Wealth Inequality and Mobility in Switzerland:
Long-Run Evidence from Wealth Tax Data

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We document different aspects of the wealth distribution in Switzerland, namely (i) wealth concentration measured by top wealth shares and (ii) the spatial distribution of the rich across Swiss cantons (the Swiss equivalent of a U.S. state) over the past century, and (iii) the joint distribution of income and wealth along with (iv) measures of wealth mobility starting in 2001. The Swiss case is of particular interest because of its a large financial sector, which also plays a major role in the tax sheltering of large fortunes (Zucman, 2013). Tax competition and the absence of wars have kept taxes low and have not foreclosed possible wealth accumulation.

We extend our earlier analysis on top wealth shares in Switzerland (Föllmi and Martínez, 2017) and measure wealth concentration at the cantonal level. We compute cantonal top wealth shares and spatial wealth distribution measures of the rich elites across Swiss cantons, relying on the Pareto interpolation method. Thanks to the fact that cantons have relied on wealth taxes for more than 100 years, we can make use of extensive historical tax statistics. Studies from other countries ofthen have to rely on survey data, since comprehensive wealth taxes have become scarce. Tax data cover a large part of the population, which allows to gain a much more comprehensive understanding of wealth inequality. For most cantons, available data goes back to the 1940s—and even further in the case of the canton (1934) and the city (1921) of Zurich. We have collected these statistics from different cantonal archives and digitized them, along with cantonal tax rates on income, wealth, inheritances, and corporate income and capital. Similar to other federal states, such as the U.S., vivid tax competition across Switzerland has led to large differences in tax levels. This descriptive analysis allows to uncover correlations between different taxes and local wealth concentration.

Next, we turn to the joint distribution of income and wealth. To understand differences in living standards, it is central to know whether high income earners also control a large part of private wealth. Are the rich in Switzerland a club of millionaires with modest incomes, or are the wealthy also standing at the top of the income distribution? The latter would exacerbate the observed concentration of income and wealth, indicating an even stronger concentration of economic resources in the hands of a few. For Switzerland, no such empirical analysis exists so far, due to limited data availability in the past. We fill this gap using individual cantonal income and wealth tax data, which allows to determine the joint distribution of income and wealth starting in 2001. To measure the extent of the joint distribution of income and wealth in years prior to 1990, we rely on cantonal statistical publications which cross-tabulate income and wealth in income and wealth brackets. We measure in each canton the association between the two variables by the share of taxpayers belonging to a wealth decile within each income decile or percentile, and we depict the correlation between the percentile rank in the income and wealth distributions. To allow for a comparisons of the joint distribution across cantons and time in a systematic, parametric way taking into account the actual shape of the income and wealth distributions and their copula, we follow the new approach presented in Jäntti et al. (2015).

Finally, the administrative data allow us to document for the first time patterns of wealth mobility over time in a subset of five cantons (where panel data is available). These cantons together contain roughly 56% of all taxpayers in Switzerland over the period 2001-2014. We asses wealth mobility through a) rank correlation at the beginning of and the end of a period, b) mobility matrices over 10-year periods, c) and the prevalence of an individual in the top 1% after one, five, and ten years (analogous to Carroll, 2010 and Auten et al. 2013 on top earners). Controlling for age and marital status, we are able to say something about the accumulation and de-saving processes at different points in life. In addition, we collected information about the 300 wealthiest families in Switzerland published annually since 1989 in the popular Swiss magazine Bilanz (equivalent to the Forbes list) and built a panel data base. While such annual wealth rankings have to be taken with a grain of salt, they allow to uncover changes in the social composition of the rich and wealth mobility at the very top over time.

Research Plan SNSF-Project Funding

The Influence of Taxation on Wealth and Income Inequality – Long-Run Evidence from the Swiss Cantons

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1 Summary

The rapid change of inequality in incomes and wealth in the world has led to a surge of scientific interest in the topic. Along with top income shares, top wealth shares have been increasing since the 1980s, especially in the U.S. (Kopczuk and Saez, 2004) but also in European countries. While there is a mature empirical literature on (top) income inequality, the knowledge on both the dynamics of (top) wealth inequality and the economic forces driving them, is still limited.

Analyzing the case of Switzerland, we want first to understand how top wealth shares evolved on a regional level (Work Package 1). The descriptive part of the study is a contribution to the literature on wealth concentration and mobility at the top in itself, and it documents the large variation we observe today across cantons. Second, we analyze wealth mobility and the joint distribution of income and wealth. To understand the differences in living standards, it is central to know whether high income earners also control a large part of private wealth (Work Package 2). Using historical data we are able to extend the analyses described under 2.2 back to the 1940s and uncover changes over time. Work Package 3 then assesses, theoretically and empirically, the influence of taxes on wealth concentration, using cantonal variation. To put the evolution of wealth accumulation into broader context, the last Work Package 4 then looks at the wealth-income ratio in Switzerland, following the recent strand in the literature on the distribution of income and wealth that has started to estimate aggregate wealth-to-income ratios in a consistent manner across countries and over time, including Piketty (2014) and Piketty and Zucman (2014).

Why do we analyze Switzerland? First of all, the Swiss case is of great interest because it is a major industrialized country with a large financial sector, which also plays a major role in the tax sheltering of large fortunes (Zucman, 2013). Tax competition within Switzerland and the absence of wars have kept taxes on income and wealth low and have not foreclosed possible wealth accumulation. In addition, both large amounts of foreign assets are deposited in Switzerland, and net foreign assets of Swiss residents are very large, due to ongoing current account surpluses. Second, Switzerland is an ideal laboratory to draw empirical inference. 26 cantons have different tax rates but otherwise comparable conditions, making it the ideal setting to study outcomes at the macro-level with panel-econometrics methods.

The majority of earlier studies have to rely on survey data, since not many countries have a comprehensive wealth tax. Instead, our project makes use of tax data, which cover a large part of the population, which allows to give a much more comprehensive understanding of wealth inequality and mobility. Building on an established working experience with tax data and sharing our results with leading researchers in the field, we are confident to achieve the aims of our study.

2 Research Plan

2.1 Current State of Research in the Field

Along with top income shares, top wealth shares have been increasing since the 1980s, especially in the U.S. (Kopczuk and Saez, 2004) but also in European countries including Switzerland (see Föllmi and Martínez, 2016; for France, see Garbinti et al., 2017, and for an international overview see Piketty, 2014, chapter 10). Wealth concentration at the top is now at levels unprecedented since WW I in the U.S. but also in Switzerland. In the present project we want to study the evolution of wealth inequality within Swiss cantons over the second half of the 20th century. Furthermore, the wealth-income ratio, previously believed to be stable, has risen in many industralized countries, as Piketty and Zucman (2014) document. The Swiss case is of great interest because it is a major industrialized country with a large financial sector, which also plays a major role in the tax sheltering of large fortunes (Zucman, 2013). Tax competition within Switzerland and the absence of wars have kept taxes on income and wealth low and have not foreclosed possible wealth accumulation.

To reduce wealth inequality, scholars have proposed a (global) wealth tax, along with progressive income taxation and inheritance taxes (most prominent proponents of such measures are Piketty, 2014; Saez and Zucman, 2016). Opponents of wealth taxation argue it distorts saving incentives and hampers capital accumulation, that it is unfair, as it implies double taxation of capital income, and that in practice it is difficult to define a tax base, appraise assets and prevent tax evasion (Seim, 2017).

This debate highlights the political relevance of the questions at hand. It touches upon the trade-off between equity and efficiency of tax policies, as well as on the relative tax burden on income versus capital. Importantly, in Switzerland these decisions do not only have to be made at the federal level but also in each of the 26 cantons. The distribution of income and wealth is highly important for the design of other redistributive policies that go beyond taxation and lie at the core of modern welfare states, namely the pension system but also the health and education systems. Given limited public funds and in face of demographic change, upcoming pension reforms will have to take into account increasing disparities in both, income and wealth, in Switzerland and elsewhere.

