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ABSTRACT

Immigration, Inequality and Income Taxes*

Immigration may affect income inequality not only by changing factor prices but also by inducing policy makers to adjust the prevailing income tax system. We assess the relative importance of these economic and political channels using administrative data from Switzerland where local authorities have a high degree of tax autonomy. We show that immigrant inflows not only raise gross earnings inequality but also reduce the progressivity of local income taxes, further increasing after-tax inequality. Our estimates suggest that around 10 percent of the impact of immigration on the net interquartile and interdecile earnings gaps can be attributed to the political channel.

JEL Classification: H23, H24, H71, J31, J61

Keywords: immigration, income taxes, earnings inequality

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I. Introduction

Upon arrival in their host countries, immigrants often find themselves working in the low-skilled segment of the labor market. In such a situation, standard labor market models predict that, by changing relative skill supplies, immigration affects the equilibrium skill prices in the economy, lowering the wages of unskilled workers relative to those of skilled workers. These wage impacts may then induce additional labor supply responses which can further amplify immigrants' impact on earnings inequality. An extensive literature surveyed by Dustmann, Schönberg and Stuhler (2016) and Edo (2019) has analyzed and quantified the extent to which immigration affects wage and earnings inequality. The main outcome of interest in almost all studies in this literature are skill-specific *gross* wages or earnings as these are readily available in most existing data sets and viewed as good proxies for equilibrium skill prices.[1] From an individual point of view, however, gross earnings are arguably less important than net after-tax earnings as the latter largely determine people's disposable income. Since income tax schedules are set by host-country authorities and therefore potentially responsive to immigrant inflows themselves, the impact of immigration on gross earnings inequality may differ substantially from the impact on net earnings inequality. An immigration-induced change in the progressivity of the tax schedule could either mitigate or exacerbate the distributional effects of immigration.

In this paper, we study how immigration affects the way in which local governments set their effective income tax rates, and the consequences this has for the distributional impact of immigration. We take advantage of the fact that cantons and municipalities in Switzerland have an unusually high degree of autonomy in determining their income taxes, generating substantial variation across both locations and time. To deal with the issue that immigrant inflows are likely to be endogenous to local income taxes and economic conditions more broadly, we instrument these inflows with the well-established ethnic enclave instrument popularized by Card (2001). Using administrative data on local stocks of immigrants and information on annual labor earnings and local tax rates, we first document that during the period 2010 to 2019 immigration increased gross earnings inequality among natives. We then show that both cantons and municipalities responded to higher immigrant inflows by systematically reducing their local tax multipliers, a key component in the computation of a household's income tax burden, dampening the progressivity of the income taxes and further increasing after-tax earnings inequality.

Decomposing the total impact of immigration on net earnings inequality into a *political channel* due to changes in the prevailing income tax system and an *economic channel* due to changing equilibrium skill prices and native labor supply, we show that, depending on the inequality measure and type of household considered, between 9.8 and 13.7 percent

[1] Of the 48 research articles cited in the recent surveys by Dustmann et al. (2016) and Edo (2019), 46 use some measure of pre-tax wages or earnings as their main dependent variable. The remaining two studies use after-tax wages but do not further discuss this particular aspect of their analysis.

of the total impact of immigration on net earnings inequality can be attributed to the political channel. Local authorities thus significantly reinforce the impact of international migration on earnings inequality. In further heterogeneity analysis, we then show that the inequality-enhancing local tax adjustments are significantly more pronounced in cantons where the main anti-immigration party in Switzerland, the *Swiss People's Party*, has stronger support. Together with the finding in the literature that more right-leaning voters are particularly prone to reduce their support for redistribution in the face of migration (Alesina, Murard and Rapoport, 2021), this points toward an underlying political economy motive for the observed adjustments in the local multipliers. We do not find evidence that immigrant inflows systematically reduce local per capita public expenditures, suggesting that diminished financial needs are not the reason for lowering the tax multipliers. We conclude by showing that the rising net earnings inequality in immigrant-receiving regions is not offset by expanding social transfer payments, suggesting that inequality in disposable income indeed increases in these regions.

Our analysis speaks to several distinct literatures. We first contribute to the extensive literature on the distributional impacts of immigration (see Dustmann et al., 2016, and Edo, 2019). This literature has largely focused on the labor market impact of immigration and the *economic channel* through which immigration may affect wages and earnings inequality in the receiving countries (see e.g. Borjas, 2003; Card, 2009; Ottaviano and Peri, 2012; or Manacorda, Manning and Wadsworth, 2012). A common finding is that the impact of immigration is very heterogeneous: while immigrants tend to negatively affect the wage and employment outcomes of workers with whom they are close substitutes, they generally benefit workers with whom they are complements in the production process. Relative to this literature, we make the important point that the immigration-induced impacts on native gross earnings inequality – the focus of most studies – may be amplified or mitigated by endogenous adjustments in the host regions' income tax systems.

For the particular case of Switzerland, Beerli, Ruffner, Siegenthaler and Peri (2021) show that the opening of the Swiss labor market to mostly high-skilled cross-border workers in the early 2000s increased new firm creation as well as the size, productivity and innovation performance of skill-intensive incumbent firms. The resulting increase in labor demand significantly raised the wages of high-skilled natives while leaving the wages of low-skilled workers largely unaffected. Analyzing the broader impact of immigration during the 2000s, including both cross-border workers and regular migrants, Favre, Lalive and Zweimüller (2013) find little evidence for any significant impacts on native employment and unemployment rates. Contrary to these studies, we study the impact of primarily low-earning immigrants in the 2010s on both gross and net earnings inequality.

Our analysis also contributes to the broader literature on the fiscal impact of immigration (see Preston, 2014, and Vargas-Silva, 2015, for recent surveys) which has traditionally compared the tax contributions and benefit take-up of immigrants with those of natives

within an accounting framework (see e.g. Hansen and Lofstrom, 2003; Bratsberg, Raaum and Røed, 2014; or Dustmann and Frattini, 2014). Some studies have gone further by considering the entire expected future streams of taxes and expenditures associated with immigration, including those from subsequent generations, using either general equilibrium overlapping generations models or generational accounting methods (see e.g. Auerbach and Oreopoulos, 1999; Storesletten, 2000; Collado, Iturbe-Ormaetxe and Valera, 2004; or Chojnicki, 2013). More recently, the literature has started to account more systematically for the indirect channels through which immigration may affect the fiscal balance, for example through its impact on native labor supply, wage levels, or house prices (see e.g. Chassamboulli and Liu, 2024; or Colas and Sachs, 2024). An alternative approach is to directly estimate the *causal* effect of immigration on fiscal revenues and expenditures, using quasi-exogenous variation in immigrant inflows across administrative regions. Mayda, Senses and Steingress (2023) show that the impact of immigration on local public expenditures in the United States, while small on average, varies significantly across counties as a function of the arriving immigrants' skill composition and impact on the local tax base. Methodologically, our analysis of local revenues and expenditures follows this study very closely. Rather than analyzing the compositional impact of immigration on the tax base and its consequences for revenues and expenditures, we focus on the distributional impacts of immigration and, especially, adjustments in local income tax rates.

Finally, our work complements a recent literature, reviewed by Elsner and Concannon (2023) and Alesina and Tabellini (2024), that shows that immigration tends to lower natives' support for redistribution (e.g. Dahlberg, Edmark and Lundqvist, 2012; Facchini, Mayda and Murard, 2016; Schmidt-Catran and Spies, 2016; Alesina et al., 2021; Alesina, Miano and Stantcheva, 2023; Domènech-Arumí, 2024), and that these shifts in preferences seem to translate into actual adjustments in tax policies and public spending. Jofre-Monseny, Sorribas-Navarro and Vázquez-Grenno (2016), for example, show that regions in Spain with more immigration between 1998 and 2006 had lower increases in per capita spending on social services than regions with less immigration. Tabellini (2020) finds that, in the context of U.S. immigration in the early 20th century, local property tax rates and public spending were lower in cities that received larger immigrant inflows, attributing these patterns to anti-immigrant sentiment and lower native demand for redistribution. Chevalier, Elsner, Lichter and Pestel (2018), in contrast, document that the arrival of forced migrants in West Germany after World War II resulted in higher local taxes and public spending, especially on welfare and education. A key difference of this study relative to the U.S. context analyzed in Tabellini (2020) and the Swiss setting considered here is that the newly-arriving forced migrants in Germany had voting rights and could therefore influence policy making directly, either by voting for political parties that favored more redistribution or by inducing parties to shift towards more redistributive

policies to attract votes from this large new constituency.[2] We contribute to this literature by linking the arguably strongest lever through which governments can influence redistribution and inequality – the income tax – to immigrant inflows. This sets us apart from the work of both Chevalier et al. (2018) and Tabellini (2020) who study immigration-induced adjustments in local business and property taxes (among other non-tax-related outcomes). While those types of taxes are clearly vital sources of local revenues and public spending, they are arguably secondary drivers of inequality relative to the income tax.

The rest of the paper is organized as follows. Section II provides a brief description of the particular institutional context in Switzerland, both in terms of the Swiss migration experience over the time period considered and its income tax system. Section III presents our empirical framework and the formal decomposition of changes in net earnings inequality into an economic and a political channel. Section IV discusses the various data sources used in the analysis and provides some key descriptive statistics. Section V presents the main empirical results regarding the impact of immigration on gross earnings inequality, local tax rates and multipliers, including robustness checks and heterogeneity analysis. Section VI concludes the paper.

II. Institutional Setting

A. Immigration in Switzerland

Among OECD countries, Switzerland has one of the highest immigrant population shares. According to data from the Swiss Federal Statistical Office, the share of foreign nationals in the population was 25.5 percent in 2020, an increase of 3.1 percentage points relative to 2010. Most of the current stock of foreign nationals originate from Italy (14.6 percent), Germany (14.0 percent) and Portugal (11.6 percent), but during the 2010s there were also sizable inflows from countries like the Kosovo, France, Eritrea, and Poland. Contrary to many other European countries, immigrants in Switzerland have relatively high levels of formal education. This is particularly true for the recent immigrants who arrived during our sample period 2010 to 2019, of which 55.8 percent have completed tertiary education compared to only 36.5 percent of the native Swiss working-age population (see Table 1). At the same time, however, recent immigrants are also significantly more likely than natives to have less than upper-secondary education (20.9 vs. 8.9 percent), making it difficult to judge a priori in which segment of the labor market immigration increased supply the most. A careful look at key indicators, though, reveals that recent immigrants in Switzerland tend to work primarily in the lower-paying segment of the labor market, with annual pre-tax earnings that are 11.7 log points below those of natives, a relatively

[2]The important role of voting rights is also highlighted by Ferwerda (2020) who, based on municipality-level data from nine European countries, documents a positive relationship between the share of immigrants in a municipality and local tax rates and spending when immigrants' have voting rights but a negative relationship when they do not. He also shows that, after immigrants receive voting rights through a franchise extension in Belgium and Switzerland in the early 2000s, local tax rates and spending increased, echoing earlier findings for a similar reform in Sweden by Vernby (2013).

Table 1—Differences between the native and immigrant population

	Natives		Immigrants		Recent immigrants	
	Mean	Sd	Mean	Sd	Mean	Sd
Age	44.869	11.389	43.218	10.586	36.521	9.052
Share female	0.495	0.500	0.503	0.500	0.470	0.499
Share married or in civil union	0.539	0.498	0.661	0.473	0.541	0.498
Share with tertiary education	0.365	0.481	0.366	0.482	0.558	0.497
Share with upper-secondary education	0.545	0.498	0.312	0.463	0.233	0.423
Share with max. lower-secondary education	0.089	0.285	0.322	0.467	0.209	0.406
Share employed	0.844	0.363	0.760	0.427	0.742	0.438
Share unemployed	0.026	0.158	0.063	0.243	0.090	0.287
Share workers with full workload (fw)	0.664	0.473	0.740	0.439	0.822	0.382
Log annual earnings	10.886	1.005	10.781	1.043	10.769	1.076
Log annual earnings, full workload (fw)	11.275	0.711	11.158	0.709	11.110	0.760
Log annual earnings, workload 50-89%	10.728	0.680	10.523	0.747	10.277	0.787
Log annual earnings, workload <50%	9.803	0.934	9.583	0.991	9.245	1.106
Log annual earnings, tertiary education (fw)	11.470	0.735	11.462	0.772	11.335	0.760
Log annual earnings, upper-sec educ (fw)	11.154	0.631	11.016	0.586	10.834	0.618
Log annual earnings, lower-sec educ (fw)	10.861	0.778	10.873	0.554	10.676	0.608

Note: Immigrants are defined as foreign-born individuals. The statistics shown for recent immigrants refer to their first full calendar year after arrival in Switzerland. The sample comprises individuals between 25 and 64 years of age of the resident population. The time period considered is 2010–2019. Annual earnings are from employment. The reported earnings net of social security contributions are in Swiss francs and deflated to the reference year 2005 using the consumer price index. Education categories refer to the highest completed degree. Sources: CCO, SE.

low employment rate (74.2 percent vs. 84.4 percent among natives) and a relatively high unemployment-to-population rate (9.0 percent vs. 2.6 percent).[3] Recent immigrants also earn less than natives within each education group: 13.5 log points less among people with tertiary education, 32.0 log points less among people with upper-secondary education, and 18.5 log points less among people with at most lower-secondary education. Despite their relatively high levels of formal education, recent immigrants in Switzerland are thus likely to have put more pressure on wages in the lower segment of the Swiss labor market, a hypothesis for which we present strong empirical evidence in Section V.A.

B. Income Taxes in Switzerland

Switzerland taxes an individual's income on an annual basis at the place of residence.[4] As of December 2020, the Swiss state territory is divided into 26 cantons and 2,198 municipalities, with a canton comprising between 3 and 342 municipalities. Income taxes are a major source of revenue, especially at the municipal level where they account for 38.3 percent of total revenue in 2019 (compared to 29.0 percent at the cantonal and 14.9

[3]Conditional on employment, recent immigrants are significantly more likely to work full-time than natives (66.4 vs. 82.2 percent). This is due to Swiss women's relatively low propensity to work full-time (40.1 vs. 67.0 percent). For men, the corresponding shares are very similar (89.1 vs. 92.2 percent).

[4]Obliged to pay taxes are a) individuals who earn a labor income and reside in Switzerland for at least 30 days per year, or b) individuals without a labor income who reside in Switzerland for at least 90 days per year. All taxpayers have to fill out a tax declaration except individuals without Swiss nationality and settlement permit who are taxed at the source (their income tax is directly deducted from their wages).

percent at the federal level).[5] The magnitude of an individual's tax liability depends on her taxable income, the applicable tax rate, and the local tax multipliers. The taxable income is the sum of labor and capital income minus deductions. Both the federal government and the individual cantons define the deductible categories and amounts. Deductions can be broadly divided into those related to earning an income (e.g. social security contributions, professional expenses, education expenses) and those related to the taxpayer's family situation (e.g. civil status, number of children). Individuals living together in either marriage or civil union are taxed as a unit, which means that their incomes are added up prior to computing the applicable tax rate.

The federal government and each individual canton define their own tax schedule in the tax law, assigning different marginal tax rates to specific income brackets. The federal tax rates apply uniformly across all municipalities, the cantonal tax rates uniformly across all municipalities situated within the canton.[6] Tax rates are progressive at the federal level and in most cantons. The federal government and the majority of cantons define two distinct tax schedules, one for singles without children and one for singles with children, married persons or persons in civil unions. Most of the remaining cantons have a single tax schedule but apply a splitting factor for the latter group.[7] A splitting factor of two, for instance, means that the joint taxable income of married individuals is divided by two before determining the average tax rate. Changes in tax rates require the revision of the relevant tax law, with the executive body submitting a proposal which is then subject to parliamentary approval. Citizens can oppose such proposed changes and request a popular vote through an optional referendum.[8] Occasionally, a change in the tax law requires a mandatory referendum. Because of these significant procedural hurdles, changes in tax rates are relatively rare as shown in Table 2 for different amounts of taxable income.[9]

Cantonal tax rates are multiplied with so-called tax multipliers to calculate the effective tax liability at the cantonal and municipal level. The basic formula that translates taxable

[5]Other municipal (cantonal) income sources are: 23.2 (23.7) percent other taxes, 16.9 (7.6) percent fees (*Entgelte*), 11.3 (31.2) percent transfers (*Transfereinnahmen*), 6.1 (3.0) percent financial income (*Finanzeinnahmen*), 2.9 (2.4) percent capital income (*Investitionseinnahmen*), 0.8 (2.6) percent rights and concessions (*Regalien und Konzessionen*), 0.4 (0.5) percent other income (*übrige Einnahmen*). See the website of the FSO for an overview. Compared to income taxes, wealth taxes contribute relatively little to local revenues, generating 6.2 and 5.2 percent of total revenue at the municipal and cantonal level, respectively.

