Immigration, Inequality and Income Taxes*

Mirjam Bächli
HEC University of Lausanne

Albrecht Glitz
Universitat Pompeu Fabra,
Barcelona School of Economics
and IPEG

June 2023

Preliminary - please do not cite or circulate

Immigration may affect income inequality not only by changing factor prices but also by inducing policy makers to adjust their income tax schedules. We assess the relative importance of these economic and political channels using administrative data from Switzerland where local authorities have an unusually high degree of tax autonomy. We show that higher immigrant inflows not only raise gross earnings inequality but also reduce the progressivity of local tax schedules, further increasing after-tax inequality. Our estimates suggest that up to 14.2 percent of the total impact of immigration on net earnings inequality can be attributed to the political channel.

Keywords: *Immigration, Income Taxes, Earnings Inequality*

JEL Codes: *H23, H24, H71, J31, J61*

* We thank Raphaël Parchet for sharing his expertise on local tax multipliers in Switzerland (Parchet, 2019). Albrecht Glitz gratefully acknowledges financial support from the Spanish Agencia Estatal de Investigación (AEI), through the Severo Ochoa Programme for Centres of Excellence in R&D (Barcelona School of Economics CEX2019-000915-S), and the Spanish Ministerio de Ciencia e Innovación and Agencia Estatal de Investigación (through Ramón y Cajal Grant RYC-2015-18806 and PID2020-114231RB-I00/MICIN/AEI/10.13039/501100011033).

I. Introduction

After settling down in their host countries, immigrants often end up working in the low-skilled segment of the labor market, especially in the early years after arrival. In such a situation, standard neoclassical labor market models predict that, by changing relative skill supplies, immigration affects equilibrium skill prices in the economy, lowering the wages of unskilled workers relative to those of skilled workers. A large fraction of host-country populations believes in this prediction: 51.3 percent of the respondents in the European Social Survey (ESS, 2002) agree that immigrants harm the economic prospects of the poor more than those of the rich, compared to only 26.4 percent who disagree with that statement. An extensive literature surveyed by Dustmann et al. (2016) and Edo (2019) has analyzed and quantified the extent to which immigration contributes to rising wage inequality. The main outcome of interest in almost all studies are skill-specific gross wages 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 wages are less important than after-tax wages as the latter largely determine people's disposable income. Since income taxes are determined by host country authorities and therefore potentially responsive to immigrant inflows, the impact of immigration on gross wage inequality may differ from the impact on net wage inequality. A 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 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 setting their income tax rates, generating substantial variation across both locations and time. To deal with the issue that immigrant inflows are likely to be endogenous to local income tax rates and economic conditions more broadly, we instrument these inflows with the well-known ethnic enclave instrument popularized by Card (2001). Using administrative data on the number of immigrants from the Swiss State Secretariat for Migration and information on local tax rates from the Federal Tax Administration, we first show that immigration increases gross earnings inequality between native low and high earners. We then provide robust evidence that both cantons and municipalities respond systematically to higher inflows of immigrants by reducing their local tax multipliers, which dampens the progressivity of their tax schedules and increases after-tax earnings inequality.

In the second part of the analysis, we decompose the total impact of immigration on relative net earnings inequality into a *political channel* due to changes in the prevailing

[1] Out of the 48 original articles cited in recent surveys by Dustmann et al. (2016) and Edo (2019), 46 use pre-tax wages as their dependent variable of interest. The remaining two papers use after-tax wages but do not further discuss this particular aspect of their analysis.

income tax schedules (as reflected by local tax multipliers) and an *economic channel* due to changing equilibrium skill prices (as reflected by gross earnings). Our estimates suggest that, depending on the inequality measure used, between 11.7 and 14.2 percent of the total impact of immigration on net earnings inequality can be attributed to the political channel, implying that local authorities significantly reinforce the impact of international migration on inequality.

Our analysis speaks to a large literature on the distributional impact of immigration. This literature has largely focused on the labor market impact of immigration and the *economic channel* through which immigration may affect inequality in the receiving countries (see e.g. Borjas, 2003; Card, 2009; or Ottaviano and Peri, 2012). More recently, several studies, reviewed by Alesina and Tabellini (2021), have shown that immigration tends to lower natives' support for redistribution (e.g. Dahlberg et al., 2012; Alesina et al., 2023; Alesina et al., 2021), and that this shift in preferences translates into actual adjustments in tax policies and public spending. Tabellini (2020), for instance, shows that in the context of U.S. immigration in the early 20th century, property tax rates and local public spending were lower in cities that received higher inflows of immigrants. In contrast, Chevalier et al. (2018) find that the arrival of forced migrants in West Germany after World War II resulted in higher local taxes and spending. A key difference of the latter study relative to the U.S. context and the Swiss setting considered here, is that the German expellees had voting rights and could therefore influence policy setting. We contribute to this nascent 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 by Chevalier et al. (2018) and Tabellini (2020) who study immigration-induced adjustments in local business and property taxes (among other non-tax-related outcomes) which, while clearly vital sources of local revenues and public spending, are arguably secondary drivers of inequality relative to the income tax.

II. Institutional Setting

Among OECD countries, Switzerland has one of the highest immigrant population shares. In 2020, 29.9 percent of its resident population was foreign-born, an increase of 3.8 percentage points relative to 2010 (OECD, 2021), with most immigrants originating from Germany (14 percent), Italy (10 percent) and Portugal (8 percent). Over the last decade, there have also been sizeable inflows from countries like Poland, Romania, China, and Hungary. Contrary to many other European host countries, immigrants in Switzerland tend to be relatively highly educated, with 36.6 percent having tertiary education compared to 36.5 percent of the native Swiss working-age population (see Table 1). However, immigrants are significantly over-represented in the population with less than upper-secondary education (32.2 vs. 8.9 percent) and among the unemployed (6.3 vs. 2.6 percent). 66.4 percent of the native workers and 74.0 percent of the immigrant workers

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
Share men with full workload (fw)	0.891	0.312	0.917	0.276	0.922	0.269
Share women with full workload (fw)	0.401	0.490	0.526	0.499	0.670	0.470
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
Log annual earnings men (fw)	11.354	0.714	11.231	0.692	11.177	0.736
Log annual earnings women (fw)	11.074	0.661	11.002	0.718	10.969	0.790

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. Sources: CCO, SE.

are employed full-time, with most of this difference due to Swiss women's relatively low propensity to work full-time. In terms of annual earnings before taxes, immigrants earn about 10.5 log points less than natives. This difference increases the lower the workload. Immigrants working full-time earn about 11.7 log points less than natives, and immigrants working part-time between 20.5 and 22.0 log points less. These earnings differences are more pronounced between recent immigrants and natives. Among full-time workers, natives and immigrants with tertiary education or less than upper secondary education have very similar earnings, but among the large group of people with upper-secondary education, immigrants earn 13.8 log points less than natives. Finally, immigrant men working full-time earn 12.3 log points less than native men and immigrant women 7.2 log points less than native women.

Switzerland taxes an individual's income on an annual basis at the place of residence.[2] 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 constitute a major source of revenue, especially at the municipal level where they account

[2]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, with the exception of individuals without Swiss nationality and settlement permit who are taxed at the source (their income tax is directly deducted from their wage).