This highlights an important yet understudied aspect of inequality: the cross-sectional joint distribution of income and wealth. To understand the differences in living standards, it is central to know whether high income earners also control a large part of private wealth. Furthermore, understanding their joint distribution is informative for optimal tax policy designs. If their correlation is high, a more progressive income tax may be well suited to target wealth holdings as well. On another note, high income and wealth concentrations are problematic on their own for the functioning of a democracy. Gilens (2014) finds that U.S. politics are already highly responsive to the preferences of the economically advantaged. The higher the correlation between income and wealth, the more serious becomes the problem of political inequality. Evidence on the joint distribution of income and wealth generally shows a high correlation of the two variables especially in the top quintile or decile (Podoluk, 1974; Sierminska et al., 2007; Jäntti et al., 2008; OECD, 2015; Saez and Zucman, 2016). Kuhn and Ríos-Rull (2016) furthermore show how in the U.S. the correlation of income and wealth increased over time, especially during the 1990s. The majority of earlier studies have to rely on survey data, since not many countries have a comprehensive wealth tax. We contribute to these analyses by documenting for the first time the joint distribution of income and wealth in Swiss cantons for differing time periods since the 1970s, and based on individual income tax data and tax statistics. The major advantage in using tax data over survey data is that the whole population, including the very rich, is covered and that assets are covered and valued in a systematic (albeit still imperfect) manner. Our analysis includes different measures used in the literature, including the correlation between income and wealth and between

a person's rank in the income and the wealth distribution (Jäntti et al., 2008), and income shares for top wealth groups (Podoluk, 1974; Saez and Zucman, 2016) In addition to these non-parametric measures of the joint distribution, Jäntti et al. (2015) present a new, parametric approach based on copula functions (Sklar, 1959). These functions model the relationship between the marginal distribution of two stochastic variables and their joint distribution. This approach allows us to examine whether differences in inequality across cantons and time are driven by differences in the association between income and wealth, or by differences in the marginal distributions.

To obtain a more complete picture of wealth inequality and its accumulation over time, we turn to wealth mobility over the lifecycle. Following the literature on the intergenerational transmission of human capital and the transmission of earnings based on Becker and Tomes's (1986) seminal contribution, the literature has mainly focused on the intergenerational wealth mobility and especially the role of inheritances.[1] Studies on mobility within an individual's lifespan have focused mainly on income.[2] One of the few studies on wealth mobility over the life cycle is Hochguertel and Ohlsson (2012). They find that in Sweden wealth mobility has decreased after the 1980s, coinciding with the deregulation of Swedish financial markets. Similar research on wealth mobility is very limited so far, and our estimates will be an important contribution towards filling this gap.

Advocates of progressive wealth, bequest, and income taxes (Piketty, 2014; Saez and Zucman, 2016) argue that each of these instruments contributes to limit wealth concentration at the top through reducing returns to wealth at the top, reducing intergenerational dependencies in wealth inequality, and reducing the ability of rich households to accumulate wealth, respectively. We are aware of no study that empirically investigates the effect of wealth taxes on wealth accumulation, a gap we fill with our research and see as a major contribution of our project. The influence of estate taxes has been studied mainly in theoretical models like Castañeda et al. (2003). Their simulations suggest that abolishing the estate tax in the U.S. would have only very small distributional implications. The overview article by De Nardi (2015) suggests that models with inheritances explain the large concentration of wealth among small top groups better than those without, yet they still don't match the data. Kaymak and Poschke (2016) study the impact of changes in the U.S. tax and transfer system over the past 50 years within a Bewley (1977) economy and an income process like in Castañeda et al. (2003), calibrated to match income and wealth distributions in the U.S. in the 1960s. They find that the increase in wealth inequality can be accounted for by (i) increased wage income dispersion and associated increased downside risk for top earners, (ii) changes in the tax system (lower taxes), (iii) expansion of Social Security and Medicare – both benefiting the elderly and reducing savings incentives for low and middle income households. Empirical evidence presented in Piketty et al. (2014) suggests that especially top incomes are sensitive to taxation.[3] Frey et al. (2016) find for Switzerland that higher income tax rates have a negative effect on the very top income shares. A one percentage point increase in the average tax rate at the very top reduces the share of total incomes going to the top 0.1% by 0.2-0.6 percentage points.

Initiated by Piketty (2014) and Piketty and Zucman (2014), a very recent strand in the literature on the distribution of income and wealth has estimated aggregate wealth-to-income ratios across countries based on national account data (Alvaredo et al., 2017a; Garbinti et al., 2016). The question is how this ratio evolves over the long run and why. The seminal contribution by Piketty and Zucman (2014) shows a gradual rise of wealth-income ratios since the 1970s in eight developed countries. According to their analysis, this can

[1] Some early contributions include Harbury (1962), and Modigliani (1988); among the many recent studies are those by Charles and Hurst (2003), Piketty (2011), Boserup et al. (2014), Adermon et al. (2015), Clark and Cummins (2015).

[2] Examples include Moser (2013) for the canton of Zurich in the period 2001–2010, and Carroll (2010); Auten et al. (2013), who study top earners' prevalence among the top 1% in the U.S. after one to nine years.

[3] This finding can be due to real responses as suggested by Feldstein (1995, 1999), mere tax avoidance responses (Slemrod and Yitzhaki, 2002), or any combination of the two (see Saez et al., 2012, for an overview). Piketty et al. (2014) suggest a third channel, where top earners have more incentives to increase their pay through bargaining efforts when marginal tax rates are lower.

be explained by long-run asset price recoveries since the world wars, and the slowdown of productivity and population growth. These results and the decomposition of national wealth into domestic capital and foreign net assets are informative to understand the observed evolution in wealth shares. The relative magnitude of wealth to income in an economy is further of importance to assess the role of a (progressive) tax on wealth versus income taxation.

As this short overview shows, wealth has become increasingly important in different areas of economic research. Its importance in assessing living conditions in a society has also been acknowledged by the Federal Office of Statistics (BFS, 2014) in a recent report on household wealth. At the same time, data allowing to study the wealth distribution is still extremely scarce in Switzerland, as the same report notes. Our research is a first, important step towards filling this gap by collecting individual and aggregate wealth tax data at the cantonal level, and it is a major contribution to the study of wealth inequalities in Switzerland. With respect to claims that wealth taxes are effective in reducing wealth inequality, there exists no sound empirical evidence that this is the case in the long run. Since wealth accumulation takes time, inequality-reducing effects of a wealth tax can only be expected to materialize after such a tax has been in place for an extended period of time. Switzerland provides a unique laboratory to study this question. Furthermore, since wealth taxation and tax competition over mobile tax bases are such controversial issues on both academic and political grounds, empirical research is needed to test the claimed effects of a wealth tax on wealth inequality at the top. Finally, we want to shed light on the relation between total wealth and national income in Switzerland over time. Again, Switzerland is an important case in international comparisons: since it did not suffer from the large destruction of wealth in the world wars of the 20th century and thanks to its low tax levels, the wealth-income-ratio is likely to be very large in Switzerland, yet no studies exist to answer this question.

Due to the renewed interest and gaps in understanding wealth inequality, other research projects related to our own are currently under way. Closely related to our research is the SNSF-Project 166618 by Kurt Schmidheiny (University of Basel) and Marius Brülhart (Université de Lausanne), which addresses the elasticity of taxable wealth in response to tax changes in Switzerland. Their focus, however, is on responses of wealth reporting to taxation, rather than on inequality. Similarly, the paper by Frey et al. (2016) estimates the influence income taxes have on income concentration. They indeed find a dampening effect on the top income shares measured within cantons, yet their paper remains silent about effects on wealth. Ben Jann and coauthors recently concluded a SNSF-project (No. 143399) on income and wealth inequality in Swiss cantons, and a follow-up project is underway. Their focus is on the middle and the bottom part of the distribution, and they study important questions related to social policies for and social exclusion of the more disadvantaged individuals in the Swiss society. Opposed to our study, their research does not consistently cover top wealth and income shares, and it does not go as far back in time as our study does, as their cantonal data covers mostly the 2000s. Out of the mentioned SNSF-project, they provided some methodological contributions to the study of income and wealth inequality which are of interest for our own research (Hümbelin and Farys, 2016; Jann, 2016a,b). Due to the close relation of the two projects, we plan a collaboration with Prof. Jann and Dr. Hümbelin in parts of our project.

2.2 Current State of Own Research

In a previous paper (Föllmi and Martínez, 2016) we estimated top income and wealth shares for Switzerland up to 2010 using tabulated tax data. This work updated earlier estimates by Dell et al. (2007), ending in 1995. In addition, we corrected the top wealth shares to take into account private pension wealth, which is untaxed and therefore not included in the tax statistics, and which is distributed much more equally than private non-pension wealth. We find that taking into account private pension wealth has a dampening effect

on the otherwise extremely high wealth concentration in Switzerland, yet that the very top wealth shares have nevertheless been increasing over the past two decades (see Figure 1).