[6]Two cantons use a separate tax schedule for all their municipalities. The canton of Valais imposes its own municipal tax schedule since 2010 and the canton of Schwyz during the years 2015–2019. Both cantons did not change the municipal tax rates during our observation period 2010–2019.

[7]In a few cantons, the same tax schedule is applied to everyone but deductions are used to differentiate between tax subjects.

[8]At the federal level, and in most cantons and municipalities, Swiss nationals need to be at least 18 years of age to be eligible to vote. In two out of 26 cantons as well as several municipalities located mainly in the French-speaking Swiss regions, long-term immigrants also have the right to vote. The requirements are usually at least ten years of residence in Switzerland or a settlement permit (C-permit) plus further conditions related to the length of stay in a specific canton and municipality, respectively.

[9]In the period 2010–2019, the federal tax rates changed only once, in 2011. In most of the cantons, the tax rates were adjusted more frequently, often reflecting different indexing mechanisms to inflation.

Table 2—Summary statistics

	Mean	Sd	Min	Max
Log population	7.379	1.251	3.332	12.964
Share immigrants in population	0.166	0.098	0.000	0.694
Immigrant inflow rate	0.005	0.015	-0.368	0.383
Municipal tax multiplier	1.192	0.571	0.250	5.250
Change in municipal tax multiplier	-0.001	0.034	-0.500	0.550
Cantonal tax multiplier	1.444	0.787	0.500	3.350
Change in cantonal tax multiplier	0.005	0.039	-0.100	0.300
Cantonal tax rate 50,000	0.058	0.039	0.017	0.235
Cantonal tax rate 75,000	0.069	0.040	0.018	0.235
Cantonal tax rate 100,000	0.076	0.041	0.018	0.235
Cantonal tax rate 500,000	0.100	0.052	0.018	0.250
Change in cantonal tax rate 50,000	-0.000	0.001	-0.005	0.001
Change in cantonal tax rate 75,000	-0.000	0.001	-0.005	0.001
Change in cantonal tax rate 100,000	-0.000	0.001	-0.006	0.001
Change in cantonal tax rate 500,000	-0.000	0.001	-0.007	0.014

Note: The summary statistics cover the time period 2010–2019. Immigrant inflow rate is the change in the stock of immigrants between t and $t-1$ divided by the resident population in $t-1$. The reported cantonal tax rates for different taxable incomes apply to singles without children. The unit of observation is the municipality for the statistics shown on the first five lines and the canton for the cantonal multiplier and tax rate statistics shown on the remaining lines. Sources: FSO, FTA, ZEMIS.

income w_g (gross income minus deductions) into after-tax net income w_n is given by:

$$w_n = w_g \times [1 - (\tau_f(w_g) + \tau_c(w_g) \times multiplier_c + \tau_c(w_g) \times multiplier_m)] \quad (1)$$

where τ_f denotes the average federal tax rate, τ_c the average cantonal tax rate, and $multiplier_c$ and $multiplier_m$ the cantonal and municipal multipliers respectively.

Each canton and municipality sets its own multiplier which is then applied uniformly to all individuals residing within the respective administrative unit. This gives Swiss regions an unusually high degree of tax autonomy compared to most other countries in which income taxes are determined at the national level. The cantonal tax laws outline in what periodicity and, less frequently, within what range the legislative authorities (cantonal parliaments, municipal parliaments, or assemblies) set the respective multipliers. The magnitudes of the multipliers are discussed regularly, also with a view to expected financial needs, and usually adjusted every few years. Changes in the multipliers are subject to optional or mandatory referendums depending on the tax law. Contrary to changes in the tax rates, however, they do not require revisions of the relevant tax laws and are therefore much easier to implement.[10]

As shown in Table 2, there is significant regional variation in the cantonal and municipal tax multipliers, ranging from 0.50 in the canton of *Basel-Stadt* to 3.35 in the canton of

[10]Switzerland also levies a wealth tax on its residents for the calculation of which the local tax multipliers play a similar role as for the income tax. Given the presumably strong positive correlation between earnings and wealth, a reduction in the tax multipliers will tend to benefit wealthier individuals more than poorer individuals, further raising disposable income inequality. Due to a lack of wealth data, we cannot account for changes in disposable income due to changes in the wealth tax burden. However, the positive relationship between earnings and wealth suggests that our findings on the impact of immigration on net earnings inequality are a lower bound for the impact on disposable income inequality.

Obwalden, and from 0.25 in the municipalities of *Greng* (canton *Fribourg*) and *Genthod* (canton *Geneva*) to 5.25 in the municipality of *Lungern* (canton *Obwalden*). More relevant for our analysis, there are frequent changes in these multipliers over time, with half of the cantons and 73.8 percent of municipalities changing their tax multipliers at least once during our observation period 2010 to 2019. The year-to-year changes in the cantonal and municipal multipliers range from -0.10 to +0.30 and -0.50 to +0.55, respectively. The objective of our empirical analysis is to assess to what extent these changes are systematically related to immigrant inflows.

Before we present our empirical framework, we briefly comment on the income measure that we use in our analysis. Disposable income, the arguably most relevant measure for the study of inequality, is defined as the sum of gross income from labor and capital plus transfer income (e.g. social insurance or welfare payments) minus transfer expenditures (e.g. social security contributions, health insurance premia, and taxes). Both types of transfers thus redistribute income and can be used to reduce inequality.[11] Unfortunately, not all types of income and transfers are observable in our data (or any other data set that is accessible to researchers). In particular, neither capital income nor social welfare transfers are recorded. We therefore use labor earnings as a proxy for income. While the lack of information on capital income is arguably less of an issue since it is unlikely to change much as a result of immigration in a small open economy like Switzerland where the price of capital is determined on international markets, the absence of information on some types of transfer income such as social welfare benefits is more problematic as these could be used, in principle, to compensate any distributional effects arising from changes in the local income tax rates and multipliers. In Section V.G, we use aggregate data on the cantonal level to test whether social welfare transfers respond systematically to the inflow of immigrants. Since we find little evidence for adjustments on this margin, our results regarding the impact of immigration on net earnings inequality should be a good approximation of the impact on inequality in disposable income as well.

III. Empirical Framework

Starting from Equation (1), log after-tax earnings are approximately given by

$$\ln w_n(I,\tau) \approx \ln w_g(I,\tau) - \tau_f(I,w_g) - \tau_c(I,w_g) \times [multiplier_c(I) + multiplier_m(I)] \quad (2)$$

where $\tau = \tau_f(I,w_g) + \tau_c(I,w_g) \times [multiplier_c(I) + multiplier_m(I)]$ is the overall average tax rate and I denotes the stock of immigrants, measured relative to the local population.

[11] In 2019, social security transfers made up 18.8 percent of total expenditures at the municipal level, with the largest items being social benefits and asylum (8.9 percent), family and youth (3.1 percent), old-age and surviving dependents (2.6 percent), and disability (2.2 percent). Other expenditure categories at the municipal level are education (27.5 percent), public administration (9.8 percent), traffic and telecommunication (9.4 percent), environmental protection and regional planning (9.4 percent), recreation, sports, culture, and church (7.2 percent), public order and security (6.4 percent), health care (4.8 percent), finances and taxes (3.4 percent), the economy (3.3 percent).

Gross earnings w_g thus not only depend on immigration but also on the average tax rate through possible labor supply responses. The average federal and cantonal tax rates τ_f and τ_c are functions of the level of pre-tax earnings and the immigrant stock. The cantonal and municipal tax multipliers are functions of the immigrant stock only.

Taking the total derivative of Equation (2) with respect to the immigrant stock and rearranging terms, we obtain the following expression:[12]

$$\begin{aligned}\frac{d \ln w_n}{d\, I} \approx & \underbrace{\left[\frac{\partial \ln w_g}{\partial\, I} + \frac{\partial \ln w_g}{\partial\, \tau}\frac{d\tau}{d\, I}\right]}_{\text{(1) Impact on gross earnings}} - \underbrace{\left[\frac{\partial \tau_f}{\partial\, w_g}\frac{dw_g}{d\, I} + \frac{\partial \tau_c}{\partial\, w_g}\frac{dw_g}{d\, I} \times [multiplier_c + multiplier_m]\right]}_{\text{(2) Impact on applicable tax rates due to earnings changes}} \\ & - \underbrace{\left[\tau_c\left(\frac{d\, multiplier_c}{d\, I}\right)\right]}_{\text{(3) Impact on cantonal multipliers}} - \underbrace{\left[\tau_c\left(\frac{d\, multiplier_m}{d\, I}\right)\right]}_{\text{(4) Impact on municipal multipliers}} \\ & - \underbrace{\left[\left(\frac{\partial \tau_c}{\partial\, I}\right) \times [multiplier_c + multiplier_m]\right]}_{\text{(5) Impact on cantonal tax rates}} \end{aligned} \tag{3}$$

The first term represents the impact of immigration on gross earnings, also accounting for possible labor supply adjustments in response to changing tax schedules. This is the impact that most of the prior literature has focused on. The second term represents the impact of immigration on the applicable average tax rate. If immigration, for example, lowers gross earnings, the applicable federal and cantonal tax rates will decline for most taxpayers due to the progressivity of the tax schedule, even if the tax schedule itself remains unchanged. This mechanical adjustment thus offsets some of the impact of immigration on gross earnings. The third and fourth term represent the impact of immigration on the cantonal and municipal tax multipliers, the fifth term the direct impact of immigration on the cantonal tax rates at given levels of earnings.

We will evaluate each of the five terms in Equation (3) at different percentiles of the native pre-tax earnings distribution exploiting regional variation in immigrant inflows. Since we are primarily interested in the impact of immigration on net earnings inequality, we will also show direct estimates for the interquartile range (the gap between the 75$^{\text{th}}$ and 25$^{\text{th}}$ percentile) and the interdecile range (the gap between the 90$^{\text{th}}$ and 10$^{\text{th}}$ percentile). Letting $\ln w_g^{high}$ and $\ln w_g^{low}$ denote the corresponding high and low reference values of the pre-tax earnings distribution, the impact on net earnings inequality can be written as:

[12] In the derivation of Equation (3), we drop the term related to the direct impact of immigration on the federal income tax schedule ($\partial\tau_f/\partial I$). This is because it is empirically impossible to separate this impact from other drivers of federal income taxes on the national level. Notice, however, that federal tax rates in Switzerland changed only once during our observation window, in 2011, suggesting that they are not responding systematically to immigrant inflows.

$$\frac{d\ln(w_n^{high}/w_n^{low})}{d\,I} \approx \underbrace{\left[\frac{d\ln(w_g^{high}/w_g^{low})}{d\,I}\right]}_{\text{(1) Impact on gross earnings}} - \underbrace{\left[\left(\frac{\partial\tau_f^{high}}{\partial\, w_g^{high}}\frac{dw_g^{high}}{d\,I}\right) - \left(\frac{\partial\tau_f^{low}}{\partial\, w_g^{low}}\frac{dw_g^{low}}{d\,I}\right)\right]}_{\text{(2) Impact on applicable tax rates due to earnings changes}}$$

$$- \underbrace{\left[\left(\frac{\partial\tau_c^{high}}{\partial\, w_g^{high}}\frac{dw_g^{high}}{d\,I}\right) - \left(\frac{\partial\tau_c^{low}}{\partial\, w_g^{low}}\frac{dw_g^{low}}{d\,I}\right)\right] \times [multiplier_c + multiplier_m]}_{\text{(2) Impact on applicable tax rates due to earnings changes}}$$

$$- \underbrace{(\tau_c^{high} - \tau_c^{low})\left(\frac{d\,multiplier_c}{d\,I}\right)}_{\text{(3) Impact on cantonal multipliers}}$$

$$- \underbrace{(\tau_c^{high} - \tau_c^{low})\left(\frac{d\,multiplier_m}{d\,I}\right)}_{\text{(4) Impact on municipal multipliers}}$$

$$- \underbrace{\left(\frac{\partial(\tau_c^{high} - \tau_c^{low})}{\partial I}\right) \times [multiplier_c + multiplier_m]}_{\text{(5) Impact on cantonal tax rates}} \tag{4}$$

The interpretation of these terms is the same as in Equation (3), only that the emphasis is now on the differential impact of immigration on high and low earners.[13] The third and fourth term in Equation (4) are, in some sense, the heart of our empirical analysis. They show that a decrease in the cantonal or municipal multipliers increases net earnings inequality as long as cantons have a progressive income tax schedule ($\tau_c^{high} > \tau_c^{low}$). Together with the last term, they represent the *political channel* through which immigration may impact net earnings inequality. We label this as *political* since adjustments in cantonal tax rates and local multipliers necessarily require the involvement of political decision makers. The first and second term in Equation (4) represent the *economic channel* through which immigration may affect net earnings inequality. We label this as *economic* since the underlying adjustments in earnings can be traced back to the impact of immigration on relative skill supplies and equilibrium factor prices in the economy.

When we estimate each of the five impacts in Equation (4) one by one in the following sections, we will account for the fact that the relevant relationships operate at different geographical levels. The impacts on gross earnings, the applicable average tax rates, and the municipal multipliers are estimated using variation in immigrant inflows across Swiss municipalities. The impacts on the cantonal multipliers and tax rates are estimated using variation in immigrant inflows across cantons. For each regional unit, we compute the

[13] Note that, compared to Equation (3), we express the impact on gross earnings inequality as a single reduced-form term that captures both changes in skill prices and possible adjustments in labor supply, including those that might arise in response to changing tax schedules.

changes in the relevant outcome variable and then regress these changes on the local immigrant inflow rate, defined as the change in the stock of immigrants ΔI divided by the total population P in the base period:

$$\Delta y_{rt} = \alpha + \beta \left(\frac{\Delta I_{rt}}{P_{rt-1}} \right) + \gamma' \mathbf{x}_{rt} + \delta_t + \varepsilon_{rt} \tag{5}$$

where r denotes the region considered (either canton c or municipality m), Δy_{rt} is the outcome of interest, and $\mathbf{x}_{rt}$ is a vector of control variables. In the earnings analysis, this vector consists of the change in the average age of 25-64 year old natives, the change in the share of natives with tertiary education, and the share of natives with upper-secondary education, following Dustmann et al. (2013). In the tax analysis, it consists of the share of women of at least 25 years of age, the share of people below 25 years of age, the share married, the share unemployed, the log of the average per capita earnings, the share living in urban areas, and the share working in the manufacturing sector, all measured at baseline using either 2010 or 2000 data, following Mayda et al. (2023). We provide more details on the construction of these control variables in Appendix B. In the estimations on the municipality level, we further augment the specification by including canton fixed effects to account for broader regional trends in the outcome variables considered. In much of our discussion of the earnings results, we will focus on the interquartile (75^{th}-25^{th} percentile) and interdecile (90^{th}-10^{th} percentile) gaps but, wherever possible, we also show separate estimates for individual earnings percentiles. As shown in Equation (4), the impact of immigration on net earnings inequality is given by the sum of the five coefficients $\widehat{\beta}$, allowing a direct comparison of the relative importance of the *economic channel* and the *political channel* for net earnings inequality.

