Online Appendix
The Fiscal Impact of Immigration: Labor Displacement, Wages, and the Allocation of Public Spending
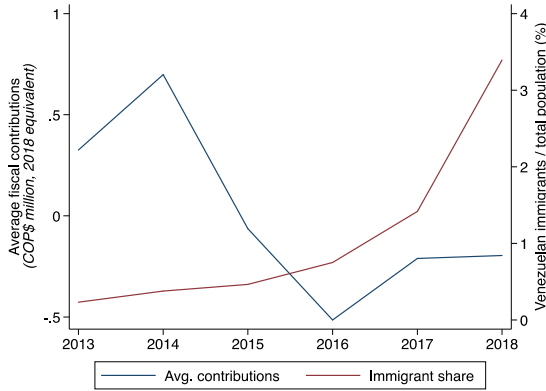
A   Additional Figures and Tables
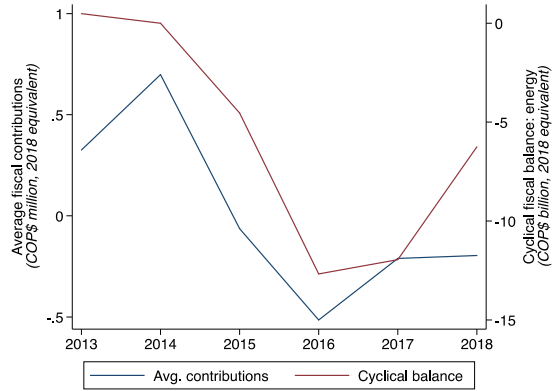
Figure A1
Fiscal contributions, immigrant shock, and energy cycle

Panel A. Immigrant shock   Panel B. Energy Cycle

Notes: The Figure compares the evolution between 2013 and 2018 of average net fiscal contributions for working-age natives to the immigrant share (Panel A) and the cyclical fiscal balance for the energy sector (Panel B). The data for the energy cyclical balance comes from public records published by the Ministry of Finance and measures the change in fiscal revenues caused by the difference between the observed price and the long-term price of crude oil of the previous period.

Figure A2
Directed Acyclic Graph (DAG) of the Effect of Immigration on Natives' Fiscal Contributions
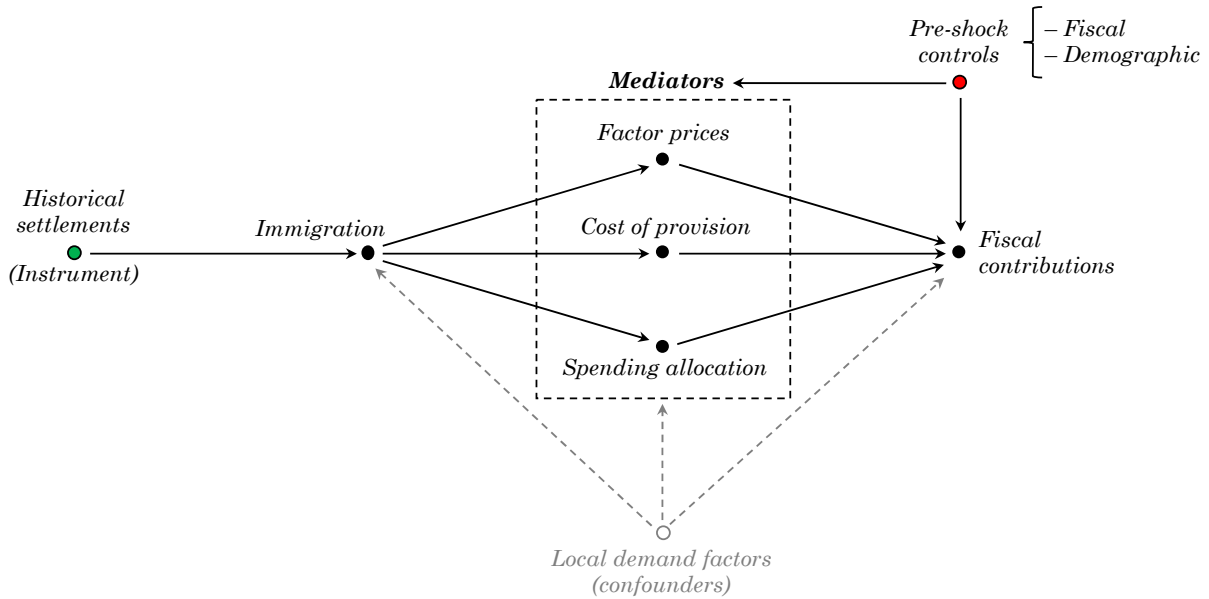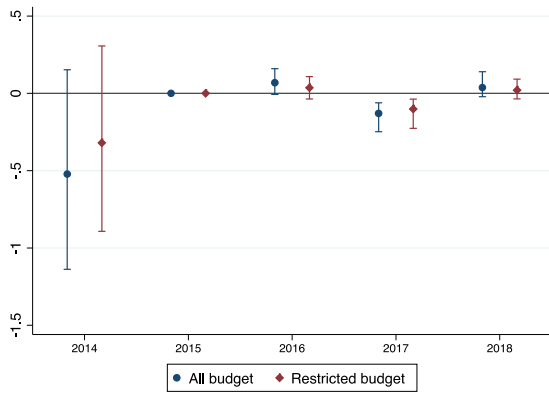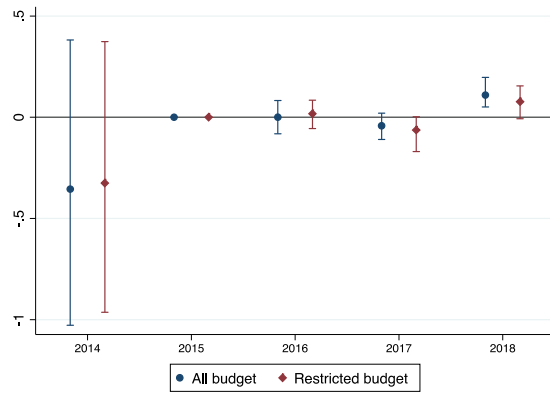
Figure A3

Year-by-year estimates of the effect of immigration on natives' fiscal contributions

Panel A. Net Fiscal Cost

Panel B. Total Revenues

Panel C. Total Expenditures

Notes: The Figure reports the year-by-year coefficients obtained by regressing the change in net fiscal contributions (panel A), revenues (Panel B), and expenditures (Panel C) on the change in immigrant inflows (Δm_{jt}). All regressions control for the share of local revenues that accrue to transfers from the central government, the share of expenditures in public goods, the share of working age population in the city, the share of college workers, and the share of workers employed in manufacturing. Anderson–Rubin confidence sets are presented. Coefficients in 2015 are set to zero as a result of weak instruments. Estimates are weighted by the working-age population in 2013.

