | 61 | 58 | 0.52 | 0.30 | 0.40 | 61 | 58 |
| Crisis | 0.48 | 0.56 | 0.41 | 70 | 56 | 0.36 | 0.53 | 0.06 | 70 | 56 |
| Banking crisis | 0.18 | 0.24 | 0.33 | 80 | 80 | 0.19 | 0.28 | 0.19 | 80 | 80 |
| Monetary crisis | 0.06 | 0.06 | 1.00 | 80 | 80 | 0.04 | 0.11 | 0.07 | 80 | 80 |
|                      | $T_{-1}$ |                      | $T$ |                      | $T_{+1}$ |
|----------------------|----------|----------------------|-----|----------------------|----------|
|                      | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| Stock market crisis  | 0.19     | 0.38                 | 0.01  | 80       | 80       | 0.15     | 0.21                 | 0.31  | 80       | 80       | 0.14     | 0.09                 | 0.31  | 80       | 79       |
| Inflationary crisis  | 0.01     | 0.01                 | 1.00  | 80       | 80       | 0.00     | 0.01                 | 0.32  | 80       | 80       | 0.01     | 0.00                 | 0.32  | 80       | 79       |
| VIX                  | 18.44    | 23.04                | 0.00  | 62       | 42       | 17.30    | 23.21                | 0.00  | 62       | 45       | 17.20    | 21.70                | 0.00  | 62       | 46       |
| Change of VIX        | -0.15    | 0.18                 | 0.00  | 60       | 32       | -0.04    | 0.05                 | 0.13  | 62       | 42       | -0.02    | -0.03                | 0.71  | 62       | 44       |
| European Union Membership | 0.56    | 0.75                 | 0.01  | 80       | 80       | 0.58     | 0.75                 | 0.02  | 80       | 80       | 0.58     | 0.75                 | 0.02  | 80       | 79       |

The analyzed determinants are divided into groups. The columns $\Delta s < M$ and $\Delta s > M$ contain the average level of variable considered for the periods in which the risk premium change was lower and higher than median change respectively. All significant differences of 10% are bolded. The columns $N_{<M}$ and $N_{>M}$ indicates the number of observations qualified for comparison. Their different values result from gaps in data. Cyclically adjusted variables are marked with “c.a.”
Table 8 Determinants of changes in the risk premium following fiscal tensions. Robustness check: results for fiscal adjustments instead of fiscal tensions