A common complication when estimating Equation (5) is that immigrants are not randomly assigned to municipalities and likely to take both local tax rates and labor market conditions into account when deciding where to settle. Observed immigrant inflows are therefore likely to be endogenous. Following Card (2001), we construct an instrumental variable based on past settlement patterns to predict the number of immigrants that would be expected to locate in a given municipality in the absence of endogenous pull factors. We use information on the nationality-specific distribution of immigrants across municipalities in the base year 1996 and combine this information with aggregate inflows by nationality measured at the national level:

$$\textit{predicted inflow rate}_{rt} = \frac{1}{P_{rt-1}} \sum_{o} \frac{\textit{immigrants}_{or1996}}{\textit{immigrants}_{o1996}} \times \Delta \textit{immigrants}_{ot} \tag{6}$$

where $\Delta \textit{immigrants}_{ot}$ represents the total inflow of immigrants with nationality o into Switzerland between period $t-1$ and t, $\textit{immigrants}_{or1996}$ the number of immigrants with nationality o living in region r in 1996, and $\textit{immigrants}_{o1996}$ the total number of immigrants in Switzerland with nationality o in 1996. The *predicted inflow rate* then serves as an

instrumental variable for the observed immigrant inflow rate $\Delta I_r/P_{rt-1}$. In practice, we distinguish between 25 different nationality groups: the top five countries of origin in terms of observed net inflows into Switzerland between 2010 and 2019 (Portugal, France, Germany, Italy, Eritrea) and 20 broader geographical regions comprising all other source countries. For more details on the construction of the instrument, see Appendix B.

IV. Data

Our main estimation samples are compiled from several different data sources. We obtain information on Swiss residents' characteristics (age, gender, civil status, municipality of residence, Swiss nationality and, for foreign-nationals, region of nationality) from the so-called STATPOP data which are provided by the Federal Statistical Office (FSO) and cover the entire population in Switzerland as of 31 December in a given year. We link these data with earnings information from the Central Compensation Office (CCO). The latter comprise all individual income that is subject to social security contributions (e.g. earnings from dependent employment and self-employment, unemployment benefits, allowances due to invalidity or parenthood) as long as it exceeds 2,300 Swiss francs per person in a given calendar year. The income reported in the original data are gross annual earnings net of social security contributions. In our main analysis, we consider only earnings from dependent employment, in line with much of the existing immigration literature.[14] However, we also show some robustness checks using broader earnings measures. Our main sample covers the pre-COVID period 2010 to 2019 and includes working-age native (Swiss national) men and women aged between 25 and 64. Since individuals in the same household are taxed as a unit, we add up the earnings of married couples or those in civil unions. In this process, we do not impose any restrictions on the age and nationality of the spouse or partner. The earnings analysis as well as the analyses related to the applicable tax rates and the cantonal tax rates are thus conducted at the household rather than individual level, which ensures a correct mapping to the relevant income tax rates and a consistent decomposition in the spirit of Equation (4).

The STATPOP and CCO data do not contain any information on individuals' educational attainment or hours worked, making it impossible to distinguish between high- and low-skilled immigrants in our analysis. To provide at least some descriptive background information, we collect data on these characteristics from the Structural Survey (SE) of the FSO. The SE is a mandatory survey with more than 250,000 observations per year and a response rate of around 85 percent. The original sample is drawn from the resident population in Switzerland aged 15 and older as of September 30 in a given year. The resident population, as defined in the SE, comprises individuals who either have been living in the country for at least 12 months or possess a permit for more than 12 months. We use

[14] In our main analysis, we drop individuals who earn income from both dependent employment and some other source in the same calendar year, e.g. dependent employment and self-employment or dependent employment and unemployment benefits.

information on native education and workload, distinguishing three education groups (at most lower-secondary education, upper-secondary education, and tertiary education covering academic and professional degrees) and defining full-time work as having a 90-100 percent workload.

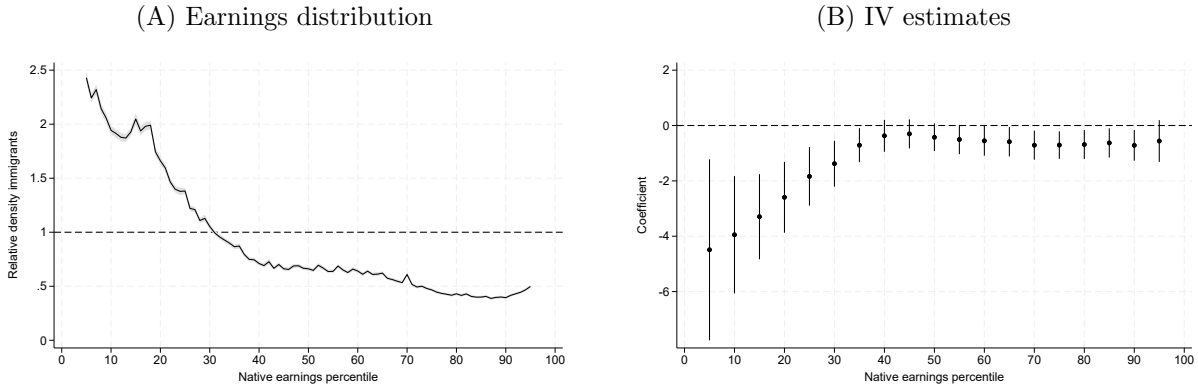
To compute local immigrant inflow rates, we rely on administrative data on the stock of immigrants in each municipality provided by the State Secretariat for Migration (SEM). Individual-level data on immigrants are taken from the Central Migration System (ZEMIS) and are available for the years 2002 to 2019. Data for the period 1996 to 2001 are available at the municipal level in aggregated form. The ZEMIS data contain information on individual characteristics, nationality, place of residence, and permit type as reported for the 31st of December of each year. We use information on individuals' nationality to compute the immigrant inflow rates. Our sample covers all immigrants independent of their permit type, with the exception of cross-border commuters who do not reside in Switzerland. We compute the inflow of new immigrants as the difference in the stocks of immigrants between two periods using the ZEMIS data, and normalize this inflow by the total local population in the base period taken from the STATPOP data.

All information related to the income tax system (tax multipliers, tax rates, deductions) are provided by the Federal Tax Administration (FTA) and are available from 2010 onwards (which determines the beginning of our observation period).[15] Tax multipliers are set, with rare exceptions, before the start of the new calendar year, almost always in the late fall of the previous year. In our sample, the multipliers refer to the year when they are set rather than the year when they become effective. In case of municipality mergers during the observation period, we use the most recent municipality classification and weight the respective pre-merger multipliers by the municipalities' populations in 2010.

To study the impact of immigration on cantonal revenues and expenditures, we use annual data from the Federal Finance Administration (EFV) which are available by detailed 5-digit categories. The categories follow national standards which ensures that data across cantons are comparable. For the analysis of social transfers, we use annual data from the Financial Statistics on Social Assistance (FIBS), which are also provided by the FSO. These expenditures include net transfers of social aid and are measured in two ways. The first measure captures the total financial benefits disbursed to cover the subsistence minimum of the recipients (narrow definition) and is available per capita and per recipient. The second measure (broad definition) additionally comprises financial benefits such as maintenance advances (e.g. for children) and supplementary benefits to old-age and invalidity insurance payments, which are paid out to recipients who are unable to cover minimum living costs with the statutory payments they receive. Financial benefits are only paid out when the supplementary benefits are insufficient. The social assistance rate, the fraction of the population that receives some type of social assistance, is 3.2

[15] https://swisstaxcalculator.estv.admin.ch/#/taxdata/tax-rates

Figure 1. Earnings distribution and impacts



Note: Panel A shows the relative density of immigrants who arrived in Switzerland between 2010 and 2019 in the native pre-tax earnings distribution of 2019. Panel B shows the estimates from IV regressions in first differences at the municipality level following Dustmann et al. (2013). The outcome is the one-year change in log annual earnings of native households at different percentiles. Year fixed effects, canton fixed effects and control variables (changes in the average age of 25-64 year old natives, in the share of natives with tertiary education, and in the share of natives with upper-secondary education) included. Standard errors are clustered at the municipal level, 95% confidence intervals shown in both panels. Sources: CCO, FSO, ZEMIS.

percent based on the narrow measure and 9.5 percent based on the broad measure in 2019. Data on the sum of federal, cantonal, and municipal social transfers are available at the cantonal level.

V. Main Results

A. Impact on Earnings Inequality

We start the presentation of our empirical results by documenting the impact of immigration on pre-tax earnings inequality. We closely follow the approach proposed by Dustmann et al. (2013) and regress annual changes in log earnings at different percentiles of the native household-level earnings distribution on local immigrant inflow rates, controlling for year fixed effects, canton fixed effects and changes in the average age and educational attainment of the native population. In our preferred specification, we run these regressions at the municipality level to be consistent with the subsequent tax multiplier analysis. In the appendix, however, we also show specifications on the commuting zone level as this is the arguably more appropriate level at which the labor market impacts of local immigrant inflows should manifest themselves. We estimate the model by both OLS and IV, using the predicted immigrant inflow rates as an instrument for the potentially endogenous observed inflow rates into each municipality.

To anticipate the results, Panel A of Figure 1 shows where recent immigrants are located in the native earnings distribution. As hypothesized based on the descriptive statistics in Table 1, immigrants in Switzerland are severely over-represented in the lower segment of the native earnings distribution despite their relatively high formal education levels. This pattern not only holds nationwide but also within each canton as shown in Figure A1 in the appendix. This constancy of the relative density of immigrants across regions is

Table 3—Pre-tax earnings analysis at different percentiles

	10th (1)	25th (2)	50th (3)	75th (4)	90th (5)	75-25th (6)	90-10th (7)
Panel A: OLS							
Immigrant inflow rate	0.083	0.201***	0.063*	0.029	0.049	-0.172**	-0.034
	(0.129)	(0.063)	(0.033)	(0.036)	(0.052)	(0.071)	(0.139)
Panel B: IV							
Immigrant inflow rate	-3.948***	-1.837***	-0.425*	-0.706***	-0.717**	1.131**	3.231***
	(1.079)	(0.538)	(0.255)	(0.253)	(0.282)	(0.466)	(1.043)
Kleibergen-Paap F-stat	42.586	42.586	42.586	42.586	42.586	42.586	42.586
AR Wald F-stat (p-value)	0.000	0.000	0.077	0.002	0.008	0.006	0.000
Mean outcome	0.013	0.007	0.005	0.007	0.008	0.001	-0.005
Sd outcome	0.174	0.081	0.048	0.045	0.056	0.084	0.181
Year FE	yes	yes	yes	yes	yes	yes	yes
Canton FE	yes	yes	yes	yes	yes	yes	yes
N	19516	19516	19516	19516	19516	19516	19516

Note: Regressions in first differences at the municipality level over the time period 2010–2019 following Dustmann et al. (2013). The outcome is the one-year difference in log annual earnings of native households at different percentiles. Year fixed effects, canton fixed effects, and control variables (changes in the average age of 25-64 year old natives, in the share of natives with tertiary education, and in the share of natives with upper-secondary education) included. Standard errors in parentheses are clustered at the municipal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: CCO, FSO, SE, ZEMIS.

a prerequisite for the estimated earnings impacts to directly reflect underlying structural parameters (see Dustmann et al., 2013, pp. 151/152). It also implies that the estimated impacts on earnings at different percentiles should closely mirror the pattern in which the relative densities in Panel A vary along the native earnings distribution.

Panel B of Figure 1 presents our IV results, depicting point estimates for every fifth percentile of the native household-level earnings distribution. Consistent with Panel A, and in line with the theoretical framework underlying this estimation approach, the impacts are largest at the bottom of the earnings distribution, suggesting that recent immigrants in Switzerland compete with poorer native households in the labor market. Table 3 reports a selection of the corresponding OLS and IV estimates. The IV estimates at the lower end of the distribution are large in magnitude (-3.948 at the 10^{th} percentile and -1.837 at the 25^{th} percentile) but it is important to remember that, since the outcome variable here is log annual earnings, the estimates reflect impacts on both the wage and employment margin. Several recent European studies also find large negative wage and employment effects once they zoom in on native workers that are most likely to compete with the newly arriving immigrants (see e.g. Dustmann et al., 2017; Edo, 2020; or Amior and Stuhler, 2024). The first-stage Kleibergen-Paap F-statistic is around 42.6, suggesting that the specification does not suffer from weak instrument problems. The significance of the second-stage estimates is further confirmed by the Anderson-Rubin F-statistics which are fully robust to the presence of weak instruments and have been recommended in just-identified settings instead of the traditional t-tests due to their correct size and superior power properties (see e.g. Andrews et al., 2019; and Keane and Neal, 2023).

For a direct measure of the impact of immigration on gross earnings inequality, Columns (6) and (7) of Table 3 report the results from specifications in which the outcome variable is the change in the interquartile and interdecile range of log earnings, respectively. According to the IV results, a 1 percent immigrant inflow rate increases the 75^{th}-25^{th} earnings gap by 1.13 log points and the 90^{th}-10^{th} earnings gap by 3.23 log points, indicating that the migrant inflows of the 2010s had a sizeable impact on household-level gross earnings inequality in Switzerland. Table A1 in the appendix shows the corresponding results on the commuting zone level. While the first stage is significantly weaker due to the large drop in the number of observations (F-stat 5.3), the point estimates for the impact on the 75^{th}-25^{th} and 90^{th}-10^{th} earnings gaps remain broadly similar, 1.564 and 5.314 respectively, both significant at conventional levels according to the Anderson-Rubin F-statistics.

Table A2 in the appendix reports several robustness checks for our earnings analysis. Panel A restates the baseline IV findings for the interquartile and interdecile log earnings gaps in Columns (1) and (2). The results reported in the remaining columns show that these findings are robust to using longer time intervals over which we measure the earnings changes and immigrant inflows (2 years, 3 years and 5 years). Panel B reports weighted regression results using average population weights which are qualitatively similar to the baseline estimates but quantitatively somewhat larger in magnitude, especially regarding the impact on the 90^{th}-10^{th} earnings gap. In Panel C, we drop the age and education-related control variables, including only year and canton fixed effects. These specifications lead to estimates that are only slightly smaller than those from our main specification.

Table A3 in the appendix reports the results for different income definitions. Panel A restates our baseline estimates which are based on the most narrow definition, including only households with earnings from dependent employment. Panel B broadens this definition by also considering payments from the social insurance system as part of households' income (e.g. disability insurance payments or unemployment benefits). Panel C includes all types of income contained in the CCO data (for details on the specific income definitions, see Appendix B). Overall, the estimated impacts on inequality are very robust across the different income measures.

Our identification strategy based on the well-known ethnic enclave instrument relies on the assumption that the initial distribution of origin groups across Swiss regions is exogenous to omitted local shocks (Goldsmith-Pinkham, Sorkin and Swift, 2020).[16] Testing the plausibility of this assumption is difficult in our setting since, during the period considered, there were neither large external shocks in the main immigrant source countries nor a sharp onset of immigration into Switzerland at a specific moment in time (see Figure A3 in the appendix). The absence of a clear pre-treatment period prevents us from

[16]The alternative assumption that the origin-specific aggregate immigrant inflows into Switzerland are exogenous in the sense described in Borusyak, Hull and Jaravel (2022) is unlikely to hold in our setting since there are no - or not sufficiently many - independent shocks ("push factors") in the source countries during the time period considered such that the endogeneity of the origin shares would average out.

testing for pre-trends by relating initial origin shares to changes in outcomes during this pre-treatment period as suggested by Goldsmith-Pinkham et al. (2020). To mitigate the concerns about a possible correlation between the initial origin shares and contemporaneous municipality-specific shocks, we lag these shares as much as possible given the data available, to the year 1996. The observation that excluding our set of control variables from the specification has only minor effects on the point estimates (compare Table A2) provides some suggestive evidence for the exogeneity of the instrument.[17]

The fact that immigration is an ongoing and relatively stable phenomenon for most municipalities during the time period considered raises the concern that current outcomes may still be adjusting to past immigrant shocks (Jaeger, Ruist and Stuhler, 2018). To assess the severity of this issue, we follow the recommended approach and include both the contemporaneous and the lagged immigrant inflow rates, measured over the previous decade (between $t-11$ and $t-1$), in our specification, instrumenting both with the corresponding enclave instrument. Table A4 reports the results from this extended specification. While the estimates suggest some dynamic earnings adjustments, the point estimate for the impact of contemporaneous inflows on the interquartile earnings gap remains virtually unchanged relative to our baseline specification (1.111 vs. 1.131). The point estimate for the impact on the interdecile earnings gap is smaller in magnitude than our baseline estimate (1.877 vs. 3.231), but the difference is not statistically significant at conventional levels, making it difficult to draw strong conclusions from this comparison.