Figure A4

Estimates of the effect of immigration on natives' fiscal contributions relative to 2013
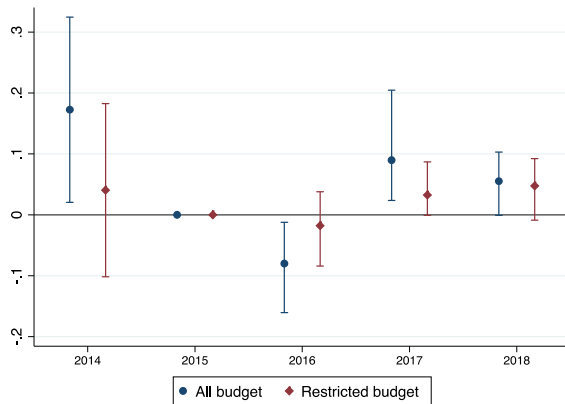
Panel A. Net Fiscal Cost

Panel B. Total Revenues
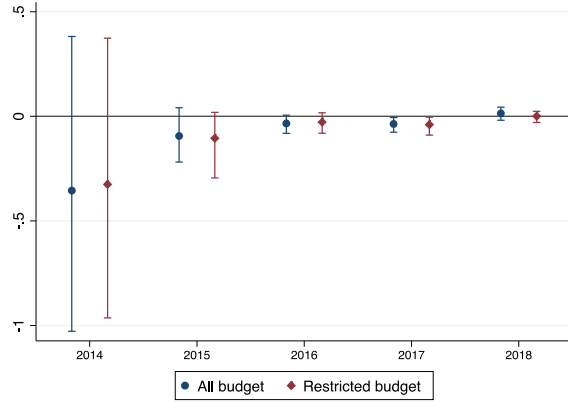
Panel C. Total Expenditures

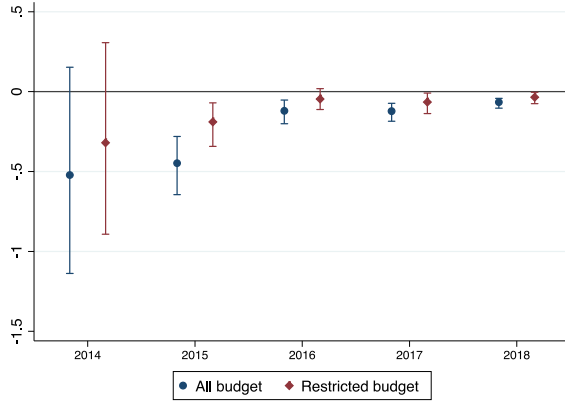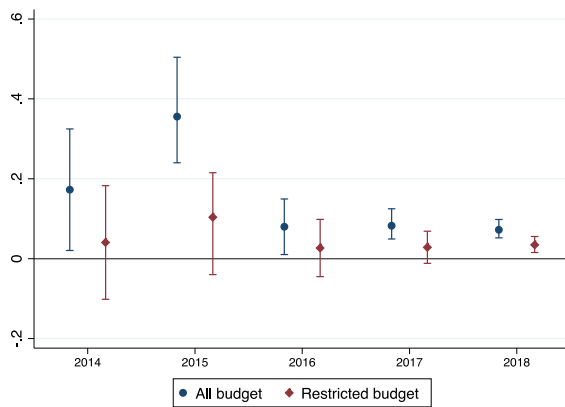*Notes:* The Figure reports the coefficients obtained by regressing the change in net fiscal contributions (panel A), revenues (Panel B), and expenditures (Panel C) on the change in immigrant inflows relative to the local population in 2013. All regressions control for the share of local revenues that accrue to transfers from the central government, the share of expenditures in public goods, the share of working age population in the city, the share of college workers, and the share of workers employed in manufacturing. Anderson–Rubin confidence sets are presented. Estimates are weighted by the working-age population in 2013.

