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Fiscal risk sharing and redistribution between Austrian states

Lukas Reiss*[†]

May 12, 2021

Abstract

This study analyses the extent of fiscal risk sharing and redistribution for Austria from 2000 to 2019. Overall, fiscal policy smooths about 1/10 of regional GDP shocks. While this is primarily driven by the federal budget and social security funds, there is also a significant contribution of the revenue sharing scheme between the federal government and subnational governments.

Most interestingly, the case of the Austrian revenue sharing system shows that there are intergovernmental transfer schemes which achieve risk sharing without much redistribution. This is due to mechanisms within this system which grant high-income states shares in federal revenue which are higher than their respective population shares. Furthermore, due to other mechanisms, the Austrian fiscal system is overall highly redistributive between states, but net contributions vary substantially over time.

Keywords: risk sharing, fiscal federalism, regional accounts

JEL codes: R10, R50, H77

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[†]This paper has originated from a common project analysing fiscal risk sharing across different federations (Burriel et al., 2020). The author thanks his co-authors for very valuable exchanges. Furthermore, earlier versions of this paper have been presented at the Austrian Ministry of Finance, the Austrian Federal Chamber for Workers and the Austrian Institute of Economic Research. The author thanks the audience of these presentations for very useful comments.

1 Introduction

Since the start of the euro area crisis, many economists have argued that the euro area should become more like a genuine federation and introduce mechanisms enhancing fiscal risk sharing among member states (e.g. Bénassy-Quéré et al., 2018). A major concern against such risk sharing is that it either will imply permanent redistribution between member states or otherwise not contribute too much to stabilization.

One way to investigate this trade-off is to look at existing fiscal federations. The seminal contribution in this literature has been written by Asdrubali et al. (1996) for the US, who find that risk sharing via factor markets is much more important than via fiscal policies, and that fiscal risk sharing mainly works via the federal budget. Hepp and von Hagen (2013) show similar results for Germany except that the contribution of the federal revenue sharing scheme to fiscal risk sharing has even become insignificant at the end of their analysed time period. Other contributions in this area have been conducted by Alberola and Asdrubali (1997) for Spain, and by Feld et al. (2018) for Switzerland.

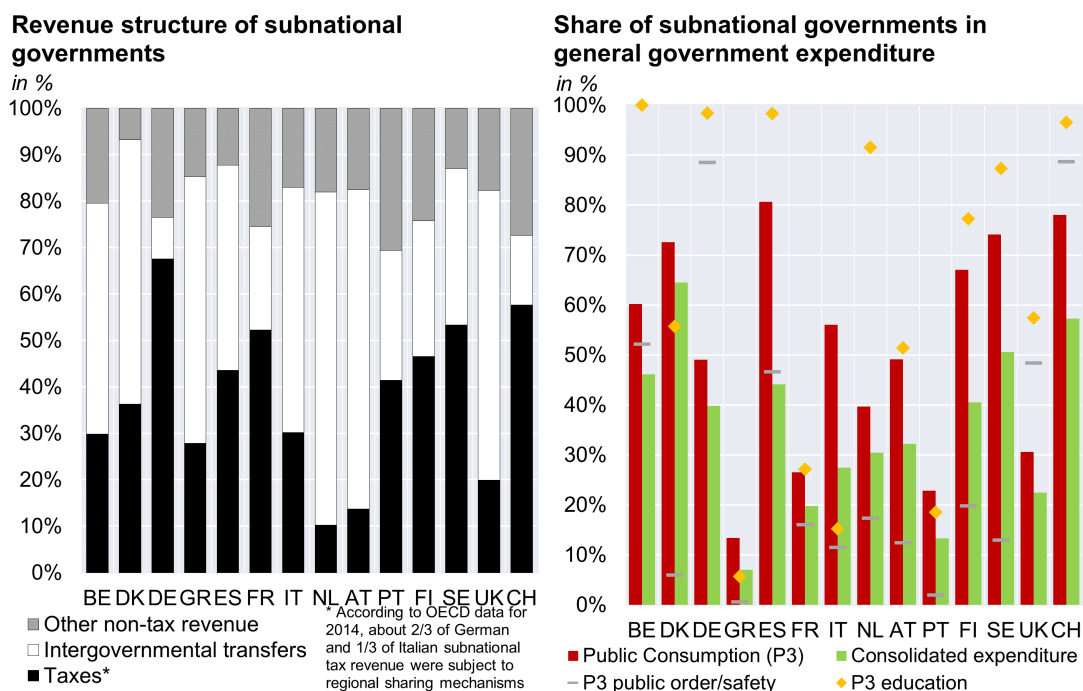
Burriel et al. (2020) compare the extent of fiscal risk sharing in Belgium, Germany, Spain, Austria and the United States. They broadly confirm the results (i.e. low extent of fiscal risk sharing which comes primarily from the federal budget) of the previously mentioned studies for Germany, Spain and the United States, and find similar outcomes for Austria.¹ Their analysis for Austria (for which they were the first to show such results) is based on the data provided by our paper. Furthermore, our paper will go beyond Burriel et al. (2020) in comparing the extent of fiscal risk sharing of different instruments to their redistributive impact.

The rest of the paper is structured as follows: Section 2 will provide an overview over Austria's federal structure, followed by an explanation of the mechanisms for fiscal risk sharing and redistribution in section 3. The extent of fiscal risk sharing in Austria will be quantified in section 4, while section 5 will do so for the extent of fiscal redistribution between states. Afterwards, section 6 investigates why the Austrian revenue sharing scheme provides so much risk sharing with so little redistribution. Conclusions will be provided in section 7.

¹As there are only three states in Belgium, it has been excluded from the econometric analysis in that paper.

2 Austria's federal structure in international comparison

Figure 2.1: Revenue and expenditure structures of subnational governments in the old EU member states and Switzerland in 2019



Source: Own calculations based on Eurostat data. Note: The term “subnational” refers to the consolidated sum of municipal governments, regional governments (e.g. for FR, IT) and state governments (for BE, DE, ES, AT, CH).

Aside from the interesting interaction between fiscal risk sharing and redistribution (which will be the focus in the later sections), Austria is a remarkable federation according to two different criteria:

1. The revenue autonomy of the states and municipalities is extremely low.
2. Regional inequality in average pre-tax incomes is very low, too.