B. Impact on Applicable Tax Rates

As discussed in Section III, in a world with progressive taxation, any immigration-induced decline in native gross earnings will be partly offset by a reduction in the applicable average tax rate. To assess the magnitude of this mechanical adjustment, which corresponds to the second term of the decomposition in Equation (4), we compute by how much the observed changes in gross earnings at different percentiles of the native earnings distribution would change the applicable average tax rate if the federal and cantonal tax rates and local multipliers remained as they were in the base period.[18] Since most cantons

[17]Table A5 in the appendix shows the correlation between the various origin group shares in 1996 and municipality characteristics measured in the year 2000 using census data. Immigrants from all origins are more likely to live in large municipalities that are characterized by a lower manufacturing share and a higher native unemployment rate. What is relevant for the validity of our empirical strategy, however, is not the correlation between the origin shares and the outcomes in levels as emphasized by Goldsmith-Pinkham et al. (2020), but rather whether the correlates of the origin shares predict *changes* in outcomes. Controlling explicitly for the baseline log population, manufacturing share and native unemployment rate in 2000 in our earnings regressions leaves our point estimates virtually unchanged, 1.117 (0.674) for the interquartile range and 2.952 (1.514) for the interdecile range.

[18]More precisely, let $\tilde{\tau}_t = \tau_{f_{t-1}}(I, w_{g,t}) + \tau_{c_{t-1}}(I, w_{g,t}) \times \left[multiplier_{c_{t-1}}(I) + multiplier_{m_{t-1}}(I)\right]$ and $\tau_{t-1} = \tau_{f_{t-1}}(I, w_{g,t-1}) + \tau_{c_{t-1}}(I, w_{g,t-1}) \times \left[multiplier_{c_{t-1}}(I) + multiplier_{m_{t-1}}(I)\right]$, where $\tau_{f_{t-1}}$ and $\tau_{c_{t-1}}$ denote the federal and cantonal tax schedules in the base period, $multiplier_{c_{t-1}}(I)$ and $multiplier_{m_{t-1}}(I)$ the cantonal and municipal multipliers in the base period, and $w_{g,t}$ and $w_{g,t-1}$ gross earnings in periods t and $t-1$ (dropping the municipality subscript for simplicity). The dependent variable in Table 4 is then $\Delta\tau_t = (\tilde{\tau}_t - \tau_{t-1})$.

Table 4—Impact on applicable average tax rates due to earnings changes – IV results

	(1) 10th	(2) 25th	(3) 50th	(4) 75th	(5) 90th	(6) 75-25th	(7) 90-10th
Panel A: Tax rates for singles without children							
Immigrant inflow rate	-0.240**	-0.061	-0.004	0.021	0.009	0.082	0.249**
	(0.118)	(0.063)	(0.027)	(0.033)	(0.045)	(0.065)	(0.124)
Mean outcome	-0.001	-0.000	0.000	0.000	0.000	0.000	0.001
Sd outcome	0.020	0.010	0.005	0.006	0.008	0.011	0.021
Kleibergen-Paap F-stat	42.654	42.654	42.654	42.654	42.654	42.654	42.654
AR Wald F-Stat (p-value)	0.028	0.316	0.876	0.526	0.847	0.189	0.036
N	19515	19515	19515	19515	19515	19515	19515
Panel B: Tax rates for married households/civil unions							
Immigrant inflow rate	-0.131	-0.134**	0.038	0.054	0.029	0.188**	0.160
	(0.104)	(0.067)	(0.041)	(0.047)	(0.057)	(0.080)	(0.119)
Mean outcome	0.002	0.001	0.001	0.001	0.001	0.000	-0.001
Sd outcome	0.020	0.012	0.008	0.009	0.011	0.013	0.023
Kleibergen-Paap F-stat	42.722	42.722	42.722	42.722	42.722	42.722	42.722
AR Wald F-Stat (p-value)	0.202	0.029	0.353	0.253	0.616	0.013	0.176
N	19505	19505	19505	19505	19505	19505	19505
Year FE	yes	yes	yes	yes	yes	yes	yes
Canton FE	yes	yes	yes	yes	yes	yes	yes

Note: Average federal and cantonal tax schedules, multiplied with the cantonal and municipal multipliers, in the initial year t-1 of each first difference applied to time varying earnings (measured at different percentiles). The dependent variable is the difference between the average tax rates in t and t-1. In Panel A, we use the federal and cantonal tax rates for single persons without children and in Panel B the federal and cantonal tax rates for married households/civil unions. The average tax rates are computed at different percentiles of the native household-level earnings distribution of single persons without children (Panel A) and married households/civil unions with two children (Panel B). Year fixed effects and control variables (changes in the average age of 25-64 year old natives, in the share of natives with tertiary education, and in the share of natives with upper-secondary education) included. Standard errors in parentheses are clustered at the municipal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: CCO, FSO, FTA, SE, ZEMIS.

specify distinct tax schedules for singles without children and everyone else, we implement the analysis separately for two representative household types: single households without children and married households/civil unions with two children, the first and third most frequent household constellation in Switzerland.[19,20]

The results in Table 4 show that the applicable average tax rates decrease more for households at the bottom of the earnings distribution than for households at the top of the distribution. For example, a 1 percent immigrant inflow rate reduces the average tax rate of singles without children at the 10^{th} percentile of their earnings distribution by 0.24 percentage points but leaves the average tax rate faced by those at the 90^{th} percentile unchanged. This pattern is consistent with the finding in the previous section that the

[19]The second most frequent household type are married households/civil unions without minor children. Since we also wanted to represent families with children in our analysis, we opted to show the results for married households/civil unions with two children instead.

[20]Note that we do not observe the actual average tax rates faced by individual households since these depend on the specific deductions that these households apply to their gross earnings – which are not recorded in our data. As a proxy, we therefore use the average tax rates that would apply to the gross earnings (net of social security contributions) that we observe in the CCO data, acknowledging that this introduces some measurement error into our dependent variable in this part of the analysis.

Table 5—Impact on cantonal tax multiplier

	OLS		IV	
	(1)	(2)	(3)	(4)
Immigrant inflow rate	-2.241	-2.241	-6.038	-5.963**
	(1.624)	(1.712)	(3.702)	(2.743)
Mean outcome	0.005	0.005	0.005	0.005
Sd outcome	0.039	0.039	0.039	0.039
WCB (p-value)	0.200	0.249	0.113	0.039
Kleibergen-Paap F-stat			3.581	17.128
AR Wald F-stat (p-value)			0.258	0.073
Year FE	yes	yes	yes	yes
Without Geneva	-	yes	-	yes
N	234	225	234	225

Note: Regressions in first differences at the cantonal level over the time period 2010–2019. The outcome is the one-year difference in the cantonal multiplier. Year fixed effects and control variables (share adult women in 2010, share young in 2010, share married in 2010, share unemployed in 2010, share employed in manufacturing in 2000, log of the average per capita earnings in 2010, share living in urban areas in 2010) included. In the even columns we drop the canton of Geneva. WCB is short for wild cluster bootstrap. Standard errors in parentheses are clustered at the cantonal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, FTA, ZEMIS.

earnings impact of immigration is largely concentrated at the lower end of the distribution. To obtain an overall assessment of the impact of immigration on net earnings inequality via the *economic channel*, one would have to offset the parameter estimates reported in Columns (6) and (7) of Table 4 against their counterparts in Table 3, something that we will do in our decomposition analysis in Section V.E.[21]

C. *Impact on Tax Multipliers*

We next estimate the impact of immigration on local tax multipliers, starting with the cantonal multipliers. Columns (1) and (3) of Panel A in Table 5 show the corresponding OLS and IV results, where the outcome variable is $\Delta multiplier_{ct}$ and standard errors are clustered at the cantonal level.[22] Since there are only 26 cantons in Switzerland, we also report standard errors obtained from the wild cluster bootstrap procedure proposed by Cameron, Gelbach and Miller (2008). Consistent with immigrants avoiding municipalities that are becoming less redistributive, the IV estimate in Column (3) is significantly larger than its OLS counterparts in Column (1). Column (3) suggests that a 1 percent immigrant inflow rate reduces the cantonal tax multiplier by 0.060 (or 1.55 standard deviations). As discussed in Section III, such an adjustment further increases net earnings inequality.

A problem with the specification reported in Column (3) is that its first stage is weak,

[21]For completeness, we report the results from our earnings analysis separately for single households without children and married households with two children in Table A6 in the appendix. In both samples, the patterns are similar to those in Table 3, with larger impacts at the bottom of the distribution and positive impacts on the interquartile and interdecile earnings gaps.

[22]To obtain an estimate of the importance of these tax multiplier changes for net earnings inequality, one would have to multiply the estimated coefficient by some reference value for $\tau_c^{high} - \tau_c^{low}$ as shown in Equation (4). We will do so when performing the full decomposition of the total impact of immigration on net earnings inequality in Section V.E. In this important part of the analysis, we prefer to use directly observed data on the level of cantonal and municipal multipliers rather than interact these with imperfect proxies for the applicable cantonal tax rates.

Table 6—Impact on municipal tax multiplier

	OLS		IV	
	(1)	(2)	(3)	(4)
Immigrant inflow rate	-0.037***	-0.042***	-1.724***	-1.192***
	(0.014)	(0.014)	(0.619)	(0.444)
Mean outcome	-0.001	-0.001	-0.001	-0.001
Sd outcome	0.034	0.034	0.034	0.034
Kleibergen-Paap F-stat			12.838	15.273
AR Wald F-stat (p-value)			0.000	0.000
Year FE	yes	yes	yes	yes
Canton FE	-	yes	-	yes
N	19782	19782	19782	19782

Note: Regressions in first differences at the municipality level over the time period 2010–2019. The outcome is the one-year difference in the municipal multiplier. Year fixed effects and control variables (share adult women in 2010, share young in 2010, share married in 2010, share unemployed in 2000, share employed in manufacturing in 2000, log of the average per capita earnings in 2010, a dummy variable that is 1 if a municipality is considered urban in 2012 and 0 else) included. In the even columns we also include canton fixed effects. Standard errors in parentheses are clustered at the municipal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, FTA, ZEMIS.

with a Kleibergen-Paap F-statistic of only 3.6. The main reason for the poor performance of the instrument on the cantonal level is that it fails to predict well the observed immigrant inflows into the most immigrant-intensive region in Switzerland, the canton of Geneva. This is evident from Panel A of Figure A2 in the appendix which depicts the first-stage relationship underlying the results in Column (3). There are several clear outliers in this scatterplot, all of which refer to observations for Geneva. Excluding this single canton from the sample in Column (4) increases the Kleibergen-Paap F-statistic substantially, to 17.1. The resulting point estimate of -5.963 is similar to that from the full sample in Column (3) and significant at the 10% level based on the Anderson-Rubin F-statistic (p-value 0.073). Because of the stronger first stage and related gain in precision, we treat the estimate of -5.963 as the main result from this part of the analysis.

Table A7 in the appendix shows that the finding of a sizable negative impact of immigration on the cantonal tax multipliers is robust to using longer time intervals over which the immigrant inflows and changes in multipliers are measured (Columns (3) to (8)), to estimating the model using average population weights (Panel B), and to dropping the control variables from the specification (Panel C).

Table 6 reports the corresponding results for the municipal tax multipliers. Focusing on the IV results and the specification that controls for canton fixed effects in Column (4), we find that a 1 percent immigrant inflow rate reduces municipal tax multipliers by 0.012 (or 0.35 standard deviations). Consistent with the analysis on the cantonal level, municipal authorities thus seem to lower their multipliers in response to immigrant inflows, contributing to a further widening of the household-level net earnings distribution.

Table A8 in the appendix reports the results from a series of robustness checks. There are only minor differences between the unweighted baseline results (Panel A) and those from a population-weighted specification (Panel B), especially when looking at shorter

intervals. Estimating the model without control variables (Panel C) leads to smaller effect sizes. However, since the composition of the local population is a key determinant of local revenue needs, we believe it is important to account for compositional differences across municipalities. We therefore focus on the conditional specification for the remainder of the paper. Table A9 in the appendix shows that our main findings are once again robust to the inclusion of the (instrumented) lagged immigrant inflow rate in the specification.

In Figure A4 in the appendix, we show which origin shares are the primary sources of variation behind our main IV estimates in Column (4) of Tables 5 and 6, following the suggestion by Goldsmith-Pinkham et al. (2020). At both the canton and municipality level, the most important origin country by some margin is Portugal with a Rotemberg weight of 0.595 and 0.601, respectively. On the cantonal level, this is followed by Western and Southwestern Europe, Eritrea and France (with weights of 0.117, 0.105 and 0.049), on the municipal level by Italy, France and Eritrea (with weights of 0.132, 0.114 and 0.104).[23] Our findings in this section thus largely reflect the impacts of West European migration on local tax multipliers in Switzerland.[24]

D. Impact on Cantonal Tax Rates

We now analyze whether immigrant inflows also lead to systematic changes in cantonal tax rates at different parts of the native household-level earnings distribution. For this, we first obtain, for each canton, the cantonal average tax rates at specific earnings percentiles in a given year. For those same earnings levels, we then obtain the corresponding tax rates in the subsequent year, and finally regress the changes in these tax rates on the local immigrant inflow rate using the specification in Equation (5).

Table 7 reports the corresponding results, again separately for singles without children (Panel A) and married households/civil unions with two children (Panel B). In line with our earnings analysis, we report estimates for selected percentiles as well as for changes in the 75^{th}-25^{th} and the 90^{th}-10^{th} percentile tax rate gaps. Overall, there is no evidence that cantonal tax rates change in response to immigrant inflows, a finding that is not surprising given the considerable procedural hurdles involved in implementing such changes (see Section II.B). As a result, the interquartile and interdecile tax rate gaps remain largely unchanged. Based on these findings, we conclude that $\partial(\tau_c^{high} - \tau_c^{low})/\partial I \approx 0$ and that the last term in Equation (4) can therefore be ignored in the following decomposition.[25]

[23] Among the origins with a first-stage F-statistic of at least 5 depicted in Figure A4, there is only one with a negative Rotemberg weight, the region of Central Asia in Panel B. Our findings regarding the impact of immigration on municipal multipliers are fully robust to excluding this particular origin group from the construction of the instrument (point estimate of -1.122 (0.407) for Column (4) of Table 6).

[24] Table A10 in the appendix shows that the immigrant impacts on cantonal and municipal multipliers do not vary significantly between the different language regions in Switzerland. We also investigated whether the impacts on local tax multipliers differed depending on the migrants' origin or their cultural distance to the local Swiss population. However, given the overwhelming role of migration from Western Europe during the time period considered, these analyses did not reveal any meaningful heterogeneity.

[25] If at all, the results in Table 7 suggest that the progressivity of the cantonal tax schedule decreases,

Table 7—Impact on cantonal tax rates at different percentiles – IV results

	(1) 10th	(2) 25th	(3) 50th	(4) 75th	(5) 90th	(6) 75-25th	(7) 90-10th
Panel A: Tax rates for singles without children							
Immigrant inflow rate	0.031	-0.012	-0.042	-0.058	-0.037	-0.046	-0.068
	(0.051)	(0.044)	(0.057)	(0.066)	(0.056)	(0.039)	(0.065)
Mean outcome	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
Sd outcome	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Kleibergen-Paap F-stat	18.409	18.409	18.409	18.409	18.409	18.409	18.409
AR Wald F-Stat (p-value)	0.547	0.802	0.506	0.426	0.543	0.266	0.313
Panel B: Tax rates for married households/civil unions							
Immigrant inflow rate	0.034	-0.005	-0.041	-0.058	-0.030	-0.053	-0.065
	(0.052)	(0.043)	(0.057)	(0.067)	(0.052)	(0.044)	(0.061)
Mean outcome	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
Sd outcome	0.001	0.001	0.001	0.001	0.001	0.000	0.000
Kleibergen-Paap F-stat	18.409	18.409	18.409	18.409	18.409	18.409	18.409
AR Wald F-Stat (p-value)	0.523	0.922	0.513	0.431	0.594	0.246	0.306
Year FE	yes	yes	yes	yes	yes	yes	yes
N	225	225	225	225	225	225	225

Note: Average cantonal tax rates computed at fixed earnings levels (measured at different percentiles) as observed in the initial year t-1 of each first difference. The corresponding tax rates at those same earnings levels are then obtained for period t. The dependent variable is the difference between the tax rates in t and t-1. In Panel A, we use the cantonal tax rates for single persons without children and in Panel B the cantonal tax rates for married households/civil unions. The average tax rates are computed for different percentiles of the native household-level earnings distribution of single persons without minor children (Panel A) and married households/civil unions with two minor children (Panel B). Year fixed effects and control variables (share adult women in 2010, share young in 2010, share married in 2010, share unemployed in 2010, share employed in manufacturing in 2000, log of the average per capita earnings in 2010, share living in urban areas in 2010) included. Observations for the canton of Geneva are excluded from the sample. Standard errors in parentheses are clustered at the cantonal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: CCO, FSO, FTA, ZEMIS.