|                                      | $T_{-1}$  |          |  |          | $T$          |          |  |          | $T_{+1}$  |          |  |
|--------------------------------------|-----------|----------|---|----------|-------------|----------|---|----------|-----------|----------|---|
|                                      | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| Fiscal consolidation                 | 0.81      | 0.58     | 0.00 | 97       | 97        | 1.00     | 1.00     | 0.00 | 97       | 97        | 0.61     | 0.77 | 0.01 | 97       | 97 |
| Start of consolidation               | 0.25      | 0.20     | 0.39 | 97       | 97        | 0.19     | 0.42     | 0.00 | 97       | 97        | 0.00     | 0.00 | 0.00 | 97       | 97 |
| Consolidation (% GDP)                | 1.06      | 0.65     | 0.00 | 97       | 97        | 1.02     | 1.06     | 0.75 | 97       | 97        | 0.58     | 0.84 | 0.05 | 97       | 97 |
| Size of expenditure cuts (% GDP)     | 0.63      | 0.38     | 0.01 | 97       | 97        | 0.70     | 0.55     | 0.13 | 97       | 97        | 0.41     | 0.52 | 0.22 | 97       | 97 |
| Size of tax hikes (% GDP)             | 0.44      | 0.27     | 0.05 | 97       | 97        | 0.31     | 0.51     | 0.03 | 97       | 97        | 0.18     | 0.32 | 0.06 | 97       | 97 |
| Share of expenditure cuts in total consolidation (%) | 0.52    | 0.58     | 0.27 | 56       | 79        | 0.56     | 0.51     | 0.30 | 97       | 97        | 0.62     | 0.56 | 0.37 | 75       | 59 |
| Budget revenue (% GDP)                | 43.76     | 41.17    | 0.03 | 97       | 97        | 44.11    | 41.98    | 0.07 | 97       | 97        | 44.35    | 42.18 | 0.06 | 97       | 97 |
| Change in government revenue (% GDP)  | 0.57      | 0.43     | 0.73 | 97       | 97        | 0.35     | 0.80     | 0.14 | 97       | 97        | 0.24     | 0.20 | 0.86 | 97       | 97 |
| Budget revenue c.a. (% GDP)           | 41.98     | 40.16    | 0.09 | 94       | 92        | 42.42    | 40.76    | 0.11 | 93       | 95        | 42.74    | 40.96 | 0.08 | 95       | 95 |
| Change in budget revenue c.a. (% GDP) | 0.43      | 0.17     | 0.48 | 92       | 90        | 0.28     | 0.62     | 0.18 | 93       | 92        | 0.32     | 0.11 | 0.32 | 93       | 95 |
| VAT revenue (% GDP)                   | 5.23      | 4.84     | 0.34 | 97       | 97        | 5.32     | 4.91     | 0.32 | 97       | 97        | 5.37     | 5.00  | 0.35 | 97       | 95 |
| Change in VAT (% GDP)                 | 0.03      | 0.04     | 0.90 | 97       | 97        | 0.09     | 0.07     | 0.81 | 97       | 97        | 0.06     | 0.09 | 0.60 | 97       | 97 |
| Revenue from VAT c.a. (% GDP)         | 5.23      | 4.90     | 0.44 | 94       | 92        | 5.38     | 4.97     | 0.35 | 93       | 95        | 5.41     | 5.11  | 0.47 | 95       | 95 |
| Change in VAT c.a. (% GDP)            | 0.03      | −0.08    | 0.30 | 92       | 90        | 0.07     | 0.08     | 0.88 | 93       | 92        | 0.03     | 0.08  | 0.40 | 93       | 95 |
| Taxation of goods and services (% GDP)| 10.27     | 9.82     | 0.26 | 97       | 97        | 10.36    | 9.89     | 0.23 | 97       | 97        | 10.35    | 9.96  | 0.31 | 97       | 97 |
| Change in the tax of goods and services (% GDP) | 0.00  | 0.05     | 0.36 | 97       | 97        | 0.09     | 0.06     | 0.65 | 97       | 97        | 0.00     | 0.07  | 0.20 | 97       | 97 |
| Taxation of goods and services c.a. (% GDP) | 9.98    | 9.69     | 0.47 | 94       | 92        | 10.15    | 9.70     | 0.27 | 93       | 95        | 10.14    | 9.81  | 0.40 | 95       | 95 |
| Change in the tax of goods and services c.a. (% GDP) | −0.01   | −0.08    | 0.48 | 92       | 90        | 0.04     | 0.06     | 0.77 | 93       | 92        | −0.01    | 0.03  | 0.45 | 93       | 95 |
| Income tax revenues (% GDP)           | 10.58     | 9.67     | 0.09 | 96       | 97        | 10.71    | 9.77     | 0.08 | 96       | 97        | 10.80    | 9.88  | 0.09 | 96       | 97 |
| Change in income tax (% GDP)          | 0.08      | 0.06     | 0.80 | 96       | 97        | 0.13     | 0.10     | 0.62 | 96       | 97        | 0.08     | 0.12  | 0.69 | 96       | 97 |
| Income tax revenue c.a. (% GDP)       | 10.44     | 9.71     | 0.18 | 93       | 92        | 10.72    | 9.77     | 0.08 | 92       | 95        | 10.82    | 9.91  | 0.10 | 94       | 95 |
| Change in income tax c.a. (% GDP)     | 0.07      | −0.01    | 0.39 | 91       | 90        | 0.12     | 0.06     | 0.38 | 92       | 92        | 0.10     | 0.08  | 0.87 | 92       | 95 |
| CIT (% GDP)                           | 2.42      | 2.35     | 0.51 | 96       | 97        | 2.46     | 2.48     | 0.89 | 96       | 97        | 2.51     | 2.57  | 0.63 | 96       | 97 |
| Change in CIT (% GDP)                 | 0.08      | 0.03     | 0.34 | 96       | 97        | 0.04     | 0.13     | 0.08 | 96       | 97        | 0.05     | 0.09  | 0.44 | 96       | 97 |
| | $T_{\Delta < M}$ | $T_{\Delta > M}$ | $T_{\Delta = M}$ | $p$-val | $N_{\Delta < M}$ | $N_{\Delta > M}$ | $\Delta s < M$ | $\Delta s > M$ |
|---|---|---|---|---|---|---|---|---|
| CIT c.a. (% GDP) | 2.66 | 2.65 | 2.58 | 0.56 | 0.26 | 0.29 | 0.56 | 0.56 |
| Change in CIT c.a. (% GDP) | 0.09 | 0.12 | 0.15 | 0.02 | 0.01 | 0.01 | 0.02 | 0.01 |
| Capital gains tax (% GDP) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Change in capital gains tax (% GDP) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tax on property (% GDP) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Change in tax on property (% GDP) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Financial transaction tax (% GDP) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Change of the financial transaction tax (% GDP) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Social contributions (% GDP) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Change in social contributions (% GDP) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Government expenditure (% GDP) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Change in government expenditure (% GDP) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Primary expenditure (% GDP) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                          | \( T_{-1} \) | \( T \)           | \( T_+1 \)         |
|--------------------------|--------------|------------------|-------------------|
|                          | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val | \( \Delta s < M \) | \( \Delta s > M \) | \( p \)-val |
| Primary expenditure c.a. (% GDP) | 41.18 | 40.99 | 0.87 | 94 | 92 | 40.93 | 40.97 | 0.97 | 93 | 95 | 40.86 | 40.49 | 0.73 | 95 | 95 |
| Change in Primary expenditure c.a. (% GDP) | \(-0.44\) | \(0.54\) | \(0.05\) | \(92\) | \(90\) | \(-0.50\) | \(0.03\) | \(0.21\) | \(93\) | \(92\) | \(-0.06\) | \(-0.63\) | \(0.16\) | \(93\) | \(95\) |
| Government consumption (% GDP) | 20.95 | 20.55 | 0.33 | 81 | 84 | 20.83 | 20.37 | 0.25 | 81 | 84 | 20.69 | 20.20 | 0.22 | 81 | 84 |
| Change in government consumption (% GDP) | \(-0.13\) | \(0.08\) | \(0.05\) | \(81\) | \(84\) | \(-0.12\) | \(-0.18\) | \(0.48\) | \(81\) | \(84\) | \(-0.15\) | \(-0.17\) | \(0.82\) | \(81\) | \(84\) |
| Government investment (% GDP) | 0.03 | 0.04 | 0.19 | 49 | 49 | 0.03 | 0.03 | 0.49 | 57 | 49 | 0.03 | 0.03 | 0.97 | 62 | 51 |
| Change in government investment (% GDP) | 0.00 | 0.00 | 0.63 | 47 | 43 | \(0.00\) | \(0.00\) | \(0.05\) | \(49\) | \(49\) | \(0.00\) | \(0.00\) | \(0.06\) | \(57\) | \(49\) |
| Public sector wages (% GDP) | 12.58 | 12.22 | 0.28 | 86 | 83 | 12.42 | 11.92 | 0.16 | 85 | 81 | 12.26 | 11.75 | 0.15 | 81 | 81 |
| Change in public sector wages (% GDP) | \(-0.16\) | \(0.01\) | \(0.04\) | \(86\) | \(83\) | \(-0.17\) | \(-0.32\) | \(0.28\) | \(85\) | \(81\) | \(-0.16\) | \(-0.33\) | \(0.21\) | \(81\) | \(81\) |
| Transfers (% government expenditure) | 58.63 | 58.84 | 0.94 | 67 | 59 | 58.62 | 58.81 | 0.94 | 69 | 60 | 59.42 | 58.77 | 0.80 | 69 | 65 |
| Change in transfers (% government expenditure) | 2.03 | 0.41 | 0.28 | 65 | 53 | 0.23 | 0.42 | 0.90 | 67 | 58 | 1.20 | \(-0.20\) | 0.14 | 68 | 60 |
| Transfers c.a. (% government expenditure) | 57.81 | 57.89 | 0.98 | 67 | 59 | 57.58 | 58.02 | 0.86 | 69 | 60 | 58.77 | 57.89 | 0.71 | 69 | 65 |
| Change of c.a. transfers (% government expenditure) | 1.90 | 0.41 | 0.32 | 65 | 53 | 0.18 | 0.42 | 0.87 | 67 | 58 | 1.19 | \(-0.13\) | 0.16 | 68 | 60 |
| Social expenditure (% GDP) | 21.71 | 21.33 | 0.64 | 96 | 96 | 21.88 | 21.42 | 0.56 | 96 | 96 | 21.85 | 21.59 | 0.73 | 96 | 96 |
| Change in social expenditure (% GDP) | 0.15 | 0.38 | 0.15 | 96 | 96 | 0.17 | 0.09 | 0.56 | 96 | 96 | \(-0.02\) | 0.18 | 0.14 | 96 | 96 |
| Social expenditure c.a. (% GDP) | 20.21 | 20.11 | 0.90 | 93 | 91 | 20.27 | 20.17 | 0.90 | 92 | 94 | 20.30 | 20.30 | 0.99 | 94 | 94 |
| Change in social expenditure c.a. (% GDP) | 0.02 | 0.06 | 0.85 | 89 | 89 | 0.07 | 0.01 | 0.57 | 92 | 91 | 0.03 | 0.15 | 0.34 | 92 | 94 |
| Debt (% GDP) | 64.10 | 62.91 | 0.80 | 97 | 97 | 66.50 | 66.31 | 0.97 | 97 | 97 | 67.82 | 68.63 | 0.87 | 97 | 97 |
| Change in debt (% GDP) | 3.17 | 3.66 | 0.47 | 97 | 97 | 2.40 | 3.39 | 0.16 | 97 | 97 | 1.32 | 2.33 | 0.12 | 97 | 97 |
| Change in debt (%) | 0.07 | 0.08 | 0.51 | 97 | 97 | 0.04 | 0.08 | 0.11 | 97 | 96 | 0.02 | 0.04 | 0.41 | 97 | 97 |
| Fiscal rules | \(-0.24\) | \(-0.18\) | 0.58 | 56 | 50 | \(-0.11\) | \(-0.10\) | 0.96 | 57 | 51 | 0.13 | 0.01 | 0.48 | 58 | 52 |
| Change of fiscal rules | 0.06 | 0.03 | 0.40 | 54 | 49 | 0.14 | 0.08 | 0.42 | 56 | 50 | 0.26 | 0.12 | 0.21 | 57 | 51 |
| Primary balance (% GDP) | \(-0.01\) | \(-1.55\) | \(0.00\) | \(97\) | \(97\) | \(0.79\) | \(-0.97\) | \(0.00\) | \(97\) | \(97\) | \(1.26\) | \(-0.22\) | \(0.01\) | \(97\) | \(97\) |
| Change in primary balance (% GDP) | \(0.85\) | \(-0.45\) | \(0.00\) | \(97\) | \(97\) | 0.80 | 0.58 | 0.53 | 97 | 97 | 0.47 | 0.75 | 0.41 | 97 | 97 |
Table 8 (continued)