The left part of figure 2.1 shows that most old EU member states have a larger share of taxes (black bars) in subnational government revenue than Austria (either on the municipal or regional level), as the by far most important revenue source of Austrian states and municipalities are intergovernmental transfers (i.e. transfers from federal government and social security funds; white bars). However, the share of subnational government expenditure (right part of the same figure) within overall expenditure is about 1/3 (green bars in figure 2.1) and thereby only somewhat below the ones of most other federations in the EU (i.e. Belgium, Germany and

Spain²). The significant role of states and municipalities on the expenditure side comes primarily from their significant role in education, health and long-term care as well as infrastructure (e.g. roads). Compared to other federations, the role of subnational governments in providing services in education (yellow squares) and public order and safety (i.e. police, firefighters, justice system; grey lines) is smaller, though. Education is especially interesting in this context as the other four federations in these charts (Belgium, Germany, Spain and Switzerland) have in common that virtually all education spending is subnational. This can be seen as one example in Austria where the federal government takes over the “supra-regional” component in an area which would probably entirely be taken over by subnational governments in more decentralised federations. For example, within the educational sector, the federal government is responsible for universities³, within cultural affairs it is responsible for Austria’s flagship cultural institutions (mainly certain museums, theatres and operas located in Wien), and within transport policies it takes care of highways and most train networks.

Figure 2.2 shows that cross-state inequality in average incomes is remarkably small in Austria.⁴ While the regional variation in GDP per capita is about as large as in other EU countries (first panel), the variation in average households’ pre-tax (primary) incomes is very low (second panel), and the same is true for average post-tax (disposable) incomes (third panel). One of the main reasons for the low variation in primary incomes is that the two Austrian states with the lowest GDP per capita (Burgenland and Niederösterreich) host a lot of commuters to Wien, pushing their primary income up and pulling down the one of Wien (orange bars and red dots in left panel of figure 2.3)⁵. Furthermore, regional inequality in households’ capital income is low, too. Interestingly, Wien’s relative economic position within Austria is weak compared to most other capitals in the EU-15 (red dots in figure 2.2; in all shown countries the capital city is also the largest city in the country):⁶ Wien is approximately tied (with Salzburg) for the top position regarding GDP per capita (black dots in left panel of figure 2.3), but it has the

²While Spain is not a federation from a legal viewpoint, for economic purposes it is typically treated as one due to the large autonomy of its regions.

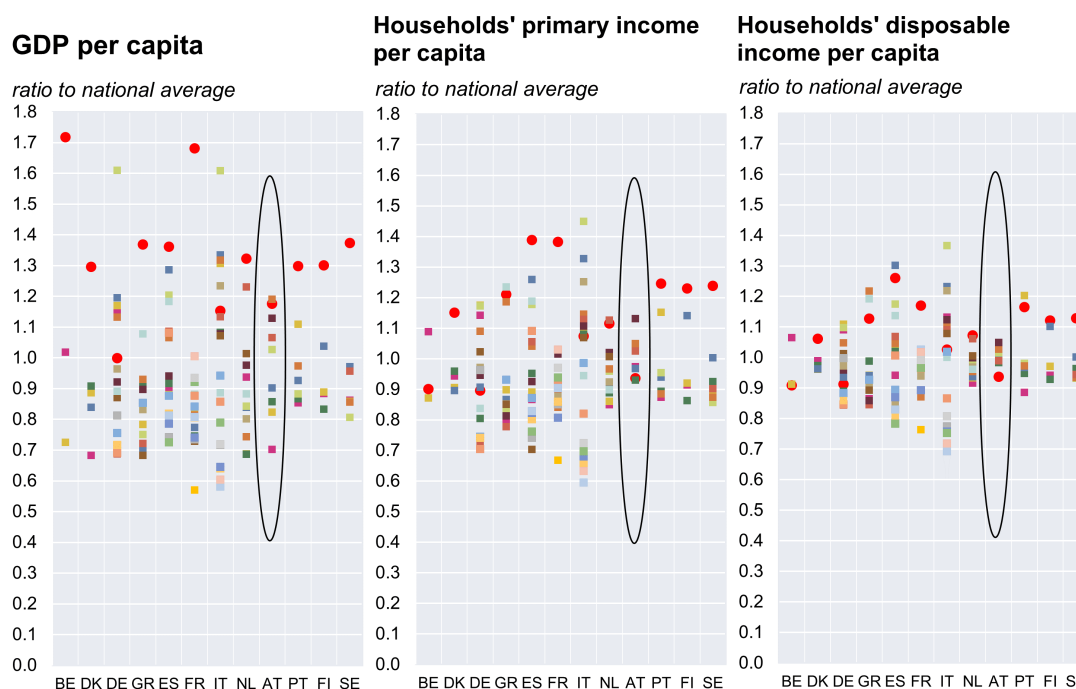
³Though, this argument cannot explain why higher secondary schools are operated by the federal government.

⁴Household’s primary income is the sum of all market income (i.e. wages, property income, self-employment income) before taxes. Disposable income is primary income minus taxes, social contributions and transfers paid plus social benefits (e.g. pensions, unemployment benefits) and other transfers received.

⁵This very important phenomenon for Austrian regional accounts has been extensively analysed by Leupold and Metzner (2019).

⁶Note that in some countries the capital city is identical to a region (e.g. BE, DE, AT), while in others it is only part of a region where also some suburbs are included (e.g. FR, IT).

