

Englischer Titel: Foreign fiscal policy spillovers on Austria

Deutscher Titel: Spillover-Effekte ausländischer Fiskalpolitik auf Österreich

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Englischer Abstract: The rationale for fiscal policy coordination within the European Union during normal times is weak because cross-country fiscal policy spillovers are found to be small. During crises, spillovers are larger, either because of constraints on monetary policy or because capital markets are well integrated. With a multi-country general equilibrium model assuming perfect capital market integration, I quantify the medium run impact of foreign fiscal actions on Austria. For instance, if Germany is hit by a negative shock and bails out its private sector, the predicted yearly average GDP loss in Austria is 15% of the yearly GDP loss in Germany. Bailouts in smaller European countries lead to weaker spillovers.

Deutscher Abstract: Da internationale Spillover-Effekte von Fiskalpolitik in normalen Zeiten gering sind, geben sie keinen Anlass für regelmäßige Koordination der Fiskalpolitik innerhalb der Europäischen Union. Aufgrund integrierter Kapitalmärkte und Beschränkungen der Geldpolitik sind Spillover-Effekte in wirtschaftlichen Krisenzeiten allerdings signifikant größer. Dieser Artikel bietet auf Basis eines Mehr-Länder-Gleichgewichtsmodells mit perfekt integrierten Kapitalmärkten mittelfristige Einschätzungen der Spillover-Effekte ausländischer Fiskalpolitik auf Österreich. Wenn beispielsweise Deutschland in Krisenzeiten Bailout-Maßnahmen ergreifen müsste, würde der jährliche BIP-Verlust in Österreich 15% des jährlichen BIP-Verlusts in Deutschland betragen. Bailout-Maßnahmen in kleineren europäischen Ländern würden zu niedrigeren Spillover-Effekten führen.

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1. Introduction

The European Union (EU) is a politically motivated project which relies on economic integration to promote peace. It has so far integrated its markets for goods, its markets for labour, its markets for capital and, to a partial extent, its monetary policy. Goods, workers and investments are indeed free to move from one EU country to another. Out of the 28 EU members, 19 have adopted the same currency (the Euro) and share a common central bank (the European Central Bank). To a large extent however, markets for services and fiscal policy remain under the control of individual member countries.

This organization is generally consistent with principles of economic policy. International trade indeed increases average household welfare. A larger market for production factors, labour and capital, allows firms to be more productive. A common currency eliminates exchange rate variations and thus supports the free movement of goods and capital.

By contrast, the case for integration of fiscal policy in Europe has traditionally been considered weak, at least when political sovereignty remains at the country level. As spelled out by the theory of fiscal federalism (Oates, 1972), there are economic gains from integration (or centralization) of fiscal policy when voters' preferences are similar across countries, when there are public goods whose provision benefits from economies of scale and when fiscal policy actions in one country impact other countries (cross-country spillovers).

In practice, cultural, historical and economic differences in Europe make for heterogeneous voters' preferences across countries. Defence is one of the main public goods which benefits from economies of scale but a centralization of defence is inconsistent with country-level political sovereignty. Finally, there has been little empirical evidence so far that cross-country spillovers of fiscal policy are large.

The European sovereign debt crisis which started in 2009 has changed this perspective. Indeed, Eurozone members have felt compelled to intervene in fiscal policy matters of each other. To take the most visible example, Greece has received support from other Eurozone countries to handle its public debt, conditional on fiscal policy (and other) reforms. Recent economic investigations have also found that fiscal policy spillovers are larger when monetary policy operates close to the Zero Lower Bound (Erceg and Lindé, 2013), a typical feature of crises. Even during crises with no constraint on monetary policy, large increases in government spending can generate sizable spillovers over the long run, if capital markets are perfectly integrated (Davoine and Molnar, 2017). These larger spillovers provide a rationale for a degree of fiscal policy coordination.

If fiscal policy spillovers are large during crises, how should countries of the same currency union approach fiscal policy coordination? Assuming coordination discussions, where should the focus lie in Austria?