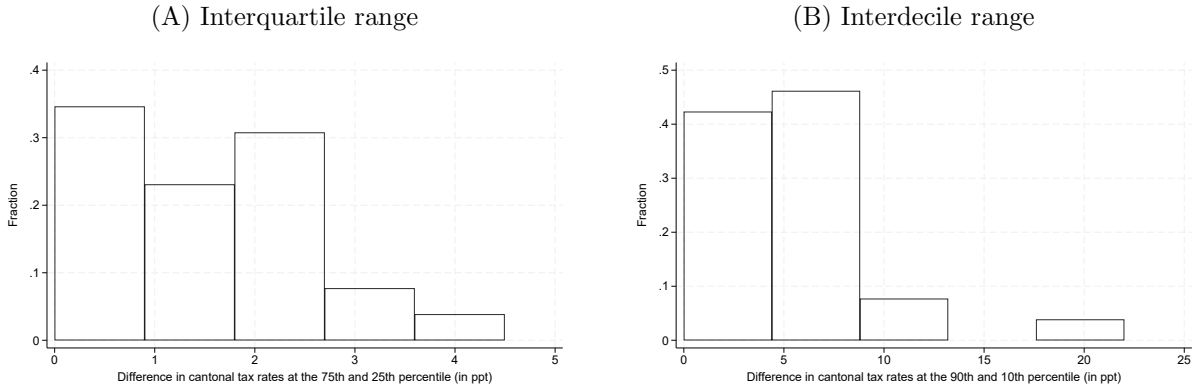
E. Decomposition

On the basis of Equation (4), we can now decompose the overall impact of immigration on net earnings inequality into an *economic channel*, as reflected by the impact on gross earnings (net of the mechanical change in the applicable average tax rate), and a *political channel*, as reflected by the impact on cantonal and municipal tax multipliers. For this decomposition, we need to scale the estimated impacts on the cantonal and municipal multipliers by the factor $(\tau_c^{high} - \tau_c^{low})$, the cantonal average tax rate gap between individuals at the upper and lower part of the earnings distribution (see Equation (4)). Focusing on single households without children and the interquartile range first, the average difference across cantons between the average tax rate at the 75$^{\text{th}}$ pre-tax earnings percentile and the average tax rate at the 25$^{\text{th}}$ percentile amounts to 1.6 percentage points.[26] Our main

which would further contribute to rising net earnings inequality (compare Equation (4)). Our assessment of the relative importance of the tax-related *political channel* can therefore be considered a lower bound.

[26]To obtain this number, we take the observed earnings net of social security contributions of single households without minor children in each canton in 2019 and subtract the statutory minimum tax deductions applicable to this type of household to proxy taxable income. We then compute the average tax rates at different percentiles of the resulting taxable income distribution in each canton. The differences in these tax rates, e.g. between the 75$^{\text{th}}$ and the 25$^{\text{th}}$ percentile, are then averaged across cantons for the

Figure 2. Distribution of the cantonal tax rate gap



Note: The figures show the distribution of the cantonal tax rate gap between the 75$^{\text{th}}$ and 25$^{\text{th}}$ percentile (left) and the 90$^{\text{th}}$ and 10$^{\text{th}}$ percentile (right) in 2019. The tax rates refer to the earnings distribution of single households without minor children. Source: FTA, own calculations.

IV estimates in Table 3 (1.131), Table 4 (0.082), Table 5 (-5.963) and Table 6 (-1.192) then suggest that $(1.131 - 0.082)/[(1.131 - 0.082) - 0.016 \times (-5.963 - 1.192)] = 90.2$ percent of the total impact of immigration on net earnings inequality is due to the *economic channel* and 9.8 percent due to the *political channel*. For the interdecile gap, the results are similar. Given an average cantonal tax rate gap between the 90$^{\text{th}}$ and 10$^{\text{th}}$ pre-tax earnings percentiles of 5.0 percentage points, our IV estimates in Table 3 (3.231) and Table 4 (0.249) suggest that the *economic channel* contributes $(3.231 - 0.249)/[(3.231 - 0.249) - 0.050 \times (-5.963 - 1.192)] = 89.3$ percent and the *political channel* 10.7 percent to the total impact of immigration on this particular measure of inequality. For married households/civil unions with two minor children, the average difference between the tax rates at the 75$^{\text{th}}$ and 25$^{\text{th}}$ (90$^{\text{th}}$ and 10$^{\text{th}}$) percentiles is 2.1 (5.1) percentage points, implying that the *political channel* contributes 13.7 (10.6) percent to the total impact of immigration on the interquartile (interdecile) range of log net earnings for this group. By systematically lowering their tax multipliers, cantons and municipalities thus significantly reinforce the distributional impact of international migration in Switzerland.

As shown in Equation (4), the relative importance of the *political channel* in determining the impact of immigration on net earnings inequality depends crucially on the progressivity of the local income tax schedules. In cantons with a flat income tax ($\tau_c^{high} = \tau_c^{low}$), adjustments in the tax multipliers will not have any additional impact on our measures of net earnings inequality whereas in cantons with a very progressive tax schedule, such adjustments may have potentially large effects. To illustrate this heterogeneity, Figure 2 shows a histogram of the cantonal average tax rate gaps for single households without children across all 26 cantons, which lie between 0 and 4.5 percentage points for the in-

decomposition exercise. We compute the average tax rate gaps in this back-of-the-envelope way because we do not observe the actual tax rates faced by individual households in our data since those tax rates depend on the specific deductions – beyond the statutory minimum ones – that households apply to their gross earnings. Those additional deductions are, unfortunately, not recorded in the data.

terquartile gap, and between 0 and 22.0 percentage points for the interdecile gap. Taking the estimated impacts on gross earnings inequality, applicable average tax rates, and local tax multipliers from the previous sections as given (so that the only parameter that varies is $\tau_c^{high} - \tau_c^{low}$), this suggests that in municipalities located in cantons with the most progressive tax schedules, the role of the *political channel* can be very important, contributing up to 23.5 percent (interquartile range) and 34.5 percent (interdecile range) to the total impact of immigration on net earnings inequality.[27]

F. Possible Explanations

Tables 5 and 6 show that tax multipliers, and therefore the progressivity of local income taxes, are systematically reduced in response to immigrant inflows, both on the cantonal and the municipal level. An important question is why. Given that tax multipliers are a key instrument for local authorities to manage their revenues, one explanation could be that the inflow of immigrants reduces the overall revenue requirements of cantons and municipalities, for example because the new immigrants are on average net contributors to local public finances. Another explanation could be that local authorities try to cater to natives' diminishing support for redistribution when exposed to immigration, a reaction that appears to be common among natives in many countries (see Elsner and Concannon, 2023, and Alesina and Tabellini, 2024) and likely to be particularly pronounced among more right-leaning voters (see Alesina et al., 2023).

In line with the second explanation, Table 8 shows that the reductions in local tax multipliers are indeed larger in cantons where the *Swiss People's Party* (SVP), the main anti-immigration party in Switzerland, has more support.[28] Interacting the local immigrant inflow rates with the SVP vote share in 2007 (the last national election before our sample period), we find in Column (2) that for every one percentage point increase in the vote share, the negative impact of a one percent immigrant inflow rate on the cantonal multipliers increases by 0.0023 in magnitude, or 3.6 percent relative to that same inflow's impact in the average canton (-0.063). In relative terms, the corresponding impact on municipal multipliers is of the same order of magnitude (1.5 percent) in Column (3) but

[27]The assumption of constant impacts of immigration on gross earnings inequality and local multipliers is, of course, a potentially strong one. It could be that, in cantons with more progressive tax schedules, adjustments in tax multipliers are smaller than in cantons with less progressive schedules, in which case the overall impact of a given immigrant inflow on net earnings inequality may end up being quite similar. Testing for this heterogeneity on the cantonal level is not possible due to the small sample size. On the municipal level, we find no significant difference in multiplier adjustments between cantons with above- and below-median progressivity, with a p-value for the relevant interaction term of 0.7. At the same time, municipalities in cantons with above-median progressivity experience lower impacts on gross earnings inequality – and therefore a more muted *economic channel* – than municipalities in cantons with below-median progressivity, further corroborating the finding of a more prominent role of the *political channel* in driving net earnings inequality in municipalities with more progressive income tax schedules.

[28]The SVP is one of the four parties that have at least one representative in the Federal Council, the executive branch in the Swiss political system. It is the largest party in terms of vote share in the National Council ("Nationalrat"), which is the lower house of the Federal Assembly. In the most recent elections in 2019, the SVP received a vote share of 25.6 percent.

Table 8—Impact on tax multipliers, heterogeneity by political attitude, IV results

	Cantonal multiplier		Municipal multiplier	
	(1)	(2)	(3)	(4)
Immigrant inflow rate	-6.674*	-6.309**	-2.140***	-1.281**
	(4.031)	(2.944)	(0.800)	(0.600)
Vote share SVP 2007	0.104***	0.102**	0.016**	0.007
	(0.039)	(0.041)	(0.008)	(0.007)
Interaction	-23.289**	-22.839**	-3.277**	-0.749
	(10.227)	(10.540)	(1.584)	(1.348)
Mean outcome	0.005	0.005	-0.001	-0.001
Sd outcome	0.039	0.039	0.034	0.034
Kleibergen-Paap F-stat	1.727	9.815	4.987	3.756
AR Wald F-Stat (p-value)	0.035	0.011	0.000	0.001
WCB immigrant inflow (p-value)	0.093	0.077		
WCB interaction (p-value)	0.023	0.058		
Year FE	yes	yes	yes	yes
Canton FE	-	-	-	yes
Without Geneva	-	yes	-	-
N	234	225	19782	19782

Note: IV Regressions in first differences over the time period 2010–2019. The outcome is the one-year difference in the cantonal multiplier in columns (1) and (2) and the municipal multiplier in columns (3) and (4). Vote share SVP 2007 is the vote share for candidates from the Swiss People's Party (SVP) in the 2007 elections for the Swiss National Council. The variable Vote share SVP 2007 is demeaned by the average vote share across all cantons. Year fixed effects and control variables according to Tables 5 and 6 included. WCB is short for wild cluster bootstrap. Standard errors in parentheses are clustered at the cantonal level (columns 1 and 2) and the municipal level (columns 3 and 4), respectively. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, FTA, ZEMIS.

becomes statistically insignificant once canton fixed effects are included in Column (4).

To assess the alternative explanation related to local authorities' financial situation, we analyze the link between cantonal revenues and expenditures and local immigrant inflows using harmonized accounting data from the Federal Finance Administration (EFV).[29] Table 9 reports the results from a set of IV estimations in which we regress log cantonal revenues and expenditures per capita, and different subcategories thereof, on local immigrant inflow rates. Column (1) of Panel A shows that total revenues per capita do not change significantly as a result of immigration. Consistent with our finding of declining gross native earnings and cantonal tax multipliers, income tax revenues per capita seem to decline (Column (3)) although the point estimate of -2.733 is not precisely estimated.[30] The reduction in fiscal revenues, however, appears to be fully offset by higher income from other taxes, other income sources, and financial transfers, even if none of the individual estimates for these categories is statistically significant.[31]

[29]Unfortunately, revenue and expenditure data are not available for the majority of municipalities, preventing us from implementing the corresponding analysis at this geographical level.

[30]Part of this decline is due to compositional changes. Since recent immigrants are less likely to be employed and, conditional on employment, earn significantly less than natives (see Table 1), they will pay lower income taxes on average than the pre-existing resident population.

[31]Further breaking down the financial transfers reveals that especially transfers from the *Bund* – the top layer in the Swiss federal system – increase in response to immigrant inflows. This is in line with findings in Mayda et al. (2023) who show that federal intergovernmental transfers partly offset the local

Table 9—Log cantonal revenues and expenditures per capita, IV

	Total	Direct taxes: Total	Direct taxes: Income only	Other taxes	Transfers	Other income
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Revenues						
Immigrant inflow rate	1.748	-0.816	-2.733	4.393	0.702	4.652
	(1.141)	(2.325)	(2.194)	(2.871)	(1.708)	(3.469)
Share category	1.000	0.355	0.283	0.149	0.332	0.164
Mean outcome	0.012	0.015	0.010	0.014	0.019	-0.008
Sd outcome	0.029	0.039	0.047	0.067	0.032	0.114
WCB (p-value)	0.280	0.800	0.215	0.233	0.745	0.224
Kleibergen-Paap F-stat	18.032	18.032	18.032	18.032	18.032	18.032
AR Wald F-Stat (p-value)	0.156	0.738	0.237	0.177	0.694	0.201
	Total	Public order	Education	Health	Social security	Other expenditures
	(7)	(8)	(9)	(10)	(11)	(12)
Panel B: Expenditures						
Immigrant inflow rate	0.713	2.701	0.103	-4.129	1.774	3.106
	(2.565)	(2.590)	(1.431)	(3.190)	(1.406)	(7.636)
Share category	1.000	0.087	0.284	0.137	0.200	0.292
Mean outcome	0.012	0.010	0.008	0.038	0.021	-0.005
Sd outcome	0.077	0.040	0.039	0.106	0.037	0.221
WCB (p-value)	0.828	0.483	0.952	0.212	0.243	0.729
Kleibergen-Paap F-stat	18.032	18.032	18.032	18.032	18.032	18.032
AR Wald F-Stat (p-value)	0.792	0.328	0.947	0.215	0.162	0.696
Year FE	yes	yes	yes	yes	yes	yes
N	225	225	225	225	225	225

Note: The outcome is the one-year difference in the log of per capita expenditures or revenues, respectively. Column (2) refers to total revenue from direct taxes on natural persons. Column (3) refers to the subcategory of income taxes on natural persons. The reported share of a revenue/expenditure category in total revenues/expenditures is the mean value over 2010-2019. Year fixed effects and control variables (share adult women in 2010, share young in 2010, share married in 2010, share unemployed in 2010, share employed in manufacturing in 2000, log of the average per capita earnings in 2010, share living in urban areas in 2010) included. Regressions are weighted with the average population over the sample period. Observations for the canton of Geneva are excluded from the sample. Standard errors in parentheses are clustered at the cantonal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: EFV, FSO, ZEMIS.

On the expenditure side, there is little evidence that immigration significantly affects the total amounts spent per capita (Panel B, Column (1)). There appear to be some shifts across expenditure categories, with spending on health care declining and spending on public order and social security (which includes items such as invalidity, unemployment, social welfare and asylum) increasing. However, the estimates once again turn out to be quite noisy. The main conclusion from Table 9 is that immigration does not seem to reduce the revenue requirements of cantonal authorities, ruling this explanation out as a driving force behind the observed reductions in tax multipliers.

G. Changes in Social Transfers

Our results so far show that net earnings inequality increases due to immigration. However, at this point we cannot rule out that local governments counteract this development by modifying their transfer system. In particular, it is conceivable that local authorities, aware of the distributional impacts of immigration and the consequences of lowering their tax multipliers, provide more generous social transfers to households at the bottom of the earnings distribution. Such transfers could generally take two distinct forms, either as social insurance payments or as social aid. Social insurance payments, related for example to unemployment or invalidity, are financed through social security contributions and determined on the national level in Switzerland. They are therefore not an instrument that local authorities could use to tackle income inequality. Consistent with this observation, we showed in Section V.A that the main result on the impact of immigration on gross earnings inequality is fully robust to the inclusion of social security related transfers in our earnings measure (see Table A3).