Table 2—Summary statistics

	Mean	Sd	Min	Max
Log population	7.369	1.249	3.332	12.964
Share immigrants in population	0.164	0.097	0.000	0.694
Immigrant inflow rate	0.003	0.003	-0.003	0.043
Municipal tax multiplier	1.191	0.571	0.250	5.250
Cantonal tax multiplier	1.538	0.769	0.500	3.350
Municipal tax multiplier (demeaned)	0.000	0.045	-0.649	0.435
Cantonal tax multiplier (demeaned)	0.000	0.034	-0.245	0.310
Change in municipal tax multiplier	-0.002	0.035	-0.500	0.550
Change in cantonal tax multiplier	0.003	0.023	-0.410	0.300

Note: The unit of observation is the municipality. 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 demeaned multipliers are the residuals from a regression of the multiplier on municipal or cantonal fixed effects, respectively. The time period considered is 2010–2019. Sources: FSO, FTA, ZEMIS.

for 38.3 percent of total revenue in 2019 (compared to 29.0 percent at the cantonal and 14.9 percent at the federal level).[3] 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 deductable 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). At the cantonal level in 2020, a single person without children can deduct on average at least 6,760 Swiss francs from her income net of social security contributions and a married person with two children on average at least 28,550 Swiss francs. Persons living together in marriage or civil union are taxed as a unit, i.e. their incomes added up.

The federal government and each canton define their own tax schedule in the tax law. The federal tax rates are uniform across all municipalities, the cantonal tax rates uniform across all municipalities within a canton.[4] Tax rates are progressive both at the federal level and in most cantons. The federal government and 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 union. Alternatively, some cantons have a single tax schedule but apply a splitting factor for the latter group of individuals.[5] A splitting

[3]Other municipal income sources are: 23.2 percent other taxes, 16.9 percent fees (*Entgelte*), 11.3 percent transfers (*Transfereinnahmen*), 6.1 percent financial income (*Finanzeinnahmen*), 2.9 percent capital income (*Investitionseinnahmen*), 1.1 percent fund withdrawals (*Entnahmen aus Fonds und Spezialfinanzierungen*), 0.8 percent rights and concessions (*Regalien und Konzessionen*), 0.4 percent other income (*übrige Einnahmen*). See the website of the FSO for an overview. Note that Switzerland also levies a wealth tax on its residents, both at the cantonal and municipal level. In comparison to income taxes, wealth taxes contribute relatively little to local revenues, generating 6.2 percent and 5.2 percent of total revenue at the municipal and cantonal level, respectively.

[4]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 over the years 2015–2019. Both cantons did not change the municipal tax rates during our observation period 2010–2019.

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

Table 3—Range of average tax rate by taxable income and civil status

	25,000	50,000	75,000	100,000	500,000
Single without children	2.9-22.1%	6.0-22.6%	8.8-24.0%	10.5-26.8%	21.1-43.2%
Married or single with children	0.0-21.8%	3.0-22.2%	5.1-22.9%	7.1-23.7%	19.3-39.4%

Note: The reported values in the cells show the range of the average tax rate across municipalities in 2020 (corresponding to the term in parentheses in Equation (1)). The column headers indicate the taxable income in Swiss francs. The tax rates are shown for two tax subjects: singles without children in the first row and singles with children, married persons or person in civil union in the second row. Source: FTA, own calculations.

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. Occasionally, a change in the tax law requires a mandatory referendum. Because of these procedural hurdles, tax rates change relatively little over time.[6]

Cantonal tax rates are multiplied with tax multipliers to calculate the effective tax liability at the cantonal and municipal level. The basic formula that translates taxable income (gross income minus deductions) w_g into after-tax income w_n is given by:

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

where τ_f denotes the federal tax rate, τ_c the 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. The cantonal tax laws outline in what periodicity and, less often, within what range the legislative (cantonal parliaments, municipal parliaments or assemblies) sets the multiplier.[7] Multipliers are typically adjusted annually according to financial needs. Changes are subject to optional or mandatory referendums depending on the tax law. As shown in Table 2, there is significant regional variation in these multipliers, ranging from 0.50 in the canton of *Basel-Stadt* to 3.35 in the canton of *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*).

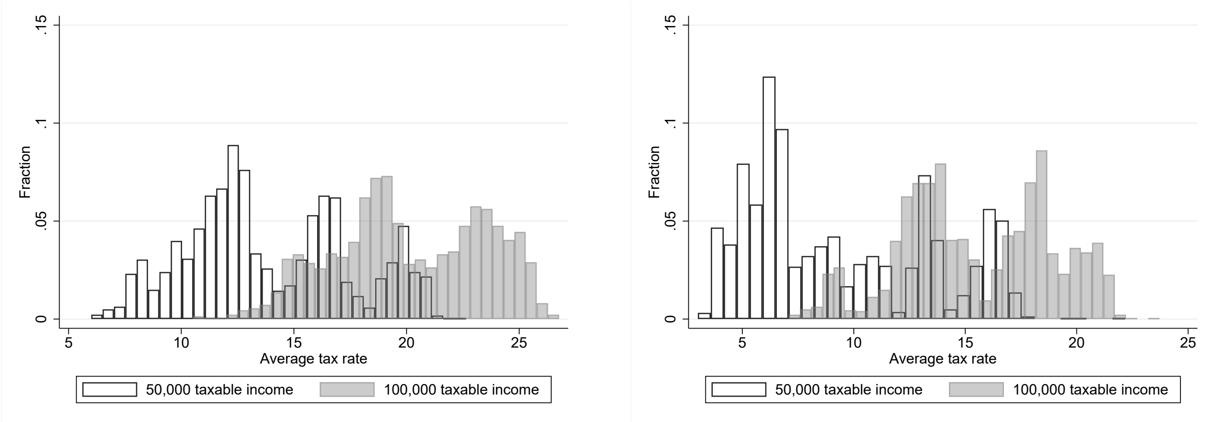
The interaction of locally determined tax rates and tax multipliers generates substantial variation in average tax rates across Swiss municipalities. Table 3 documents this variation by means of some examples. A single person without children and with a taxable income of 75,000 Swiss francs pays between 8.8 and 24.0 percent income taxes in 2020 depending

[6] In eight out of 26 cantons, there were no changes in the tax rates during the period 2010–2020. Ten cantons changed the tax rate once, five cantons at least twice. The remaining three cantons made yearly changes. The frequency of these changes can be linked to different indexing mechanisms to inflation.

[7] For example, the tax law of the canton of Zurich defines that the cantonal tax multiplier is set for two-year periods by the cantonal parliament, and that the municipal multiplier is set every year. In general, the members of the cantonal and municipal parliaments are elected for a period of 4 years.

Figure 1. Distribution of average tax rate by taxable income and civil status

(A) Single without children (B) Married or single with children



Note: The figures show the distribution of the average tax rate across Swiss municipalities in 2020 (corresponding to the term in parentheses in Equation (1)). The tax rates are shown for two tax subjects: singles without children in Panel A, and singles with children, married persons or person in civil union in Panel B. Source: FTA, own calculations.

on the municipality in which she lives. For a taxable income of $25,000$ Swiss francs, the range extends from 2.9 to 22.1 percent and for a taxable income of $500,000$ Swiss francs from 21.1 to 43.2 percent. Being married or single with children generally reduces the tax burden. Figure 1 further illustrates the regional variation in average tax rates.