Below I seek answers to these questions, applying the framework developed in Davoine and Molnar (2017). I start with an overview of facts and theories relevant for the analysis, then continue with the modelling approach, the results and concluding remarks.

2. Overview of Eurozone facts and relevant theories

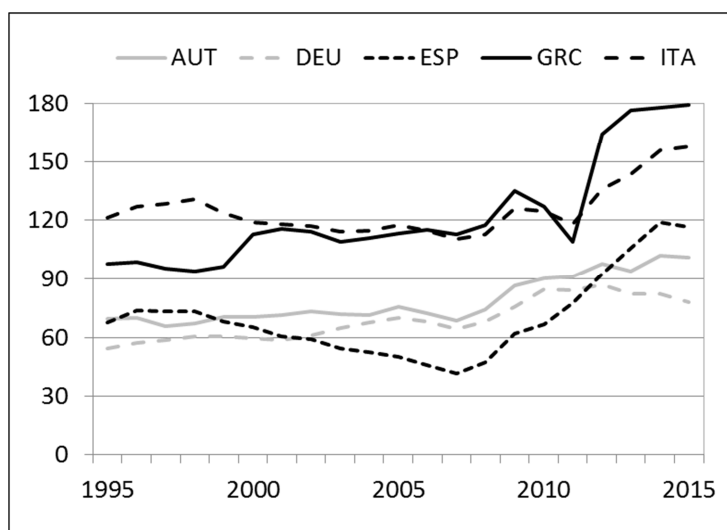
Theories of Optimal Currency Areas (starting with Mundell, 1961) spell out economic criteria for states or countries to form a currency union: trade volumes between members should be large, members should either be exposed to similar exogenous shocks or there should be appropriate adjustment mechanisms to offset member-specific exogenous shocks. In the United States, high labour mobility and the federal system of taxes and transfers help to offset state-specific shocks: as much as 40% of gross income differences across states are eliminated by taxes and transfers, a reduction of income differences which is part insurance and part redistribution (Sala-i-Martin and Sachs, 1992). By contrast, labour mobility is much lower in Europe and there is no significant cross-country tax and transfer mechanism in the Eurozone².

At the start of the Euro in 1999, policy makers and economists were aware of these shortcomings. The benefits from a unique currency were however expected to be larger. The elimination of the exchange rate risk, in particular, supports trade and the integration of capital markets. Although not shared by all, there was also an optimism about future reforms: Eurozone countries would increase the pace at which they implement growth-enhancing reforms in the labour, goods and services markets, so that economic performance across countries would become less heterogeneous and exogenous shocks less country-specific. After the Euro started, parts of these expectations were fulfilled: the exchange rate risk was eliminated and the integration of capital markets furthered but the pace of reforms did not increase. As a result, the Eurozone has remained more exposed to member-specific exogenous shocks than other existing currency areas (Frankel, 2015).

What prompted adjustments of the initial institutional framework was the 2009 sovereign debt crisis, which hit a number of Eurozone members hard. In many countries, public debt increased after the 2009 crisis and now amounts to 90% of GDP or more (see Figure 1). While the 2007 meltdown of the US subprime mortgage market was a common trigger, the causes for the sovereign debt crisis differ across countries but usually precede the 2007 subprime crisis, such as excessive public spending in Greece or real estate bubbles in Ireland and Spain (Wyplosz, 2016).

² The Social Cohesion Fund redistributes resources from high-income to low-income countries in the European Union. However, the size of this and other similar funds are too small for significant absorption of country-specific shocks, as they amount to less than 1% of Eurozone GDP.

Figure 1. General government debt in selected EU countries (% of GDP)



Source: OECD

The 2009 sovereign debt crisis was also accompanied by a banking crisis. In Ireland and Spain, the risk of bank failures is actually the main cause for the public debt crisis: several domestic banks had to be bailed-out as the real estate bubble burst (Eichengreen, 2012). In other countries, bank difficulties due to the 2007 US subprime crisis also required public interventions, through bank recapitalizations, acquisitions of non-performing loans or other measures. Even if these interventions did not create a sovereign debt crisis everywhere, they did increase debt. Typical examples include Belgium and Germany, where the gross cumulated support of local and central governments to the financial sector amounted respectively to 5.9% and 10.8% of GDP between 2007 and 2012 (IMF, 2013)³.