Figure 2.2: Regional income inequality in the old EU member states in 2018

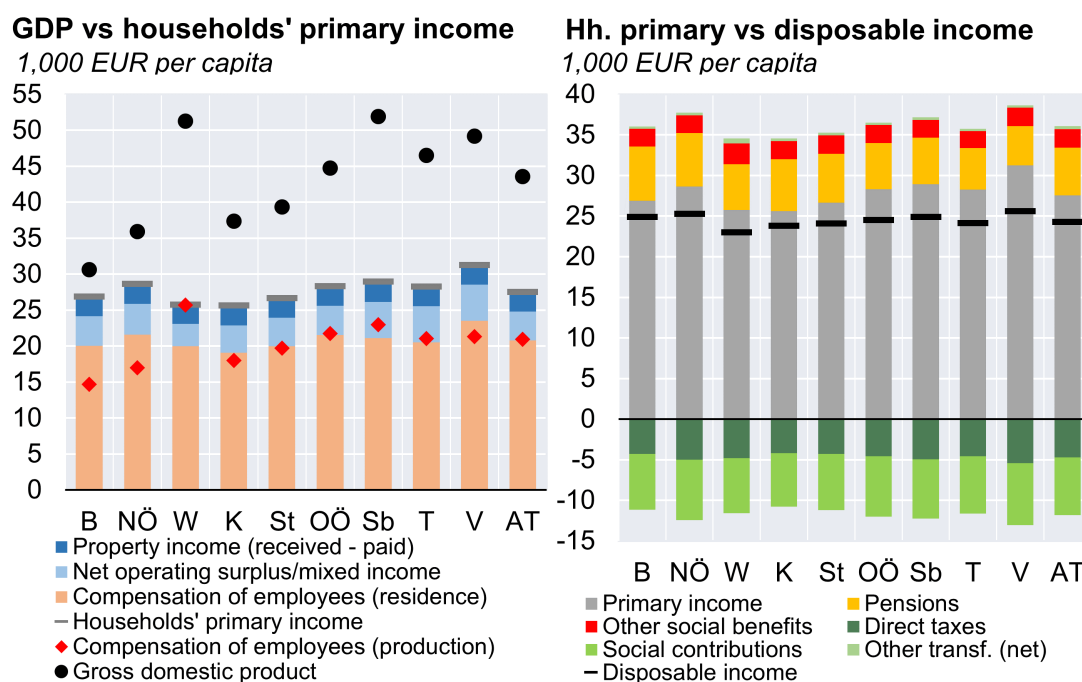


Source: Own calculations based on Eurostat data. Note: Squares represent the ratios of different income variables in NUTS2 regions to the national average. In Belgium and Germany the federal states form NUTS1 regions, so we show NUTS1 regions for these two countries (and for the UK). Red circles are used to represent the region containing the capital city. Ireland (misleading effects of GDP growth in 2015 of about 25%) and Luxembourg (only 1 NUTS2 region) have been excluded.

second-lowest primary income per capita and the lowest disposable income (grey bars and black lines in right panel). Furthermore, its unemployment rate is far higher than those of the other eight states (figure A.1).

Figure 2.3 also indicates why we order states (which are NUTS2 regions in Austria) according to their NUTS1 region instead of doing so alphabetically (like in most national publications). The two states forming the South region (Kärnten and Steiermark) and the four states forming the West region (Oberösterreich, Salzburg, Tirol and Vorarlberg) tend to be relatively similar to each other in economic terms, with the first two being below the Austrian average in terms of primary income and GDP, and the latter four being above the Austrian average. The three states forming the East region (Burgenland, Niederösterreich and Wien) are very different from each other, but are strongly connected in economic terms (as indicated by the large number of cross-state commuters within that region).

Figure 2.3: Regional income inequality in Austria in 2018



Source: Own calculations based on Statistics Austria data.

Note that a low variation in average incomes across states is very different from low income inequality across households. It just suggests that the distribution functions of household incomes in different states overlap to a large extent. From a fiscal perspective, this low regional inequality in average incomes also implies that the potential revenue from state-level taxes on household incomes would be relatively similar.

3 Mechanisms and data sources for fiscal risk sharing and redistribution in Austria

Fiscal risk sharing and redistribution are related concepts, but not identical. In our context, they refer to differences between primary/market incomes and disposable incomes:

- Redistribution is about narrowing the inequality in the levels of disposable incomes compared to primary incomes.
- Fiscal risk sharing is about narrowing the dispersion in growth rates of disposable incomes compared to primary incomes (an econometric definition is provided in section 4).

At the individual or household level, both fiscal redistribution and risk sharing work via the interaction of taxes and social contributions paid with social benefits received. Many fiscal instruments provide redistribution and risk sharing at the same time: For example, unemployment benefits reduce the inequality induced by primary incomes both in levels and in growth rates (via using the contributions of employed persons to give transfers to unemployed persons).

The impact of these fiscal instruments on aggregated households' incomes in federal states is one of the two major ingredients of fiscal risk sharing and redistribution between federal states. The other major component are federal intergovernmental transfers to the budgets of states and municipalities, which they in turn mainly use to provide services to their respective citizens in the areas of education, health care, long-term care and infrastructure. To a much lesser extent these federal funds are also used to provide monetary transfers, like for basic social assistance (“Sozialhilfe” / “Mindestsicherung”) to poor citizens.⁷ Federal transfers to states and municipalities can be divided into three different groups in Austria:⁸

1. States and municipalities get about 1/3 of most federal income and consumption taxes (mostly according to population shares).
2. Certain expenditure at the state and municipal level is co-financed by the federal government (esp. the salaries and pensions of state teachers).
3. Health insurance funds provide lump-sum transfers to states for the operation of hospitals (they are essentially a fixed share of health insurance contributions).

In line with the other contribution in the risk sharing literature, this study ignores possible indirect risk sharing effects via federal government consumption and subsidies (which is one of the points mentioned by Dullien, 2019, in his criticism of the risk sharing literature). Note that these items include to a large extent items of a supra-regional nature, like spending on public security, universities, high-level infrastructure and flagship cultural institutions.

Table A.1 in the appendix lists the data sources used in this paper. Data on GDP, pre-tax (primary) incomes, post-tax (disposable) incomes, income taxes and social contributions

⁷To avoid double counting for disposable incomes, these small social benefits in cash are only counted as part of intergovernmental transfers.

⁸In other countries, most notably Germany, there is also redistribution and risk sharing via transfers between federal states to reduce the inequality in tax revenue collected at the state level.

paid, and social benefits received by households in individual states are taken from the regional accounts data published by Statistics Austria. Data on pensions received by state are taken from the wage income tax statistics (which are also published by Statistics Austria). Data on federal transfers to states is taken from the Ministry of Finance, except for the transfers by health insurance funds to states for hospitals which are based on own calculations using government finance statistics data and information from social security law.

4 Risk sharing between Austrian states

For analyzing the extent of different forms of risk sharing, Asdrubali et al. (1996) or Hepp and von Hagen (2013) estimate the following equations using time fixed effects:

$$\Delta \log(gdp_{i,t}) - \Delta \log(pi_{i,t}) = \alpha_{FAC,t} + \beta_{FAC} \Delta \log(gdp_{i,t}) + \epsilon_{FAC,i,t}, \quad (4.1)$$

$$\Delta \log(pi_{i,t}) - \Delta \log(di_{i,t}) = \alpha_{FIS,t} + \beta_{FIS} \Delta \log(gdp_{i,t}) + \epsilon_{FIS,i,t}, \quad (4.2)$$