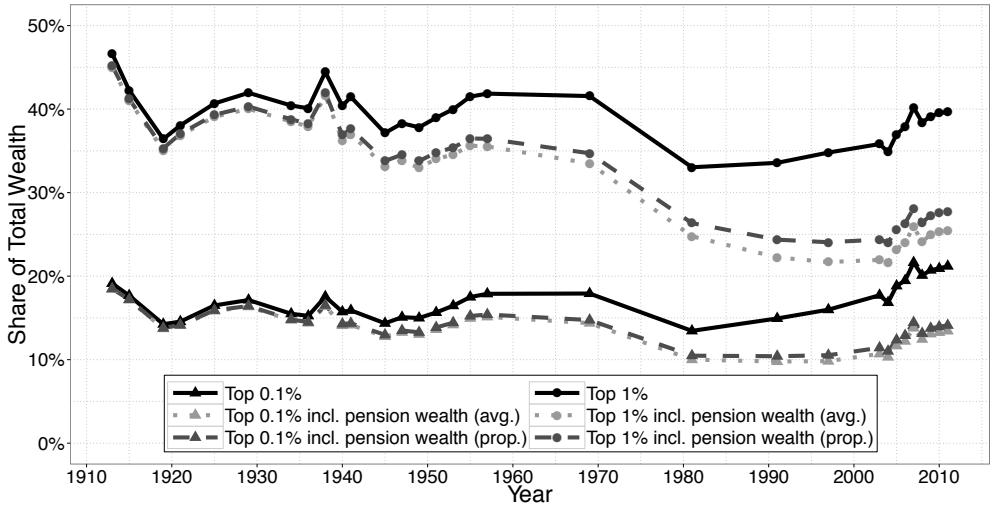


Figure 1: Top wealth shares in Switzerland corrected for pension wealth, 1913–2011

Source: Föllmi and Martínez (2016)

We build on and extend this work in several ways to gain a more detailed picture of wealth inequality in Switzerland. We first construct top wealth shares at the cantonal level, to show how wealth inequality within cantons varies across cantons (Figure 2). Second, we construct three regional wealth distribution parameters to highlight the spatial dimension of wealth inequality in Switzerland. The first measure shows the distribution of the top 1% of Swiss taxpayers across cantons (Figure 3a). We refer to these taxpayers as the "classe riche". The second shows the share of cantonal wealth going to the classe riche (Figure 3b). The third parameter shows how total wealth of the classe riche is distributed across cantons (Figure 3c). So far, we have been able to compute these distributional measures for the years 2003–2013, We intend to digitalize cantonal wealth data for earlier years, starting in 1971, to increase the time-span from 11 to more than 40 years.

While the literature on top income shares has evolved rapidly over the past 15 years, estimates on wealth shares are still relatively scarce in cross-country comparison. The WID.world project (Alvaredo et al., 2017b), which collects these data, currently has top wealth shares on France (Garbinti et al., 2017), the U.S. (Piketty and Zucman, 2014), the U.K. (Alvaredo et al., 2016a) and China (Piketty et al., 2016). Since in many countries wealth is not taxed (anymore), top wealth shares have to be estimated using other techniques, including the income capitalization method (Saez and Zucman, 2016) and the estate multiplier method (Kopczuk and Saez, 2004). In contrast, the Swiss case allows for a direct measure of the distribution of (taxable) wealth using wealth tax statistics.

The cantonal series on top wealth shares and on the regional distribution series will allow us, in a next step, to assess the role of wealth taxation on these measures, by exploiting the vast cantonal variation in wealth and income tax rates. As the Figures 2–3c show, there is considerable variation in all of these measures across cantons, which together with the variation over time, allows us to identify the role of taxes in a quantitative panel model.

Another aspect of wealth inequality we want to study in this project is the joint distribution of income and wealth. In a first step we have done so relying on individual income tax data from the canton of Obwalden for the period 2001–2010. We find that there is a strong correlation in wealth and total income in the top decile: 35% of taxpayers in the top wealth decile are also in the top income decile (Figure 4).

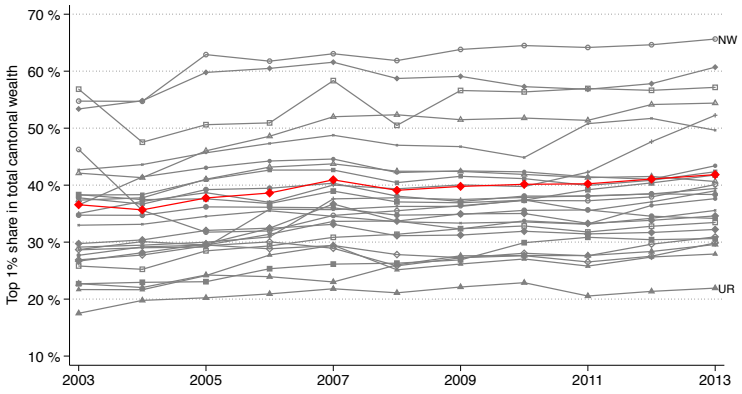


Figure 2: Within-canton wealth shares of the top 1% (red: CH)

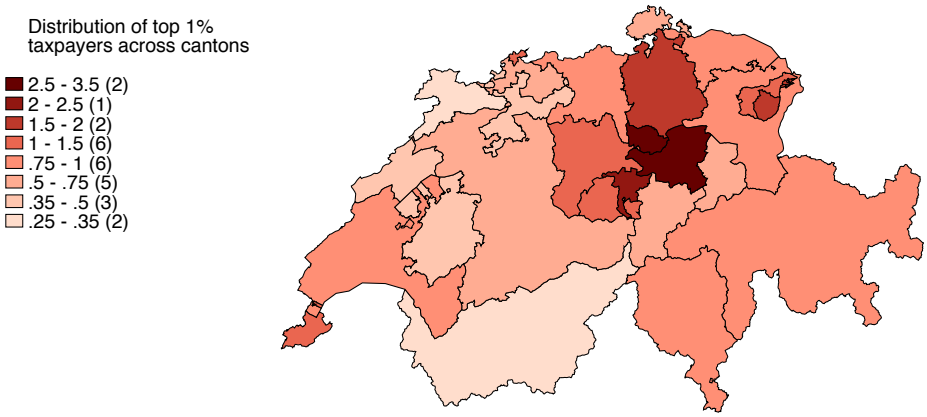
This correlation increases further within the top decile of the income distribution, a result of the Paretian distribution of incomes and wealth at the top (Pareto, 1896; Piketty, 2001). When looking only at labor incomes, we find that of those in the top wealth decile, 40% are in the lowest labor income decile. The picture is reversed when considering the distribution of the 10th wealth decile over the capital income distribution. Taxpayers in the top decile of the wealth distribution are most likely to be also found in the top 10% of the capital income distribution. In contrast, taxpayers from the 8th decile of the wealth distribution (top 20-30%), are most likely to be found in the 6th decile of the capital income distribution. This suggests that returns to capital are higher for the very wealthy than for the upper middle-class, a concern raised in the literature (e.g., Garbinti et al., 2017; Piketty, 2014; Saez and Zucman, 2016) and documented empirically for the Norwegian case (Fagereng et al., 2016). Such descriptive insights of the joint distribution of income and wealth are important to gain a better understanding of the dynamics in income processes and wealth accumulation, and to develop a model which matches the data well.

Figure 5 shows how the joint distribution of income and wealth has evolved in Obwalden over time. Following the two major tax reductions on top incomes and high wealth, the correlation between income and wealth has increased. The comparison between the Spearman and Pearson's correlation of wealth and capital incomes further points out the non-linear relationship between these two variables: high capital incomes are overrepresented among top wealth holders.