As the 2009 sovereign debt crisis unfolded, the Eurozone departed from its initial fiscal policy agreements. The 1992 Maastricht Treaty not only fixed maximum values for fiscal deficit and public debt (respectively, 3% and 60% of GDP), but also included a no-bailout provision. Starting in 2010 conditional financial support has been provided by the Eurozone to Greece, in violation of the no-bailout rule and marking the first significant coordinated fiscal policy action in the single currency area.

Since then, the Eurozone's institutional framework has been amended. Fiscal rules now have a cyclical component and fiscal surveillance has been increased. The European Stability Mechanism is a cross-country insurance which now helps to protect against sovereign liquidity risks (and, perhaps, solvency risks). The first steps of a banking union have been completed, including centralized supervision and a common resolution fund to deal with bank failures (the Single Resolution Fund).

Policy analysts all welcome these improvements. For many however, more reforms are needed (see for instance Obstfeld, 2013; Gros and Schoenmaker, 2014; Eichengreen, 2015; Baldwin and Giavazzi,

³ To compare, the support provided to the financial sector amounted to 15.4 % of GDP in Greece and 36.1% of GDP in Ireland (IMF, 2013).

2016; Dolls, Fuest, Heinemann and Peichl, 2016; Wyplosz, 2016). While many agree that additional reforms are needed, there is neither consensus on the required changes nor on priorities.

In case further discussions on fiscal policy coordination take place, this policy brief helps to set priorities. As Lane (2006) argued, the largest impact of the Euro creation was the integration of the capital markets, much ahead of the integration of the goods markets and the labour markets. Further, the 2009 crisis highlighted the importance of banks' exposure to domestic and foreign sovereign debts in shaping cross-country fiscal rescue actions. I thus focus on capital market integration and ask where fiscal policy spillovers are likely to be largest: should Austria primarily have discussions with France, Germany, Greece or other countries?

3. Theoretical approach

To answer the question asked at the end of last section I apply a macroeconomic model developed in Davoine and Molnar (2017). It is a multi-country version of *TaxLab*, the computable general equilibrium model of the Institut für Höhere Studien (IHS) which is used on a regular basis for policy evaluation⁴.

The model basis has an overlapping generation structure with eight age groups and three skill classes. Households are forward-looking and make consumption and labour supply decisions to maximize lifetime utility, depending on interest rates, wages, taxes as well as social security contributions and benefits. Firms are also forward-looking and make investment decisions to maximize future profits. The government collects taxes and social security contributions to finance its own consumption and social security benefits. In the present analysis, it adjusts labour income taxes to balance its budget in each period, keeping public debt constant.

The multi-country version of the model follows Börsch-Supan, Ludwig and Winter (2006). We assume that capital is mobile across countries, labour is immobile and that exchange rates are constant. These assumptions reflect capital market integration, low effective international mobility of workers and the single currency in the Eurozone. Because the Eurozone is not economically isolated, we include a stylized rest-of-the-world country, capturing trade flows in and out of the Eurozone. The unique interest rate adjusts so that investment and consumption equal production over the entire set of countries⁵.

Three simulation results in Davoine and Molnar (2017) guide the analysis in this policy brief. First, cross-country spillovers of standard fiscal policy reforms, due to capital markets integration, are small. For instance, if Germany was to implement a reform on its own, increasing its consumption taxes to finance a 20% cut of its labour tax rate, its GDP would increase 0.4% (one time effect). In other countries, the GDP would also increase, but less than 0.01%.

⁴ Recent examples include Hofer et al. (2015) for an ex-ante evaluation of the 2015/2016 labour income tax reforms in Austria and Berger et al. (2016) for the long run public finance impact of immigration in Austria and three other European countries.