|                                | $T_{-1}$ |          |          | $T$  |          |          | $T_{+1}$ |          |          |
|--------------------------------|----------|----------|----------|------|----------|----------|----------|----------|----------|
|                                | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| Primary balance c.a. (% GDP)   | 0.79     | -0.85    | 0.00     | 94    | 92       | 1.49     | -0.22    | 0.00     | 93    | 95       |
| Cost of debt service (% GDP)   | 5.18     | 4.28     | 0.02     | 97    | 97       | 5.18     | 4.37     | 0.03     | 97    | 97       |
| Change in the cost of debt service (% GDP) | 0.15 | 0.05 | 0.17 | 97 | 97 | 0.00 | 0.08 | 0.26 | 97 | 97 |
| Monetary policy                |          |          |          |      |          |          |          |          |      |          |
| Short-term rate (p.p.)         | 6.94     | 5.73     | 0.06     | 93    | 91       | 6.01     | 5.92     | 0.90     | 94    | 92       |
| Change in short-term interest rate (%) | -0.44 | -0.56 | 0.65 | 92 | 89 | -0.96 | 0.12 | 0.00 | 93 | 91       |
| Change in short-term interest rate (p.p.) | -0.03 | -0.06 | 0.52 | 92 | 89 | -0.16 | 0.07 | 0.00 | 93 | 91       |
| Change in M3 (%)               | 0.07     | 0.06     | 0.25     | 34    | 34       | 0.08     | 0.06     | 0.10     | 34    | 34       |
| Central bank independence      | 0.51     | 0.54     | 0.23     | 97    | 97       | 0.51     | 0.55     | 0.16     | 96    | 91       |
| Change of central bank independence | 0.01 | 0.01 | 0.56 | 97 | 97 | 0.02 | 0.00 | 0.12 | 96 | 91       |
| Exchange rate                  |          |          |          |      |          |          |          |          |      |          |
| Fixed regime                   | 0.16     | 0.14     | 0.69     | 97    | 97       | 0.22     | 0.10     | 0.03     | 97    | 97       |
| Floating regime                | 0.60     | 0.71     | 0.10     | 97    | 97       | 0.57     | 0.74     | 0.01     | 97    | 97       |
| Intermediate regime            | 0.21     | 0.12     | 0.12     | 97    | 97       | 0.19     | 0.13     | 0.33     | 97    | 97       |
| EMU                            | 0.20     | 0.31     | 0.07     | 97    | 97       | 0.21     | 0.32     | 0.07     | 97    | 97       |
| Labour market                  |          |          |          |      |          |          |          |          |      |          |
| Unemployment (%)               | 9.97     | 9.08     | 0.15     | 94    | 92       | 10.16    | 9.38     | 0.23     | 93    | 95       |
| Change in unemployment (p.p.)  | 0.31     | 0.36     | 0.82     | 92    | 90       | 0.13     | 0.31     | 0.36     | 93    | 92       |
| Change in unit labour cost (%) | 0.01     | 0.03     | 0.31     | 95    | 95       | 0.02     | 0.01     | 0.65     | 94    | 95       |
| Labour protection              | 2.04     | 2.20     | 0.33     | 83    | 77       | 2.00     | 2.16     | 0.31     | 84    | 83       |
| Change in labour protection    | -0.01    | 0.00     | 0.37     | 82    | 72       | 0.00     | -0.01    | 0.50     | 83    | 77       |
| Unions density                 | 36.10    | 33.01    | 0.27     | 96    | 97       | 35.91    | 32.62    | 0.25     | 96    | 96       |
### Table 8 (continued)

| | $T_{-1}$ | | $T$ | | $T_{+1}$ |
|---|---|---|---|---|---|
| | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| Changing in unions density | $-0.01$ | $-0.01$ | $0.72$ | $96$ | $97$ | $-0.01$ | $-0.01$ | $0.50$ | $96$ | $96$ | $-0.01$ | $-0.01$ | $0.85$ | $95$ | $94$ |
| Retirement age | $61.88$ | $62.09$ | $0.60$ | $83$ | $86$ | $61.79$ | $62.05$ | $0.51$ | $83$ | $86$ | $61.71$ | $62.01$ | $0.43$ | $84$ | $86$ |
| Change in retirement age | $-0.11$ | $-0.12$ | $0.85$ | $82$ | $86$ | $-0.09$ | $-0.04$ | $0.47$ | $83$ | $86$ | $-0.08$ | $-0.01$ | $0.32$ | $83$ | $86$ |