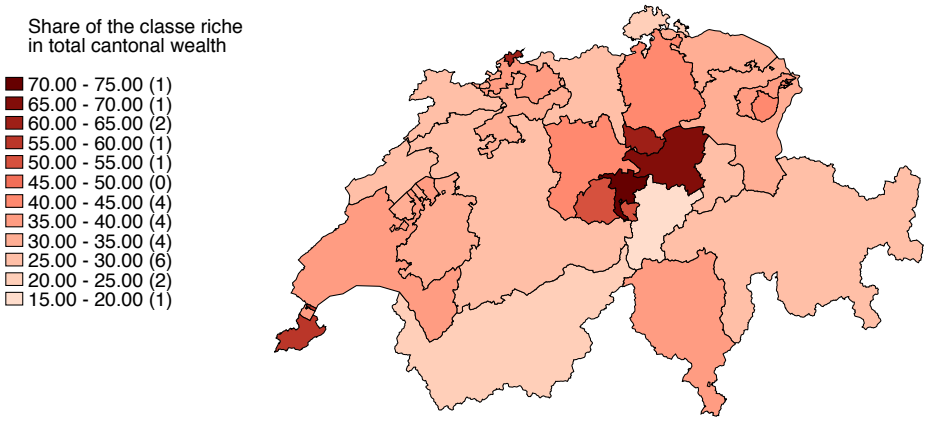
We go beyond the cross-sectional view of wealth inequality and include measures of wealth mobility. For this analysis individual panel data is absolutely necessary, thus so far results are based on tax data from the canton of Obwalden for the period 2001–2010. The wealth mobility matrix (Figure 6) shows the share of taxpayers in a wealth decile in 2010 conditional on their starting point in 2001. It reflects the high prevalence of wealthy taxpayers at the top: among those in the 10th decile of the net wealth distribution in 2001, 74% were still in that same decile ten years later. The persistence is substantially larger at the top than at the bottom or anywhere in else in the wealth distribution. Panel b) of Figure 6 shows how basing the analysis on taxable wealth, artificially increases mobility at the top while lowering bottom wealth mobility due to personal exemption levels and extensive deductions for business owners.

2.3 Detailed Research Plan

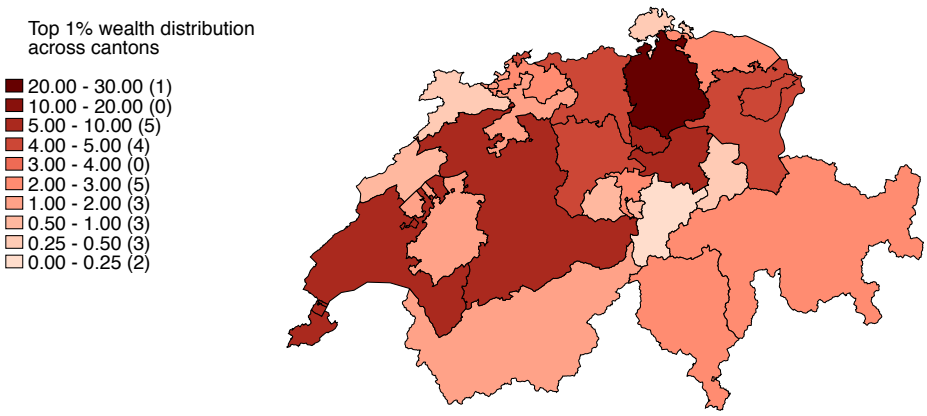
The goal of this study is to understand the influence of wealth taxes on the wealth concentration at the top. We first document different aspects of the wealth distribution in Swiss cantons, including (i) wealth concentration measured by top wealth shares, (ii) the spatial distribution of the "classe riche" (Work Package 1), and (iii) the joint distribution of income and wealth along with (iv) measures of wealth mobility (Work



(a) Share of taxpayers belonging to the "calsse riche" in each canton



(b) Wealth share of the Swiss "classe riche" in cantonal wealth



(c) Distribution of wealth belonging to the "classe riche" across cantons

Figure 3: Distributional measures of wealth concentration at the top in Switzerland, 2013

Note: *Source*: Wealth tax statistics published by the Federal Tax Administration (ESTV); own calculations.

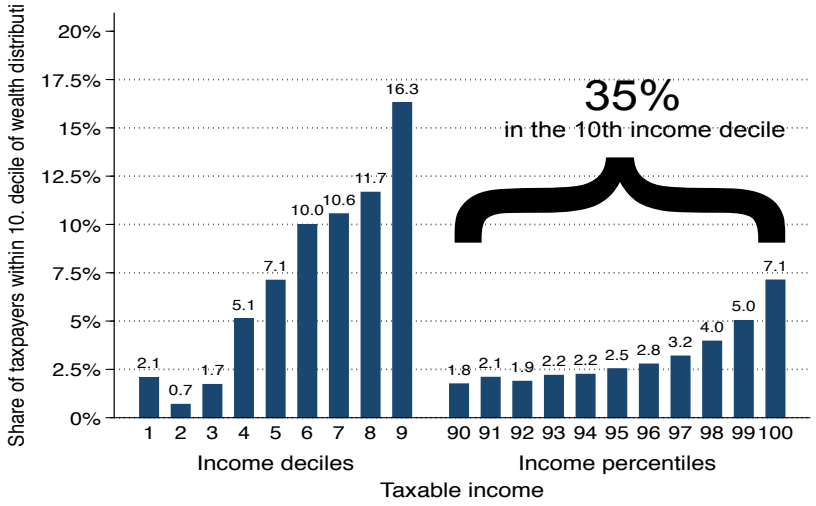


Figure 4: Distribution of 10^{th} wealth decile over the income deciles (Obwalden, 2001–2010)

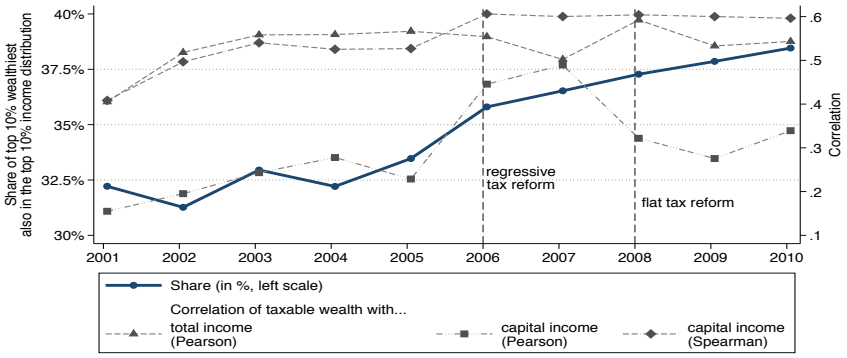


Figure 5: Share of taxpayers from the 10^{th} wealth decile in the 10^{th} income decile and the correlation of income and wealth (Obwalden, 2001–2010)



(a) net wealth **(b)** taxable wealth

Figure 6: Wealth mobility matrix (Obwalden, 2001–2010)

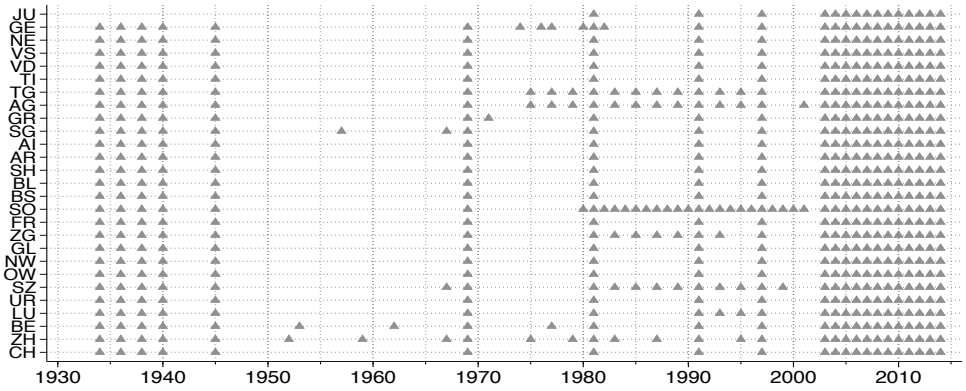


Figure 7: Aggregate wealth statistics by canton (available so far)

Note: Prior to 2003, the Swiss tax system was biennial at the federal level and in most cantons, except SO and BS, which levied taxes annually.

Package 2). Using historical data we are able to extend the analyses described under 2.2 back to the 1940s and uncover changes over time.[4] This descriptive part of the study is a contribution to the literature on wealth concentration and mobility at the top in itself, and it documents the large variation we observe today across cantons. The influence of taxes on wealth concentration is then assessed on theoretical and empirical grounds (Work Package 3). We develop a theoretical model of wealth accumulation in the presence of taxes on income and wealth to match the key parameters found in the descriptive part. Empirically, we test the effect of taxes on the concentration of wealth at the top in a panel regression framework. Switzerland, where the 26 cantons have different tax rates but otherwise comparable conditions, offers the ideal setting to study outcomes at the macro-level with panel-econometrics methods.