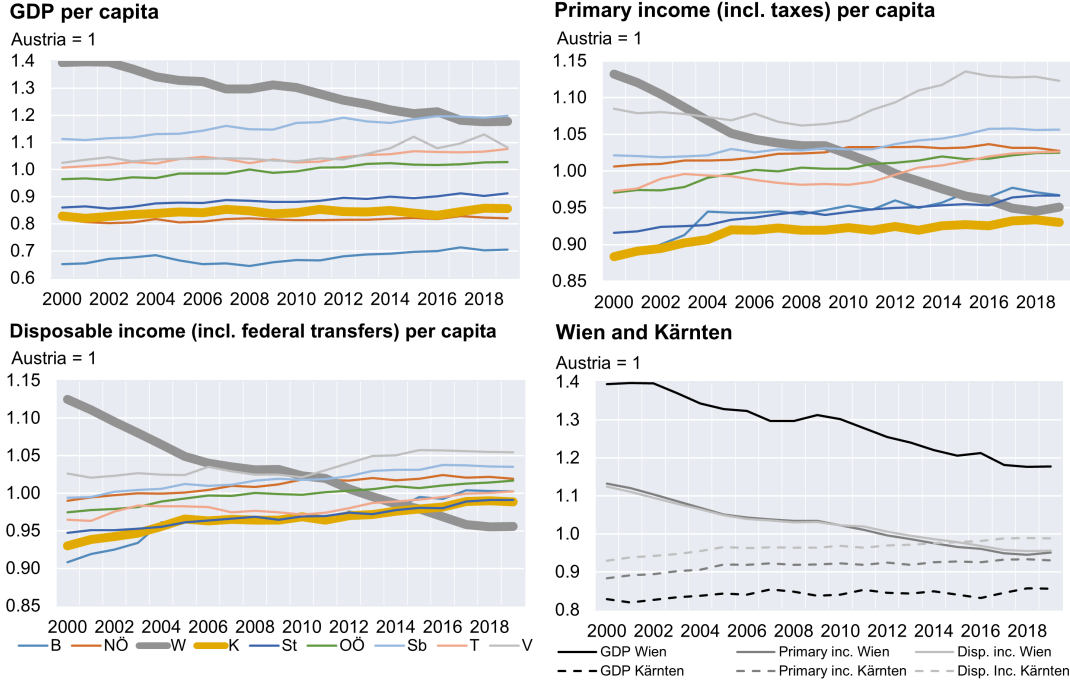
$$\Delta \log(di_{i,t}) - \Delta \log(c_{i,t}) = \alpha_{CRE,t} + \beta_{CRE} \Delta \log(gdp_{i,t}) + \epsilon_{CRE,i,t}, \quad (4.3)$$

where gdp_i is GDP, pi_i is primary income, di_i is disposable income and c_i refers to consumption expenditure of region i , where the latter three refer to the sums of households' and regional/local government income resp. consumption in region i . β_{FAC} denotes the share of variation in GDP which is smoothed by factor (capital) markets, β_{FIS} shows the extent of risk sharing via fiscal policy and β_{CRE} the one induced by credit markets, while $1 - \beta_{FAC} - \beta_{FIS} - \beta_{CRE}$ denotes the share of unsmoothed shocks. For example, a positive fiscal risk sharing coefficient β_{FIS} indicates that – controlling for regional variation in GDP growth – regional variation in disposable income growth is smaller than for primary income growth. Due to the lack of regional consumption data for Austria (which is not part of the current ESA transmission programme), we can only estimate the extent of factor market and fiscal risk sharing (i.e. β_{FAC} and β_{FIS}).

Ideally, regional consumption price indices should be used to deflate the various income aggregates used in these regressions. Unfortunately, in Austria regional deflators are only available for GDP (i.e. the production side), but not for consumption. Sørensen and Yosha (2007) show that using regional GDP deflators for the estimation of cross-regional risk sharing is a bad proxy for regional consumption deflators in the US as regional differences in the structure of production

do not reflect different consumption patterns (for example due to the role of the oil industry in some US states). To a lesser extent, this is also an issue in Austria: There is higher variation of prices for certain agricultural or industrial goods, and the trend growth of prices for services related to tourism is higher than that of overall GDP; these goods and services are primarily exported to residents of other states, and thereby affect regional GDP deflators to a much larger extent than consumption deflators. Therefore, we focus our analysis on results using nominal (i.e. non-deflated) series, but we also show the figures obtained when using regional GDP deflators (which have been used by Burriel et al., 2020, for example). Due to the use of time fixed effects, using the nominal series yields practically the same result as using the national GDP deflator.

Figure 4.1: Illustration of factor market and fiscal risk sharing in Austria



Source: Own calculations.

Figure 4.1 illustrates the extent of risk sharing in Austria graphically. It shows the ratio of the different states' GDP, primary income and disposable income to the Austrian average,⁹ where the bottom right panel shows all income variables for two selected states, namely the

⁹Dividing by the (weighted) Austrian average is a similar transformation to taking time fixed effects, as this amounts to deducting unweighted averages.

capital city Wien (solid lines) and the low-income state of Kärnten (dashed lines), where manufacturing and agriculture are relatively more important. The figure indicates that per capita growth of income variables has been far below average for Wien¹⁰, while Kärnten’s per capita growth was broadly similar to the Austrian average. More importantly in our context, it also reveals that the growth rates of primary and disposable income (grey lines) are very similar across states, while fluctuations in GDP growth (black lines) are much stronger.

Table 4.1: Risk sharing across states from 2000 to 2019 (households + governments)

	Nominal series	Regional deflator
Risk sharing via factor markets	71.6% ***	57.3% ***
Operating surplus/capital income	55.3% ***	43.8% ***
Compensation of employees	5.9% **	5.8% **
(Net) Indirect taxes	10.1% ***	8.3% ***
Risk sharing via fiscal policy	10.5% ***	7.7% ***
Federal taxes and social benefits	6.4% ***	5.4% ***
Federal pensions	1.3%	1.1%
Other federal benefits	2.1% ***	2.4% ***
Other federal taxes	2.0% ***	1.0% *
Federal transfers to states	3.3% ***	1.9% *
Federal revenue sharing	2.7% ***	1.8% ***
Co-financing by federal gov.	0.2%	-0.3%
SSF transfers for hospitals	0.4% ***	0.4% ***

Source: Own calculations. Note: * significant at 10%, ** significant at 5%, *** significant at 1%.