Figure A5

Effect of immigration on main labor market outcomes by sex
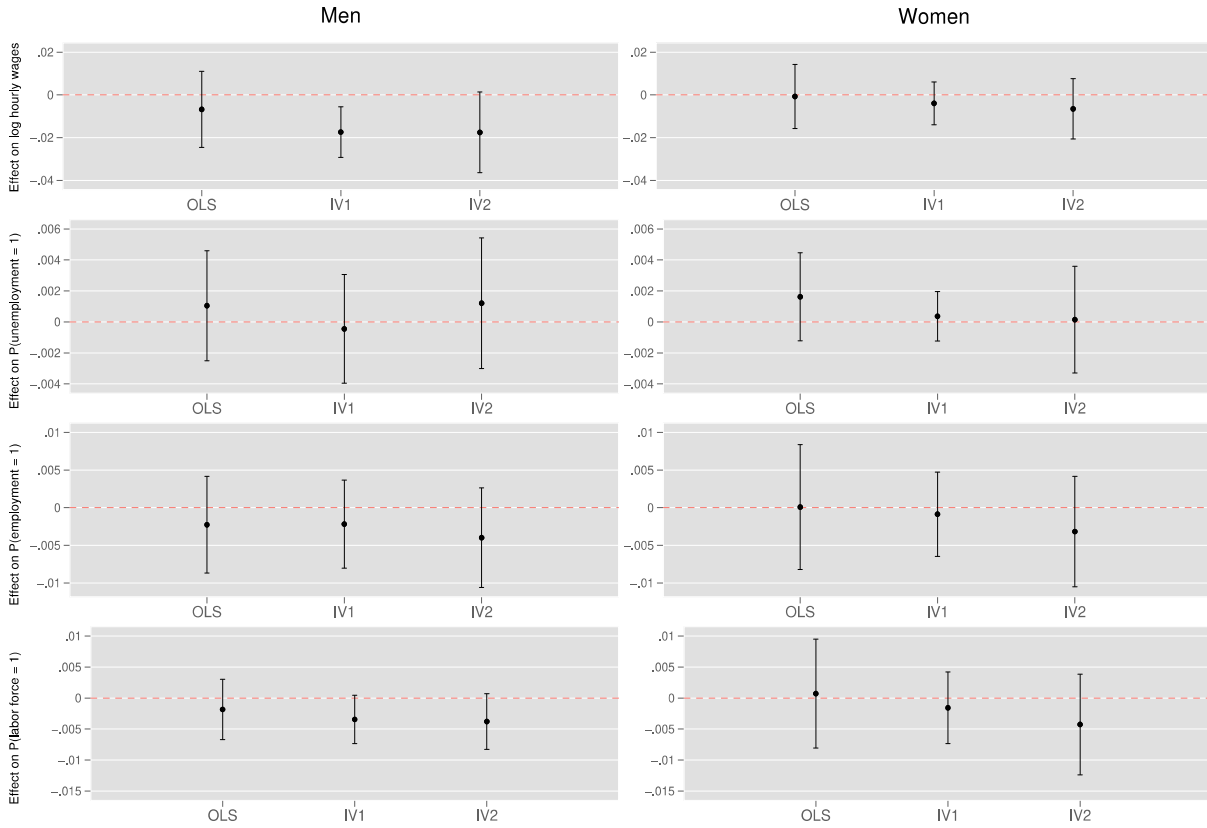
Notes: The Figure reports OLS and 2SLS coefficients and the respective 95% confidence intervals obtained by regressing natives' log wages, unemployment, employment, and labor force participation status on the fraction of immigrants ($\tilde{m}_{jt}$) separated by sex. IV1 instruments $\tilde{m}_{jt}$ with the past settlement instrument as defined in Eq. (7). IV2 instruments $\tilde{m}_{jt}$ with the distance instrument as defined in Eq. (9). All regressions include year and area fixed effects, individual controls (sex, age, age squared), and dummies for education achievement (less than high school, high school, some college, college graduates, and graduate degrees). Wages are computed for wage and salary workers and include the labor income of self-employed workers. The sample is restricted to natives aged 15 to 64 living in metropolitan areas (MSAs) from 2013-2018. To alleviate the potential impact of outliers, wages were computed by trimming the wage distribution by year at 0.5% and 99.5%. Wages are expressed in 2018 equivalent COP. Estimates are weighted by sampling weights. Standard errors are clustered at the metropolitan area level.
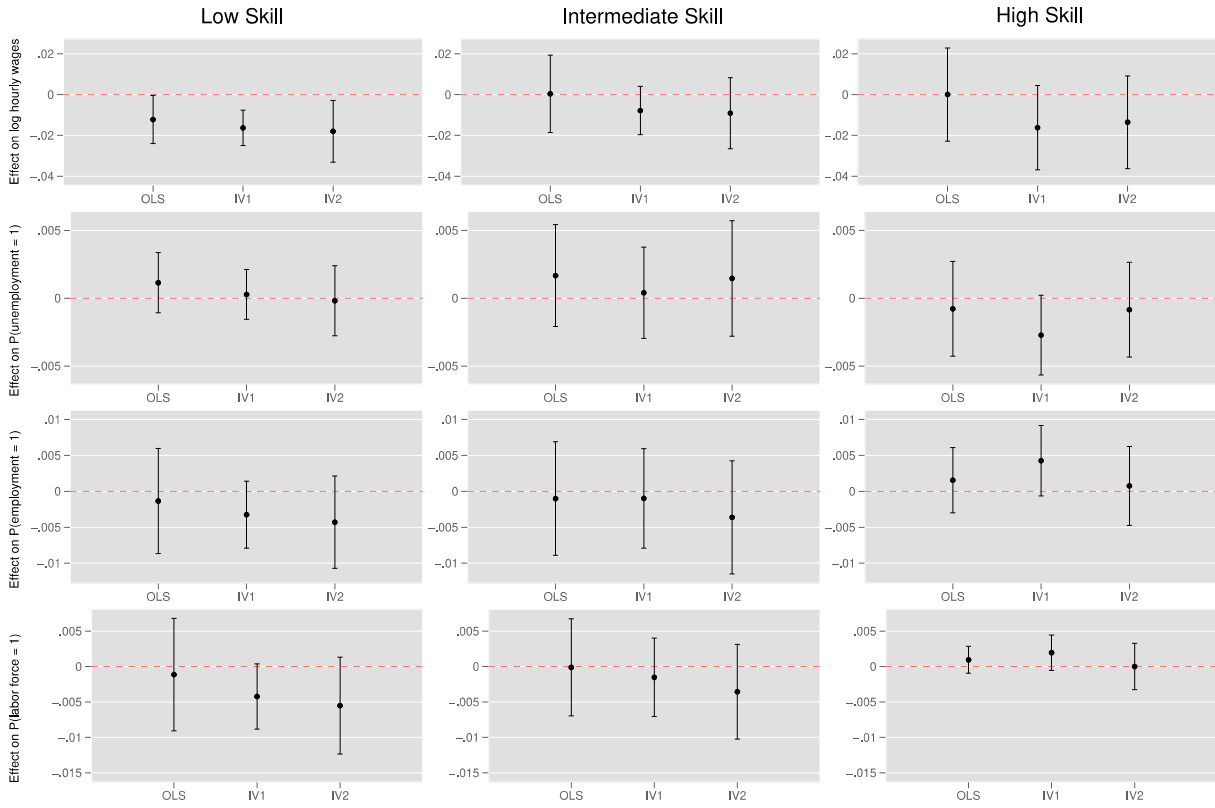
Figure A6
Effect of immigration on main labor market outcomes by skill