Disposable income – the arguably relevant measure when studying inequality – is the sum of gross income from labor and capital plus transfer income (e.g. social insurance payments) minus transfer expenditures (e.g. social security contributions, health insurance premia, and taxes). Both types of transfers redistribute income and can thus be used to reduce inequality between low and high earners.[8] While the focus of our analysis is on after-tax labor income as a proxy for disposable income, we also test whether local government transfers respond systematically to the inflow of immigrants in Section V.

III. Empirical Framework

Starting from Equation (1) and using earnings as a proxy for income, log after-tax earnings are approximately given by:

$$\ln w_n \approx \ln w_g - \tau_f - \tau_c \times multiplier_c - \tau_c \times multiplier_m \tag{2}$$

Let $\ln w_g^{high}$ and $\ln w_g^{low}$ denote some high and low reference values of pre-tax earnings in each municipality (e.g. the 90$^{\text{th}}$ and 10$^{\text{th}}$ percentile). Local after-tax earnings inequality

[8] 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).

can then be expressed as

$$\ln\left(\frac{w_n^{high}}{w_n^{low}}\right) \approx \ln\left(\frac{w_g^{high}}{w_g^{low}}\right) - (\tau_f^{high} - \tau_f^{low}) - (\tau_c^{high} - \tau_c^{low}) \times (multiplier_c + multiplier_m) \tag{3}$$

An immigrant inflow into a given municipality can thus affect net earnings inequality in two distinct ways. First, immigration may change equilibrium skill prices by altering relative skill supplies in the local economy, which would be reflected in a change in gross earnings inequality. Second, through the political process, immigration may induce local authorities to adjust their tax rates and/or multipliers. Differentiating Equation (3) with respect to a measure of the immigration shock yields the following expression

$$\begin{aligned}\frac{d\ln(w_n^{high}/w_n^{low})}{d\,I} \approx\ & \underbrace{\frac{d\ln(w_g^{high}/w_g^{low})}{d\,I}}_{\text{Impact on gross earnings}} \\ & - \underbrace{(\tau_c^{high} - \tau_c^{low})\left(\frac{\partial\, multiplier_c}{\partial\, I}\right)}_{\text{Impact on cantonal multipliers}} \\ & - \underbrace{(\tau_c^{high} - \tau_c^{low})\left(\frac{\partial\, multiplier_m}{\partial\, I}\right)}_{\text{Impact on municipal multipliers}} \\ & - \underbrace{\left(\frac{\partial(\tau_c^{high} - \tau_c^{low})}{\partial\, I}\right) \times (multiplier_c + multiplier_m)}_{\text{Impact on cantonal tax rates}} \end{aligned} \tag{4}$$

The first term on the right-hand side of Equation (4) represents the impact of immigration on gross earnings inequality, accounting also for possible labor supply adjustments in response to changing tax schedules. This is the causal effect that most studies in the literature focus on. The second and third term represent the impact of immigration on the cantonal and municipal tax multipliers. These terms show that, as long as cantons have progressive income tax schedules ($\tau_c^{high} > \tau_c^{low}$), a decrease in either of these multipliers will increase net earnings inequality. The last term represents the impact of immigration on the cantonal tax rates at different parts of the earnings distribution.[9]

In our empirical analysis, we estimate each of the four impacts shown in Equation (4) separately, taking into account that the relevant relationships operate on different geo-

[9]Equation (4) abstracts from two additional channels through which immigration may affect net earnings inequality. First, immigration may have a direct impact on the federal income tax schedule. Since it is not possible to empirically separate this impact from other changes on the national level in Switzerland, we are not able to systematically assess the relevance of this channel. Second, due to the progressivity of the federal and cantonal tax schedules, individuals end up facing different average tax rates when their gross earnings change due to immigration, even if the tax schedules themselves remain unaltered. Such mechanical changes in the average tax rates are likely to be quantitatively small. Appendix B shows the full derivation including these two additional mechanisms.

graphical levels. The impact on gross earnings is estimated using variation in immigrant inflows across Swiss municipalities. As a robustness check, we also show corresponding results on the level of commuting zones (which may better proxy for local labor markets). The impacts on the cantonal multipliers and tax rates are estimated using variation across cantons, and the impact on the municipal multipliers using variation in immigrant inflows across municipalities. For each regional unit, we construct the relevant outcome variable and regress them on the local immigrant inflow rate:

$$y_{rt} = \alpha + \beta \left(\frac{\Delta I_{rt}}{P_{rt-1}} \right) + \delta_r + \delta_t + \varepsilon_{rt} \qquad (5)$$

where y_{rt} is either $\Delta \ln(w_g^{high}/w_g^{low})$, $\Delta multiplier_c$, $\Delta multiplier_m$ or $\Delta(\tau_c^{high} - \tau_c^{low})$. We focus on the interquartile ($75^{\text{th}} - 25^{\text{th}}$ percentile) and interdecile ($90^{\text{th}} - 10^{\text{th}}$ percentile) earnings gaps but also show separate estimates for specific individual percentiles. The impact of immigration on net earnings inequality is then given by the sum of the appropriately scaled coefficients $\widehat{\beta}$, allowing a direct comparison of the relative importance of the *economic channel*, as captured by the impact on gross earnings inequality, and the *political channel*, as captured by the impact on the cantonal tax rates and local multipliers, through which immigration may affect 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 making their location decisions. 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 yearly inflows by nationality measured at the national level:

$$predicted\ inflow\ rate_{rt} = \frac{1}{P_{rt-1}} \sum_o \frac{immigrants_{or1996}}{immigrants_{o1996}} \times \Delta immigrants_{ot} \qquad (6)$$

where $\Delta immigrants_{ot}$ represents the total inflow of immigrants with nationality o into Switzerland between year $t-1$ and t. The *predicted inflow rate* will then serve as an instrumental variable for the observed changes in local immigrant shares $\Delta I_r / P_{rt-1}$. In practice, we distinguish between 25 different immigrant groups: the top five countries of origin in terms of observed inflow rates into Switzerland between 2010 and 2019 (Portugal, France, Germany, Italy, Eritrea) and 20 broader geographical regions comprising all other source countries.

IV. Data

Our main estimation samples are compiled from three different sources. We obtain information on Swiss residents' personal characteristics (age, gender, civil status, children, country of birth, municipality of residence) from the 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 the STATPOP data with earnings information from the Central Compensation Office (CCO). These administrative data comprise all income that is subject to social security contributions (e.g. earnings from 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 are gross earnings net of social security contributions.[10] In our main analysis, we consider earnings from employment only, in line with much of the existing literature.[11] The personal characteristics from the STATPOP data allow us to proxy taxable income and assign individuals to the relevant tax brackets, which, apart from income, depend on the taxpayers' civil status, place of residence, and on whether they have children. Our main sample covers the pre-COVID period 2010–2019 and includes native (Swiss-born) men and women aged 25 to 64. At the household level, we add up the earnings of married individuals or those in civil unions as they are taxed as a unit. In this process, we do not impose any restrictions on the age and nationality of the spouse or partner.

Since the administrative STATPOP and CCO data do not provide information on hours worked, we collect these data from the Structural Survey (SE) of the FSO. The SE is a mandatory survey with more than 250,000 observations annually 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 year. The resident population comprises individuals who have been living in the country for at least 12 months or have a permit for more than 12 months. We use information on 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. Of our sample of native employed men aged 25-64, 89.1 percent work full-time over the period 2010-2019, compared to only 40.1 percent of similarly aged women.