This “eyeball econometrics” indicates that factor market risk sharing is far more important than fiscal risk sharing, which is also confirmed by the results shown in table 4.1. Factor markets smooth more than two thirds of region-specific shocks to nominal GDP, while fiscal policy smooths only about one tenth. In line with Burriel et al. (2020), we also isolate the impact $\beta_{FIS,j}$ of individual fiscal instruments tt_j by estimating

$$\Delta \log(pi_{i,t}) - \Delta \log(pi_{i,t} - tt_{i,j,t}) = \alpha_{FIS,j,t} + \beta_{FIS,j} \Delta \log(gdp_{i,t}) + \epsilon_{FIS,i,j,t}. \quad (4.4)$$

We use this specification also for computing the contributions of various income components to risk sharing via factor markets. These results illustrate why “factor” and “capital” markets are often used synonymously in this literature as risk sharing via profit income makes up the

¹⁰The poor per capita economic growth performance of Wien shown in 4.1 cannot be solely attributed to the very high population growth in this time period, as Wien’s unadjusted income growth has been the lowest in Austria, too (except for nominal GDP growth where Wien was slightly higher than Kärnten).

bulk of factor market risk sharing. Note that risk sharing via factor markets translates total pre-tax income generated in one region into the income attributable to households and local governments in one region before redistribution. So risk sharing via profit income not only captures cross-state flows of capital income, but it also includes the effect of retained earnings of corporations and the revenue in corporate income taxes generated in one region.¹¹ While compensation of employees is important for redistribution across regions (orange bars and red dots in the left panel of figure 2.3), it only plays a relatively limited role for risk sharing, meaning that cross-state commuting patterns react much less to inter-state variations in GDP growth than capital income. Indirect taxes (net of subsidies) are also a part of GDP and of primary income, and so they also contribute to estimated risk sharing via factor markets.

Within fiscal risk sharing, federal taxes and social benefits are about twice as important as federal transfers to state; this ratio broadly corresponds to the relative size of the federal government (including social security funds) compared to state and municipal governments (green bars in figure 2.1). Within federal taxes and social benefits, the pension system is of relatively little importance for risk sharing. Other federal benefits (primarily unemployment and family benefits) are much smaller in terms of government expenditure, but provide much more risk sharing. Within federal transfers to states, the revenue sharing mechanism is by far the most important contributor to risk sharing. It is much larger than the other two schemes, and it also involves the sharing of highly cyclical profit-related taxes (especially the corporate income tax), while the transfers by health insurance funds imply the sharing of far less cyclical social security contributions.

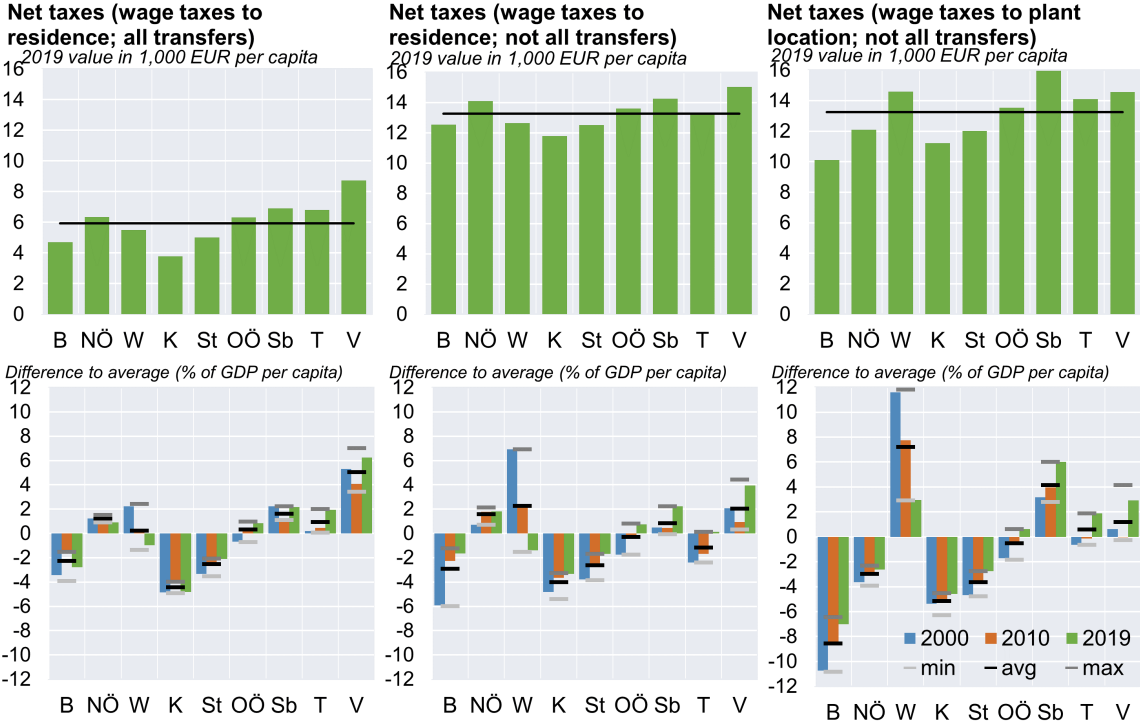
5 Fiscal redistribution between Austrian states

The use of federal taxes for social benefits and for transfers to subnational governments does not only induce risk sharing, it also redistributes resources between states. The left panel in figure 5.1 shows the combined distributive effect of all the schemes used in the regressions in section 4.1. The top part shows net taxes (i.e. tax revenue generated in one state minus transfers to residents and subnational governments in this state) in 2019, while the bottom part shows the difference to the Austrian average divided by GDP over time, namely net taxes in 2000 (blue

¹¹Furthermore, (net) primary income excludes consumption of fixed capital (depreciation of the capital stock), which tends to be much less cyclical than profits net of depreciation.

bars), 2010 (orange bars) and 2019 (green bars) as well as the minimum (light grey line), average (black line) and maximum (dark grey line) value of net taxes between 2000 and 2019. The main results in the left panel indicate that Wien and Oberösterreich actually have been both net payers (positive values) and net recipients (negative values) at some point in time between 2000 and 2019.¹² According to these calculations, Burgenland, Kärnten and Steiermark have been consistent net recipients (i.e. the maximum resp. the dark grey line is in negative territory), while Niederösterreich, Salzburg, Tirol and Vorarlberg have been consistent net contributors (i.e. the minimum resp. the light grey line is in positive territory).

Figure 5.1: Estimated net taxes by Austrian states from 2000 to 2019



Source: Own calculations. Note: The left column shows the results from the baseline calculations using the data from section 4. The black line in the top row shows the Austrian average. The bottom row shows the respective differences of the different per capita net tax variables to the Austrian average, which is then divided by the Austrian GDP per capita. The grey and black lines in the bottom row show the smallest/largest/average value observed for the respective variable from 2000 to 2019.