⁵ For details on the multi-country set up, see Davoine and Molnar (2017).

Second, cross-country spillovers are larger for fiscal measures taken during crisis times. Consider for instance a crisis and bailout comparable to the 2007-2012 financial sector support in Germany, amounting to 2.5% of GDP during 5 years (see section 2). Then the yearly GDP loss in Germany would average 0.59% over the next 25 years, because labour income taxes have to be increased to pay for the bailout, investment is reduced and the capital stock needs to be rebuilt. In other countries, which have been spared from the shock and the bailout, GDP would also decrease: the yearly GDP loss would average for instance 0.14% in Spain over the same time period. The main reason for spillover effects is the integration of capital markets: the public bailout takes resources away from the integrated capital market, reducing resources available for investment in *all* countries. I will come back to this channel below.

Third, the size of the spillover varies across countries and depends on the contribution of the capital in production: while the yearly GDP loss would average 0.14% in Spain it would be only 0.06% in Poland. One reason for the larger spillover in Spain is that capital plays a bigger role in production there: relative to output, the capital stock is bigger and the corresponding share of national income is larger; a decrease in investment has thus a more negative impact in Spain.

The main implication of these first simulation results is that Austria does not have to pay particular attention to standard fiscal policy reforms in neighbouring countries. Spillover effects are however larger when neighbouring countries take actions with strong public finance consequences, typical of crises. In the continuation, I will therefore consider crisis-time actions and investigate the factors which determine how strongly Austria is impacted. Taking these factors into account, I will then look for countries which are most likely to affect Austria through crisis-time fiscal actions.

4. Results

Domestic actions taken during crises have consequences on output and public finances not only in the country hit by the shock, but also in neighbouring countries. Simulations show that fiscal policy spillovers in times of crises can be sizable in single currency unions with integrated capital markets. Below I investigate spillovers on Austria assuming that shocks hit other countries, which then take actions with large public finance impact. I answer the following questions in a sequence:

- Are there spillovers on Austria and why?
- Which factors influence the size of the spillovers on Austria?
- What kinds of countries generate large spillovers on Austria?

4.1 Are there spillovers on Austria and why?

I reproduce a result from Davoine and Molnar (2017) to illustrate and explain the impact of spillovers on Austria. Assume Germany alone is hit by a negative shock, forcing its government to provide financial support equivalent to 2.5% of GDP during 5 years to households and the private sector for reconstruction purposes, such as rebuilding houses, replacing destroyed production factors or

erasing foreign-held private debt⁶. The volume of the government support is comparable to the one provided to the sole financial sector after the 2007 subprime crisis (see section 2). For internal or external reasons (such as the Maastricht Treaty) I assume that public debts are kept constant in all countries with labour taxes adjustments.

Table 1 provides an overview of the simulated macroeconomic, labour market and public finance impacts in Germany and Austria over the medium run. Seven years after the negative shock in Germany, GDP drops by 0.5% in Germany and 0.14% in Austria. The yearly GDP loss in Germany averages 0.66% over the next 25 years, and 0.10% in Austria. Although Austria was not hit by any shock, it still suffers a visible loss of GDP for a long time over the medium run because of cross-country spillovers.

Table 1: Simulated impacts of a bailout in Germany

	Germany		Austria		
	Year 7	Avg 1-25	Year 7	Avg 1-25	Spillover
<i>Macroeconomics:</i>					
GDP (%)	-0.50	-0.66	-0.14	-0.10	15%
Capital Stock (%)	-0.58		-0.28		
Interest Rate (%)	0.47		0.47		
<i>Labour Market:</i>					
Participation (pp)	-0.07		-0.02		
Hours Worked (%)	-0.08		-0.02		
Gross Wage Rate (%)	-0.08		-0.10		
<i>Public Finance:</i>					
Public Debt (%)	-		-		
Labour Income Tax (pp)	0.58		0.11		

Legend: % = percentage change; pp = changes in percentage points; Avg 1-25 = average changes over years 1-25; Spillover = Avg 1-25 GDP (%) Austria / Germany. *Source:* TaxLab (IHS) simulations.