Notes: The Figure reports OLS and 2SLS coefficients and the respective 95% confidence intervals obtained by regressing natives' log wages, unemployment, employment, and labor force participation status on the fraction of immigrants ($\tilde{m}_{jt}$) separated by skill. IV1 instruments $\tilde{m}_{jt}$ with the past settlement instrument as defined in Eq. (7). IV2 instruments $\tilde{m}_{jt}$ with the distance instrument as defined in Eq. (9). Low skill: those with less than high-school degrees. Intermediate skill: those with high school degrees or technical degrees. High skill: those with a bachelor's or more. All regressions include year and area fixed effects, individual controls (sex, age, age squared), and dummies for education achievement (less than high school, high school, some college, college graduates, and graduate degrees). Wages are computed for wage and salary workers and include the labor income of self-employed workers. The sample is restricted to natives aged 15 to 64 living in metropolitan areas (MSAs) from 2013-2018. To alleviate the potential impact of outliers, wages were computed by trimming the wage distribution by year at 0.5% and 99.5%. Wages are expressed in 2018 equivalent COP. Estimates are weighted by sampling weights. Standard errors are clustered at the metropolitan area level.
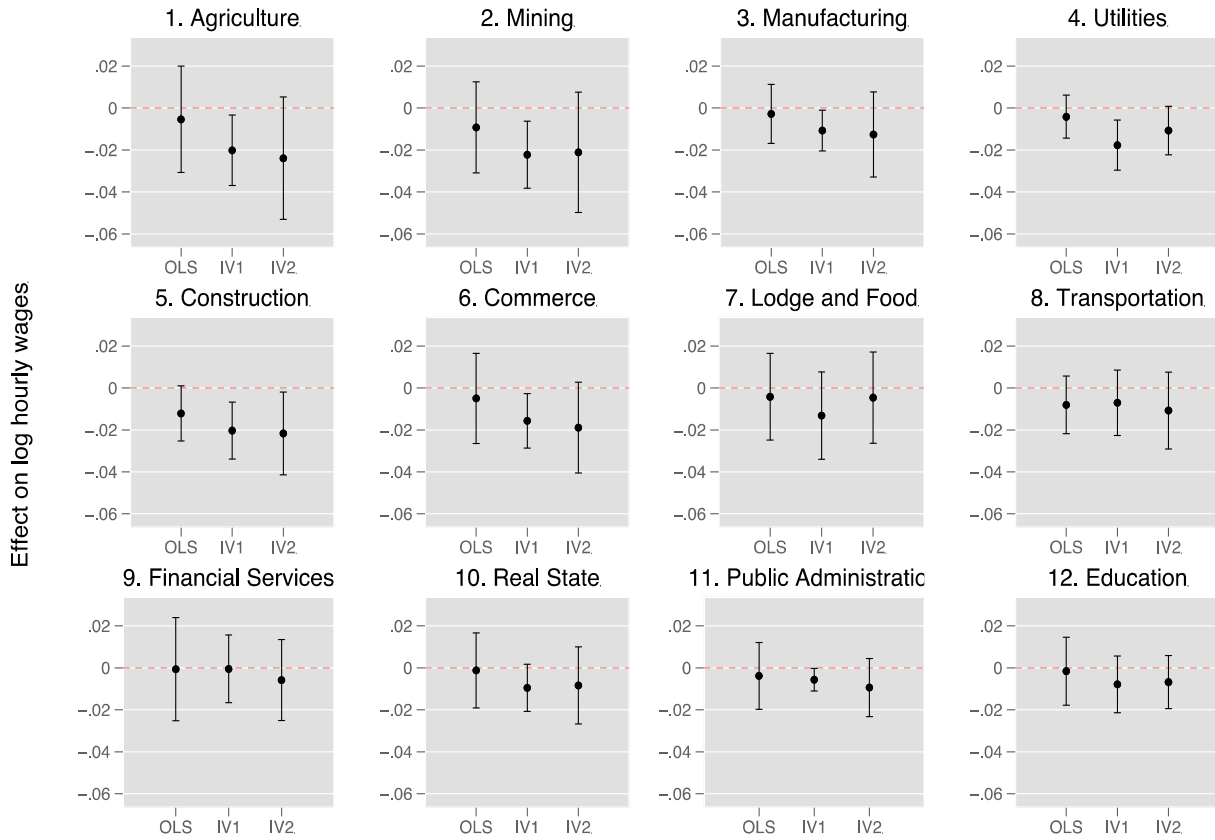
Appendix A7
Effect of immigration on wages by sector

Notes: The Figure reports OLS and 2SLS coefficients and the respective 95% confidence intervals obtained by regressing natives' log wages, unemployment, employment, and labor force participation status on the fraction of immigrants ($\tilde{m}_{jt}$) separated by economic activity. IV1 instruments $\tilde{m}_{jt}$ with the past settlement instrument as defined in Eq. (7). IV2 instruments $\tilde{m}_{jt}$ with the distance instrument as defined in Eq. (9). All regressions include year and area fixed effects, individual controls (sex, age, age squared), and dummies for education achievement (less than high school, high school, some college, college graduates, and graduate degrees). Wages are computed for wage and salary workers and include the labor income of self-employed workers. The sample is restricted to natives aged 15 to 64 living in metropolitan areas (MSAs) from 2013-2018. To alleviate the potential impact of outliers, wages were computed by trimming the wage distribution by year at 0.5% and 99.5%. Wages are expressed in 2018 equivalent COP. Estimates are weighted by sampling weights. Standard errors are clustered at the metropolitan area level.