The results of the baseline calculations seem to contradict the ones of Keuschnigg and Loretz (2015) in their study advocating more revenue autonomy for the federal states of Austria, where

¹²Net taxes are positive for all states as federal taxes are not only used for cash transfers to subnational governments and households, but also for consumption and investment expenditure, and to a much lesser extent for transfers to corporations and the rest of the world. Our study implicitly assumes that this other federal expenditure is evenly spread across states.

they show Wien as the largest net payer (one has to note here that showing the redistributive impact of the tax and transfer system on the Austrian states was not the goal of their study, though). There are several reasons for these differences, of which some are highly suitable for a sensitivity analysis of the results shown in the left column of figure 5.1: Keuschnigg and Loretz (2015) base their results on 2014 data, and the relative economic position of Wien has deteriorated since (which is also indicated by the different numbers shown for 2000, 2010 and 2019 in figure 5.1). More importantly, they base their analysis on the federal governments' transfers to state governments only (first panel in figure A.2), where Wien receives relatively little due to the much lower transfers for teachers employed by the federal states (black lines in figure A.3 and second panel in figure A.2). However, this picture is distorted by the fact that the share of students in federally operated secondary schools is much higher in Wien than in the other eight states; correcting for these problems would yield federal expenditure on school education in Wien at about the national average (sum of black and grey bars in figure A.3). They also exclude federal transfers to municipalities, where Wien receives much more per capita than the other eight states (right panel in figure A.2; the reasons for this discrepancy are explained in section 6). Due to the previously mentioned distortions concerning the transfers for schools and similar problems for transfers for hospitals¹³, we calculate net taxes excluding these items. We also took out pension expenditure as its inter-state differences are due to the strong regional variation in the age structure. The middle panel of figure 5.1 shows that this does not alter the current inter-state ranking in net taxes too much.

Furthermore, Keuschnigg and Loretz (2015) base their calculations of tax revenue generated in states on regional GDP, while we – in line with the risk sharing literature – base it on households' incomes, except for corporate taxes (table A.1). To indicate the impact of distributing taxes according to the residency of income recipients, we reallocated wage-dependent taxes (about one half of overall taxes) using the relative difference between compensation of employees according to residency of the employee to the one according to the place of production.¹⁴ The

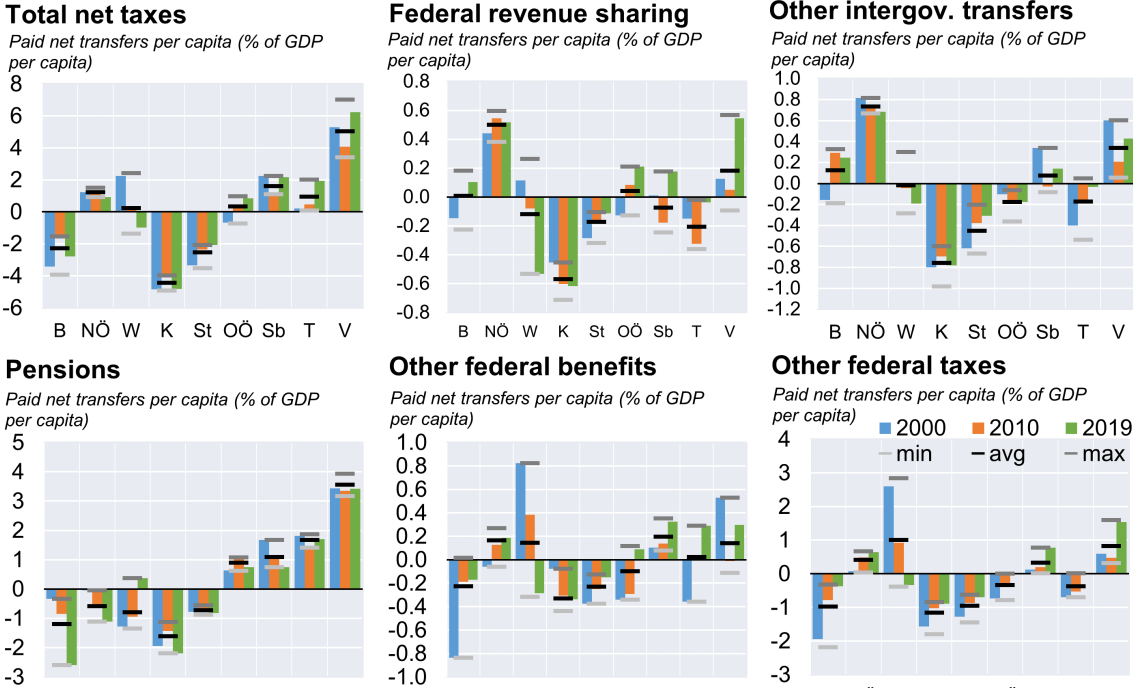
¹³The per-capita transfers for hospitals by both the federal government and the health insurance funds are broadly similar for the six states in the West and South of Austria. However, they are far below the Austrian average for Burgenland and Niederösterreich and far above it for Wien because a significant share of patients treated in Wien are residents of the former two states.

¹⁴Such an allocation would broadly correspond to the current standard in international taxation, namely: corporate and labour income are taxed at the place of production, capital income is taxed at the residence of the recipient, and consumption is taxed at the place of consumption.

former is much larger than the latter in Wien, while the opposite is true for Burgenland and Niederösterreich; in the other six states differences are much smaller (left panel of figure 2.3). A comparison of the right panel of figure 5.1 with the middle panel shows that this would lower the estimated net taxes paid by Burgenland and Niederösterreich, and increase the ones of Wien. Note that all three different specifications shown in figure 5.1 show an improvement over time in net taxes of the states which were net recipients in 2000 (most notably Burgenland, Kärnten and Steiermark, which are net recipients in all three specifications in each single year).

6 Why is there so little redistribution and so much risk sharing via the revenue sharing scheme?

Figure 6.1: Components of estimated net taxes by Austrian states from 2000 to 2019



Source: Own calculations. Note: The charts show the respective differences of the different components of per capita net taxes to the Austrian average, which is then divided by the Austrian GDP per capita. The grey and black lines show the smallest/largest/average value observed for the respective variable from 2000 to 2019.

For a fiscal risk sharing scheme to be politically viable at the euro area level, it should achieve as much risk sharing as possible with as little permanent redistribution between member states as possible. Figure 6.1 decomposes the net taxes by states shown in figure 5.1 into the components

also used in the regressions shown in table 4.1.¹⁵ It shows that especially the pension system (due to the large differences in the age structure of states) and other federal taxes have a large redistributive impact across states. However, there are two ingredients that have a particularly high risk sharing effect compared to the size of their redistributive effect (table 6.1), namely

- federal benefits other than pensions and
- the federal revenue sharing mechanism.