The reasons for the spillovers are the single currency union and the integration of the capital markets. Because Germany and Austria share the same currency, exchange rate variations do not absorb the Germany-specific shocks. The increase in public spending in Germany draws resources from the capital market, as shown for instance by the 0.47% increase in the interest rate 7 years after the shock. Since the capital market is integrated, investment is reduced in all countries (international crowding out). Seven years after the shock for instance, the capital stock has shrunk by 0.58% in Germany and 0.28% in Austria. The decline in the capital stock reduces the capital/labour ratio and wages, resulting in a drop of labour supply and a further decline of GDP. The shrinking tax base also forces governments to increase their tax rates, by 0.58 % points in Germany and 0.11% points in Austria.

⁶ In technical simulation terms, the shock corresponds to an increase of government consumption, which does not generate any utility gains, amounting to 2.5% of GDP during 5 years.

4.2 Which factors influence the size of the spillovers on Austria?

Davoine and Molnar (2017) find that the size of the spillovers depends on characteristics of the shock-free countries (the receiving end), in particular the importance of capital in the production process there. Conversely, I here investigate the dependence of spillovers on characteristics of the countries which are hit by shocks (the sending end). Three characteristics are investigated: the use of capital in production, the level of public debt and the relative economic size of the country. The first characteristic is a parallel with the Davoine and Molnar (2017) finding. Different public debt levels reflect different public use of capital markets, motivating the analysis of the second characteristic. The third characteristic is justified by the observation that a proportional bailout should have a larger impact on international capital markets if the country is bigger.

I consider a German bailout in four different cases and report macroeconomic outcomes for Austria and Germany in Table 2. In the first line, the characteristics of Germany are unchanged: the simulated impacts, taken from table 1, are repeated for convenience and serve as benchmark. In the second line, Germany is (counterfactually) assumed to make as intensive a use of capital in production as Spain. In the third line, one (counterfactually) assumes that the public debt in Germany is as high as in Italy, and, in the last line, that Germany has the economic (GDP) size of Spain. In each line, the same bailout package (amounting to 2.5 % of GDP during five years) is provided by Germany's government.

Table 2. Simulated impacts of a bailout in Germany if Germany had different characteristics

Case	If Germany had ...				Impacts of German bailout ...		
	Capital Stock / Output	Capital Income Share	Public Debt / GDP	Size Factor	At home	In Austria	
					Avg 1-25 GDP (%)	Avg 1-25 GDP (%)	Spillover
Baseline case	3.5	33%	88	21.4	-0.66	-0.10	15%
Capital use as in Spain	4.4	49%	-	-	-0.86	-0.09	10%
Public debt as in Italy	-	-	126	-	-0.66	-0.09	13%
Size as Spain	-	-	-	9.8	-0.60	-0.04	7%

Legend: Avg 1-25 GDP (%) = average yearly GDP changes over years 1-25; Spillover = Avg 1-25 GDP (%) Austria / Germany. Baseline values indicated by sign "-". *Sources:* OECD (2010); TaxLab (IHS) simulations.

The key result from Table 2 is the importance of the economic size of the country performing the bailout. The larger the size, the larger the spillovers on Austria: if Germany was as small in economic terms as Spain, the spillover on Austria would only be 7%, instead of 15%. This outcome is not a surprise. The bailouts may be the same in relative terms, but differ in absolute terms. Hence, the bailout in the bigger country makes a larger absolute drag on the capital markets, reducing investment more in all countries.

Table 2 also shows that spillovers would be similar in absolute terms if Germany had a different use of capital in production or a different public debt, as the average GDP loss over the next 25 years is close to the baseline case (0.09% to 0.10% average yearly GDP loss in Austria)⁷.