Appendix A8
Effect of immigration on wages by type of job

Notes: The Figure reports OLS and 2SLS coefficients and the respective 95% confidence intervals obtained by regressing natives' log wages, unemployment, employment, and labor force participation status on the fraction of immigrants ($\tilde{m}_{jt}$) separated by type of job. IV1 instruments $\tilde{m}_{jt}$ with the past settlement instrument as defined in Eq. (7). IV2 instruments $\tilde{m}_{jt}$ with the distance instrument as defined in Eq. (9). All regressions include year and area fixed effects, individual controls (sex, age, age squared), and dummies for education achievement (less than high school, high school, some college, college graduates, and graduate degrees). Wages are computed for wage and salary workers and include the labor income of self-employed workers. The sample is restricted to natives aged 15 to 64 living in metropolitan areas (MSAs) from 2013-2018. To alleviate the potential impact of outliers, wages were computed by trimming the wage distribution by year at 0.5% and 99.5%. Wages are expressed in 2018 equivalent COP. Estimates are weighted by sampling weights. Standard errors are clustered at the metropolitan area level.
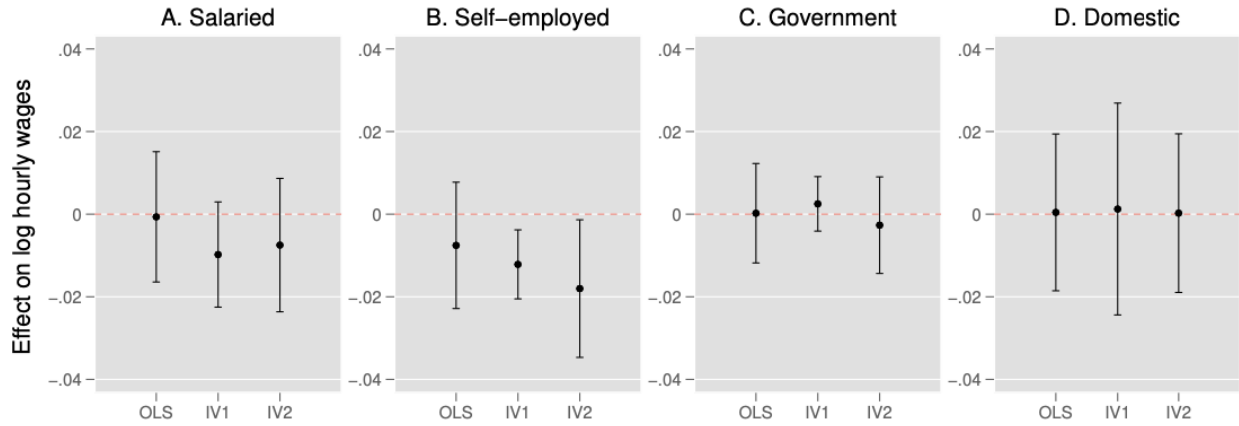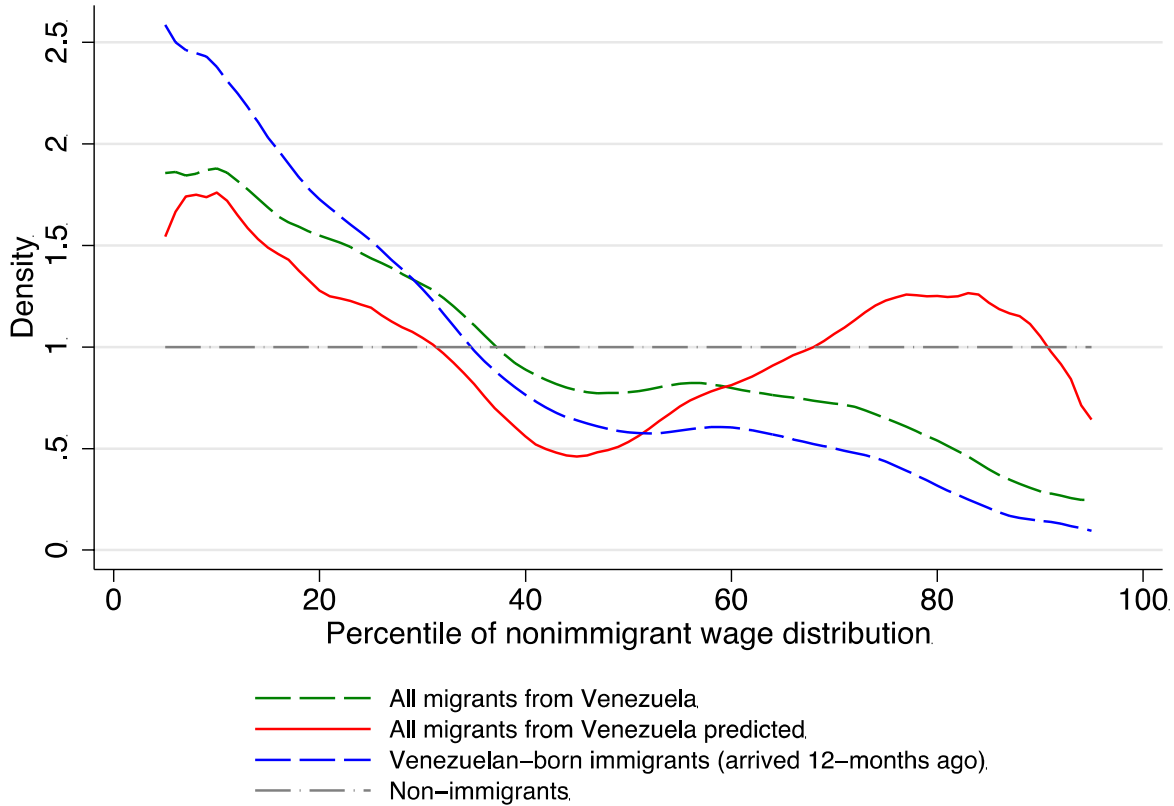
Figure A9

Actual vs. predicted position of Venezuelan immigrants in natives' wage distribution

Notes: The Figure depicts the observed kernel density (green dashed line) and the predicted kernel density estimates for all immigrants from Venezuela, including returnees and Venezuelan-born (red line), and for the Venezuelan-born immigrants that arrived in Colombia within the last 12 months. The predicted density is based on where Venezuelans would be located if they received the same return to education and experience as natives. The predicted line is obtained by estimating a flexible log regression separately for native males and females in each year between 2014 and 2018. The regression includes three age categories (15 to 28, 29 to 40, and 41 to 64), three education groups (less than high school diploma, high school diploma or technical degree, and bachelor's degree or more), the interaction between age and education groups, dummies for Bogotá, Medellín, and Cali, and dummies for each quarter of the survey. The resulting coefficients are then used to predict out-of-sample wages for different groups of immigrants from Venezuela. This procedure was based on Dustmann *et al.* (2013). The horizontal dashed gray line shows the native wage distribution as a reference. Kernel estimates are above (below) the horizontal gray line where migrants from Venezuela are more (less) concentrated than natives. Nonimmigrants are all natives, excluding returnees. The sample is restricted to the urban working-age population (15-64 years old) in the labor force who report labor income and are not enrolled in school. To alleviate the potential impact of outliers, wages were computed by trimming the wage distribution by year at 0.5% and 99.5%. Wages are expressed in 2018 Colombian pesos. *Source:* Own estimates using information from the GEIH 2014-2018 for all 23 MSAs.