2.3.1 The Geography of Top Wealth and Income Shares in Switzerland (WP 1)

In order to be able to estimate the role of taxes on wealth concentration at the cantonal level in the long run, we first need to extend the estimates on top wealth shares at the cantonal level to include time spans as long as possible. For this purpose, we need to collect historical data on the distribution on wealth in each canton and, for the years where this is possible, for Switzerland as a whole. Since there is no wealth tax at the federal level, the Federal Tax Administration published such statistical tables covering all cantons prior to 2003 only in 1940, 1945, 1969, 1981, 1991 and 1997. For these years we can compute cantonal top wealth shares and spatial wealth distribution measures of the "classe riche" across the Swiss cantons as described in 2.2. For many cantons there are in addition cantonal publications, starting mostly in the 1970s, and dating back as early as 1934 for the canton of Zurich. For the city of Zurich there are, in addition, data covering the 1920s. For an overview of the data we have found in cantonal archives and websites so far, see Figure 7. We expect to be able to cover more cantons during the course of this project by contacting further cantonal archives.

An additional part of this descriptive analysis of wealth concentration at the top includes the systematic collection of information about the 300 wealthiest families in Switzerland, published annually since 1977 in the popular Swiss magazine *Bilanz*. While such annual wealth rankings have to be taken with a grain of salt, they allow to uncover changes in the social composition of the rich and wealth mobility at the very top over time, a question we come back to in Work Package 2 (see Section 2.3.2).

[4] Data needed for measure (iv) is limited to more recent years. We still plan on expanding this measure to cover more cantons by obtaining individual cantonal tax data.

To compute cantonal top income shares we rely on data from the Federal Tax Administration ESTV in Bern. For the years from 1971 onward individual data exist in digital form and can be accessed on site. Dr. Martínez has experience in working with this data through earlier projects (Föllmi and Martínez, 2016; Martínez, 2016). Condition to obtain access to this highly confidential data is that the corresponding research project be funded through the SNSF. For the years prior to 1971, scanned tabulated tax statistics are available through the ESTV website.[5] Schaltegger and Gorgas (2011) and Frey et al. (2016) have manually recorded these data into a database such that the data can be processed further. The authors share these raw data for the early years with us for this project.

To estimate the share of total wealth and total income going to the top 1% of taxpayers and the associated regional distribution measures, we rely on the parametric assumptions of the Pareto distribution (Pareto, 1896; Kuznets, 1953). Herein we follow our earlier work on top income shares in Switzerland (Föllmi and Martínez, 2016). There is ample empirical evidence that income and wealth at the top of the distribution are approximately Pareto distributed, and Gabaix (2008) presents theoretical motivations for the emergence of a Pareto distribution at the top for income and wealth (for an overview of popular variants of Pareto's models, see Arnold, 2008). Due to its features, the Pareto interpolation method (described in detail in the appendix of Piketty, 2001) has become the standard in the literature to estimate top income and wealth shares, which are commonly based on tabulated tax statistics (including Föllmi and Martínez, 2016; Schaltegger and Gorgas, 2011; Kopczuk and Saez, 2004; Piketty and Saez, 2006, 2007; Salverda and Atkinson, 2007; Alvaredo and Saez, 2009; Roine and Waldenström, 2010; Atkinson and Piketty, 2007, 2010).

2.3.2 Wealth Mobility and the Joint Distribution of Income and Wealth (WP 2)

Next we turn to the question of wealth mobility and the joint distribution of income and wealth. To understand the differences in living standards, it is central to know whether high income earners also control a large part of private wealth. Are the rich in Switzerland a club of millionaires with modest incomes, or are the wealthy also standing at the top of the income distribution? The latter would exacerbate the observed concentration of income and wealth, since it indicates an even stronger concentration of economic resources in the hands of a few.

For Switzerland, no empirical analysis of the joint distribution of income and wealth exists so far.[6] The reason is that data sets measuring income and wealth at the individual level are scarce in Switzerland, where also no such survey exists (BFS, 2014). We aim to fill this gap using individual cantonal income and wealth tax data which allows to determine the joint distribution of income and wealth at least in recent years. Figure 8 shows the years and cantons for which individual tax data is available for this project. As part of the recently completed SNSF-Project 143399, our project collaborators and co-authors for this work package, Prof. Jann and Dr. Hümbelin, have obtained access to individual tax data from eight cantons, which we aim at using in the present project. For the canton of Zurich, we will be able to get data access for the project at hand. Although these cantonal data sets do not allow for a complete picture of Switzerland, these cantons together contain roughly 56% of all taxpayers in Switzerland.[7] Within this project, we aim at including further cantons and / or extend the coverage over time of the cantons covered so far where this is possible. To measure the extent of the joint distribution of income and wealth in years prior to 1990, we rely on statistical publications which cross-tabulate income and wealth in income and wealth brackets. So far we have found such data for the cantons of Zurich, Lucerne, and Thurgau. The availability of tax

[5] https://www.estv.admin.ch/estv/de/home/allgemein/steuerstatistiken/fachinformationen/steuerstatistiken/direkte-bundessteuer.html

[6] Moser (2006) provides an analysis of income and wealth concentration by age and birth cohorts based on tax data from the canton of Zurich for the Period 1991–2003. His study points out important age and cohort effects, yet remains silent on the joint distribution of income and wealth.

[7] Estimates according to federal income tax statistics; own calculation.

data covering the whole population on both, income and wealth, is an improvement compared to earlier studies from other countries, which have to rely on survey data. Survey data often suffers from top-coding and under-sampling of top earners and may therefore not be appropriate to measure wealth and income at the top of the distribution (Hümbelin and Farys, 2016). A major exception are Saez and Zucman (2016) who base their wealth estimates on the income capitalization method using detailed income tax return data. While the wealthiest are caputred in these tax data, the approach is still problematic in the presence of heterogeneous returns to wealth by different wealth levels, as shown in Fagereng et al. (2016).

We use the following non-parametric measures to capture the joint distribution of income and wealth. We measure in each canton the association between the two variables by the share of taxpayers belonging to a wealth decile within each income decile or percentile, as shown in Figure 4. We also depict the correlation between the percentile rank in the income and wealth distributions.

To allow for a comparisons of the joint distribution across cantons and time in a systematic, parametric way taking into account the actual shape of the income and wealth distributions and their copula, we follow the new approach presented in Jäntti et al. (2015). The joint cumulative distribution of income and wealth, $F(y, w)$, can be uniquely expressed as a function of a copula, C, and the univariate marginal distributions of income, $F_Y(y)$ and wealth, $F_W(w)$: $F(y, w) = C\left[F_Y(y), F_W(w)\right]$. We follow Jäntti et al. (2015) and others by modeling the income distribution with a Singh and Maddala (1976) specification.

$$F_Y(y) = 1 - \left[1 + (\frac{y}{b})^a\right]^{-q}$$

Jäntti et al. (2015) use a finite mixture model in the vein of Jenkins and Jäntti (2005), where different parts of the distribution are modeled separately, to account for excess mass at zero and, depending on the data at hand, negative values. Since taxable wealth cannot be negative, we only have to account for the excess mass at zero:

$$F_W(w) = \begin{cases} \pi & \text{if } w = 0 \\ \pi + (1-\pi)\left[1 - \left[1 + (\frac{w}{\beta})^\alpha\right]^{-\gamma}\right] & \text{if } w > 0 \end{cases}$$

For the copula specification, C, we will have to experiment with several alternative specifications based on Jäntti et al. (2015), the only guidance for copula estimations in the context of income and wealth. Differences in the estimated parameters across cantons can then be used to classify cantons into different groups, which can be informative to further investigate the sources of wealth inequality as we do in Work Package 3.

The administrative data sets used to study the joint distribution of income and wealth further allow us to document for the first time patterns of wealth mobility over time in Switzerland in a subset of five cantons (those where panel data is available, see Figure 8). Wealth mobility is the result of inheritances and the accumulation (deccumulation) process through savings (de-saving). The latter are directly influenced by income and wealth taxes. Measuring wealth mobility over the whole distribution allows to draw conclusions about the speed of such accumulation processes for different wealth deciles. This topic is highly relevant and yet understudied as De Nardi (2015) states it. We rely on methods used to study income mobility over the life cycle. These include mobility matrices over determined periods (Moser, 2013, e.g., 10 years as in), the prevalence of an individual in a top wealth group after one, five, and ten years, analogous to Carroll (2010); Auten et al. (2013) in the case of top income earners, and the rank correlation at the beginning of and the end of a period. Controlling for age and marital status, we are able to say something about the accumulation and de-saving processes at different points in life. This will allow us to compare our results to the ones found in Moser (2006). Further conditioning on income allows us to uncover any heterogeneity between income groups.