#### Markets and regulation

| Markets and regulation | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Degree of integration with global markets | $75.23$ | $74.25$ | $0.51$ | $96$ | $94$ | $96.08$ | $75.11$ | $0.50$ | $97$ | $94$ | $77.01$ | $75.77$ | $0.37$ | $97$ | $94$ |
| Change in degree of integration with global markets | $0.95$ | $0.60$ | $0.10$ | $96$ | $93$ | $0.85$ | $0.89$ | $0.83$ | $96$ | $94$ | $0.93$ | $0.66$ | $0.20$ | $97$ | $94$ |
| Competitiveness of the economy | $95.14$ | $96.51$ | $0.42$ | $97$ | $97$ | $94.82$ | $94.40$ | $0.78$ | $97$ | $97$ | $94.51$ | $94.17$ | $0.82$ | $97$ | $97$ |
| Change in competitiveness of the economy | $-0.01$ | $-0.01$ | $0.47$ | $97$ | $97$ | $0.00$ | $-0.02$ | $0.03$ | $97$ | $97$ | $0.00$ | $0.00$ | $0.89$ | $97$ | $97$ |
| Capitalization of government bond market (% GDP) | $50.25$ | $51.80$ | $0.76$ | $70$ | $57$ | $51.56$ | $54.38$ | $0.60$ | $67$ | $55$ | $52.13$ | $55.36$ | $0.57$ | $62$ | $56$ |
| Change in the capitalisation of the government bond market (%) | $1.99$ | $2.97$ | $0.22$ | $68$ | $54$ | $1.53$ | $2.69$ | $0.15$ | $66$ | $51$ | $1.44$ | $1.91$ | $0.56$ | $60$ | $54$ |
| Entry barriers | $2.27$ | $2.32$ | $0.68$ | $74$ | $83$ | $2.33$ | $2.41$ | $0.52$ | $70$ | $83$ | $2.41$ | $2.42$ | $0.98$ | $67$ | $82$ |
| Change in entry barriers | $0.06$ | $0.09$ | $0.46$ | $74$ | $83$ | $0.06$ | $0.13$ | $0.21$ | $70$ | $83$ | $0.10$ | $0.03$ | $0.10$ | $67$ | $82$ |
| Degree of privatisation | $2.14$ | $2.15$ | $0.98$ | $74$ | $83$ | $2.19$ | $2.24$ | $0.73$ | $70$ | $83$ | $2.24$ | $2.27$ | $0.87$ | $67$ | $82$ |
| Change in the degree of privatisation | $0.02$ | $0.07$ | $0.34$ | $74$ | $83$ | $0.05$ | $0.07$ | $0.64$ | $70$ | $83$ | $0.06$ | $0.01$ | $0.16$ | $67$ | $82$ |
| Degree of financial market reform | $0.81$ | $0.81$ | $0.97$ | $74$ | $83$ | $0.83$ | $0.82$ | $0.89$ | $70$ | $83$ | $0.85$ | $0.84$ | $0.72$ | $67$ | $82$ |
| Change in the degree of financial market reform | $0.02$ | $0.03$ | $0.19$ | $74$ | $83$ | $0.02$ | $0.02$ | $0.76$ | $70$ | $83$ | $0.02$ | $0.01$ | $0.37$ | $67$ | $82$ |
| Quality of government | $0.77$ | $0.75$ | $0.64$ | $97$ | $97$ | $0.81$ | $0.77$ | $0.40$ | $97$ | $97$ | $0.84$ | $0.78$ | $0.13$ | $97$ | $97$ |
| Change in the quality of government | $0.07$ | $0.01$ | $0.06$ | $97$ | $97$ | $0.04$ | $0.02$ | $0.59$ | $97$ | $97$ | $0.03$ | $0.01$ | $0.36$ | $97$ | $97$ |
| Openness of financial markets | $1.84$ | $1.92$ | $0.53$ | $97$ | $97$ | $1.88$ | $2.04$ | $0.20$ | $97$ | $97$ | $1.93$ | $2.06$ | $0.27$ | $97$ | $97$ |
| Change in the openness of financial markets | $0.11$ | $0.04$ | $0.10$ | $97$ | $97$ | $0.04$ | $0.11$ | $0.12$ | $97$ | $97$ | $0.05$ | $0.02$ | $0.30$ | $97$ | $97$ |

#### Macroeconomic environment

| Macroeconomic environment | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GDP growth (%) | $0.05$ | $0.05$ | $0.55$ | $97$ | $97$ | $0.05$ | $0.05$ | $0.45$ | $97$ | $97$ | $0.05$ | $0.05$ | $0.64$ | $97$ | $97$ |
Table 8 (continued)

|                        | $T_{-1}$ |          | $T$ |          | $T_{+1}$ |          |
|------------------------|----------|----------|-----|----------|----------|----------|
|                        | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < M$ | $\Delta s > M$ | $p$-val | $N_{<M}$ | $N_{>M}$ |
| **Output gap (% GDP)** | $-1.12$  | $-1.23$  | $0.78$  | $82$  | $78$  | $-1.35$  | $-1.16$  | $0.67$  | $83$  | $83$  | $-1.35$  | $-1.20$  | $0.74$  | $84$  | $87$  |
| **Change in the output gap (p.p.)** | $-0.33$  | $-0.37$  | $0.91$  | $81$  | $74$  | $-0.29$  | $0.05$  | $0.18$  | $82$  | $78$  | $0.05$  | $-0.05$  | $0.63$  | $83$  | $83$  |
| **Exports (% GDP)**   | $33.96$  | $30.69$  | $0.24$  | $97$  | $97$  | $34.54$  | $32.25$  | $0.42$  | $97$  | $97$  | $35.06$  | $33.41$  | $0.57$  | $97$  | $97$  |
| **Change in exports (% GDP)** | $1.08$  | $0.77$  | $0.36$  | $97$  | $97$  | $0.58$  | $1.55$  | $0.00$  | $97$  | $97$  | $0.52$  | $1.16$  | $0.02$  | $97$  | $97$  |
| **Savings (% GDP)**   | $21.57$  | $20.78$  | $0.21$  | $83$  | $85$  | $21.62$  | $20.94$  | $0.27$  | $83$  | $85$  | $21.89$  | $21.02$  | $0.16$  | $83$  | $86$  |
| **Change in savings (% GDP)** | $0.16$  | $-0.29$  | $0.07$  | $83$  | $84$  | $0.06$  | $0.16$  | $0.64$  | $83$  | $85$  | $0.23$  | $0.08$  | $0.50$  | $83$  | $85$  |
| **Investment (% GDP)** | $21.27$  | $22.31$  | $0.01$  | $97$  | $97$  | $21.06$  | $21.95$  | $0.02$  | $97$  | $97$  | $21.09$  | $21.65$  | $0.13$  | $97$  | $97$  |
| **Change in investment (% GDP)** | $-0.34$  | $-0.48$  | $0.42$  | $97$  | $97$  | $-0.21$  | $-0.36$  | $0.34$  | $97$  | $97$  | $0.03$  | $-0.31$  | $0.02$  | $97$  | $97$  |
| **Consumption (% GDP)** | $76.86$  | $77.14$  | $0.62$  | $97$  | $97$  | $76.71$  | $76.97$  | $0.66$  | $97$  | $97$  | $76.29$  | $76.95$  | $0.33$  | $97$  | $97$  |
| **Change in consumption (% GDP)** | $-0.01$  | $-0.32$  | $0.03$  | $97$  | $97$  | $-0.15$  | $-0.18$  | $0.87$  | $97$  | $97$  | $-0.42$  | $-0.01$  | $0.05$  | $97$  | $97$  |
| **Inflation (p.p.)**   | $3.86$  | $3.58$  | $0.59$  | $97$  | $97$  | $3.12$  | $3.73$  | $0.21$  | $97$  | $97$  | $2.49$  | $3.64$  | $0.01$  | $97$  | $97$  |
| **Change in inflation** | $0.00$  | $0.00$  | $1.00$  | $97$  | $97$  | $0.01$  | $0.00$  | $0.00$  | $97$  | $97$  | $0.01$  | $0.00$  | $0.01$  | $97$  | $97$  |
| **Change in industrial production (%)** | $0.02$  | $0.02$  | $0.54$  | $97$  | $97$  | $0.02$  | $0.02$  | $0.22$  | $97$  | $97$  | $0.02$  | $0.02$  | $0.40$  | $97$  | $97$  |
| **Current account balance (% GDP)** | $-0.03$  | $-1.61$  | $0.00$  | $83$  | $85$  | $0.28$  | $-1.13$  | $0.01$  | $83$  | $85$  | $0.29$  | $-0.59$  | $0.10$  | $83$  | $86$  |
| **Change in current account balance (% GDP)** | $0.50$  | $0.22$  | $0.18$  | $83$  | $84$  | $0.31$  | $0.48$  | $0.44$  | $83$  | $85$  | $0.08$  | $0.54$  | $0.02$  | $83$  | $85$  |
| **Crisis**             | $0.34$  | $0.42$  | $0.26$  | $92$  | $85$  | $0.30$  | $0.38$  | $0.28$  | $85$  | $84$  | $0.38$  | $0.29$  | $0.23$  | $79$  | $84$  |
| **Banking crisis**     | $0.18$  | $0.25$  | $0.22$  | $97$  | $97$  | $0.12$  | $0.15$  | $0.54$  | $97$  | $97$  | $0.11$  | $0.10$  | $0.82$  | $97$  | $97$  |
| **Currency crisis**    | $0.08$  | $0.08$  | $1.00$  | $97$  | $97$  | $0.05$  | $0.09$  | $0.27$  | $97$  | $97$  | $0.09$  | $0.03$  | $0.07$  | $97$  | $97$  |
| **Stock market crisis** | $0.13$  | $0.13$  | $1.00$  | $97$  | $97$  | $0.12$  | $0.11$  | $0.83$  | $97$  | $97$  | $0.15$  | $0.12$  | $0.54$  | $97$  | $97$  |
| **Inflation crisis**   | $0.00$  | $0.02$  | $0.16$  | $97$  | $97$  | $0.00$  | $0.01$  | $0.32$  | $97$  | $97$  | $0.00$  | $0.01$  | $0.32$  | $97$  | $97$  |
| **VIX**                | $18.89$  | $19.01$  | $0.90$  | $72$  | $64$  | $18.92$  | $17.94$  | $0.25$  | $73$  | $67$  | $19.41$  | $18.51$  | $0.31$  | $74$  | $69$  |
The analyzed determinants are divided into groups. Years of fiscal adjustments are as defined by Alesina et al. (2017) and Devries et al. (2011.) The columns $\Delta s < M$ and $\Delta s > M$ contain the average level of variable considered for the periods in which the risk premium change was lower and higher than median change respectively. All significant differences of 10% are bolded. The columns $N_{<M}$ and $N_{>M}$ indicate the number of observations qualified for comparison. Their different values result from gaps in data. Cyclically adjusted variables are marked with “c.a.”