To compute local immigrant inflow rates, we rely on administrative data on the stock

[10] Social security contribution rates vary over time. The rate for the first pillar of social insurance (old age, disability, supplementary benefits, unemployment) is the same for all employed workers and has a reduced rate for incomes above a certain threshold. In 2021, employees with an annual labor income of up to 148,200 Swiss francs pay 6.4 percent of their gross earnings. The contribution rates for the second pillar of social insurance (pension) depend on both age and income levels. For example, employees aged between 35 and 44 with an annual labor income above 21,510 Swiss francs in 2021 pay 10 percent of their gross wage within the range of 25,095 and 86,040 Swiss francs. Labor incomes above the upper threshold can be voluntarily insured by the employer at different rates.

[11] We drop individuals who earn income from both employment and some other source in the same year, e.g. employment and self-employment or employment and unemployment.

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 2020. Data for the period 1996 to 2001 are available in aggregated form at the municipal level. The data contain information on individual characteristics, nationality, place of residence, and permit type as reported on 31 December of each year. We use information on individuals' nationality to build the immigrant inflow rates. Our sample covers immigrants with a short-term (L-permit), long-term (B-permit) and settlement permit (C-permit), as well as asylum seekers (N-permit) and temporarily admitted refugees (F-permit). We compute the inflow of new immigrant as the difference in the stocks of immigrants between two periods using the SEM data, and normalize this inflow by the total local population in the base year obtained from the STATPOP data.

All income tax data (tax multipliers, tax rates, deductions) are provided by the Federal Tax Administration (FTA) since 2010.[12] Multipliers are set before the start of the new calendar year, typically in the previous fall. In our sample, the multipliers refer to the year when they are set. 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 social transfers, we use annual data from the Financial Statistics on Social Assistance (FIBS) provided by the FSO. These expenditures include net transfers on social aid and are measured in two ways. One measure captures the financial benefits to cover the subsistence minimum (narrow definition). It is available per capita and per recipient. Another one captures financial and supplementary benefits such as maintenance advances and supplementary benefits to old age and invalidity insurance payments (broad definition), and separately the number of recipients. Financial benefits are only paid out when the supplementary benefits are not sufficient. The social assistance rate for the narrow measure is 3.2 percent and for the broad measure 9.5 percent in 2019. Data on the sum of federal, cantonal, and municipal expenditures are available at the cantonal level.

V. Main Results

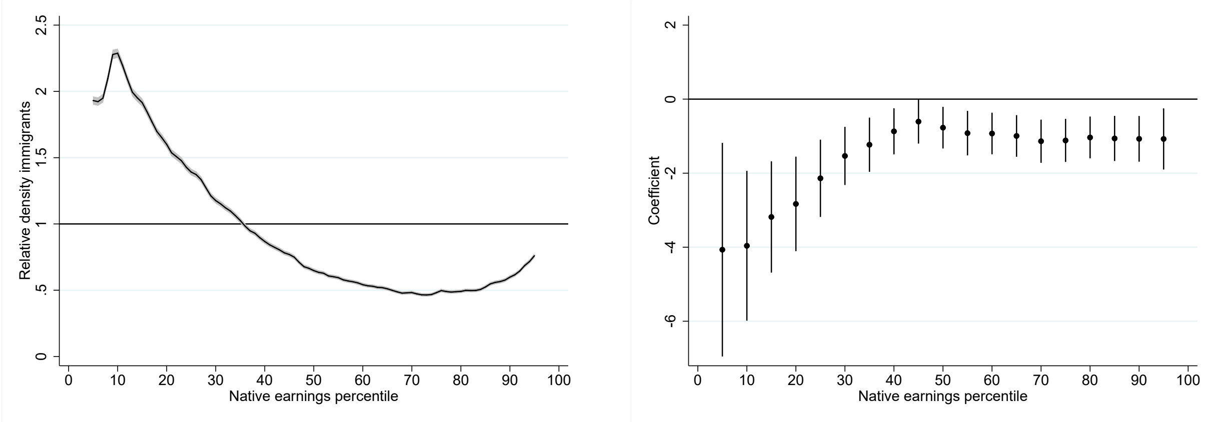
A. Impact on Earnings Inequality

We start the presentation of our empirical results by documenting the impact of immigration on pre-tax earnings inequality. We follow the approach proposed by Dustmann et al. (2013) and regress one-year changes in the log annual earnings at different percentiles of the native earnings distribution on the local immigrant inflow rate. In our preferred specification, we run these regressions at the municipality level. In the appendix, we also show specifications on the commuting zone level as this is the relevant level at which

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

Figure 2. Earnings distribution and impacts

(A) Earnings distribution (B) IV



Note: Panel A shows the relative density of male immigrants between the 5th and 95th percentiles of the native male earnings distribution in 2010. Panel B shows the estimates from IV 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 natives at different percentiles. Year fixed effects and canton fixed effects included. Standard errors are clustered at the municipality level, 95% confidence intervals shown in both panels. Sources: CCO, FSO, ZEMIS.

the labor market impacts of local immigrant inflows should manifest themselves. Both specifications lead to similar results. We estimate the model by both OLS and IV, using the predicted immigrant inflow rate as an instrument for the potentially endogenous observed inflows into each municipality. To anticipate the results, Panel A of Figure 2 shows where immigrants are located along the native earnings distribution in 2010. Despite their relatively good formal education levels, immigrants in Switzerland are severely over-represented in the lower part of the native earnings distribution, especially around the 10^{th} percentile.

Panel B of Figure 2 presents our IV results, depicting point estimates for every fifth percentile of the native household-level earnings distribution. In line with the evidence in Panel A, the impacts are largest at the bottom of the earnings distribution, suggesting that recent immigrants in Switzerland compete with native households in the lower segment of the labor market. Table 4 reports a selection of the OLS and IV estimates. For a direct measure of the impact of immigration on earnings inequality, Columns (6) to (8) report the results from specifications in which the outcome variable is the change in the interquartile range of log earnings (75^{th}-25^{th} percentile), the 80^{th}-20^{th} percentile, and the interdecile range (90^{th}-10^{th} percentile). According to the IV results, a 1 percent immigrant inflow rate increases the 75^{th}-25^{th} earnings gap by 1.02 log points and the 90^{th}-10^{th} earnings gap by 2.89 log points. The first-stage Kleibergen-Paap F-statistic is 43.2, suggesting that the estimates do not suffer from weak instrument problems. The significance of the second-stage estimates is further confirmed by the highly significant Anderson-Rubin F-statistic which is robust to the presence of weak instruments. Table A1 in the appendix shows similar results for regressions on the commuting zone level.