This work package will be an interdisciplinary cooperation between Prof. Reto Foellmi and Dr. Isabel

Martínez at the University of St. Gallen, and Prof. Ben Jann (Sociology, University of Bern) and Dr. Oliver Hümbelin (Sociology, Bern University of Applied Sciences). The latter have a demonstrated expertise in the analysis of socio-economic inequalities in Switzerland based on administrative data, including methodological contributions regarding the analysis of administrative data (Hümbelin and Farys, 2016). Prof. Foellmi and Dr. Martínez have carried out studies on top income and wealth shares before and contribute to the project by highlighting the economic relevance of these groups.

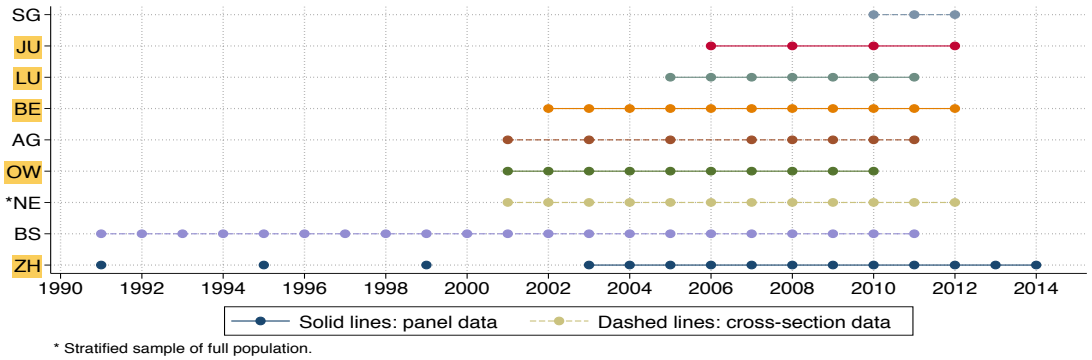


Figure 8: Coverage of Individual Income and Wealth Tax Data Sets

2.3.3 The Role of Taxes for the Accumulation of Wealth (WP 3)

Piketty (2014) and Saez and Zucman (2016) suggest that a (global) wealth tax would contribute to reducing the wealth concentration among the richest. In the case of income concentration, earlier studies have suggested and provided empirical evidence that the tax burden on top earners has a a negative impact on observed income concentration (e.g., Roine et al., 2009; Piketty et al., 2014; Frey et al., 2016). In this work package we extend the analysis to include the effect of capital taxes on top wealth shares. Not only does Switzerland provide an ideal laboratory to study this question thanks to the federal set up. Furthermore, it is one of the few countries where top wealth shares are available for an extended period. In other countries, wealth is often untaxed or it is only taxed at death in form of an inheritance tax (this stands in contrast to annual income taxation, which is why top income shares exist for a wide range of countries over long time spans).

To tackle the role of taxes for the accumulation of wealth analytically, we present a theoretical OLG model based on the work by Bertola et al. (2014) and Foellmi (2014). From this workhorse model we obtain comparative statics which serve as benchmark for our empirical analysis. Assume that individuals are active only for one period. Individual i is endowed with l units of labor. New born individuals also inherit a bequest of amount k_t from their parents. During their active period they earn labor income $W_t l$ and risky capital income $R_t^i k_t$. At the end of their life individuals consume c_t and leave a bequest k_{t+1} to their heirs. In its simplest form, the maximization problem of individual i can be written as:

$$\begin{aligned} & \max_{c_t} E_t \left\{ u(c_t) + \frac{1}{1+\rho} v\left(k_{t+1}\right) \right\} \\ \text{s.t. } k_{t+1} \quad &= \quad (1+R_t^i)k_t + W_t l_t - c_t, \end{aligned}$$

where $u(\cdot)$ and $v(\cdot)$ represent the utility from consumption and from bequeathing resources to their offspring, respectively. For convergence, we will assume that the utility is of the hyperbolic absolute risk aversion (HARA) type. Using this framework, wealth versus capital income taxation and the resulting wealth dynamics leading to an ergodic distribution can be analyzed. Different from a capital income tax, a wealth

tax is not contingent on the realized returns of capital holdings. Thus, a wealth tax punishes risk-taking or entrepreneurial activity less than a capital income tax. However, the impact on capital accumulation could be substantial – in particular in a situation with falling interest rates, if the average wealth tax does not adjust sufficiently.

Empirically, we analyze the relationship between wealth tax rates and top wealth shares applying different panel regression models to the long-run cantonal time series we collect and estimate in WP 1. Our base-line specification is a OLS panel regression including canton and time fixed effects (FE).[8]

$$\text{Top p\% wealth share}_{i,t} = \beta_1 \tau^w_{i,t} + \beta_2 \tau^w_{j,t-1} + \beta_3 \tau^y_{i,t} + X'_{i,t}\beta_4 + \eta_i + \delta_t + \varepsilon_{it} \quad (1)$$

$\tau^w_{i,t}$ is the wealth tax rate in the canton, and $\tau^w_{j,t-1}$ is the average wealth tax rate in all contingent neighboring cantons in the previous year. $\tau^y_{i,t}$ denotes the income tax rate on the top 1% income earners, to control for different effects of income vs. wealth taxes as predicted by the theoretical model. η_i and δ_t are canton and year FE, respectively, ε_{it} is the error term. $X'_{i,t}$ is a vector of controls accounting for economic conditions, socio-demographic trends and political environment. We include the lowest wealth tax rate prevailing in year t, to account for the fact that wealth could be of very mobile nature and always be drawn to the place with the lowest tax rate. $X'_{i,t}$ further includes the cantonal top 1% income share, the cantonal unemployment rate, tertiary sector employment in the canton, cantonal per capita expenditure, and federal transfers to the canton. We take into account socio-demographics controlling for the share of working-age population in the labor force, the share of elderly (62+), and the share of foreigners living in the canton. The prevalence of certain values is captured with the share of social democrats in the last national elections, and the share of Protestants in the population. Finally, X contains dummies taking into account institutional changes which are likely to have affected saving behavior of low and middle-income earners, as suggested in Kaymak and Poschke (2016). These include the introduction of the Federal Old-Age and Survival Insurance (OASI) in 1948; the introduction of means-tested, supplementary benefits to the OASI in 1965; the introduction of an encompassing unemployment insurance in 1983; and the introduction of a mandatory occupational pension funds in 1985.

Due to mobility responses and income sorting of top earners across Swiss cantons (Feld and Kirchgässner, 2001; Schmidheiny, 2006; Liebig et al., 2007; Martínez, 2016), cantonal income tax rates are likely to suffer from endogeneity. The scarce evidence on mobility responses to wealth taxes in the Swiss context suggests that such responses are small and that the behavioral responses are more likely to drive changes in wealth tax holdings (Brülhart and Parchet, 2014; Brülhart et al., 2017). However, since we cannot fully rule out the possibility that wealth taxes and wealth concentration endogenously influence each other, and because sorting of wealthy individuals may also occur through the channel of income sorting, we instrument for the tax rates and use a two-stages-least-squares (2SLS) approach.[9] We consider a set of instruments which are correlated with the cantonal tax policy yet do not have a direct effect on cantonal top wealth shares. First, we use marginal voter turnout on referendums on cantonal tax laws. Here the identifying assumption is that if a tax hike was only marginally accepted or rejected, the resulting tax changes can be treated as exogenous. Even if wealth may be correlated with political agenda setting and power, the top 1% within the canton are not going to be decisive in a tight race. This variation around the 50% discontinuity has been successfully exploited for causal identification in Regression Discontinuity Design (RDD) studies on policy decisions in response to election outcomes (e.g., Lee et al., 2004; Lee, 2008; Caughey and Sekhon, 2011; Eggers et al., 2015). Our setting provides the advantage that popular votes are held on policy measures rather than elected representatives, hence circumventing the incumbent problem or strategic voting behavior, which both

[8] For an overview of panel regression methods and the identifying assumptions, the reader is referred to Wooldridge (2002) and Arellano (2003).