Table A1

Robustness estimates of the effect of immigration on natives' fiscal contributions – all budget

Estimates of immigrant inflows (m_{jt})	Coef.	SE	F-stat	Anderson–Rubin CI
(1) Net fiscal contributions				
(a) Using the shares from the 1993 census	0.008	0.033	23.707	[−0.046, 0.095]
(b) Normalizing ΔM_{jt} by the local pop. in 2013	0.007	0.035	22.672	[−0.050, 0.100]
(c) Using individual pooled data ($\widetilde{m}_{jt}$)	−0.012	0.014	25.567	[−0.040, 0.017]
(d) Using a distance-based instrument	−0.014	0.030	66.698	[−0.067, 0.049]
(e) Controlling for dynamic bias				
– Contemporaneous term: m_{jt}	0.191	0.101	30.433	[0.051, 0.612]
– Lagged term: m_{jt-1}	−0.278	0.121	74.634	[−0.699, −0.110]
(f) LIML	0.007	0.036	24.212	[−0.042, 0.097]
(2) Revenues				
(a) Using the shares from the 1993 census	0.076	0.037	23.707	[0.023, 0.187]
(b) Normalizing ΔM_{jt} by the local pop. in 2013	0.067	0.041	22.672	[0.001, 0.181]
(c) Using individual pooled data ($\widetilde{m}_{jt}$)	0.029	0.014	27.496	[0.003, 0.059]
(d) Using a distance-based instrument	0.036	0.038	66.698	[−0.032, 0.117]
(e) Controlling for dynamic bias				
– Contemporaneous term: m_{jt}	0.152	0.110	30.433	[−0.002, 0.535]
– Lagged term: m_{jt-1}	−0.125	0.139	74.634	[−0.510, 0.068]
(f) LIML	0.069	0.042	24.212	[0.014, 0.186]
(3) Expenditures				
(a) Using the shares from the 1993 census	0.051	0.024	23.707	[0.007, 0.106]
(b) Normalizing ΔM_{jt} by the local pop. in 2013	0.048	0.025	22.672	[−0.002, 0.105]
(c) Using individual pooled data ($\widetilde{m}_{jt}$)	0.034	0.007	25.935	[0.020, 0.047]
(d) Using a distance-based instrument	0.040	0.021	66.698	[0.003, 0.084]
(e) Controlling for dynamic bias				
– Contemporaneous term: m_{jt}	−0.070	0.074	30.433	[−0.275, 0.084]
– Lagged term: m_{jt-1}	0.179	0.073	74.634	[0.028, 0.381]
(f) LIML	0.049	0.026	24.212	[−0.002, 0.106]

Notes: The Table reports various estimates of the effect of changes in the fraction of immigrants on natives' net fiscal contributions, tax contributions, and expenditures. All regressions include year dummies and interactions of MSA-level controls with year dummies. Results are net of individual-level controls (sex, age, education) and computed by trimming the distribution of contributions each year at 1% and 99%. We report 5%-level identification-robust Anderson–Rubin confidence sets. Results are expressed as 2018 equivalent COP$ million.

Table A2

Effect of immigration on natives' outflows

	Panel A. Variation across metropolitan areas			
	OLS		2SLS	
Immigrant share ($\tilde{m}_{njt}$)	−0.007***		−0.010***	
	(0.001)		(0.001)	
Kleibergen-Paap F-stat			21.343	
Observations	138		138	

	Panel B. Variation across neighborhoods (*tracts*)			
	OLS	OLS	2SLS	2SLS
Immigrant share ($\tilde{m}_{njt}$)	0.012	0.017***	−0.008**	−0.001
	(0.002)	(0.002)	(0.004)	(0.019)
Area by Year FE		✓		✓
Kleibergen-Paap F-stat			43.982	27.413
Observations	8,186	8,186	8,186	8,186

Notes: The Table reports the coefficients obtained by regressing the log of the number of natives on the fraction of immigrants ($\tilde{m}_{kt}$) between 2013–2018. Regressions in columns 1 and 3 include year and area (tract) fixed effects. Regressions in columns 2 and 4 control for tract and area by year fixed effects. The fraction of immigrants ($\tilde{m}_{njt}$) in Panel B is constructed by averaging immigrants in the tract using 2-year moving averages. In all regressions, observations are weighted by the total population in the area or tract in 2013. Columns 1 and 3 report in parentheses robust standard errors. Columns 2 and 4 report robust standard errors clustered at the area level. *** Denotes significance at 1%, ** significance at 5% and * significance at 10%.

B Data Appendix

In this section we describe the allocation of revenues and expenditures to each individual observation in the GEIH. Before moving on, two clarifying points are in order. First, items in the budget can be assigned as individual-based or group-based revenues/expenditures. In other words, based on self-reported information in the GEIH we can attribute some tax contributions and benefits to each observation independently (individual-based). For those that we cannot attribute directly, we assign revenues and expenditures on a per capita basis using individual eligibility (group-based). Second, since we have fiscal information at all levels of government (National government, social security sector, and regional and local governments), all group-based revenues and expenditures are assigned conditional on the geographical location of the individual. Thus, when we are able, we separate the contribution of each municipality from the national contribution.

Tables B1 and B2 list all revenues and expenditures sources and their corresponding grouping.

B.1 Allocation of Revenues

B.1.1 Income tax, social insurance, and payroll taxes

Income tax contributions are estimated by applying year-specific tax rates of the ordinary system to gross annualized taxable income. We use information from all sources of labor and capital income, non-labor compensation, the sale of fixed assets, and all payments for fees, commissions, services, emoluments, and among others reported in the GEIH.[1] We aggregate monthly information into annual income and apply the tax schedule of the ordinary system.[2] In our estimates, we allow for tax benefits that reduce the tax base: (i) costs and deductions, (ii) non-taxed income, and (iii) exempt income (25% for wage and salary workers and 50% for self-employed). In addition, we estimate tax withholdings for those individuals below the income threshold.[3]

We estimate social security contributions as follow. Contributions to the contributory health care regime, Colpensiones, and the pension solidarity fund (FSP) are estimated using year-specific rates applied to the estimated Contribution Base Income (IBC) for all wage and salary workers and self-employed. Contributions to the minimum pension guarantee fund (FGPM) are estimated by taking 1.5% of the IBC for those enrolled in a private pension fund. Social security contributions to special regimes (*e.g.*, police and the national railway fund) are assigned per capita to all workers enrolled in a special regime.