The situation is different with respect to social aid – financial benefits that often supplement social insurance payments to cover individuals' subsistence minimum. These need-based transfers are mostly financed through cantonal taxes in Switzerland and therefore fall into the domain of cantonal authorities. Contrary to social security related transfers, social aid is not included in the income data provided by the CCO and therefore not directly accounted for in our earnings measures. To address this issue, we collected data from the Financial Statistics on Social Assistance (FIBS), which include information on average social aid expenditures per recipient on the cantonal level.[32]

Columns (1) and (2) of Table 10 report results based on a relatively broad measure of social aid transfers which includes both supplementary and financial benefits. The results in Columns (3) and (4) are based on a narrower definition that focuses exclusively on financial benefits. Overall, there is no evidence that immigration leads to an increase in local social aid transfers, suggesting that cantons do not compensate households at the bottom of the distribution for rising net earnings inequality by providing more generous

fiscal impact of immigration in the United States.

[32]Optimally, one would want to use average social aid transfers per native recipient here given our focus on native earnings inequality but that breakdown is unfortunately not provided in the EFV data.

Table 10—Impact on social aid transfers per recipient, IV results

	Broad definition		Narrow definition	
	(1)	(2)	(3)	(4)
Immigrant inflow rate	-3.714	-2.015	0.421	0.517
	(4.223)	(3.771)	(2.791)	(2.579)
Mean outcome	0.012	0.012	0.023	0.022
Sd outcome	0.033	0.033	0.066	0.066
Kleibergen-Paap F-stat	3.838	18.032	3.838	18.032
AR Wald F-stat (p-value)	0.278	0.593	0.891	0.856
Year FE	yes	yes	yes	yes
Without Geneva	-	yes	-	yes
N	234	225	234	225

Note: IV Regressions in first differences at the cantonal level over the time period 2010–2019. The outcome is the one-year difference in the log of social aid transfers per recipient. We use a broad measure including financial and supplementary benefits in Columns (1) and (2) and a narrow measure including only financial benefits in Columns (3) and (4). Year fixed effects and control variables (share adult women in 2010, share young in 2010, share married in 2010, share unemployed in 2010, share employed in manufacturing in 2000, log of the average per capita earnings in 2010, share living in urban areas in 2010) included. Regressions are weighted with the average population over the sample period. In the even columns we drop the canton of Geneva. Standard errors in parentheses are clustered at the cantonal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FIBS, FSO, ZEMIS.

welfare benefits. As shown in Tables A11 and A12 in the appendix, this finding is robust across many different specifications.

VI. Conclusion

This paper provides a novel perspective on the distributional impact of immigration. We investigate how immigration affects the design of local income tax systems in Switzerland, and the consequences this has for after-tax earnings inequality among natives. We first show that immigration tends to raise gross earnings inequality. We then provide robust evidence that an increase in immigrant inflows lowers local tax multipliers, thereby reducing redistribution between high and low earners and further increasing net earnings inequality. Our estimates suggest that around 10 percent of the total impact of immigration on net earnings inequality can be attributed to the *political channel* while the remaining 90 percent can be attributed to the traditional *economic channel*. By focusing on gross earnings, many existing estimates in the literature may thus understate the true impact of immigration on inequality in terms of disposable income.

Consistent with recent evidence that immigration lowers natives' support for redistribution, especially among more right-leaning voters, we find that the negative impact of immigration on local tax multipliers is more pronounced in regions with stronger support for the main anti-immigration party in Switzerland. In contrast, we find no evidence that per capita public expenditures decline in regions receiving more immigrants, suggesting that the reductions in tax multipliers are not driven by decreasing local revenue requirements. These pieces of evidence speak in favor of a political economy mechanism in which local authorities try to cater for the shifting preferences of their constituents.

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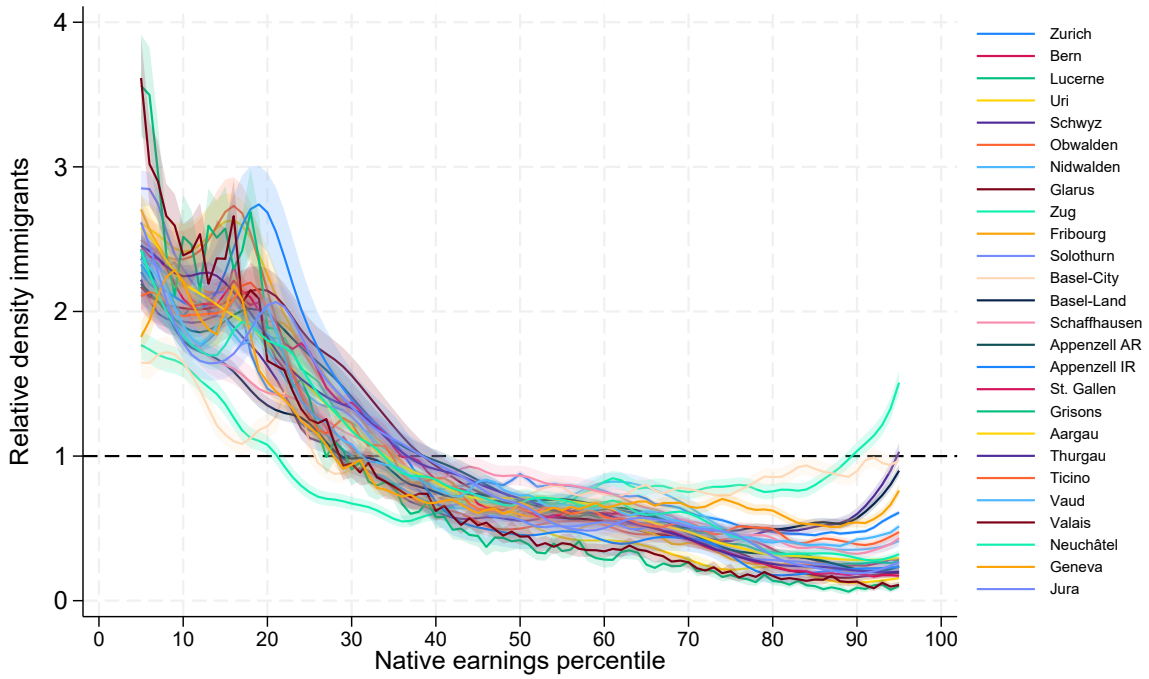
Appendix A: Additional Tables and Figures

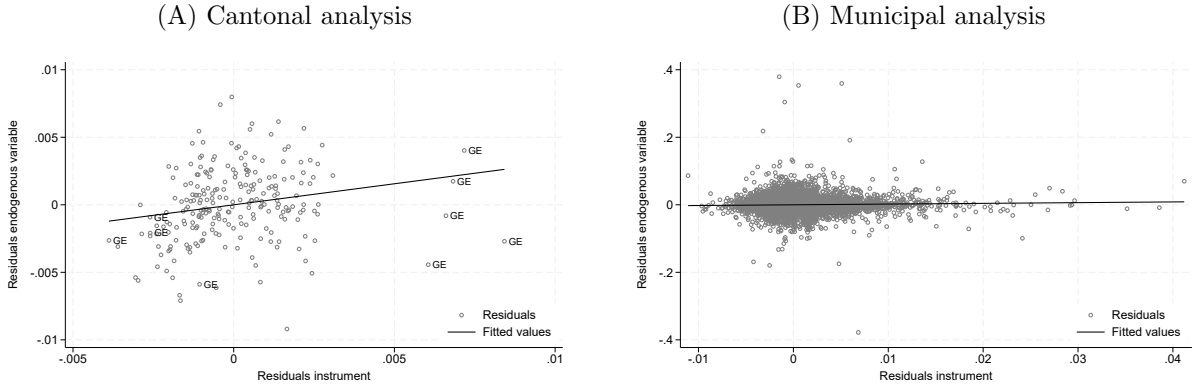
A1. Figures

Figure A1. Position of immigrants along the native earnings distribution by canton



Note: This figure shows the relative density of immigrants who arrived in Switzerland between 2010 and 2019 in the native earnings distribution of 2019, separately by canton. Source: CCO, FSO, ZEMIS.

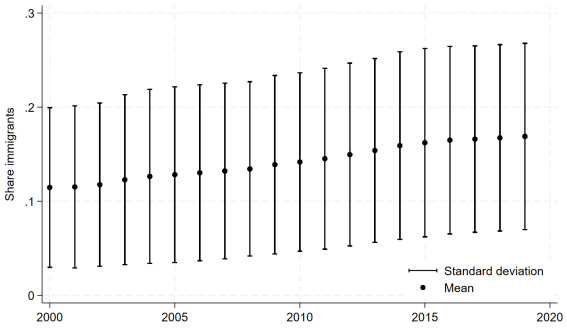
Figure A2. First stage residuals



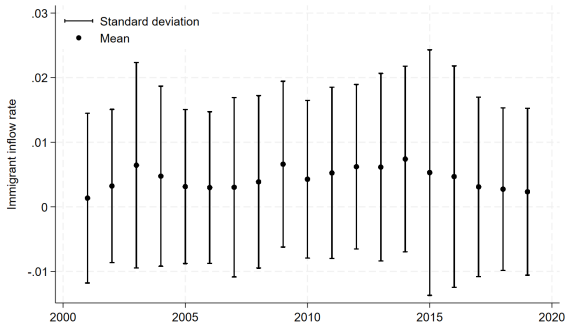
Note: This figure shows the residuals of the first stage regressions underlying the specifications in Column 3 of Table 5 (Panel A) and Column 4 of Table 6 (Panel B). The residuals on the x-axis are from a regression of the instrument on the control variables and fixed effects. The residuals on the y-axis are from a regression of the endogenous variable on the control variables and fixed effects. The labeled circles on the right-hand side of Panel A refer to the canton of Geneva (GE) and the years 2011 to 2015. Sources: FSO, ZEMIS.

FIGURE A3. IMMIGRANT INFLOW

(A) Share immigrants



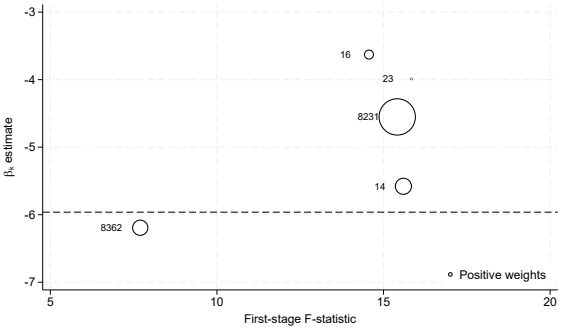
(B) Immigrant inflow rate



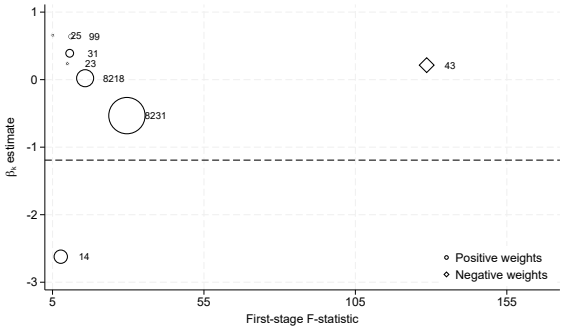
Note: This figure shows the mean and standard deviation of the share of immigrants (Panel A) and the immigrant inflow rate (Panel B) at the municipality level. Sources: FSO, ZEMIS.

FIGURE A4. IMPACT ON TAX MULTIPLIERS: ROBUSTNESS CHECKS OF INSTRUMENT CONSTRUCTION

(A) Cantonal multipliers



(B) Municipal multipliers



Note: This figure shows separate regressions at the level of the instruments' components (immigrants' nationality or origin groups) of the cantonal and municipal multiplier analysis following Goldsmith-Pinkham et al. (2020). It plots the relationship between each instruments' (origin-shares') β_k (y-axis), first-stage F-statistics (x-axis) and the Rotemberg weights. Each point refers to a separate instrument's estimate. The size of the points are scaled by the magnitude of the Rotemberg weights, with circles denoting positive weights and diamonds denoting negative weights. The group 14 corresponds to Western and Southwestern Europe, 16 to Southern Europe, 23 to Central Africa, 24 to Western Africa, 25 to Southwestern Africa, South Africa and Southeastern Africa, 31 to North America, 43 to Central Asia, 99 to Unknown, 8218 to Italy, 8231 to Portugal, 8362 to Eritrea. The horizontal dashed line is plotted at the value of the overall β reported in Column (4) of Table 5 and Column (4) of Table 6, respectively. The figure includes instruments with first-stage F-statistics of at least 5. Sources: FSO, FTA, ZEMIS.

A2. Tables

TABLE A1—PRE-TAX EARNINGS ANALYSIS AT COMMUTING ZONE LEVEL

	10th	25th	50th	75th	90th	75-25th	90-10th
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: OLS							
Immigrant inflow rate	-0.028	0.090	0.014	-0.044	-0.060	-0.133**	-0.032
	(0.182)	(0.077)	(0.049)	(0.050)	(0.071)	(0.059)	(0.218)
Panel B: IV							
Immigrant inflow rate	-4.822**	-1.465	-0.141	0.099	0.493	1.564*	5.314**
	(2.402)	(0.944)	(0.385)	(0.333)	(0.345)	(0.921)	(2.565)
Kleibergen-Paap F-stat	5.297	5.297	5.297	5.297	5.297	5.297	5.297
AR Wald F-stat (p-value)	0.000	0.006	0.712	0.775	0.085	0.002	0.000
Mean outcome	0.011	0.006	0.004	0.007	0.008	0.001	-0.004
Sd outcome	0.035	0.015	0.009	0.010	0.010	0.012	0.033
Year FE	yes	yes	yes	yes	yes	yes	yes
Labor market FE	yes	yes	yes	yes	yes	yes	yes
N	909	909	909	909	909	909	909

Note: Regressions in first differences at the commuting zone level over the time period 2010–2019 following Dustmann et al. (2013). The outcome is the one-year difference in log annual earnings of natives at different percentiles.Year fixed effects, labor market fixed effects and control variables (changes in the average age of 25-64 year old natives, in the share of natives with tertiary education, and in the share of natives with upper-secondary education) included. Standard errors in parentheses are clustered at the commuting zone level. * p<0.1; ** p<0.05; *** p<0.01. Sources: CCO, FSO, SE, ZEMIS.

Table A2—Pre-tax earnings analysis at different percentiles: IV robustness checks

	1-year diff		2-year diff		3-year diff		5-year diff	
	75-25th (1)	90-10th (2)	75-25th (3)	90-10th (4)	75-25th (5)	90-10th (6)	75-25th (7)	90-10th (8)
Panel A: Baseline specification								
Immigrant inflow rate	1.131**	3.231***	0.902*	3.438***	1.398***	4.688***	1.740***	4.345***
	(0.466)	(1.043)	(0.517)	(1.278)	(0.467)	(1.044)	(0.522)	(1.156)
Kleibergen-Paap F-stat	42.586	42.586	36.081	36.081	43.807	43.807	36.936	36.936
AR Wald F-stat (p-value)	0.006	0.000	0.064	0.001	0.001	0.000	0.000	0.000
N	19516	19516	8657	8657	6502	6502	4341	4341
Panel B: With weights								
Immigrant inflow rate	0.907***	4.358***	0.670**	4.482***	1.510***	6.448***	1.906***	8.068***
	(0.300)	(0.784)	(0.311)	(0.921)	(0.469)	(1.418)	(0.684)	(2.081)
Kleibergen-Paap F-stat	53.036	53.036	36.511	36.511	29.026	29.026	17.485	17.485
AR Wald F-stat (p-value)	0.000	0.000	0.011	0.000	0.000	0.000	0.000	0.000
N	19516	19516	8657	8657	6502	6502	4341	4341
Panel C: Without controls								
Immigrant inflow rate	0.958**	2.874***	0.712	2.967**	0.884**	3.807***	1.241***	3.329***
	(0.448)	(0.965)	(0.513)	(1.189)	(0.432)	(0.971)	(0.431)	(0.909)
Kleibergen-Paap F-stat	43.991	43.991	38.124	38.124	47.713	47.713	48.936	48.936
AR Wald F-stat (p-value)	0.018	0.000	0.145	0.004	0.028	0.000	0.001	0.000
N	19782	19782	8792	8792	6594	6594	4396	4396
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Canton FE	yes	yes	yes	yes	yes	yes	yes	yes

Note: Regressions at the municipality level over the time period 2010–2019 following Dustmann et al. (2013). The outcome is the one-, two-, three- or five-year difference in log annual earnings gaps of native households. Year fixed effects and canton fixed effects in all specifications included. Control variables (changes in the average age of 25-64 year old natives, in the share of natives with tertiary education, and in the share of natives with upper-secondary education) included in Panels A and B. In Panel B, observations are weighted with the average native population over the sample period. In Panel C, no control variables are included. Standard errors in parentheses are clustered at the municipal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: CCO, FSO, SE, ZEMIS.