[9] See (Angrist and Pischke, 2009) for an introduction into IV methods.

invalidate the identifying assumptions of RDDs.[10] Using existing data on cantonal voter turnout, we identify all the referendums which were associated to personal tax changes and then determine the direction of the intended tax change (hike, reduction, status quo). Next we select those referendums as instruments where the race was sufficiently close, e.g., within a window of 49–51%.

The second instrumentation is based on Frey et al. (2016). Here, we exploit institutional changes at the federal level that affected cantonal taxes. The identifying assumption is that cantonal tax changes which were induced by a federal policy change are not driven by cantonal top wealth shares. Frey et al. (2016) use the implementation of the tax harmonization law (StHG from 1990) by the cantons over the period 1995–2005, and the introduction of the new fiscal equalization scheme ("*Neugestaltung des Finanzausgleichs*", NFA) in 2008. As these instruments limit identification to newer periods, we add further federal policy changes that took place since the 1970s[11] as instruments to study the effect of tax rates on wealth concentration in the long run. These federal policy changes include the following: decree for the temporary reduction of depreciation allowances 1973–1976; decree on the reduction of cantonal shares in Federal revenue in 1975 and in 1978; decree on tax harmonization 1977; decree on the abolition of cantonal shares in federal stamp duty 1980, popular vote held in 1985.

The second stage of the IV estimation of Equation 1 accordingly becomes:

$$\text{Top p\% wealth share}_{i,t} = \gamma_1 \tau^{w,IV}_{i,t} + \gamma_2 \tau^{w}_{min,t} + \gamma_3 \tau^{w}_{j,t-1} + + Z^{'}_{i,t}\gamma_4 + \eta_i + \delta_t + \nu_{it}, \tag{2}$$

where $\tau^{w,IV}_{i,t-1}$ now is the instrumented wealth tax rate. $Z^{'}_{i,t}$ is a vector of controls analogous to $X^{'}_{i,t}$ in (1).

Finally, tax rates may not only suffer from endogeneity, but also from spatial autocorrelation and spatial heterogeneity (Anselin, 1988, 2003). The former refers to spillover effects, e.g., changes in the economic conditions, which result in clusters of wealthy taxpayers in some regions which are independent of the tax rate. The latter refers to the role the specific geographic location of some cantons, e.g., near the alps or close to the border, which may cause wealthy taxpayers to cluster in certain cantons. We employ a spatial panel regression that accounts for these potential features in the data.

2.3.4 The Aggregate Wealth-to-Income Ratio Over the Long Run (WP 4)

To put the evolution of wealth accumulation into broader context, in this last work package we take an aggregate view on wealth in Switzerland. A very recent strand in the literature on the distribution of income and wealth has started to estimate aggreaget wealth-to-income ratios in a consistent manner across countries and over time, including Piketty (2014) and Piketty and Zucman (2014). Switzerland is a particularly interesting case, since large amounts of foreign assets are deposited here, due to Switzerland's role as international tax haven (Zucman, 2015) and its stable currency and political environment.

To ensure comparability across countries, we follow Piketty and Zucman (2014) and the guidelins in Alvaredo et al. (2017a) and use national account data and GDP estimates. Data on national income are available throughout the period 1948–2015 from current and historical statistics published by the Federal Statistics Office (BFS). These also include estimates on annual savings and available income for both, private households and the public sector. Private and public wealth estimates are available from the Swiss National Bank (SNB) for the years 1999–2015. For the period 1981–1998 we have to rely on SNB-internal wealth estimates used in Schmid (2013). To cover years prior to the 1980s, we plan to estimate total private wealth based on annual saving estimates published in national accounts and taxable wealth collected in WP 1. In a related study on bequethable wealth, Brülhart et al. (2016) base their estimates of total wealth on tax

[10] See Eggers et al. (2015) for a discussion of these problems and a general review of the method.
[11] We will add instruments for earlier periods once we have more observations on wealth concentration between 1945 and 1971.

statistics. These were published for Switzerland as a whole for some years, and extrapolated by Dell et al. (2007). Since we have cantonal data for more years, we can contribute to the total wealth estimates based on tax data exploiting this cantonal information (in a similar vein, we updated income estimates for whole Switzerland in Föllmi and Martínez, 2016). To account for non-taxed pension wealth, we add pension wealth as published in Leimgruber (2008) (prior to 1999) and the SNB, Swiss Financial Account, Table 14 (available since 1999). Cross-referencing total wealth estimates based on national accounts and tax data will further allow us to understand how closely reported total taxable wealth tracks aggregate private wealth reported in national accounts and whether this relation has changed in Switzerland over time.

2.3.5 Data Collection Overview

Table 1 shows the sources for the main data and variables we use in each working package. A major part of the data is available online, albeit from different sources. This will require some work on building a consistent data base. For working packages 1 and 2, we need to scan a substantial number of tables and other old publications, including the extensive publications for Zurich in the 1920s and annual wealth surveys in the monthly journal *Bilanz*. For the latter, scanning and then building a consistent panel data base over the years will require considerable time. We have scanned most of the cantonal wealth tax statistics that could be found in the National Library in Bern, yet there remain cantons for which we will have to visit the cantonal archives to scan the tables. Scanned statistics will have to be imputed manually into a database as part of this project.

2.3.6 Role of Team Members and Collaborators

Prof. Reto Foellmi, PI. Reto Foellmi is Professor of Economics at the University of St. Gallen and has extensive experience with similar research projects. He has a demonstrated research interest on the relationship between inequality and growth and has successfully published books (Bertola et al., 2014) and articles on these topics (Föllmi and Martínez, 2016; Foellmi and Zweimller, 2016; Foellmi et al., 2014; Foellmi and Oechslin, 2010; Foellmi and Zweimuller, 2006, 2004). In his role as a PI, he will oversee the project and give scientific guidance in all of the WPs. He will make substantial contributions to the theoretical analysis (especially WP 3) as well as drafting research articles.

Dr. Isabel Martínez, employee. Dr. Isabel Martínez is currently a Post-Doctoral researcher at the Luxembourg Institute of Socio-Economic Research and a Research Associate at the University of St. Gallen. She has done work on income and wealth tax competition in Switzerland Martínez (2016) and on top income and wealth shares Föllmi and Martínez (2016). As a Fellow of the WID.world Project (Alvaredo et al., 2017b) she contributes regularly to the database on top income shares in Switzerland. She obtained her PhD from the University of St. Gallen in May 2016 after an extensive research stay at the University of California, Berkeley. Dr. Martínez will be responsible for the empirical analyses and drafting of the research papers. She will have a role as overall project manager, including organizing the data collection and digitalization process with research assistants to be hired and organizing the planned workshops.

Dr. Oliver Hümbelin, collaborator and employee. Dr. Hümbelin obtained his PhD in Sociology from the University of Bern in October 2016. His PhD was funded through the SNSF project "Inequalities of Income and Wealth in Switzerland", where he has gained extensive experience in analyzing different large administrative data sets, estimating distributional measures, and carrying out decomposition analyses Hümbelin and Farys (2017). His work further includes methodological contributions (Hümbelin and Farys, 2016) and data visualization. He is now a researcher and lecturer at the Bern University of Applied Sciences and will contribute actively to the analyses of WP 2 and be a co-author of the corresponding paper.

WP	Data	Sources
1,2	**Cantonal wealth distributions (tables)**[a]	
*	Bilanz survey on richest residents, 1977–2016	Zentral Bibliothek Zürich
	2003–2013, annually, all cantons	ESTV (online)
*	1920–2002, varying years	National Library, ESTV, Cantonal archives
1	**Cantonal income distributions**	
	1917–1970 (tables)	Frey et al. (2016)
	1971–2013 (tables and individual data)	ESTV (on site)
2	**Individual cantonal wealth and income tax data**[b]	
	Canton Zurich	Statistisches Amt
	BS, NE, OW, AG, BE, LU, JU, SG	Collaboration Hümbelin/Jann &
	Further cantons (upon request)	cantonal tax administrations
3	**Income and wealth tax rates**	
	1971–2014	Parchet (2012)
	2015-2016	ESTV (online)
3	**Voting outcomes**	
	Cantonal, 1970–2016	www.c2d.ch
	Cantonal, prior to 1970	Bechtel et al. (2017)
	Federal (incl. cantonal results), 1848–2016	Swissvotes, BFS (online)
3	**Controls**	
	cantonal p.c. expenditure	EFV, Stat. Jahrbuch
	federal transfers to the canton	EFV, Stat. Jahrbuch
	unemployment rate	SECO, Stat. Jahrbuch
	tertiary sector employment	BFS, Stat. Jahrbuch
	% in labor force	BFS
	% elderly	BFS
	% foreigners	BFS
	% social democrats in federal parliament	BFS
	% Protestants	BFS
4	**Aggergate wealth-income-ratio**	
	GDP estimates, 1948–2015	BFS and Historical Statistics of
	Annual savings	Switzerland Online, UZH
	Available income	
	Aggregate wealth estimates, 1999–2015	SNB (online)
	Aggregate wealth estimates, 1981–1998	Schmid (2013), Stat. Jahrbuch

Table 1: Data Sources

[a] See Figure 7 for overview of years and cantons available so far.
[b] See Figure 8 for overview of years and cantons available so far.