Payroll taxes (SENA, ICBF, ESAP, and industrial schools) are estimated using year-specific rates applied to the estimated base salary.

B.1.2 Corporate and capital taxes

To assign corporate taxes, net of nonresident foreign ownership share, we first divide the contribution from national public ownership of companies and households. We allocate the national public ownership share on a per capita basis and assign the share corresponding to resident households equally to all those receiving individual dividend and interest income. Corporate taxes at the national level are distributed using the total population in the country, while those at the municipal level are only

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[1] For 2017 and 2018, we estimate capital taxes including dividends as we cannot separately identify this in the GEIH.

[2] Before 2018, the tax each person had to pay was the highest value resulting from simultaneously declaring via the ordinary system and the National Alternative Minimum Tax (IMAN). For simplicity we use the ordinary system. This does not affect our results.

[3] According to Steiner and Cañas (2014), 76% of all income tax contributions in 2010 corresponded to tax withholdings of individuals who never filed a tax return.

assigned to the residents of the municipality. As described in Mesa-Guerra & Ramírez-Tobón (2022), corporate and capital taxes include the share of other taxes (*e.g.*, wealth, indirect, and property taxes) that is paid by firms and not households.

B.1.3   Wealth tax

Wealth tax contributions of resident households are estimated by applying year-specific tax rates to net wealth. We use a multi-step procedure to estimate net wealth based on information from the GEIH. First, for property owners, we include self-reported values on the minimum price a household would sell their dwelling if they decided to do so. Next, we estimate price-to-rent ratios for each year using self-assessed housing values and expected rent payments and apply these ratios to annualized self-reported individual rental income. We impute mean housing values by socio-economic strata to all missing values in each year and bottom-code to one million pesos. In our estimates, we allow for all tax deductions as recognized by law. The total tax attributed to each household is distributed among the household head and his or her spouse or partner using individual contributions to the combined household gross income.

B.1.4   VAT and other indirect taxes

We use estimates of decile-specific effective VAT tax rates from Mesa-Guerra & Ramírez-Tobón (2022) and apply these to the household gross income. We distribute total payments to indirect taxes to all members of the household using individual contributions to the household gross income.

B.1.5   Motor vehicle tax

We use a multi-step procedure to estimate motor vehicle tax contributions. First, we estimate the number of vehicles (cars and motorcycles) owned by the household. Second, we assign to each car the average value of modal car sold in Colombia (28 million pesos). We do the same for motorcycles using the 10 most sold brands (6.5 million pesos). Third, we apply the tax rate to each vehicle and use the resulting value to estimate each household's share in the total value aggregated at the municipal level. Fourth, we take these shares to assign motor vehicle tax revenues to each household. Each household's contribution is split equally among all adult (18+) members.

B.1.6   Property tax

To estimate property tax contributions, we use self-assessed values of all real estate for property owners. Each household's share in the property tax of the corresponding municipality is distributed among the head of the household, his/her spouse or partner, and those members who report rental income and are classified as an independent person.[4] We impute the average for all missing observations in each socio-economic strata and bottom-code to one million pesos.

B.1.7   Industry and commerce tax

Assigned per capita to all self-employed owning an industrial, commercial, or service business in the municipality.

B.1.8   Financial transactions tax

We use estimates of expenditures-to-income ratio by decile from Mesa-Guerra & Ramírez-Tobón (2022) and apply these to individual gross income. We then allocate financial transactions tax using an individual's expenditure share among those with monthly expenditures above 350 units of tax value.

B.1.9   Gross operating surplus, rents, and royalties

We assign gross operating surplus, rents, and royalties using per capita contributions to all adults (18+).

B.1.10   Urban phones tax

We assign urban phones tax using per capita contributions to all adults (18+) with access to a landline.

B.1.11   Educational services

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[4] We consider as an independent person any individual age 18 years or older who is not enrolled full time in secondary education and if enrolled in higher education is working more than half time. If a person is married, they are considered independent, regardless of their age.

We apportion revenues from educational services using per capita contributions to all individuals enrolled in higher education in public establishments.

B.1.12 National Teachers Pension Fund

We allocate these resources using per capita contributions to all workers in the educational sector (pre-school, primary, or secondary education) classified as wage and salary workers working for the government.

B.1.13 Other

All remaining tax payments, fees, fines and penalties, and other receipts, are assigned equally to all adults (18+).

Table B1
List of Government Revenues

Revenue source	Grouping
Personal income tax Withholding tax Capital gains taxes Social security contributions Payroll taxes	Income tax, social insurance, and payroll taxes
Corporate income tax Minimum presumptive tax Income tax for equality (CREE)	Corporate and capital taxes
Wealth tax	Wealth tax
Value-added tax Consumption tax Wine and spirits duties Beer and cider duties Tobacco duties Carbon tax Fuel tax Fuel surcharge Tariffs and customs duties	VAT and other indirect taxes
Vehicle excise duties	Motor vehicle tax
Property tax	Property tax
Industry and commerce tax	Industry and commerce tax
Financial transactions tax	Financial transactions tax
Gross operating surplus and rents Interests and dividends Oil and mining royalties	Gross operating surplus, rents and royalties

Urban phones tax	Urban phones tax
Educational services	Educational services
Social security contributions FOMAG Other receipts FOMAG	National Teachers Pension Fund
Fees and rights Fines and penalties Contributions Sale of goods and services Contractual income Other taxes Other receipts	Other

Source. Mesa-Guerra & Ramírez-Tobón (2022).

B.2   Allocation of Expenditures

B.2.1   'Pure' and 'congestible' public goods

We allocate public goods on a per capita basis to the entire population.

B.2.2   Law courts and prisons

Law courts and prison expenditures are assigned per capita among the total adult (18+) population using the share of each origin-country group in the total prison population. Information on the origin-country of prison inmates comes from the National Penitentiary and Prison Institute (INPEC).

B.2.3   Water supply

Water supply expenditures are assigned equally to all households with access to water supply and then divided per capita among all household members.