|                      | $T-1$          |                  | $T$          |                  | $T+1$         |                  |
|----------------------|----------------|-----------------|--------------|-----------------|----------------|-----------------|
|                      | $\Delta s < M$ | $\Delta s > M$ | $p$-val      | $N_{<M}$       | $N_{>M}$       | $\Delta s < M$ | $\Delta s > M$ | $p$-val      | $N_{<M}$       | $N_{>M}$       |
| Change of VIX        | 0.00           | −0.02           | 0.56         | 70              | 61             | 0.03            | −0.03          | 0.14         | 72              | 64             |
| European Union Membership | 0.74          | 0.66            | 0.21         | 97              | 97             | 0.74           | 0.68           | 0.34         | 97              | 97             |

The table shows the change of VIX and European Union Membership for different time periods and their respective $p$-values and number of observations.
Table 9  Determinants of changes in the risk premium following fiscal tensions. Robustness check: results for initial conditions

|                          | Split by median  |                  |         | Split by Q<sub>1</sub> |                  |         |
|--------------------------|------------------|------------------|---------|------------------------|------------------|---------|
|                          | $\Delta s < M$   | $\Delta s > M$   | $p$-val | $N_{<M}$               | $N_{>M}$         | $N_{<Q1}$| $N_{>Q1}$|
| Fiscal consolidation     | 0.43             | 0.38             | 0.36    | 93                     | 93               | 0.37    | 0.42    | 0.46    | 47      | 139    |
| Consolidation (% GDP)    | 2.15             | 1.80             | 0.35    | 93                     | 93               | 1.94    | 1.99    | 0.90    | 47      | 139    |
| Size of expenditure cuts (% GDP) | 1.45           | 1.07             | 0.20    | 93                     | 93               | 1.08    | 1.32    | 0.48    | 47      | 139    |
| Size of tax hikes (% GDP) | 0.70             | 0.73             | 0.88    | 93                     | 93               | 0.85    | 0.67    | 0.32    | 47      | 139    |
| Share of expenditure cuts in total consolidation (%) | 0.69            | 0.54             | 0.05    | 55                     | 54               | 0.64    | 0.61    | 0.78    | 24      | 85     |
| Budget revenue (% GDP)   | 40.20            | 44.06            | 0.00    | 93                     | 93               | 38.75   | 43.27   | 0.00    | 47      | 139    |
| Budget revenue c.a. (% GDP) | 39.79         | 44.09            | 0.00    | 82                     | 84               | 37.75   | 43.35   | 0.00    | 41      | 125    |
| VAT revenue (% GDP)      | 4.43             | 5.57             | 0.02    | 93                     | 93               | 4.17    | 5.28    | 0.04    | 47      | 139    |
| VAT revenue c.a. (% GDP) | 4.72             | 5.71             | 0.04    | 82                     | 84               | 4.65    | 5.41    | 0.18    | 41      | 125    |
| Taxation of goods and services (% GDP) | 9.82          | 10.52            | 0.08    | 93                     | 93               | 10.01   | 10.22   | 0.65    | 47      | 139    |
| Taxation of goods and services c.a. (% GDP) | 9.45          | 10.29            | 0.03    | 82                     | 84               | 9.59    | 9.97    | 0.40    | 41      | 125    |
| Income tax revenues (% GDP) | 10.92         | 10.93            | 0.99    | 91                     | 92               | 10.99   | 10.91   | 0.91    | 45      | 138    |
| Income tax revenue c.a. (% GDP) | 10.23         | 10.56            | 0.60    | 80                     | 83               | 10.08   | 10.49   | 0.58    | 39      | 124    |
| CIT (% GDP)              | 2.61             | 2.97             | 0.12    | 91                     | 92               | 2.25    | 2.96    | 0.01    | 45      | 138    |
| CIT c.a. (% GDP)         | 2.91             | 3.13             | 0.48    | 80                     | 83               | 2.60    | 3.16    | 0.13    | 39      | 124    |
| Capital gains tax (% GDP) | 0.10             | 0.06             | 0.24    | 85                     | 85               | 0.12    | 0.07    | 0.29    | 40      | 130    |
| Capital gains tax c.a. (% GDP) | 0.13          | 0.08             | 0.17    | 74                     | 76               | 0.18    | 0.08    | 0.05    | 34      | 116    |
| Tax on property (% GDP)  | 1.95             | 1.80             | 0.20    | 93                     | 93               | 1.96    | 1.85    | 0.43    | 47      | 139    |
| Tax on property c.a. (% GDP) | 1.97          | 1.76             | 0.10    | 82                     | 84               | 2.01    | 1.81    | 0.18    | 41      | 125    |
| Financial transaction tax (% GDP) | 0.48         | 0.52             | 0.37    | 93                     | 93               | 0.49    | 0.50    | 0.84    | 47      | 139    |
| Financial transaction tax c.a. (% GDP) | 0.53         | 0.50             | 0.62    | 82                     | 84               | 0.63    | 0.47    | 0.02    | 41      | 125    |
| Social contributions (% GDP) | 8.09           | 9.72             | 0.04    | 93                     | 93               | 7.44    | 9.40    | 0.03    | 47      | 139    |
| Social contributions c.a. (% GDP) | 8.42          | 10.14            | 0.03    | 82                     | 84               | 7.78    | 9.79    | 0.03    | 41      | 125    |
| Government expenditure (% GDP) | 44.36         | 45.72            | 0.21    | 93                     | 93               | 43.89   | 45.43   | 0.22    | 47      | 139    |
| Government expenditure c.a. (% GDP) | 42.89         | 45.10            | 0.06    | 82                     | 84               | 41.09   | 44.96   | 0.00    | 41      | 125    |
| Primary expenditure (% GDP) | 40.31           | 42.18            | 0.07    | 93                     | 93               | 39.77   | 41.74   | 0.10    | 47      | 139    |
Table 9 (continued)