TABLE 4—PRE-TAX EARNINGS ANALYSIS AT DIFFERENT PERCENTILES

	10th (1)	25th (2)	50th (3)	75th (4)	90th (5)	75-25th (6)	80-20th (7)	90-10th (8)
Panel A: OLS								
Immigrant inflow rate	-0.020	0.167***	0.057*	0.033	0.053	-0.134*	-0.097	0.073
	(0.130)	(0.064)	(0.034)	(0.038)	(0.055)	(0.069)	(0.076)	(0.137)
Panel B: IV								
Immigrant inflow rate	-3.961***	-2.138***	-0.770***	-1.116***	-1.072***	1.023**	1.795***	2.889***
	(1.031)	(0.532)	(0.287)	(0.296)	(0.314)	(0.472)	(0.572)	(0.984)
Mean outcome	0.014	0.007	0.005	0.008	0.009	0.001	-0.001	-0.005
Sd outcome	0.175	0.082	0.048	0.046	0.056	0.085	0.106	0.182
First stage F-stat	43.247	43.247	43.247	43.247	43.247	43.247	43.247	43.247
AR Wald F-stat (p-value)	0.000	0.000	0.003	0.000	0.000	0.019	0.000	0.001
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Canton FE	yes	yes	yes	yes	yes	yes	yes	yes
N	19782	19782	19782	19782	19782	19782	19782	19782

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 natives at different percentiles. Year fixed effects and canton fixed effects included. Standard errors in parentheses are clustered at the municipality level. * p<0.1; ** p<0.05; *** p<0.01. Sources: CCO, FSO, SE, ZEMIS.

Table 5 reports several robustness checks of our IV earnings analysis. Panel A restates the baseline findings for the 75^{th}-25^{th} and 90^{th}-10^{th} percentile log earnings gap in Columns (1) and (2). The results reported in the remaining columns show that these findings are robust to using longer intervals over which one measures the earnings changes and immigrant inflows (2-year, 3-year and 5-year). Panel B reports weighted regression results which are qualitatively similar to the baseline estimates. In Panel C, we add several control variables to capture differences in the composition of the local population: the change in the log population between two periods, the change in the average age, the change in the share of individuals with tertiary education, and the change in the share of individuals with upper-secondary education. The inclusion of these controls increases the main estimates somewhat, especially when considering longer-term changes over three or five years.

B. *Impact on Local Tax Multipliers*

We next estimate the impact of immigration on local tax multipliers, estimating versions of Equation (5) in which the outcome variable is the change in the cantonal tax multipliers.[13] Columns (1) and (3) of Panel A in Table 6 show the corresponding OLS and IV results. The reported standard errors are clustered on the cantonal level. Since there are only 26 cantons in Switzerland, we also report standard errors obtained from the wild cluster bootstrap procedure developed by Cameron et al. (2008). The IV estimate reported in Column (3) suggests that a 1 percent immigrant inflow rate reduces the cantonal tax multiplier by 0.069 (or 1.8 standard deviations). While the weak-instrument robust Anderson-Rubin F-statistic shows that this coefficient is statistically significant at the 10 percent level, the Kleibergen-Paap F-statistic is small, with a value of only 4.072. One

[13]To obtain an estimate of the importance of these tax multiplier changes for net earnings inequality, one would then have to multiply the estimated coefficient by some value for $(\tau_c^{high} - \tau_c^{low})$ (compare Equation 4). We will account for this when performing the full decomposition of the total impact of immigration on net earnings inequality.

Table 5—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	1.023**	2.889***	0.886	3.194***	0.878*	3.834***	1.383***	3.243***
	(0.472)	(0.984)	(0.543)	(1.217)	(0.459)	(0.990)	(0.464)	(0.917)
First stage F-stat	43.247	43.247	36.412	36.412	46.015	46.015	47.528	47.528
AR Wald F-stat (p-value)	0.019	0.001	0.084	0.003	0.042	0.000	0.001	0.000
Panel B: With weights								
Immigrant inflow rate	0.575***	3.631***	0.252	3.319***	0.637***	4.241***	0.634***	4.528***
	(0.211)	(0.601)	(0.199)	(0.589)	(0.226)	(0.756)	(0.234)	(0.735)
First stage F-stat	77.512	77.512	67.378	67.378	59.245	59.245	53.917	53.917
AR Wald F-stat (p-value)	0.002	0.000	0.195	0.000	0.001	0.000	0.002	0.000
Panel C: With controls								
Immigrant inflow rate	1.022**	3.214***	0.901*	2.986***	1.237***	4.656***	1.789***	4.152***
	(0.454)	(1.045)	(0.480)	(1.103)	(0.434)	(0.963)	(0.498)	(1.048)
First stage F-stat	53.482	53.482	59.151	59.151	61.209	61.209	49.235	49.235
AR Wald F-stat (p-value)	0.015	0.001	0.052	0.003	0.002	0.000	0.000	0.000
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Canton FE	yes	yes	yes	yes	yes	yes	yes	yes
N	19517	19517	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 and canton fixed effects in all specifications included. In Panel B, observations are weighted with the average native population over the sample period. In Panel C, control variables are included. Standard errors in parentheses are clustered at the municipality level. * p<0.1; ** p<0.05; *** p<0.01. Sources: CCO, FSO, SE, ZEMIS.

reason for the relatively poor performance of our instrument on the cantonal level is that it does not predict well the actual immigrant inflows into the most immigrant-intensive region in Switzerland, the canton of Geneva. Excluding this single canton increases the Kleibergen-Paap F-statistic to 11.215 but leaves the point estimates virtually unchanged relative to the full sample (Columns (3) and (4)). Table A2 in the appendix shows that the finding of a large negative impact of immigration on the cantonal tax multipliers is

Table 6—Impact on cantonal tax multiplier

	OLS		IV	
	(1)	(2)	(3)	(4)
Immigrant inflow rate	-1.655	-1.657	-6.924**	-6.657**
	(1.188)	(1.208)	(3.220)	(3.331)
Mean outcome	0.005	0.005	0.005	0.005
Sd outcome	0.039	0.039	0.039	0.039
Mean regressor	0.005	0.005	0.005	0.005
Sd regressor	0.004	0.004	0.004	0.004
WCB (p-value)	0.164	0.157	0.018	0.047
First stage F-stat			4.072	11.215
AR Wald F-Stat (p-value)			0.086	0.021
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. WCB is short for wild cluster bootstrap. In Columns (2) and (4) we drop the canton of Geneva. Year fixed effects in all specifications 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 7—Impact on municipal tax multiplier

	OLS		IV	
	(1)	(2)	(3)	(4)
Immigrant inflow rate	-0.036***	-0.040***	-0.699***	-0.444**
	(0.014)	(0.014)	(0.245)	(0.204)
Mean outcome	-0.001	-0.001	-0.001	-0.001
Sd outcome	0.034	0.034	0.034	0.034
Mean regressor	0.005	0.005	0.005	0.005
Sd regressor	0.015	0.015	0.015	0.015
First stage F-stat			41.066	43.247
AR Wald F-Stat (p-value)			0.002	0.024
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 in all specifications included. Standard errors in parentheses are clustered at the municipality level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, FTA, ZEMIS.

robust to using longer differences and to estimating the model using average population weights.

Table 7 reports the corresponding results for the municipal tax multipliers. The OLS estimate in Column (1) is statistically significant but small in magnitude: a 1 percent immigrant inflow rate reduces the tax multiplier by a very moderate 0.00036 (or 1.1 percent of a standard deviation of the year-to-year changes of this multiplier). Including canton fixed effect in Column (2) leaves this estimate virtually unchanged. Columns (3) and (4) report the corresponding IV results. Consistent with immigrants avoiding municipalities that become less redistributive, the IV estimate in Column (4) is significantly larger in magnitude than its OLS counterpart in Column (2), indicating that a 1 percent immigrant inflow rate reduces municipal tax multipliers by 0.00444 (or 13.1 percent of a standard deviation). Table A3 in the appendix reports the results from a series of robustness checks, showing estimates of around -0.62 when estimating the model using 2-year intervals and marginally insignificant results for 3-year intervals. We conclude that municipalities lower their multipliers in response to exogenous inflows of immigrants.