B.2.4   Health services

To assign health services, we first identify all individuals enrolled in the General Health Care Social Security System (SGSSS) as reported in the GEIH. We then impute the per capita personal health care cost (UPC) by age group and regime which is estimated by the Ministry of Health. We assign the complete value of the UPC to those affiliated to a defined contribution regime (including those affiliated to special

regimes) or to the subsidized regime, and 45% of the subsidized UPC as the cost of health services for all individuals not enrolled in the SGSSS.[5]

B.2.5   Education

Expenditures for education include expenditure for compulsory education, job training programs, and higher education. Use information on enrollment in the GEIH for each education level, we assign expenditures per capita to the relevant population. For compulsory education, we take all individuals aged 3 to 16 years attending compulsory education. For job training, we take all individuals enrolled in job training programs. For higher education, we take all individuals enrolled in higher education in public institutions.

B.2.6   Social protection

Social protection expenditures, both provided in the form of cash and in-kind benefits, includes benefits for sickness and disability, pension, family and children, unemployment, social housing, and vulnerable population. We assign directly all self-reported benefits received from government agencies in the GEIH, with the following caveats:

(i) Sickness and disability: for those outside the labor force that left their job due to illness, we assign the per capita expenditure; for those that directly report receiving disability-related benefits (variable $p1661s4a1$), we assign the reported value or impute the average when the value is not reported. We include values that contain descriptions such as: "discapacitado", "incapacidad", "invalidez", "personas especiales", or "cuidadores".

(ii) Pension: we assign values for pension income and Colombia Mayor (variables $p7500s2a1$ and $p1661s3a1$). We include pension-related benefits not reported directly under pension income that contain descriptions such as: "Adulto Mayor", "pension", "BEPS", "Colpensiones", and "tercera edad" (variables $p1661s4a1$ and $p1661s4a2$). We impute the minimum wage for pension income for all missing observations that reported to have received the benefit, and the average for Colombia Mayor.

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[5] This follows from Reina *et al.* (2018).

(iii) Family and children: we add all family and children benefits in the household and divide them evenly among all household members (variable *p1661s1a1*). We add income received from other government programs such as: "ICBF", "Madres Comunitarias", "Madres Sustitutas", "Hogar Gestor", or "Nutrición" (variables *p1661s4a1* and *p1661s4a2*). We impute the median income for all missing observations that reported to have received the benefit.

(iv) Social housing: we add all housing-related benefits in the household and divide them evenly among all household members (variable *p7500s2a1* for 2013-2015; variable *p1661s4a2* for 2016-2018). We add income received from other government programs that contain descriptions such as: "vivienda", "arriendo", "casa", "damnificado", "desastre", or "desalojo" (variables *p1661s4a1* and *p1661s4a2*). We impute the median income for all missing observations that reported to have received the benefit.

(v) Vulnerable population: we add all self-reported benefits in the household and divide them evenly among all household members (variable *p1661s1a1*). We add income that contains descriptions such as: "alcaldia/municipio", "gobernación/departamento", "desplazado", "victima", "ayuda humanitaria", "negritudes/afro", "migracion", "recicladores", "reintegracion", "reincertados", "desmovilizados", "familias en su tierra/guarda bosques", "integración social", or "jovenes en accion" (variables *p1661s4a1* and *p1661s4a2*). We impute the median income for all missing observations that reported to have received the benefit.

(vi) Other: since some households report higher values for the total benefits received from the government than the value reported for each individual program, we create a variable that contains the remaining difference. We add this by household and divide it evenly among all members. We do this also in years when we cannot disaggregate benefits by program.

B.2.7   Debt service

We assign debt service on a per capita basis to the entire population after excluding interests for debt acquired as a result of immigrants' arrival to the country. Using information on the year the debt was issued and the cohort of arrival of all immigrants, we exclude the share of immigrants in the total resident population by

year of arrival. Debt service of regional and local governments is allocated per capita as we cannot disaggregate it by issuance date.

Table B2
List of Government Expenditures by Sub-Function (UN COFOG-DANE)

Expenditure item		Grouping
1.1 - 1.2	Executive and legislative organs, financial and fiscal affairs, external affairs, and foreign economic aid	
1.3	General services	
1.4	Basic research	
1.5	R&D general public administration	
1.6	General public administration n.e.c.	'Pure' public goods
1.8	Transfers of a general character between different levels of government	
2.1	Military defense	
2.2	Civil defense	
2.3	Foreign military aid	
2.4	R&D defense	
2.5	Defense administration	
3.1	Police services	
3.2	Fire-protection services	
3.5	R&D public order and safety	
3.6	Public order and safety administration	
4.1	General economic, commercial, and labor affairs	
4.2	Agriculture, forestry, fishing, and hunting	
4.3	Fuel and energy	
4.4	Mining, manufacturing, and construction	
4.5	Transport	
4.6	Communication	
4.7	Other industries	
4.8	R&D economic affairs	
4.9	Economic affairs n.e.c.	
5.1	Waste management	
5.2	Wastewater management	
5.3	Pollution abatement	
5.4	Protection of biodiversity and landscape	
5.5	R&D environmental protection	'Congestible' public goods
5.6	Environmental protection administration	
6.1	Housing development	
6.2	Community development	
6.4	Street lighting	
6.5	R&D housing and community amenities	
6.6	Housing and community amenities administration	
7.5	R&D health	
7.6	Health administration	
8.1	Recreational and sporting services	
8.2	Cultural services	
8.3	Broadcasting and publishing services	
8.4	Religious and other community services	
8.5	R&D recreation, culture, and religion	
8.6	Recreation, culture, and religion administration	
9.5	Education not definable by level	
9.6	Subsidiary services to education	

9.7	R&D education	
9.8	Education administration	
10.8	R&D social protection	
10.9	Social protection administration	
3.3	Law courts	Law courts and prisons
3.4	Prisons	
6.3	Water supply	Water supply
7.1 - 7.2 - 7.3	Medical, hospital and pharmaceutical services	Health services
7.4	Public health services	
9.1 - 9.2	Pre-primary, primary, and secondary education	Education: compulsory education
9.3	Post-secondary non-tertiary education	Education: job training
9.4	Tertiary education	Education: higher education
10.1	Sickness and disability	Social protection: sickness and disability
10.2 - 10.3	Old age	Social protection: pensions
10.4	Family and children	Social protection: family and children
10.5	Unemployment	Social protection: unemployment
10.6	Housing	Social protection: housing
10.7	Socially vulnerable and excluded population	Social protection: vulnerable population
11	Public debt service	Debt service

Source. Mesa-Guerra & Ramírez-Tobón (2022).

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