| Split by median | Split by Q1 |
|-----------------|------------|
| Δs < M | Δs > M | p-val | N< M | N> M | Δs < Q1 | Δs > Q1 | p-val | N< Q1 | N> Q1 |
|----------------|----------|-------|------|------|----------|----------|-------|------|------|
| Primary expenditure c.a. (% GDP) | 39.49 | 42.15 | 0.02 | 82 | 84 | 37.80 | 41.83 | 0.00 | 41 | 125 |
| Government consumption (% GDP) | 19.90 | 20.20 | 0.45 | 81 | 87 | 19.79 | 20.14 | 0.46 | 40 | 128 |
| Government investment (% GDP) | 0.03 | 0.04 | 0.58 | 34 | 54 | 0.03 | 0.04 | 0.30 | 22 | 66 |
| Public sector wages (% GDP) | 12.09 | 11.92 | 0.63 | 83 | 85 | 12.27 | 11.92 | 0.39 | 41 | 127 |
| Transfers (% government expenditure) | 54.26 | 54.54 | 0.94 | 39 | 66 | 49.38 | 55.49 | 0.21 | 18 | 87 |
| Transfers c.a. (% government expenditure) | 54.64 | 59.86 | 0.07 | 42 | 67 | 50.29 | 59.87 | 0.01 | 23 | 86 |
| Social expenditure (% GDP) | 17.17 | 20.08 | 0.01 | 93 | 93 | 18.33 | 18.72 | 0.77 | 47 | 139 |
| Social expenditure c.a. (% GDP) | 18.74 | 20.80 | 0.02 | 82 | 84 | 18.28 | 20.27 | 0.04 | 41 | 125 |
| Debt (% GDP) | 53.87 | 51.61 | 0.66 | 93 | 93 | 59.10 | 50.59 | 0.14 | 47 | 139 |
| Fiscal rules | -0.24 | 0.03 | 0.07 | 34 | 58 | -0.20 | -0.03 | 0.34 | 20 | 72 |
| Primary balance (% GDP) | -0.11 | 1.88 | 0.00 | 93 | 93 | -1.02 | 1.53 | 0.00 | 47 | 139 |
| Primary balance c.a. (% GDP) | 0.18 | 1.91 | 0.02 | 82 | 84 | -0.20 | 1.47 | 0.06 | 41 | 125 |
| Cost of debt service (% GDP) | 4.05 | 3.55 | 0.10 | 93 | 93 | 4.12 | 3.69 | 0.22 | 47 | 139 |

**Monetary policy**

| Short-term rate (p.p.) | 9.33 | 7.51 | 0.02 | 80 | 86 | 9.60 | 7.99 | 0.09 | 41 | 125 |
| Central bank independence | 0.46 | 0.56 | 0.00 | 93 | 93 | 0.46 | 0.52 | 0.11 | 47 | 139 |

**Exchange rate**

| Fixed regime | 0.28 | 0.26 | 0.74 | 93 | 93 | 0.23 | 0.28 | 0.54 | 47 | 139 |
| Floating regime | 0.54 | 0.59 | 0.46 | 93 | 93 | 0.55 | 0.57 | 0.86 | 47 | 139 |
| Intermediate regime | 0.22 | 0.32 | 0.10 | 93 | 93 | 0.15 | 0.31 | 0.03 | 47 | 139 |
| EMU | 0.17 | 0.82 | 0.10 | 93 | 93 | 0.26 | 0.32 | 0.43 | 47 | 139 |

**Labour market**

| Unemployment (%) | 7.96 | 6.76 | 0.06 | 78 | 85 | 10.09 | 6.50 | 0.00 | 38 | 125 |
| Labour protection | 1.80 | 2.29 | 0.00 | 55 | 72 | 1.74 | 2.18 | 0.03 | 29 | 98 |
| Unions density | 39.05 | 38.14 | 0.75 | 92 | 93 | 39.37 | 38.33 | 0.75 | 47 | 138 |
| Table 9 (continued)                                      | Split by median | Split by $Q_1$ |
|--------------------------------------------------------|----------------|---------------|
|                                                        | $\Delta s < M$ | $\Delta s > M$ | P-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < Q_1$ | $\Delta s > Q_1$ | P-val | $N_{<Q_1}$ | $N_{>Q_1}$ |
| Retirement age                                          | 62.83          | 61.82         | 0.01  | 78       | 80       | 62.99           | 62.07           | 0.05  | 42       | 116       |
| Markets and regulation                                  |                |               |       |          |          |                |                |       |          |          |
| Degree of integration with global markets              | 70.16          | 75.64         | 0.00  | 86       | 86       | 69.01           | 74.37           | 0.01  | 47       | 125       |
| Capitalization of government bond market (% GDP)        | 46.30          | 43.22         | 0.47  | 40       | 61       | 48.79           | 43.50           | 0.33  | 18       | 83        |
| Entry barriers                                          | 1.84           | 2.05          | 0.19  | 75       | 60       | 1.86            | 1.96            | 0.58  | 35       | 100       |
| Degree of privatisation                                 | 1.72           | 1.80          | 0.67  | 75       | 60       | 1.63            | 1.80            | 0.42  | 35       | 100       |
| Degree of financial market reform                       | 0.66           | 0.69          | 0.40  | 75       | 60       | 0.63            | 0.69            | 0.19  | 35       | 100       |
| Quality of government                                   | 101.11         | 102.00        | 0.00  | 90       | 70       | 103.00          | 103.46          | 0.00  | 47       | 114       |
| Openness of financial markets                           | 1.46           | 1.75          | 0.09  | 93       | 93       | 1.44            | 1.66            | 0.25  | 47       | 139       |
| Macroeconomic environment                               |                |               |       |          |          |                |                |       |          |          |
| GDP growth (%)                                          | 0.09           | 0.08          | 0.39  | 93       | 93       | 0.09            | 0.08            | 0.19  | 47       | 139       |
| Output gap (% GDP)                                      | 0.44           | 2.21          | 0.01  | 59       | 71       | -1.28           | 2.14            | 0.00  | 28       | 102       |
| Exports (% GDP)                                         | 30.59          | 35.03         | 0.10  | 93       | 93       | 30.27           | 33.67           | 0.28  | 47       | 139       |
| Savings (% GDP)                                         | 21.59          | 24.71         | 0.00  | 68       | 74       | 20.28           | 24.25           | 0.00  | 37       | 105       |
| Investment (% GDP)                                      | 23.92          | 23.96         | 0.94  | 93       | 93       | 23.62           | 24.05           | 0.50  | 47       | 139       |
| Consumption (% GDP)                                     | 76.88          | 75.03         | 0.03  | 93       | 93       | 77.75           | 75.35           | 0.01  | 47       | 139       |
| Inflation (p.p.)                                        | 7.44           | 4.91          | 0.00  | 93       | 93       | 9.00            | 5.22            | 0.00  | 47       | 139       |
| Current account balance (% GDP)                         | -0.85          | 0.20          | 0.18  | 68       | 74       | -1.47           | 0.11            | 0.08  | 37       | 105       |
| Crisis                                                 | 0.55           | 0.48          | 0.38  | 93       | 93       | 0.55            | 0.50            | 0.56  | 47       | 139       |
| Banking crisis                                          | 0.23           | 0.05          | 0.00  | 93       | 93       | 0.21            | 0.12            | 0.10  | 47       | 139       |
| Currency crisis                                         | 0.03           | 1.03          | 0.00  | 93       | 93       | 0.06            | 0.02            | 0.16  | 47       | 139       |
| Stock market crisis                                     | 0.37           | 0.42          | 0.46  | 93       | 93       | 0.30            | 0.42            | 0.13  | 47       | 139       |
| Inflation crisis                                        | 0.04           | 0.03          | 0.70  | 93       | 93       | 0.09            | 0.02            | 0.05  | 47       | 139       |
| VIX                                                     | 21.20          | 19.46         | 0.03  | 41       | 67       | 21.76           | 19.80           | 0.06  | 18       | 90        |
The analyzed determinants are divided into groups. Initial conditions are defined as the last year of "stress" periods. The columns $\Delta s < M$ and $\Delta s > M$ contain the average level of variable considered for the periods in which the risk premium change was lower and higher than median change respectively. The columns $\Delta s < Q_1$ and $\Delta s > Q_1$ contain the average level of variable for the periods in which the risk premium change was lower and higher than first quartile respectively. All significant differences of 10% are bolded. The columns $N_{<M}$, $N_{>M}$, $N_{<Q1}$ and $N_{>Q1}$ indicate the number of observations qualified for comparison, their different values result from gaps in data. Cyclically adjusted variables are marked with “c.a.”