Taken together, the findings in Tables 6 and 7 indicate that, especially on the cantonal level, local authorities respond to new immigrant inflows by lowering their tax multipliers which further increases net earnings inequality among the resident population.

C. Impact on Cantonal Tax Rates

We now analyze whether immigrant inflows lead to systematic changes in cantonal tax rates at different segments of the earnings distribution. To do this, we first obtain separately for each canton the average tax rates at specific earnings percentiles in a given year. For those same earnings levels, we then obtain the corresponding average tax rates

Table 8—Impact on cantonal tax rates at different percentiles – IV

	(1) 10th	(2) 25th	(3) 50th	(4) 75th	(5) 90th	(6) 75-25th	(7) 90-10th
Panel A: Rates for singles without children							
Immigrant inflow rate	-0.104	-0.143	-0.172	-0.177	-0.188	-0.033	-0.085
	(0.102)	(0.116)	(0.133)	(0.135)	(0.143)	(0.033)	(0.089)
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	0.001
AR Wald F-Stat (p-value)	0.430	0.352	0.326	0.320	0.314	0.356	0.392
Panel B: Rates for married individuals or singles with children							
Immigrant inflow rate	-0.105	-0.103	-0.126	-0.158	-0.177	-0.055	-0.072
	(0.102)	(0.103)	(0.109)	(0.125)	(0.136)	(0.063)	(0.085)
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	0.001
AR Wald F-Stat (p-value)	0.421	0.435	0.380	0.341	0.322	0.430	0.444
Year FE	yes	yes	yes	yes	yes	yes	yes
Mean regressor	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Sd regressor	0.004	0.004	0.004	0.004	0.004	0.004	0.004
N	234	234	234	234	234	234	234
First stage F-stat	4.072	4.072	4.072	4.072	4.072	4.072	4.072

Note: Cantonal tax rates computed at fixed earnings levels (measured at different percentiles) in the initial year t-1 of each first difference. At those same earnings levels, the corresponding tax rates are then obtained for period t. In the final step, we take first differences between the tax rates in t and t-1 and relate the changes to the immigrant inflows. Year fixed effects in all regressions included. Standard errors in parentheses are clustered at the cantonal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, FTA, ZEMIS.

in the subsequent period. In the final step, we take the difference between those two tax rates and relate those changes in tax rates to the local immigrant inflow rates using the specification in Equation (5). Table 8 reports the corresponding results separately for the tax rates of singles without children and the tax rates of married individuals or singles with children. As in 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. While there is some indication that average tax rates decrease in response to immigrant inflows, these reductions appear to be relatively homogeneous across the earnings distribution, leaving the interquartile and interdecile gaps largely unchanged. Based on these findings, we conclude that $\partial(\tau_c^{high} - \tau_c^{low})/\partial I = 0$ and, therefore, that the last term in Equation (4) can be ignored in the following decomposition analysis.[14]

D. 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 pre-tax earnings, 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

[14] According to the results in Table 8, if at all, the progressivity of the cantonal tax schedule appears to decrease which would further contribute to rising net earnings inequality (compare Equation (4)).

cantonal and municipal multipliers by the factor $(\tau_c^{high} - \tau_c^{low})$, the average cantonal tax rate gap between individuals at the upper and lower part of the earnings distribution. Focussing on the interquartile range first, the average difference between the tax rates at the 75$^{\text{th}}$ and 25$^{\text{th}}$ pre-tax earnings percentile across cantons amounts to 2.3 percentage points.[15] Our main IV estimates in Table 4 (1.023), Table 6 (-6.924) and Table 7 (-0.444) then suggest that $1.023/[1.023 - 0.023 \times (-6.924 - 0.444)] = 85.8$ percent of the total impact of immigration on net earnings inequality is due to the *economic channel* and 14.2 percent due to the *political channel*. By systematically lowering their tax multipliers, cantons and, to a lesser extent, municipalities thus significantly reinforce the distributional impact of international migration.

For the interdecile earnings gap, the political channel is somewhat less important. Given an average cantonal tax rate gap between the 90$^{\text{th}}$ and 10$^{\text{th}}$ percentile of 5.2 percentage points, and an estimated impact on the interdecile earnings gap of 2.889 (see Column (8) of Panel B in Table 4), our findings suggest that the *economic channel* contributes $2.889/[2.889 - 0.052 \times (-6.924 - 0.444)] = 88.3$ percent and the *political channel* 11.7 percent to the total impact of immigration on this measure of earnings inequality.

E. Impact on Local Transfers

Governments can affect an individual's disposable income also by reconfiguring the design of their transfer systems. Transfers can be related to social insurances (e.g., unemployment, invalidity, old age) or social aid (supplementary benefits to social insurance payments and financial benefits to cover the subsistence minimum). Social insurances are paid out as a result of an event such as unemployment or retirement and are generally financed through social security contributions deducted from labor income. Local governments in Switzerland have no influence on these payments. In contrast, social aid is based on need. The Federal Statistical Office reports that 31.6 percent of social aid receivers between 15 and 64 years of age in 2021 are employed and 32.7 percent are unemployed. Social aid is mostly financed through local taxes.[16] The bulk of social aid payments are determined by the cantons and enforced by the municipalities. Since municipalities cannot significantly influence their expenditures on such transfers, we focus on the cantonal level in what follows.

In Table 9 we use data on net social aid transfers per recipient. Panel A shows results based on a relatively broad measure of such transfers, including both supplementary and financial benefits. Results in Panel B are based on a more narrow definition that focusses

[15] We take earnings data net of social security contributions from 2020 and deduct the minimum tax deductions to proxy taxable income. We then compute the average tax rate at different percentiles of the taxable income distribution by tax subject. The difference in the cantonal tax rates used in this decomposition refers to the earnings of married individuals with 2 children.

[16] EFV data show that the total of cantonal and municipal net expenditures on social transfers including housing subsidies, social benefits and asylum, research and development in social security and other social benefit transfers amounted to 76.6 percent of the total net expenditures at the federal, cantonal and municipal level in 2019.

Table 9—Impact on social aid transfers per recipient

	OLS		IV	
	(1)	(2)	(3)	(4)
Panel A: Social aid - broad definition				
Immigrant inflow rate	-0.773	-0.631	-6.921	-7.961
	(0.881)	(0.889)	(4.374)	(5.508)
Mean outcome	0.012	0.012	0.012	0.012
Sd outcome	0.039	0.040	0.039	0.040
First stage F-stat			4.072	11.215
AR Wald F-stat (p-value)			0.183	0.055
Panel B: Social aid - narrow definition				
Immigrant inflow rate	0.871	0.848	-3.429	-5.756
	(1.631)	(1.707)	(4.542)	(5.171)
Mean outcome	0.024	0.023	0.024	0.023
Sd outcome	0.099	0.100	0.099	0.100
First stage F-stat			4.072	11.215
AR Wald F-stat (p-value)			0.523	0.257
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 log of social aid transfers per recipient. We use a broad measure including financial and supplementary benefits in Panel A and a narrow measure including only financial benefits in Panel B. In Columns (2) and (4) we drop the canton of Geneva. Year fixed effects in all specifications included. Standard errors in parentheses are clustered at the cantonal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, ZEMIS.

exclusively on financial benefits. Overall, we find little evidence that immigration affects the generosity of local social aid transfers. If at all, transfers per recipient appear to decline, suggesting that local governments do not compensate households at the bottom of the earnings distribution for rising net after-tax earnings inequality by providing more generous benefits. Table A5 in the appendix reports the corresponding results for longer first differences.