Prof. Ben Jann, project partner. Ben Jann is professor in Sociology at the University of Bern, with specialization in social structure analysis and was PI of the recently concluded SNSF project on "Inequalities of Income and Wealth in Switzerland". He has published on different topics, including inequality analysis and methodological contributions (Jann, 2016a,b; Hevenstone and Jann, 2016; Jann and Fluder, 2015; Franzen et al., 2016). He will have a consulting role in the project, especially in WP 2.

Prof. Thomas Piketty and Prof. Gabriel Zucman, project partners. Prof. Piketty (Paris School of Economics and WID.world) and Prof. Zucman (University of California, Berkeley, and WID.world) are two of the leading scholars in the areas of income and wealth distribution. In particular, Piketty (2001) initiated the recent literature on the long run evolution of top income and wealth shares. Based on national accounting statistics, Zucman (2013) has analyzed the Role of Switzerland as save haven and tax shelter for foreign wealth on a global scale. Together (Piketty and Zucman, 2014) have studied the relation of private and public wealth to national income. They will both be involved as consultants, mainly for WP 4 and WP 1. The goal is to produce consistent series on top wealth shares and wealth-to-income ratios, which can be incorporated into the WID.world database and are comparable to those of other countries, despite differences

in the data sources in Switzerland.

Prof. Christoph Schaltegger, project partner. Prof. Schaltegger (University of Lucerne) is an expert in public finance and has published extensively on fiscal federalism in Switzerland (e.g., Frey et al., 2016; Schaltegger and Gorgas, 2011; Feld et al., 2010; Schaltegger et al., 2011). He will act as a consultant for the project, mainly in relation to WP 3.

2.4 Schedule and Milestones

The suggested time line for the project is visualized in Figure 9. During the first months, we will finish the data collection process and organize the digitalization with research assistants (RA's). As soon as data are ready, we will start with estimates of cantonal top wealth share. We expect the digitalization of the wealth survey (*Bilanz*) data to take some more time, as a there panel data base has to been built from published list and articles. We expect the first draft to be completed by the end of the first project year. For WP 2–4, most of the data is available, allowing us to spend the second and third year on the data analysis and writing of research papers. We will submit drafts of the working papers to conferences and expect to present our work regularly at conferences and seminars to get important feedback before submitting to journals. In October of the second and third year of the project, we will organize a workshop inviting our collaborators to present work in progress and foster the scientific discussion.

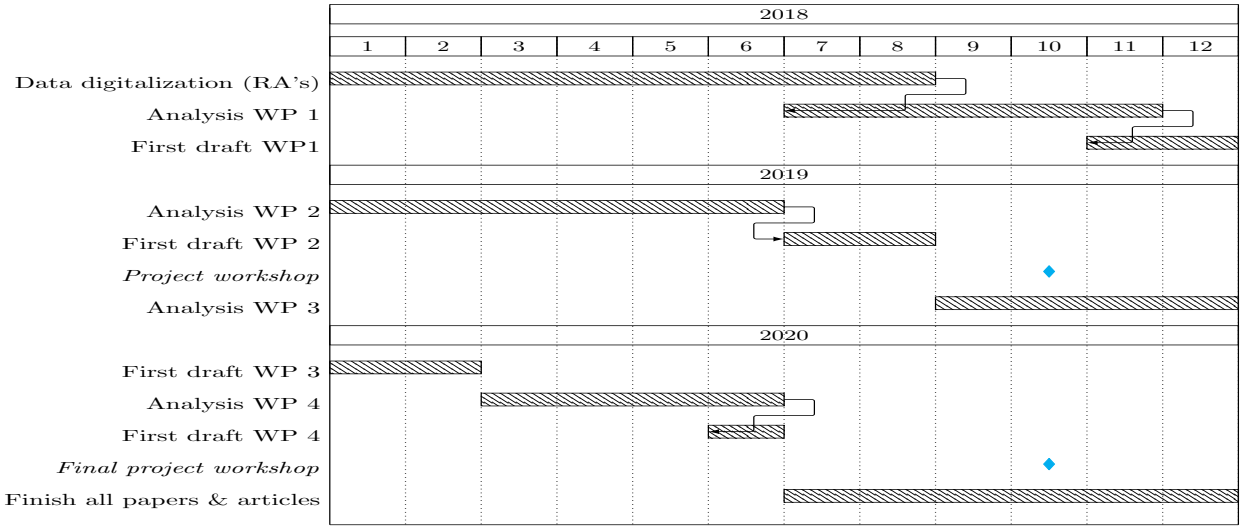


Figure 9: Schedule and milestones

2.5 Importance and Impact

Our project will make an important contribution to the understanding of the long-run effects of taxation on wealth inequality (WP 3). Even though wealth taxation has gained major attention in academic debates, no such empirical analysis exists so far. Conclusions have mainly been drawn from theoretical models and simulations. Switzerland is one of the few countries that have a wealth tax, allowing us to use comprehensive tax data and which thanks to its federal structure provides a unique laboratory to study the effects of wealth taxation. To this end, collecting additional canton-level data over a long time-period is critical. These results can further be informative to formulate theoretical models in the future. In addition to the causal effect of wealth taxation, we provide a wide range of descriptive results on wealth inequality. Finally, our project is also important from a policy perspective. First, to understand the differences in living standards, it is central

to know whether high income earners also control a large part of private wealth. Second, understanding the link between taxation and wealth inequality is a requirement for the design of tax policies as well as social security policies, such as pension reforms. Despite frequent and often ideological debates, there exists almost no systematic empirical evidence on the importance of wealth taxation.

Products: We plan to publish several articles in high-ranked academic journals and contribute to two existing databases. The first article will focus on top wealth inequality in Switzerland and within its cantons, making visible the within-country heterogeneity in wealth inequality over time. It will further feature results from WP 4 on the total wealth-to-income ratio in Switzerland. While the two work packages differ in the data sources, data collection, and methods of analysis, the questions they answer are complementary. In a second article, co-authored with Dr. Hümbelin, we will provide empirical results on the joint distribution of income and wealth and on mobility over time in different Swiss cantons (WP 2). Since only little empirical evidence on the joint distribution of income and wealth exists so far, this is going to be an important contribution to the literature in both fields, economics and sociology. In a third paper we study the causal impact of taxes on wealth concentration, theoretically and empirically (WP 3). This work will build on descriptive results from the two preceding papers. For the empirical analysis, we are able to exploit the variation across Swiss cantons and over time. We plan also to draft a fourth shorter article in German that summarizes the main findings for a Swiss audience, with a special focus on regional disparities. To foster exchange and strengthen the research network involved in this project, we will organize two academic workshops, a first one in the second and the second one in the third year of the project (see Figure 9). There we will present our work in progress, and our project partners and collaborators are invited to participate as well as to present their own research related to this project. After the end of this project, non-confidential data collected and our results shall be made available for future research and a broader public. We plan to publish the computed canton-level top income and wealth shares series online on the existing project website `www.inequalities.ch`, hosted by our project partners Prof. Ben Jann and Dr. Oliver Hümbelin. Top wealth shares for Switzerland and total wealth-to-income ratios will be available on the World Wealth and Income Database (Alvaredo et al., 2016b, , `www.wid.world`), where also our estimates on top income shares can be found (Föllmi and Martínez, 2016). The scanned wealth tax tabulations from the cantons may be subject to copyrights and can hence not be published online. To nevertheless make them accessible for future research, we will share them with the Federal Tax Administration (ESTV) in Bern, where they will be accessible for future research upon request.

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