|                  | $\Delta s < M$ | $\Delta s > M$ | p-val | $N_{<M}$ | $N_{>M}$ | $\Delta s < Q_1$ | $\Delta s > Q_1$ | p-val | $N_{<Q1}$ | $N_{>Q1}$ |
|------------------|----------------|----------------|-------|----------|----------|------------------|------------------|-------|----------|----------|
| European Union Membership | 0.59           | 0.72           | 0.06  | 93       | 93       | 0.55             | 0.69             | 0.09  | 47       | 139      |

Table 9 (continued)
premium. However, for this effect to occur, the new rules had to be introduced and work, and not just be announced.

The measures leading to deeper falls in the risk premium were, in a way, forced by high costs of servicing sovereign debt. It was not so much the higher sovereign debt that contributed to those costs (because, as mentioned, it was similar in both cases) but rather the higher nominal interest rates. They may be associated with lower central bank independence and higher inflation that often preceded deeper falls in the risk premium.

The exchange rate regime was irrelevant for changes in the risk premium following fiscal tensions. Deeper falls in the risk premium occurred less frequently within the Euro area than outside it. This frequency difference was so large that it affected the assessment of the impact of EU membership. However, additional ANOVA analysis indicates that EU members from outside the Euro area were particularly successful in lowering risk premium following fiscal tensions. By contrast, EU members from the Euro area performed slightly worse than even non-EU members, though the difference is not statistically significant (see Fig. 1). This result may reflect heterogeneity of the Euro area, where credibility of core countries could weaken incentives of peripheries to run sustainable fiscal policy, as suggested, e.g. by Afonso et al. (2014) or Ciżkowicz et al. (2015).

Periods of deeper falls in the risk premium were marked by reforms that improved government quality, reduced employment protection (which was otherwise already lower, making the economy more flexible and therefore facilitating its rebound), reduced trade union density, privatised state-owned enterprises and liberalized financial markets. The very announcement of most of these reforms led to deeper falls in risk premium. The exception in this respect was the reduction in labour protection, which only helped with a one-year lag. This suggests that the impact of this reform was mainly through its effects on economic performance. Surprisingly enough, although a higher retirement age was of help, its changes were not, and the statistical significance of the relationship is weak.

A higher integration with global markets did not contribute to deeper falls in the risk premium, although this may reflect a lower financial integration in the 1980s when the falls were particularly large and frequent.

Deeper falls in the risk premium were preceded and accompanied by a more difficult domestic macroeconomic environment. This manifested itself in a higher unemployment rate and its sharper increase in the run-up to the fall in the risk premium, a more negative output gap and a lower investment rate. At the same time, the tougher macroeconomic conditions were conducive to an improvement in the current account balance, which helped to reduce the risk premium. In contrast, they were mitigated by less frequent crises, including in particular the stock market crashes in the run-up to the fall in the risk premium.

Deeper falls in the risk premium improved the domestic macroeconomic environment. They led to a fall in unemployment, limited a decrease in investment rate and increased industrial production.

Lowering the risk premium was more difficult with a higher risk aversion in global markets (which, by the way, correlates with the stock market crashes
mentioned above). A moderation of global market volatility facilitated deeper falls in the risk premium. Most of the results are robust to changes in definitions and other checks described in Section three. Those checks reveal some additional regularities.

If we tighten the definition of deeper falls in the risk premium, then as shown in Table 5 government revenue and expenditure at which they occurred decline as compared to the baseline results. Above all, however, the size of fiscal adjustments that preceded them increases. Both cuts in government expenditure during adjustments and tax increases become larger, but the latter increase more relative to the baseline results. Eventually, they outweigh the cuts in public expenditure. However, if not confined to periods of fiscal adjustment, the deeper falls in the risk premium differed from their remaining changes only in periods of public expenditure cuts, and no longer in periods of tax increases. The role of tightening fiscal rules grows and begins to have a signalling effect. Membership in the Euro area (and, as a result, the EU) ceases to be an impediment to deeper falls in the risk premium. The domestic macroeconomic environment becomes even tougher than the baseline results indicate, with an even higher unemployment, a more negative output gap and a lower investment rate, which additionally drops strongly in periods preceding the deeper falls in the risk premium. More frequent banking crises further exacerbate macroeconomic conditions. In contrast, exports emerge as a factor that alleviates those conditions.

Table 6 reports the results with the outliers removed.4 Their removal results in the disappearance of the statistical significance of cuts in government expenditure, both during periods of fiscal adjustment and beyond, as factors determining deeper falls in the risk premium. At the same time, signals that economic performance improves after deeper falls in the risk premium weaken relative to the baseline results. Mitigation of a drop in investments (which directly depend on the risk premium) is the only signal that remains significant. Taken together, these results suggest that if there were exceptionally strong cuts in government expenditure, the vast majority of them preceded deeper falls in the risk premium. At the same time, it was mainly after such cuts that economic performance improved.

Table 7 shows the results for the modified definition of periods of ‘stress’ and, consequently ‘relaxation.’ Most relationships and their statistical significance do not change. Tax increases as a driver for deeper falls in the risk premium weigh more than the baseline results indicate, but cuts in government expenditure still play a more important role. Low social security contributions (affecting labour costs) join the set of government revenue features that facilitate deeper falls in the risk premium. Surprisingly enough, however, the increase in CIT receipts becomes a measure that fosters such falls. Tightening fiscal rules gains a signalling effect, while financial market reforms lose any significance. After deeper falls in the risk

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4 Removing outliers eliminates dummy variables, index variables with small number of possible values and those with strongly skewed distributions. These are fiscal consolidation, EMU and EU memberships, currency regimes, entry barriers, privatization, and competitiveness of the economy, labour protection and crises periods.
premium, drop in investments is no longer more mitigated than after its remaining changes, but the output gap still closes and unemployment falls.