This is not surprising for the former as other federal benefits are relatively small in size (compared to pensions), and as the highly cyclical unemployment benefit system makes up a high share of it. The potential use of an unemployment-insurance-based system for fiscal risk sharing in the euro area has been discussed extensively in the literature (e.g. Dolls et al., 2018), but due to possible obstacles to such a scheme (e.g. the differences in cyclicity of unemployment rates across Europe), it is still interesting to analyse alternative risk sharing schemes.

Table 6.1: Risk sharing vs. redistribution from 2000 to 2019 (households + governments)

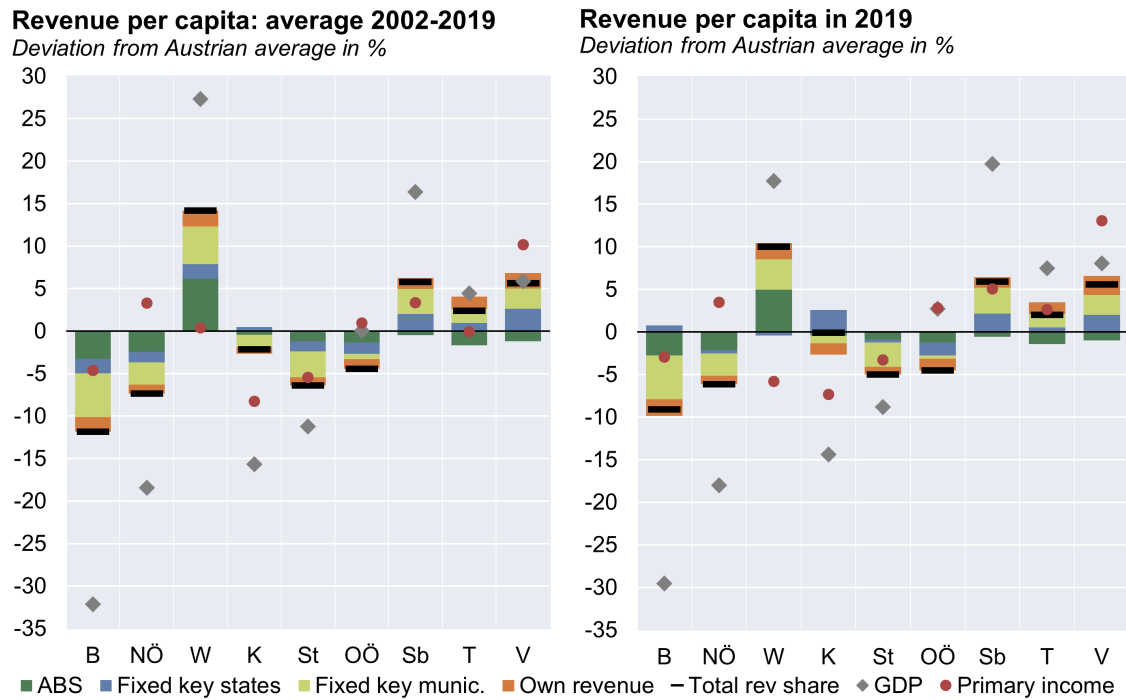
	Fiscal risk sharing	Redistribution
	% of variation in GDP which is smoothed (based on nominal series)	mean abs. deviation of avg. net transfers (2000-19) in % of GDP per capita
Overall fiscal policy	10.5% ***	2.1%
Federal taxes and benefits	6.4% ***	1.7%
Federal pensions	1.3%	1.3%
Other federal benefits	2.1% ***	0.2%
Other federal taxes	2.0% ***	0.7%
Federal transfers to states	3.3% ***	0.5%
Federal revenue sharing	2.7% ***	0.2%
Co-financing by federal gov.	0.2%	0.3%
SSF transfers for hospitals	0.4% ***	0.2%

Source: Own calculations. Note: * significant at 10%, ** significant at 5%, *** significant at 1%.

6.2 tries to illustrate why the Austrian federal revenue sharing system has similar properties. It compares the revenue per capita from the federal revenue sharing system across states and also plots the deviation of GDP and households' primary income from the Austrian average. While a large share of the revenue sharing scheme uses simple population shares, parts of revenue are allocated differently, namely:

¹⁵Due to their relatively small size, transfers of social security funds and other federal transfers for co-financing expenditure have been combined for this figure.

Figure 6.2: Deviations of the revenue sharing mechanism from population shares



Source: Own calculations based on Ministry of Finance data. Note: Transfers from the revenue sharing mechanism are divided by the populations figures used for the allocation of revenue shares (currently from year $T - 2$).

- The revenue share of municipalities is partly allocated according to adjusted population shares where the inhabitants of larger municipalities receive a higher weight (called “abgestufter Bevölkerungsschlüssel” in Austria), which primarily benefits the city-state of Wien.
- The land transfer tax (and some other minor taxes) are allocated according to where its revenue has been collected.
- Other parts of tax revenue are allocated across pre-defined fixed shares (“Fixschlüssel”)¹⁶ which deviate from population weights and tend to be higher for states with above-average GDP per capita.

Overall, these deviations from pure population shares tend to favour Wien, Salzburg, Tirol and Vorarlberg, which all have above-average GDP per capita and – except for Wien – above-average households’ primary income per capita.

¹⁶As it is conceptually similar, we also included the smaller and meanwhile abolished compensation for the abolishment of the beverage tax in the fixed key of municipalities.

Interestingly from an European perspective, not only is the absolute average net contribution of the revenue sharing system comparatively low, there are also several states which have been both net contributors and net payers at some point in time since 2000 (figure 6.1). This shows that extensive revenue sharing mechanisms may not necessarily result in states being divided into (significant) permanent net recipients and permanent net payers.¹⁷

7 Conclusions

This paper analyses fiscal transfers in Austria from the perspective of how fiscal risk sharing could be increased at the European level. Similar to other federations like Germany or the US, fiscal risk sharing in Austria smooths about 1/10 of regional GDP shocks, but factor markets provide a much higher degree of smoothing.

What’s probably most interesting from a European perspective is that the most important intergovernmental transfer scheme – namely the federal revenue sharing scheme – provides significant risk sharing without much redistribution. This is primarily due to the fact that part of the revenue sharing scheme follows fixed keys (which are typically adjusted after a few years), which are higher than population shares for states with a relatively higher GDP per capita. While it may be easy to write down an insurance scheme with similar properties from scratch, it is interesting to see that such schemes actually exist (and have been in place for quite some time).