VI. Conclusion

This paper provides a novel perspective on the distributional impact of immigration. We investigate how immigration affects local income tax schedules, and the consequences this has for the distributional effects of immigration. We find evidence that an increase in immigrant inflows lowers local tax multipliers, thereby reducing redistribution between high and low income earners and increasing after-tax earnings inequality. We also show that immigration tends to raise gross earnings inequality. Our estimates suggest that, depending on the measure considered, between 11.7 and 14.2 percent of the total impact of immigration on net earnings inequality can be attributed to the *political channel* and between 85.8 and 88.3 percent to the *economic channel*. Since both of these channels are linked to different sets of policy measures, it is important to understand their relative role in the causal relationship between immigration and inequality.

References

Alesina, Alberto and Marco Tabellini, "The Political Effects of Immigration: Culture or Economics?," Working Paper 21-069, Harvard Business School 2021.

__ , **Armando Miano, and Stefanie Stantcheva**, "Immigration and Redistribution," *The Review of Economic Studies*, 2023, *90* (1), 1–39.

__ , **Elie Murard, and Hillel Rapoport**, "Immigration and Preferences for Redistribution in Europe," *Journal of Economic Geography*, 2021, *21* (6), 925–954.

Borjas, George J., "The Labor Demand Curve Is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market," *Quarterly Journal of Economics*, November 2003, *118* (4), 1335–1374.

Cameron, A. Colin, Jonah B. Gelbach, and Douglas L. Miller, "Bootstrap-based Improvements for Inference with Clustered Standard Errors," *The Review of Economics and Statistics*, 2008, *90* (3), 414–427.

Card, David, "Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration," *Journal of Labor Economics*, 2001, *19* (1), 22–64.

__ , "Immigration and Inequality," *American Economic Review: Papers & Proceedings*, 2009, *99* (2), 1–21.

Chevalier, Arnaud, Benjamin Elsner, Andreas Lichter, and Nico Pestel, "Immigrant Voters, Taxation and the Size of the Welfare State," Working Paper 11725, IZA Institute of Labor Economics 2018.

Dahlberg, Matz, Karin Edmark, and Heléne Lundqvist, "Ethnic Diversity and Preferences for Redistribution," *Journal of Political Economy*, 2012, *120* (1), 41–76.

Dustmann, Christian, Tommaso Frattini, and Ian P. Preston, "The Effect of Immigration along the Distribution of Wages," *The Review of Economic Studies*, 04 2013, *80* (1), 145–173.

__ , **Uta Schönberg, and Jan Stuhler**, "The Impact of Immigration: Why Do Studies Reach Such Different Results?," *Journal of Economic Perspectives*, 2016, *30* (4), 31–56.

Edo, Anthony, "The Impact of Immigration on the Labor Market," *Journal of Economic Surveys*, 2019, *33* (3), 922–948.

ESS, "European Social Survey Round 1 Data. Data file edition 6.6. NSD - Norwegian Centre for Research Data, Norway – Data Archive and distributor of ESS data for ESS ERIC," 2002.

OECD, *International Migration Outlook 2021* 2021.

Ottaviano, Gianmarco I.P. and Giovanni Peri, "Rethinking the Effect of Immigration on Wages," *Journal of the European Economic Association*, February 2012, *10* (1), 152–197.

Parchet, Raphaël, "Are Local Tax Rates Strategic Complements or Strategic Substitutes?," *American Economic Journal: Economic Policy*, May 2019, *11* (2), 189–224.

Tabellini, Marco, "Gifts of the Immigrants, Woes of the Natives: Lessons from the Age of Mass Migration," *Review of Economic Studies*, 2020, *87*, 454–486.

Appendix A: Additional Tables and Figures

Table A1—Pre-tax earnings analysis at commuting zone level

	10th	25th	50th	75th	90th	75-25th	80-20th	90-10th
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: OLS								
Immigrant inflow rate	-0.005	0.084	0.002	-0.058	-0.075	-0.142**	0.084	-0.070
	(0.188)	(0.066)	(0.050)	(0.053)	(0.076)	(0.055)	(0.095)	(0.239)
Panel B: IV								
Immigrant inflow rate	-4.102**	-1.450*	-0.289	-0.281	0.153	1.169*	2.300**	4.255**
	(1.678)	(0.798)	(0.301)	(0.316)	(0.223)	(0.655)	(1.006)	(1.660)
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Labor market FE	yes	yes	yes	yes	yes	yes	yes	yes
Mean outcome	0.012	0.007	0.005	0.008	0.009	0.001	-0.000	-0.004
Sd outcome	0.035	0.015	0.009	0.010	0.010	0.012	0.017	0.033
N	909	909	909	909	909	909	909	909
First stage F-stat	8.076	8.076	8.076	8.076	8.076	8.076	8.076	8.076
AR Wald F-stat (p-value)	0.000	0.003	0.318	0.322	0.507	0.008	0.000	0.000

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 and labor market area fixed effects in all regressions 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—Impact on cantonal tax multiplier: 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	-6.924**	-8.166**	-6.750**	-7.891*
	(3.220)	(3.983)	(3.187)	(4.191)
Mean outcome	0.005	0.012	0.016	0.029
Sd outcome	0.039	0.068	0.081	0.092
Mean regressor	0.005	0.010	0.015	0.027
Sd regressor	0.004	0.007	0.010	0.015
First stage F-stat	4.072	6.295	2.994	3.139
AR Wald F-Stat (p-value)	0.086	0.092	0.077	0.100
Panel B: With weights				
Immigrant inflow rate	-4.954*	-5.374*	-5.205*	-5.653
	(2.673)	(3.170)	(3.038)	(3.555)
Mean outcome	0.003	0.007	0.010	0.018
Sd outcome	0.027	0.047	0.060	0.069
Mean regressor	0.006	0.011	0.017	0.030
Sd regressor	0.004	0.006	0.009	0.014
First stage F-stat	2.606	4.065	1.825	1.890
AR Wald F-Stat (p-value)	0.103	0.120	0.096	0.110
Year FE	yes	yes	yes	yes
N	234	104	78	52

Note: 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. In Panel B, observations are weighted with the average native population over the sample period. All specifications include year fixed effects. Standard errors in parentheses are clustered at the cantonal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, FTA, ZEMIS.