Table 8 presents the results for fiscal adjustments instead of fiscal tensions. The results suggest that fiscal adjustments can lead to deeper falls in the risk premium in virtually all circumstances. The adjustments only need to be strong enough, which in practice is possible when they consist of both significant tax increases and large expenditure cuts. Once these conditions are met, fiscal adjustments lead to deeper falls in the risk premium, even if taxation is high from the outset, fiscal burden increases include social security contributions, initial fiscal imbalances are not large, few reforms are implemented (if any, entry barriers easing, improvement in government quality or increase in the openness of financial markets). Such falls then occur regardless of the degree of integration into global markets, global risk aversion and changes in global markets volatility. That said, they were still less frequent in the Euro area. The floating exchange rate did not foster them, but interest rate cuts were of help.

Finally, Table 9 reports results for initial conditions defined as the last year of ’stress’ periods. It follows that neither fiscal adjustments prior to ‘relaxation’ periods, nor tax increases and expenditure cuts they consist of, are a factor differentiating subsequent changes in the risk premium. Apparently, only sustaining (or, on the contrary, abandoning), in a ‘relaxation’ period, the adjustments introduced to end the ’stress’ period affect these changes. Low social security contributions in a stress period (that ease labour costs) foster the subsequent falls in the risk premium even more than low taxes on goods and services (which provide space for tax increases with no significant distortions). Besides, initial conditions preceding deeper falls in the risk premium included tough macroeconomic environment not only domestic, as suggested by the baseline results, but also international, which manifested itself in greater volatility in global markets. They also contained larger initial fiscal imbalances, as measured by a cyclically-adjusted primary balance, as well as weaker fiscal rules and lower government quality. However the significance of these last two features fades with the modified definition of the ’stress’ periods (see the last column of the table).

Comparing the above results with those from studies on fiscal adjustments (summarized in Section two) leads to the following main conclusions.

For deeper falls in the risk premium, the size of the adjustment is more important than its composition. For sustainability of fiscal adjustment and reduction of its costs (in terms of aggregate demand), the opposite is true: size matters (see, e.g. Giavazzi and Pagano 1996), but composition matters more (see, e.g. Alesina et al. 1998; Alesina et al. 2018; Borys et al. 2014 or Tsibouris et al. 2006).

The risk premium can fall if taxes are raised, especially on goods and services; in certain circumstances also CIT increases foster its deeper falls. While there are quite a lot of studies pointing out that tax-based adjustment can be sustainable and of limited costs (see, e.g. Batini et al. 2012), especially when initial fiscal imbalances are large enough (see, e.g. Giavazzi et al. 2005), there are far fewer suggesting that CIT increases could have such effects (Holden and Midthjell 2013 is among those few).

Tough domestic macroeconomic conditions, which may increase the costs of fiscal adjustment (see, e.g. Auerbach and Gorodnichenko 2012; Gechter and
Rannenberg 2018; Heimberger 2017, or Müller 2014a, b), do not rule out deeper falls in the risk premium. In turn, such falls do not depend on the initial sovereign debt burden, which, if high or fast-growing, increases the chances of low fiscal adjustment costs (provided that the adjustment is of an appropriate size; see, e.g. Ardagna 2004; Bhattacharya 1999 or Ilzetzki et al. 2013). Apparently, it is easier to lower the risk premium than to reduce the fiscal adjustment costs.

The fiscal adjustment reduces the risk premium almost always as long as it is sustained during a ‘relaxation’ period. What makes the adjustment sustainable is usually leads to a deeper fall in the risk premium. In particular, cuts in government expenditure, including social spending, that foster sustainability of adjustment and reduce its costs (see, e.g. Alesina and Ardagana 1998 or 2013; Alesina and Perotti 1997; Bermporphlgul et al. 2013, von Hagen et al. 2002), simultaneously help to lower the risk premium more deeply.

Deeper falls in the risk premium after fiscal adjustment are more frequent if the central bank cuts interest rates. It is not surprising given that the interest rates cuts help sustain fiscal adjustments and reduce their costs (see, e.g. Ahrend et al. 2006; Alesina and Ardagana 2013; Hellebrandt et al. 2012). However, there is no such option for the countries where the ELB binds (see, e.g. Eggertsson 2010).

Without fiscal adjustments, a deeper fall in the risk premium is possible mainly if the government introduces supply-side reforms or global risk aversion declines. Allowing for fiscal tensions does not eliminate the chance to benefit from the very announcement of reforms. If accompanied by a sufficiently large fiscal adjustment, even the tightening of fiscal rules, previously circumvented (or in any case ineffective in preventing fiscal tensions) can have a signaling effect. Lack of fiscal adjustments and reforms means relying on good luck alone. However, necessity of low level or decline in global risk aversion for deep falls in the risk premium when no fiscal adjustment is introduced may also suggest that there are time-breaks in relations between the risk premium and other factors.

Supply-side reforms, especially of the labour market (Alesina and Ardagana 2013), but also privatization (Alesina and Perotti 1997), increase in financial market openness (Giavazzi and Pagano 1990) and improvement of government quality (Monastiriotis 2014), which help sustain fiscal adjustment and reduce its costs, favour deeper drops in the risk premium. Economic policy does not have to look for compromise between the fall in the risk premium on the one hand, and the sustainability of fiscal adjustment and reduction of its costs on the other. A set of measures can be designed to support all these objectives. That said, recall that the ELB may cause some trade-offs. In any case, there is no broad consensus on the effects of supply-side reforms in such conditions (cf., e.g. Eggertsson 2010; DeLong and Summers 2012 and Mertens and Ravn 2014).

5 Conclusions

We study more than a hundred likely determinants of the risk premium in 22 OECD countries over 1978–2017 to show what works in lowering it and what doesn’t following fiscal tensions. While most other studies on the risk premium don’t put
particular stress on fiscal tensions, we focus on them because that’s when success may bring particularly large gains while failure risks extreme pains.

We find that for deeper falls in the risk premium, size of fiscal adjustment matters more than its composition. However, what makes the adjustment sustainable is generally conducive to a deeper fall in the risk premium. There are no serious trade-offs between the fall in the risk premium on the one hand, and the sustainability of fiscal adjustment and reduction of its costs on the other. In particular, expenditure based fiscal adjustments, which other studies found to be more sustainable and less costly in terms of aggregate demand, are also more effective in lowering the risk premium following fiscal tensions than tax-based ones. Fiscal adjustments can outweigh the effects of global risk aversion. Otherwise its low level or decline is needed for deep falls in the risk premium, suggesting there are time-breaks in relations between the risk premium and other factors. Reforms, especially of the labour market, but also those that liberalize financial and product markets, as well as improve government quality are of help. The risk premium often responds to the very announcements of reforms, suggesting that fiscal tensions do not necessarily delay payoffs from reform efforts.

That said, it has to be stressed that the results obtained are only qualitative in nature. Moreover, they do not provide any conclusions as to mechanisms or causality.

Thus, our study is only a modest step towards bridging two strands of research, one dealing with the sustainability and costs of fiscal adjustments in terms of aggregate demand and the other devoted to the risk premium. We are aware of all weaknesses that simple comparisons of averages have, even if accompanied by various robustness checks. Hence, next steps should follow.

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