Table A3—Pre-tax earnings analysis at different percentiles: different earnings definitions

	1-year diff		2-year diff		3-year diff		5-year diff	
	75-25th (1)	90-10th (2)	75-25th (3)	90-10th (4)	75-25th (5)	90-10th (6)	75-25th (7)	90-10th (8)
Panel A: Baseline specification								
Immigrant inflow rate	1.131**	3.231***	0.902*	3.438***	1.398***	4.688***	1.740***	4.345***
	(0.466)	(1.043)	(0.517)	(1.278)	(0.467)	(1.044)	(0.522)	(1.156)
Kleibergen-Paap F-stat	42.586	42.586	36.081	36.081	43.807	43.807	36.936	36.936
AR Wald F-stat (p-value)	0.006	0.000	0.064	0.001	0.001	0.000	0.000	0.000
Panel B: Earnings from employment incl insurances								
Immigrant inflow rate	0.840**	3.591***	0.883*	2.620**	1.244***	4.804***	1.104**	4.409***
	(0.403)	(1.033)	(0.493)	(1.178)	(0.425)	(1.020)	(0.439)	(1.157)
Kleibergen-Paap F-stat	42.443	42.443	36.041	36.041	43.650	43.650	36.893	36.893
AR Wald F-stat (p-value)	0.019	0.000	0.053	0.012	0.001	0.000	0.004	0.000
Panel C: All earnings								
Immigrant inflow rate	0.664*	3.244***	0.956*	1.686	1.403***	4.394***	0.858**	2.182**
	(0.363)	(1.051)	(0.492)	(1.107)	(0.386)	(1.051)	(0.402)	(1.017)
Kleibergen-Paap F-stat	42.443	42.443	36.041	36.041	43.650	43.650	36.893	36.893
AR Wald F-stat (p-value)	0.052	0.001	0.031	0.107	0.000	0.000	0.021	0.024
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Canton FE	yes	yes	yes	yes	yes	yes	yes	yes
N	19516	19516	8657	8657	6502	6502	4341	4341

Note: Regressions at the municipality level over the time period 2010–2019 following Dustmann et al. (2013). The outcome is the one-, two-, three- or five-year difference in log annual earnings of natives at different earning gaps. Year fixed effects, canton fixed effects and control variables (changes in the average age of 25-64 year old natives, in the share of natives with tertiary education, and in the share of natives with upper-secondary education) included. Standard errors in parentheses are clustered at the municipal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: CCO, FSO, SE, ZEMIS.

Table A4—Pre-tax earnings analysis with lagged immigrant inflow rate

	(1) 10th (1)	(2) 25th (2)	(3) 50th (3)	(4) 75th (4)	(5) 90th (5)	(6) 75-25th (6)	(7) 90-10th (7)
Immigrant inflow rate	-2.240**	-1.292***	-0.227	-0.180	-0.363	1.111**	1.877**
	(0.948)	(0.457)	(0.235)	(0.209)	(0.234)	(0.434)	(0.944)
Immigrant inflow rate t-1,t-11	-0.197***	-0.063*	-0.023	-0.061***	-0.041*	0.002	0.156**
	(0.070)	(0.033)	(0.017)	(0.018)	(0.021)	(0.032)	(0.071)
Kleibergen-Paap F-stat	25.978	25.978	25.978	25.978	25.978	25.978	25.978
Year FE	yes	yes	yes	yes	yes	yes	yes
Canton FE	yes	yes	yes	yes	yes	yes	yes
N	19516	19516	19516	19516	19516	19516	19516

Note: Regressions at the municipal level over the time period 2010–2019 following Dustmann et al. (2013) and Jaeger et al. (2018). The outcome is the one-year difference in log annual earnings of natives at different percentiles. The main regressors are the instrumented immigrant inflow rate and the instrumented 10-year difference of the immigrant inflow lagged by one year. Year fixed effects, canton fixed effects and control variables (changes in the average age of 25-64 year old natives, in the share of natives with tertiary education, and in the share of natives with upper-secondary education) included. Standard errors in parentheses are clustered at the municipal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: CCO, FSO, ZEMIS.

TABLE A5—CORRELATION BETWEEN ORIGIN GROUP SHARES IN 1996 AND MUNICIPAL CHARACTERISTICS IN 2000

	Oceania (1)	N Eur (2)	E Eur (3)	Cent Eur (4)	W/SW Eur (5)	S Eur (6)	SE Eur (7)	North Afr (8)	East Afr (9)	Cent Afr (10)	West Afr (11)	S/SW/SE Afr (12)	North Am (13)
Log total population	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sh young natives	-0.002	-0.002*	-0.001	-0.002	-0.001	-0.003**	-0.002	-0.001	-0.001	0.002	-0.002	0.000	-0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Sh old natives	0.005***	0.004***	0.005***	0.003***	0.004***	0.005***	0.003***	0.004**	0.004**	0.005**	0.004**	0.005***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Sh natives with ter educ	0.006***	0.006***	0.005***	0.001**	0.004**	0.001	-0.001	0.005*	0.003*	0.003	0.003	0.003*	0.009***
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Sh natives with up-sec educ	-0.004**	-0.003**	-0.005	0.000	-0.005*	-0.000	0.000	-0.007	-0.006*	-0.006*	-0.006*	-0.006**	-0.007**
	(0.002)	(0.001)	(0.003)	(0.001)	(0.003)	(0.001)	(0.001)	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Share manufacturing empl	-0.005***	-0.004***	-0.005***	-0.003*	-0.004***	-0.001	-0.002*	-0.005***	-0.005***	-0.004***	-0.005***	-0.003***	-0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
Share native unemployed	0.011*	0.005	0.022**	0.001	0.025***	0.006**	0.005***	0.041***	0.030***	0.045***	0.033***	0.035***	0.019**
	(0.006)	(0.004)	(0.010)	(0.002)	(0.009)	(0.003)	(0.002)	(0.016)	(0.011)	(0.014)	(0.011)	(0.010)	(0.009)
N	2198	2198	2198	2198	2198	2198	2198	2198	2198	2198	2198	2198	2198

	Cent Am (14)	South Am (15)	N/E Asia (16)	Cent Asia (17)	W/SW Asia (18)	S/SE Asia (19)	Unknown (20)	Germany (21)	France (22)	Italy (23)	Portugal (24)	Eritrea (25)
Log total population	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Sh young natives	-0.004**	-0.002	-0.002	-0.001	-0.002	-0.003	-0.000	-0.002	0.001	-0.003***	-0.001	0.002
	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.003)
Sh old natives	0.003**	0.003**	0.006***	0.003	0.005***	0.005***	0.006***	0.004***	0.004**	0.003***	0.003**	0.006**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.003)
Sh natives with ter educ	0.001	0.003*	0.003***	0.004	0.005**	0.002*	0.003**	0.002***	0.007***	-0.000	0.001	0.005
	(0.001)	(0.002)	(0.001)	(0.003)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.003)
Sh natives with up-sec educ	-0.003*	-0.005	-0.003	-0.006	-0.005	-0.001	-0.004	0.000	-0.009**	-0.001	-0.006*	-0.009
	(0.002)	(0.003)	(0.002)	(0.004)	(0.003)	(0.001)	(0.002)	(0.001)	(0.004)	(0.001)	(0.003)	(0.006)
Share manufacturing empl	-0.005**	-0.005***	-0.004**	-0.005***	-0.005**	-0.004**	-0.003*	-0.003**	-0.003**	-0.003***	-0.004***	-0.006***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Share native unemployed	0.021***	0.031***	0.009	0.038**	0.025**	0.008**	0.023***	-0.002	0.042***	0.019***	0.032***	0.059***
	(0.006)	(0.011)	(0.006)	(0.016)	(0.010)	(0.004)	(0.008)	(0.002)	(0.014)	(0.004)	(0.009)	(0.021)
N	2198	2198	2198	2198	2198	2198	2198	2198	2198	2198	2198	2198

Note: Eur is short for Europe, Afr for Africa, Am for America. Share young natives are natives aged 0-24. Share old natives are natives aged 65+. Share natives with a tertiary education have a degree from a university or university of applied sciences (tertiary A) or from higher professional education (tertiary B). Share natives with an upper-secondary education have an apprenticeship or a matura as highest degree. Share manufacturing employment includes native and immigrant employment. Sources: FSO, ZEMIS.

Table A6—IV pre-tax earnings analysis for specific household earnings distributions

	10th	25th	50th	75th	90th	75-25th	90-10th
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: Earnings of singles without children							
Immigrant inflow rate	-2.135	-0.294	0.097	0.192	0.067	0.486	2.202
	(1.494)	(0.644)	(0.287)	(0.289)	(0.384)	(0.646)	(1.531)
Mean outcome	-0.009	-0.000	0.003	0.003	0.004	0.004	0.013
Sd outcome	0.311	0.124	0.060	0.053	0.072	0.126	0.317
Kleibergen-Paap F-stat	42.654	42.654	42.654	42.654	42.654	42.654	42.654
AR Wald F-stat (p-value)	0.140	0.643	0.738	0.510	0.863	0.444	0.141
N	19515	19515	19515	19515	19515	19515	19515
Panel B: Earnings of married households/civil unions with two children							
Immigrant inflow rate	-3.092*	-2.208***	0.158	0.372	0.556	2.581***	3.648**
	(1.798)	(0.804)	(0.350)	(0.364)	(0.467)	(0.878)	(1.858)
Mean outcome	0.030	0.014	0.011	0.010	0.010	-0.004	-0.020
Sd outcome	0.365	0.156	0.081	0.080	0.099	0.161	0.373
Kleibergen-Paap F-stat	42.722	42.722	42.722	42.722	42.722	42.722	42.722
AR Wald F-stat (p-value)	0.080	0.002	0.653	0.313	0.232	0.001	0.045
N	19505	19505	19505	19505	19505	19505	19505
Year FE	yes	yes	yes	yes	yes	yes	yes
Canton FE	yes	yes	yes	yes	yes	yes	yes

Note: Regressions in first differences at the municipality level over the time period 2010–2019 following Dustmann et al. (2013). The outcome is the one-year difference in log annual earnings of native households at different percentiles. The percentiles in Panel A refer to the native household-level earnings distribution of single persons without children and in Panel B to married persons with two minor children (Panel B). Year fixed effects and control variables (changes in the average age of 25-64 year old natives, in the share of natives with tertiary education, and in the share of natives with upper-secondary education) included. Standard errors in parentheses are clustered at the municipal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, FTA, ZEMIS.

Table A7—Impact on cantonal tax multiplier: IV robustness checks

	1-year diff		2-year diff		3-year diff		5-year diff	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Baseline specification								
Immigrant inflow rate	-6.038	-5.963**	-7.010	-8.269**	-5.668	-4.993**	-8.479*	-7.078***
	(3.702)	(2.743)	(4.428)	(4.040)	(4.106)	(2.271)	(4.626)	(2.707)
Mean outcome	0.005	0.005	0.012	0.012	0.016	0.016	0.029	0.030
Sd outcome	0.039	0.039	0.068	0.069	0.081	0.082	0.092	0.094
Kleibergen-Papp F-stat	3.581	17.128	5.645	12.594	1.595	16.323	1.943	12.335
AR Wald F-Stat (p-value)	0.258	0.073	0.251	0.091	0.337	0.071	0.260	0.068
Panel B: With weights								
Immigrant inflow rate	-3.110	-3.810**	-3.165	-4.364*	-3.475	-3.650**	-3.565	-4.450**
	(2.074)	(1.828)	(2.123)	(2.538)	(2.395)	(1.573)	(2.488)	(1.937)
Mean outcome	0.003	0.003	0.006	0.007	0.009	0.010	0.016	0.017
Sd outcome	0.026	0.027	0.045	0.046	0.057	0.059	0.067	0.069
Kleibergen-Paap F-stat	3.838	18.032	7.382	15.974	1.449	13.718	2.989	11.437
AR Wald F-Stat (p-value)	0.275	0.048	0.249	0.094	0.329	0.032	0.333	0.041
Panel C: Without controls								
Immigrant inflow rate	-7.018**	-6.756**	-8.315**	-9.546*	-6.876**	-6.131**	-8.006*	-7.500*
	(3.311)	(3.424)	(4.100)	(5.413)	(3.290)	(2.967)	(4.276)	(4.275)
Mean outcome	0.005	0.005	0.012	0.012	0.016	0.016	0.029	0.030
Sd outcome	0.039	0.039	0.068	0.069	0.081	0.082	0.092	0.094
Kleibergen-Paap F-stat	3.982	11.070	6.215	7.342	2.934	10.908	3.086	7.586
AR Wald F-Stat (p-value)	0.089	0.023	0.094	0.033	0.080	0.015	0.101	0.037
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Without Geneva	-	yes	-	yes	-	yes	-	yes
N	234	225	104	100	78	75	52	50

Note: IV regressions at the cantonal level over the time period 2010–2019. The outcome is the one-, two-, three- or five-year difference in the cantonal multiplier. Year fixed effects and in Panels A and B control variables (share adult women in 2010, share young in 2010, share married in 2010, share unemployed in 2010, share employed in manufacturing in 2000, log of the average per capita earnings in 2010, share living in urban areas in 2010) included. In Panel B, observations are weighted with the average total population over the sample period. In Panel C, no control variables are included. Standard errors in parentheses are clustered at the cantonal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, FTA, ZEMIS.

Table A8—Impact on municipal tax multiplier: IV robustness checks

	1-year diff		2-year diff		3-year diff		5-year diff	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Baseline specification								
Immigrant inflow rate	-1.724***	-1.192***	-2.394***	-1.600***	-1.565***	-1.020**	-1.619**	-0.969**
	(0.619)	(0.444)	(0.841)	(0.567)	(0.580)	(0.415)	(0.638)	(0.416)
Mean outcome	-0.001	-0.001	-0.003	-0.003	-0.003	-0.003	-0.005	-0.005
Sd outcome	0.034	0.034	0.048	0.048	0.062	0.062	0.081	0.081
Kleibergen-Paap F-stat	12.838	15.273	10.878	13.810	14.721	17.215	11.846	14.691
AR Wald F-Stat (p-value)	0.000	0.000	0.000	0.000	0.001	0.005	0.001	0.006
Panel B: With weights								
Immigrant inflow rate	-1.849***	-1.325***	-2.396***	-1.798***	-2.238**	-1.574***	-2.504**	-1.582***
	(0.590)	(0.353)	(0.601)	(0.391)	(0.945)	(0.520)	(1.000)	(0.479)
Mean outcome	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.004	-0.004
Sd outcome	0.030	0.030	0.043	0.043	0.054	0.054	0.071	0.071
Kleibergen-Paap F-stat	22.959	41.526	30.287	43.299	9.946	20.358	13.190	25.057
AR Wald F-Stat (p-value)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Panel C: Without controls								
Immigrant inflow rate	-0.701***	-0.447**	-0.972***	-0.616**	-0.568**	-0.310	-0.454**	-0.232
	(0.245)	(0.204)	(0.310)	(0.241)	(0.235)	(0.197)	(0.219)	(0.180)
Mean outcome	-0.001	-0.001	-0.003	-0.003	-0.003	-0.003	-0.005	-0.005
Sd outcome	0.034	0.034	0.048	0.048	0.062	0.062	0.081	0.081
Kleibergen-Paap F-stat	41.297	43.991	32.937	38.124	44.909	47.713	45.111	48.936
AR Wald F-Stat (p-value)	0.002	0.022	0.000	0.006	0.011	0.114	0.033	0.195
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Canton FE	-	yes	-	yes	-	yes	-	yes
N	19782	19782	8792	8792	6594	6594	4396	4396

Note: IV regressions at the municipality level over the time period 2010–2019. The outcome is the one-, two-, three- or five-year difference in the municipal multiplier. Year fixed effects and control variables (share adult women in 2010, share young in 2010, share married in 2010, share unemployed in 2000, share employed in manufacturing in 2000, log of the average per capita earnings in 2010, a dummy variable that is 1 if a municipality is considered urban in 2012 and 0 else) included. In the even columns we also include canton fixed effects. In Panel B, observations are weighted with the average total population over the sample period. In Panel C, no control variables are included. Standard errors in parentheses are clustered at the municipal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, FTA, ZEMIS.