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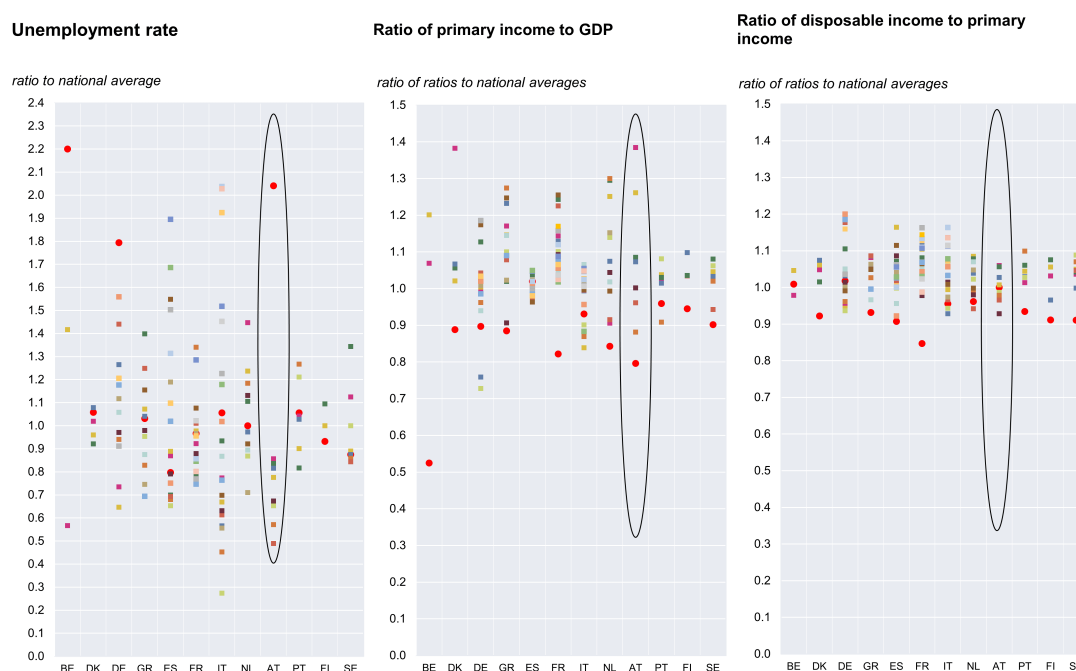
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¹⁷However, one should not forget the poor incentive effects of the Austrian revenue sharing system, which have been heavily criticized by both national experts (e.g. Keuschnigg and Loretz, 2015) and international organisations.

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A Additional charts and tables

Figure A.1: Regional inequality in the old EU member states in 2018



Source: Own calculations based on Eurostat data. Note: Squares represent different NUTS2 regions resp. NUTS1 regions for the UK, Belgium and Germany (in the latter two the federal states form NUTS1 regions), and red circles are used to represent the region containing the capital city. Ireland has been excluded due to the misleading effects of GDP growth in 2015 of about 25%.

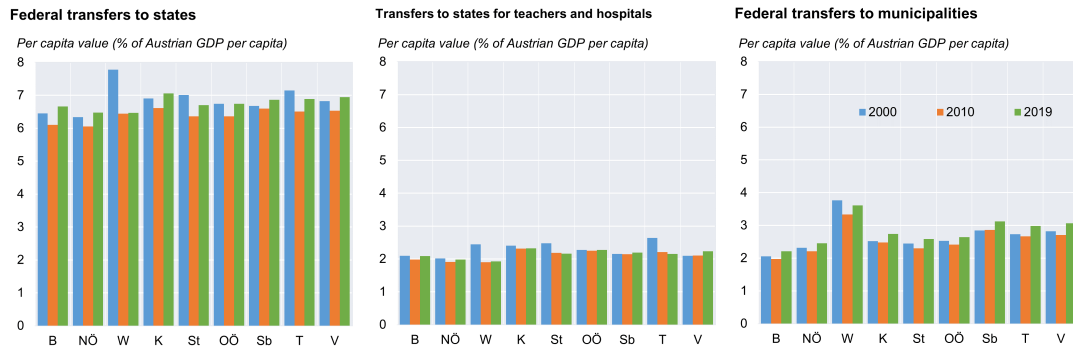
Table A.1: Data sources

Economic concept	Data source
Gross domestic product + compensation of employees received from (+) / paid to (-) other states + property income received from (+) / paid to (-) other states - retained earnings by corporations - consumption of fixed capital - indirect taxes net of subsidies	Regional accounts Regional accounts Regional accounts, national accounts Regional accounts, national accounts
Primary income of households of which social contributions of which direct taxes + indirect taxes on wages "collected in state" + indirect taxes related to real estate + other indirect taxes "collected in state" + other direct (corporate) taxes "collected in state"	Regional accounts Regional accounts Regional accounts Own calculations based on households' wages received Land tax and land transfer tax (Ministry of Finance) Own calculations based on households' disposable income Own calculations based on gross operating surplus
Primary income (households and governments) - taxes to federal government - social contributions to federal government and social security funds + federal social benefits other than in kind of which pensions + transfers from federal revenue sharing (Ministry of Finance) + other federal transfers (Ministry of Finance) + transfers from health insurance funds	Regional accounts, GFS data on own tax revenue Regional accounts, GFS data on own tax revenue Regional accounts, administrative data for social transfers by states Own calculations (wage income tax statistics, national accounts) Ministry of Finance Ministry of Finance Own calculations (GFS data, social security law)
Disposable income (households and governments)	

GFS = Government Finance Statistics.

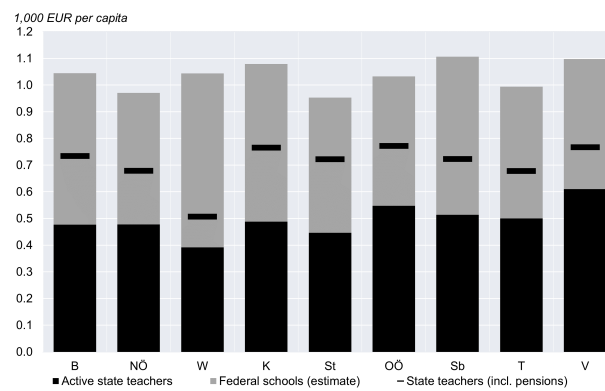
Source: Statistik Austria, Ministry of Finance, social security law, own calculations.

Figure A.2: Federal transfers to states and municipalities



Source: Own calculations based on Ministry of Finance data.

Figure A.3: Federal expenditure on education in schools in 2018



Source: Own calculations based on Ministry of Finance data.