4.3 What kinds of countries generate large spillovers on Austria?

Section 4.3 showed that economic size has the largest influence on the size of spillovers on Austria, followed by the intensity of capital use in production and public debt. I compare the effect on Austria of the same bailouts in different Eurozone countries, each bailout amounting to a 2% of GDP support during 5 years⁸. Because size has a large influence, only large Eurozone countries are considered. Bailouts in countries with highest capital use in production (Spain) and largest public debt (Italy) are compared to bailouts in a country with moderate use of capital in production and moderate public debt (Germany).

Table 3. Simulated impacts of bailout in different countries

Country performing bailout	Country characteristics				Impacts of bailout ...		
	Capital Stock / Output	Capital Income Share	Public Debt / GDP	Size Factor	At home	In Austria	
					Avg 1-25 GDP (%)	Avg 1-25 GDP (%)	Spillover
Germany	3.5	33%	88	21.4	-0.42	-0.07	16%
Italy	3.5	37%	126	13.7	-0.38	-0.04	10%
Spain	4.4	49%	65	9.8	-0.35	-0.03	8%

Legend: Avg 1-25 GDP (%) = average yearly GDP changes over years 1-25; Spillover = Avg 1-25 GDP (%) Austria / bailout country. Sources: OECD (2010); TaxLab (IHS) simulations.

Table 3 provides the simulation results. As expected, a bailout in the largest country (Germany) generates the largest negative spillover on Austria, at 16%.

The table also shows that one can not rely on a single factor analysis to identify countries with the largest impact on Austria. Spain indeed uses capital in production more intensively than Germany and its economic size is less than half that of Germany. The single factor decomposition of section 4.2 suggests that the spillover for Spanish bailouts should be much smaller than half the spillover from German bailouts. Table 3 shows that the Spanish bailout spillover is *exactly* half the German bailout spillover. This is because the Spanish public debt (in 2010) was smaller than the German public debt, which, according to Table 2, pushes up the Spanish bailout spillover.

⁷ In relative terms, the spillovers would be smallest if Germany made a more intensive use of capital in production (10% instead of 15%). Germany itself would indeed suffer more from the bailout, as the public drag on the capital market would deprive German firms from a production factor which is more critical.

⁸⁸ Compared to section 4.3, the bailouts in section 4.4 are thus slightly smaller (2% of GDP instead of 2.5% of GDP over 5 years).

5. Concluding remarks

When some countries take policy actions with fiscal consequences, there are impacts on other countries. Consistent with the economic literature, our simulations show however that cross-border spillovers are small in case of standard fiscal policy reforms. By contrast, spillovers are visible with unusual policy actions taken during crises, such as the financial sector bailouts after the meltdown of the US subprime markets in 2007. In my simulations, the yearly GDP loss in Austria could amount to 15% of the yearly GDP loss in Germany if there was a bailout in Germany: the yearly loss in Austria would average 0.1% over the next 25 years, compared to an average yearly loss of 0.66% in Germany. The only reasons for these spillovers are the single currency union and the integration of capital markets.

Spillovers during crises thus provide a rationale for policy coordination. Some policy analysts actually recommend a further strengthening of crises resolution mechanisms at the Eurozone level (e.g. Eichengreen, 2012; Dolls, Fuest, Heinemann and Peichl, 2016). If such an effort was officially undertaken, this policy brief could help define the position of Austria.

Other analysts remind that capital markets in the Eurozone are not yet fully integrated (Beck, 2016). Yet the analysis presented here assumes perfect capital market integration. In reality thus, it is possible that the spillovers quantified here, due to capital market integration, are smaller. On the other hand, there are other reasons for cross-country fiscal policy spillovers, including lower bounds on monetary policy (Erceg and Lindé, 2013). Overall, one should thus not hope that spillovers are much smaller than estimated here, especially during times of crises.

Summing up, integrated capital markets and a single currency lead to international spillovers of foreign policy actions during crises, simply because investors are free to invest everywhere. During coordination discussions, Austria should pay attention to countries with a large economy and expect the lead to be taken by countries which make a big use of capital in production, irrespective of their economic size.

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