Table A3—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	-0.699***	-0.444**	-0.989***	-0.620**	-0.566**	-0.307	-0.453**	-0.228
	(0.245)	(0.204)	(0.314)	(0.244)	(0.234)	(0.198)	(0.220)	(0.181)
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
Mean regressor	0.005	0.005	0.009	0.009	0.014	0.014	0.025	0.025
Sd regressor	0.015	0.015	0.021	0.021	0.025	0.025	0.035	0.035
First stage F-stat	41.066	43.247	31.944	36.412	44.054	46.015	44.707	47.528
AR Wald F-Stat (p-value)	0.002	0.024	0.000	0.006	0.012	0.118	0.034	0.208
Panel B: With weights								
Immigrant inflow rate	-0.015	-0.450	-0.414	-0.807**	0.054	-0.425	0.266	-0.229
	(0.238)	(0.275)	(0.269)	(0.321)	(0.245)	(0.297)	(0.240)	(0.315)
Mean outcome	-0.001	-0.001	-0.002	-0.002	-0.004	-0.004	-0.005	-0.005
Sd outcome	0.032	0.032	0.045	0.045	0.056	0.056	0.075	0.075
Mean regressor	0.005	0.005	0.011	0.011	0.017	0.017	0.029	0.029
Sd regressor	0.010	0.010	0.014	0.014	0.018	0.018	0.026	0.026
First stage F-stat	45.843	77.512	59.068	67.378	29.157	59.245	41.192	53.917
AR Wald F-Stat (p-value)	0.950	0.094	0.122	0.007	0.828	0.138	0.280	0.462
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: Regressions in first differences 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. In Panel B, observations are weighted with the average native population over the sample period. Year fixed effects in all regressions included. Standard errors in parentheses are clustered at the municipality level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, FTA, ZEMIS.

Table A4—Impact on cantonal tax rates at different percentiles – IV (without canton of Geneva)

	(1) 10th	(2) 25th	(3) 50th	(4) 75th	(5) 90th	(6) 75-25th	(7) 90-10th
Panel A: Rates for singles without children							
Immigrant inflow rate	-0.150	-0.204	-0.240	-0.246	-0.261	-0.042	-0.111
	(0.127)	(0.142)	(0.162)	(0.165)	(0.175)	(0.041)	(0.113)
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	0.001
AR Wald F-Stat (p-value)	0.280	0.137	0.096	0.090	0.082	0.203	0.227
Panel B: Rates for married individuals or singles with children							
Immigrant inflow rate	-0.148	-0.150	-0.182	-0.224	-0.247	-0.074	-0.098
	(0.127)	(0.127)	(0.133)	(0.153)	(0.166)	(0.080)	(0.107)
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	0.001
AR Wald F-Stat (p-value)	0.289	0.280	0.180	0.110	0.091	0.261	0.267
Year FE	yes	yes	yes	yes	yes	yes	yes
Mean regressor	0.005	0.005	0.005	0.005	0.005	0.005	0.005
Sd regressor	0.004	0.004	0.004	0.004	0.004	0.004	0.004
N	225	225	225	225	225	225	225
First stage F-stat	11.215	11.215	11.215	11.215	11.215	11.215	11.215

Note: Cantonal tax rates computed at fixed earnings levels (measured at different percentiles) in the initial year t-1 of each first difference. At those same earnings levels, the corresponding tax rates are then obtained for period t. In the final step, we take first differences between the tax rates in t and t-1 and relate the changes to the immigrant inflows. Year fixed effects in all regressions 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 A5—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	-6.921	-5.397	-5.599	-6.931
	(4.374)	(3.677)	(4.617)	(5.117)
Mean outcome	0.012	0.020	0.036	0.063
Sd outcome	0.039	0.049	0.067	0.101
First stage F-stat	4.072	6.295	2.994	3.139
AR Wald F-stat (p-value)	0.183	0.184	0.329	0.203
Panel B: With weights				
Immigrant inflow rate	-1.506	-2.028	-0.499	-0.983
	(3.065)	(2.791)	(3.491)	(3.279)
Mean outcome	0.012	0.022	0.037	0.062
Sd outcome	0.033	0.044	0.060	0.081
First stage F-stat	2.606	4.065	1.825	1.890
AR Wald F-stat (p-value)	0.629	0.488	0.893	0.762
Year FE	yes	yes	yes	yes
N	234	104	78	52

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. In Panel B, observations are weighted with the average native population over the sample period. Year fixed effects in all regressions included. Standard errors in parentheses are clustered at the cantonal level. * p<0.1; ** p<0.05; *** p<0.01. Sources: FSO, ZEMIS.

Appendix B: Some Derivations

Gross earnings are related to net after-tax earnings by the following equation:

$$\ln w_n \approx \ln w_g(I,\tau) - \tau_f(I,w_g) - \tau_c(I,w_g) \times [multiplier_c(I) + multiplier_m(I)] \qquad \text{(B1)}$$

where $\tau = \tau_f(I,w_g) + \tau_c(I,w_g) \times [multiplier_c(I) + multiplier_m(I)]$ is the average tax rate, and I denotes the local stock of immigrants. Gross earnings thus depend on immigration but also on the average tax rate through possible labor supply responses. The federal and cantonal tax rates τ_f and τ_c are functions of the immigrant stock but also of the gross earnings themselves (unless a canton has a flat tax schedule).

Taking derivative with respect to the immigration shock yields the following expression

$$\begin{aligned}
\frac{d\ln w_n}{d\,I} &= \frac{\partial \ln w_g}{\partial\, I} + \frac{\partial \ln w_g}{\partial\,\tau}\frac{\partial \tau}{\partial\, I} \\
&- \left(\frac{\partial \tau_f}{\partial\, I} + \frac{\partial \tau_f}{\partial\, w_g}\frac{\partial w_g}{\partial\, I}\right) \\
&- \left(\frac{\partial \tau_c}{\partial\, I} + \frac{\partial \tau_c}{\partial\, w_g}\frac{\partial w_g}{\partial\, I}\right) \times [multiplier_c(I) + multiplier_m(I)] \\
&- \tau_c\left(\frac{\partial\, multiplier_c(I)}{\partial\, I}\right) - \tau_c\left(\frac{\partial\, multiplier_m(I)}{\partial\, I}\right)
\end{aligned}$$

The first term represents the impact of immigration on gross earnings (accounting also for possible labor supply adjustments in response to changing tax schedules). The second term represents the impact of immigration on the federal tax rates individuals face. The third term represents the impact of immigration on the cantonal tax rates. The fourth term represents the impact on the cantonal and municipal tax multipliers.

Separating the direct impacts of immigration on the tax system from the impact on gross earnings and mechanial impacts on the tax rates faced, the previous equation can be arranged as follows:

$$\begin{aligned}
\frac{d\ln w_n}{d\,I} \approx\ & \underbrace{\frac{\partial \ln w_g}{\partial\, I} + \frac{\partial \ln w_g}{\partial\,\tau}\frac{\partial \tau}{\partial\, I}}_{\text{Impact on gross earnings}} \\
& - \underbrace{\left[\frac{\partial \tau_f}{\partial\, w_g}\frac{\partial w_g}{\partial\, I} + \frac{\partial \tau_c}{\partial\, w_g}\frac{\partial w_g}{\partial\, I} \times [multiplier_c(I) + multiplier_m(I)]\right]}_{\text{Mechanical changes in tax rates due to changes in earnings}} \\
& - \underbrace{\left[\left(\frac{\partial \tau_f}{\partial\, I}\right) + \left(\frac{\partial \tau_c}{\partial\, I}\right) \times [multiplier_c(I) + multiplier_m(I)]\right]}_{\text{Impact on federal and cantonal tax rates}} \\
& - \underbrace{\left[\tau_c\left(\frac{\partial\, multiplier_c(I)}{\partial\, I}\right) + \tau_c\left(\frac{\partial\, multiplier_m(I)}{\partial\, I}\right)\right]}_{\text{Impact on cantonal and municipal multipliers}}
\end{aligned}$$