Table A9—Impact on tax multipliers: including lagged immigrant inflow rate, IV results

	Cantonal multiplier		Municipal multiplier	
	(1)	(2)	(3)	(4)
Immigrant inflow rate	-12.982	-4.033	-1.332***	-0.814**
	(38.689)	(2.708)	(0.454)	(0.318)
Immigrant inflow rate t-1,t-11	-3.208	-0.601*	-0.050*	-0.055**
	(11.909)	(0.351)	(0.028)	(0.026)
Kleibergen-Paap F-stat	0.029	2.845	8.966	11.737
AR Wald F-Stat (p-value)	0.344	0.062	0.000	0.002
WCB immigrant inflow (p-value)	0.665	0.181		
WCB lagged immigrant inflow (p-value)	0.712	0.063		
Year FE	yes	yes	yes	yes
Canton FE	-	-	-	yes
Without Geneva	-	yes		
N	234	225	19782	19782

Note: IV regressions at the cantonal level over the time period 2010–2019. Year fixed effects and control variables according to Tables 5 and 6 included. WCB is short for wild cluster bootstrap. Standard errors in parentheses are clustered at the cantonal level (columns 1 and 2) and the municipal level (columns 3 and 4), respectively. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, ZEMIS.

Table A10—Impact on tax multipliers, heterogeneity by language region, IV results

	Cantonal multiplier		Municipal multiplier	
	(1)	(2)	(3)	(4)
Immigrant inflow rate	-8.322	-8.339*	-4.483*	-1.156
	(5.402)	(4.677)	(2.301)	(1.027)
Latin language region	0.007	0.005	-0.000	0.001
	(0.010)	(0.013)	(0.004)	(0.001)
Interaction	1.910	1.909	1.598	-0.050
	(2.466)	(2.649)	(1.094)	(0.566)
Mean outcome	0.005	0.005	-0.001	-0.001
Sd outcome	0.039	0.039	0.034	0.034
Kleibergen-Paap F-stat	1.990	2.344	1.968	1.811
AR Wald F-Stat (p-value)	0.458	0.184	0.000	0.000
WCB immigrant inflow (p-value)	0.117	0.087		
WCB interaction (p-value)	0.423	0.514		
Year FE	yes	yes	yes	yes
Canton FE	-	-	-	yes
Without Geneva	-	yes	-	-
N	234	225	19782	19782

Note: IV regressions in first differences over the time period 2010–2019. The outcome is the one year difference in the cantonal multiplier in columns (1) and (2) and the municipal multiplier in columns (3) and (4). The dummy Latin language region is 1 if the majority speaks French, Italian or Romansh within a canton or municipality. Year fixed effects and control variables according to Tables 5 and 6 included. WCB is short for wild cluster bootstrap. Standard errors in parentheses are clustered at the cantonal level (columns 1 and 2) and the municipal level (columns 3 and 4), respectively. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, FTA, ZEMIS.

Table A11—Impact on social aid transfers (broad measure) per recipient: IV robustness checks

	1-year diff	2-year diff	3-year diff	5-year diff
	(1)	(2)	(3)	(4)
Panel A: Baseline specification				
Immigrant inflow rate	-2.015	-2.727	-2.266	-2.539
	(3.771)	(4.208)	(4.106)	(4.299)
Mean outcome	0.012	0.021	0.036	0.062
Sd outcome	0.033	0.045	0.061	0.083
Kleibergen-Paap F-stat	18.032	15.974	13.718	11.437
AR Wald F-stat (p-value)	0.593	0.512	0.590	0.575
Panel B: Without weights				
Immigrant inflow rate	-6.897	-7.719	-5.914	-6.809
	(4.800)	(5.684)	(4.567)	(5.478)
Mean outcome	0.012	0.019	0.035	0.062
Sd outcome	0.040	0.050	0.069	0.103
Kleibergen-Paap F-stat	17.128	12.594	16.323	12.335
AR Wald F-stat (p-value)	0.124	0.149	0.192	0.231
Panel C: Without controls				
Immigrant inflow rate	-1.577	-2.167	-1.624	-0.903
	(3.501)	(3.449)	(3.570)	(3.447)
Mean outcome	0.012	0.021	0.036	0.062
Sd outcome	0.033	0.045	0.061	0.083
Kleibergen-Paap F-stat	24.442	15.689	23.721	16.100
AR Wald F-stat (p-value)	0.653	0.516	0.650	0.795
Year FE	yes	yes	yes	yes
N	225	100	75	50

Note: Regressions in first differences at the cantonal level over the time period 2010–2019. The outcome is the one-year difference in the log of social aid transfers (broad measure) per recipient. Year fixed effects and in Panels A and B control variables (share adult women in 2010, share young in 2010, share married in 2010, share unemployed in 2010, share employed in manufacturing in 2000, log of the average per capita earnings in 2010, share living in urban areas in 2010) included. In Panel B, observations are unweighted. In Panel C, no control variables are included. Observations for the canton of Geneva are excluded from the sample. Standard errors in parentheses are clustered at the cantonal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, ZEMIS.

Table A12—Impact on social aid transfers (narrow measure) per recipient: IV robustness checks

	1-year diff	2-year diff	3-year diff	5-year diff
	(1)	(2)	(3)	(4)
Panel A: Baseline specification				
Immigrant inflow rate	0.517	-0.026	-1.573	0.540
	(2.579)	(3.064)	(4.484)	(2.263)
Mean outcome	0.022	0.042	0.067	0.112
Sd outcome	0.066	0.089	0.109	0.135
Kleibergen-Paap F-stat	18.032	15.974	13.718	11.437
AR Wald F-stat (p-value)	0.856	0.994	0.739	0.841
Panel B: Without weights				
Immigrant inflow rate	-10.883	-12.081	-9.677	-8.401
	(7.077)	(8.135)	(7.142)	(7.021)
Mean outcome	0.023	0.041	0.069	0.118
Sd outcome	0.100	0.125	0.155	0.216
Kleibergen-Paap F-stat	17.128	12.594	16.323	12.335
AR Wald F-stat (p-value)	0.085	0.074	0.167	0.220
Panel C: Without controls				
Immigrant inflow rate	3.319	2.543	2.342	5.203
	(3.971)	(3.784)	(5.187)	(4.178)
Mean outcome	0.022	0.042	0.067	0.112
Sd outcome	0.066	0.089	0.109	0.135
Kleibergen-Paap F-stat	24.442	15.689	23.721	16.100
AR Wald F-stat (p-value)	0.438	0.542	0.672	0.262
Year FE	yes	yes	yes	yes
N	225	100	75	50

Note: Regressions in first differences at the cantonal level over the time period 2010–2019. The outcome is the one-year difference in the log of social aid transfers (narrow measure) per recipient. Year fixed effects and in Panels A and B control variables (share adult women in 2010, share young in 2010, share married in 2010, share unemployed in 2010, share employed in manufacturing in 2000, log of the average per capita earnings in 2010, share living in urban areas in 2010) included. In Panel B, observations are unweighted. Observations for the canton of Geneva are excluded from the sample. Standard errors in parentheses are clustered at the cantonal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, ZEMIS.

Appendix B: Data, Variables, Sample

Tax multipliers and tax rates The tax data are publicly available from 2010 onwards. In the original data set, the year of a multiplier or a tax rate refers to the year when it is in place t. For our data set, we adjust the time variable such that the year refers to the year when the relevant decision by the authorities was made $(t-1)$. We report the multipliers as factors, so that a multiplier recorded as 100 (%) in the original dataset is equal to a factor of 1. Multipliers are defined at the cantonal and municipal level. Some of the municipalities merged with others during our observation period. We use the total population in 2010 to weight the multipliers of the municipalities that merged. Tax rates are defined at the federal and cantonal level. They are applied to the taxable income, which is the income net of social security contributions minus the deductions that are specified in the tax law.

We also consider publicly available information on possible tax deductions from 2019. Tax deductions are defined as either lump-sum, as a percentage of some reference value (such as labor earnings, professional expenses, property values) that can be combined with minimum and maximum deduction values, or as effective expenditures typically combined with a maximum deduction value. In our decomposition exercise (see Section V.E), we compute the minimal applicable tax deduction for each household type. Specifically, we consider lump-sum deductions and minimum values if a category applies to a household. We ignore deductions that are defined as a percentage of a reference value and effective expenditures due to a lack of data. We consider the following three most common household types: single persons without minor children, married households without minor children, married households with two minor children.

Earnings We use earnings data from the Swiss Central Compensation Office (CCO). The CCO is the implementing body of the old-age and survivor's insurance as well as the disability insurance and collects data on all earnings that are subject to these social security insurances. Reported earnings are gross earnings net of the mandatory social security contributions (old-age and survivor's insurance, disability insurance, unemployment insurance). Each person has an individual account at the CCO showing the different earnings components by source in separate entries. There are 10 different earnings categories related to the type of earnings such as employment, self-employment or non-employment. Within these categories, the entries have settlement numbers that allow us to identify income received from certain insurances. We sum up the relevant components at the individual by year level.

In our baseline specification, we focus on earnings from dependent employment. To compute yearly earnings, we use the earnings received from employers that are liable to pay contributions (earnings category 1 in the data set) and from employers that are not liable to pay contributions (category 2). In the latter case, employees are compulsorily insured and pay the relevant contributions themselves. Examples are employees working

at embassies of other countries or foreign companies without business domicile in Switzerland.[33] We keep individuals with earnings that belong exclusively to these two categories in a given year. The resulting group of individuals account for 83.2 percent of all observations in the CCO data. Individuals with additional earnings from other categories such as self-employment are thus excluded in this baseline sample.[34] Within categories 1 and 2, we further only keep individuals who do not receive income in the form of disability benefits, unemployment benefits, or income compensation allowances in the event of service, maternity, paternity, caring for a sick child or adoption in the same year.[35]

To compute earnings from employment including insurance payments (disability insurance, unemployment benefits, income compensation allowance in the event of service, maternity, paternity, caring for a sick child or adoption), we consider the total earnings from employees (categories 1 and 2). We keep individuals with earnings exclusively from these two categories. We treat negative entries the same way as described above.

To compute total earnings, we include earnings from all available sources except from the two categories that consist of fictive earnings. These fictive earnings are used to calculate the pension of non-employed individuals (category 4) and of divorced people (category 8) and make up 7.0 percent out of all entries in the CCO data. The entries that we consider are earnings including insurance payments from employment (categories 1 and 2, 92.6 percent of all earnings), self-employment (categories 3 and 9, 5.3 percent) and three negligible categories which, ordered by their monetary relevance, are non-pension earnings, earnings of the voluntary insured, and earnings settled by an outdated system.

Immigrants Immigrants and refugees are individuals with a nationality other than that of Switzerland. The allocation to one of the two groups is linked to the permit type. Refugees have an F- (provisionally admitted foreigners) or a N-permit (permit for asylum-seekers). Immigrants have an L- (short-term residents), B- (resident foreign nationals), C- (settled foreign nationals) or G-permit (cross-border commuters). Our sample consists of all foreign nationals who reside in Switzerland, excluding cross-border commuters. The Swiss State Secretariat for Migration (SEM) provides data on the stock of foreign nationals as of the 31st of December in a year. Information on refugees is available at the individual level for the period 1994-2021. Aggregate information on immigrants by nationality and permit-type is available at the municipal level for the years 1996-2001. From 2002 onwards, we have access to individual level immigration data. We compute the immigrant inflow rate as the change in the number of immigrants divided by the total

[33] https://www.sva-ag.ch/arbeitgebende/sie-als-arbeitgeber/internationale-geschaftstatigkeit/arbeitnehmende-ohne.

[34] Note that we disregard fictive earnings that are required to compute the pension of divorced people (category 8) in all earnings definitions.

[35] There are some negative entries of which most are flagged as "reversal". A reversal is a correction of an entry, usually from the same year. We delete 35 negative entries from 2016 not flagged as a reversal because they cannot be explained by the CCO. We keep the negative entries flagged as reversal when summing up the different components at the yearly level, but drop observations with a negative sum of yearly earnings. This applies to only 0.01% of the observations.

population in the base period.

In constructing the instrument, we aggregate foreign nationals from Kosovo, Montenegro and Serbia because the allocation to these individual countries is inconsistent over time. Individuals with an unknown nationality, with no nationality or with missing information are categorized into a group "unknown". We define the top five sending countries as those with the largest increase in the stock of foreign nationals between 2010 and 2019. These are Portugal (increase of 58,381 individuals), France (45,488), Germany (41,538), Italy (36,694) and Eritrea (30,895). Together, these countries account for 51.0 percent of the total increase in the immigrant stock. We group all other countries into twenty geographic regions. These are Western and Southwestern Europe, Northern Europe, Eastern Europe, Central Europe, Southern Europe, Southeastern Europe, North Africa, Eastern Africa, Central Africa, Western Africa, Southwestern Africa and South Africa and Southeastern Africa, North America, Caribbean and Central America, South America, Northern and Eastern Asia, Central Asia, Western and Southwestern Asia, Southern and Southeastern Asia, Oceania, and Unknown. The predicted immigrant inflow rate is the change in the number of immigrants by nationality group measured at the country level multiplied with the share of immigrants by nationality group measured at the municipality level in the base year 1996. This product is then divided by the total population in the base period.

Control variables In the tax analysis, we follow Mayda et al. (2023) and include the share of women of 25 years of age or older ("share adult women"), the share of people below 25 years of age ("share young") and the share who is married. All of these shares are relative to the total population and measured in 2010 with data from the STATPOP. We also include the share of unemployed in the labor force in 2010, provided by the State Secretariat for Economic Affairs, and the share of workers employed in the manufacturing sector in 2000 from the census. In the municipal analysis, we use census data from 2000 to measure both of these control variables. We add the log of the average per capita earnings in 2010 that is computed based on the CCO data. Finally, we include the share that lives in urban areas by combining population data from 2010 and information on urban municipalities from 2012. At the municipality level, we use a dummy that equals 1 if the municipality is defined as urban in 2012 and that equals 0 otherwise.

In the earnings analysis, we follow Dustmann et al. (2013) and include the difference in average age, share of natives with a tertiary education and share of natives with an upper-secondary education as control variables. Average age is computed for the group of natives between 25 and 64 years of age based on STATPOP data. Tertiary education includes degrees from universities, universities of applied sciences and higher technical and vocational degrees. Upper-secondary education includes vocational and general degrees (e.g., apprenticeship, maturity certificate). We use data from the Structural Survey (SE) to measure the share of natives with a certain educational degree using the available survey weights.

Other data The cantonal revenues and expenditures are taken from the Federal Finance Administration (EFV). To compute the revenues and expenditures per capita, we divide the values by the total population. In the analysis, we use the change in the log of these per capita values as outcome variable. Data on social transfers are taken from the Financial Statistics on Social Assistance (FIBS), provided by the FSO. The data set includes the sum of the federal, cantonal and municipal social transfers aggregated at the cantonal level. The information on the narrow measure of social transfers is reported by recipient. The broad measure of social transfers by recipient is a combination of two data sets, one comprising the aggregate expenditures and another one the number of receivers.

Sample In the tax multiplier analysis, the sample consists of all municipalities as defined in December 2020. These are 2,198 municipalities located in 26 cantons.

In the earnings analysis, the sample consists of individuals with positive earnings who are part of the STATPOP data set. We keep Swiss nationals (natives) aged between 25 and 64. In our main specification, we merge the earnings of the spouse who can be of any age and nationality and add up the earnings of those who are married or in civil union since they are taxed as a unit. In a few cases, we cannot identify the spouse in the STATPOP although the individual is married or in civil union. This most likely applies to situations where the spouse resides abroad. Around 3.3 percent of the natives who are married have missing information on the spouse in the data set. The corresponding share of natives in civil union is 0.5 percent.