

Acevedo, Rafael A.; Lorca-Susino, María; Mora, José U.

Article

The unfree, the freer, and the government: Economic freedom and the fiscal multiplier

Journal of Government and Economics (JGE)

Provided in Cooperation with:

Elsevier

Suggested Citation: Acevedo, Rafael A.; Lorca-Susino, María; Mora, José U. (2024) : The unfree, the freer, and the government: Economic freedom and the fiscal multiplier, Journal of Government and Economics (JGE), ISSN 2667-3193, Elsevier, Amsterdam, Vol. 13, pp. 1-8, <https://doi.org/10.1016/j.jge.2024.100098>

This Version is available at:

<https://hdl.handle.net/10419/340730>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by-nc-nd/4.0/>



The unfree, the freer, and the government: Economic freedom and the fiscal multiplier[☆]

Rafael Acevedo^{a,c,*}, Maria Lorca-Susino^{b,c}, Jose U. Mora^d

^a Menard Family Institute for Economic Inquiry, Heider College of Business, Creighton University, Omaha, NE, USA

^b Department of Economics, Miami-Herbert Business School, University of Miami, Coral Gables, FL, USA

^c Econintech, USA

^d Department of Business Administration, Sul Ross University, Alpine, TX, USA

ARTICLE INFO

JEL classification:

H11

P10

E12

E62

E63

Keywords:

Fiscal policy

Fiscal multiplier

Economic freedom

Interaction model

ABSTRACT

We investigate the causal effect of government spending on real output conditional on economic freedom. Using data for 161 countries from 2000 to 2019 results show, first, that the size of the fiscal multiplier is inversely related to the level of freedom and, second, countries with the mean level of economic freedom of the sample (6.9) had a multiplier of around 1. Developed countries are characterized by high levels of freedom and a fiscal multiplier lower than 1 while developing countries exhibit a fiscal multiplier higher than 1 and low levels of freedom. The differences between countries with low and high economic freedom in their fiscal multipliers are asymmetric, in fiscal contractions are higher. We conclude that countries should strengthen institutions to promote economic freedom and development.

1. Introduction

The Global Financial Crisis and Great Recession that began on December 2007 (National Bureau of Economic Research) brought attention to the literature on the strength of fiscal policy and the size of the fiscal multiplier, but that literature shows a lack of consensus. First, the size of the fiscal multiplier and its effectiveness vary across countries and over time as suggested by Alesina et al. (2008), Halland et al. (2011), Corsetti et al. (2012), Ojeda-Joya and Guzman (2017), Costa et al. (2017), Acevedo et al. (2022), among others. The exchange rate, degree of trade openness and capital mobility, foreign debt as a percentage of GDP, tightness of monetary policy, agents' liquidity constraint, automatic stabilizers, stability and flexibility of the financial system, institutional environment, and even population age might play important roles (Basso and Rachedi, 2021). Second, economists do not agree about the size of the multiplier within a country; for example, some economists determined that the fiscal multiplier in the USA in 2009 was as high as around 1.6 (Romer and Bernstein, 2009), while others found that during peacetime it was near zero (Barro, 2009).

Before the Great Recession, fiscal policy in some European and developing countries, including those in Latin America, tended to be procyclical (Gootjes and Haan, 2022; Strawczynski and Zeira, 2013; Gavin and Perotti 1997; Talvi and Vegh, 2005) and used the fiscal stimulus to combat the Great Recession (Didier et al., 2012; Vegh and Vuletin, 2014). This implies that spending multipliers around the world tend to be larger than reported in other developed economies. Acevedo et al. (2022), Halland et al. (2011), Alesina et al. (2008) suggest that this difference might be due to differences in the institutional environment.

That fiscal multipliers vary around the world is not unusual. Acevedo et al. (2022), in a study of Latin American countries, explore factors that condition the size of the fiscal multiplier. They use an interaction model like the one proposed by Brambor et al. (2006). More specifically, they estimate the marginal effect of changes in government spending conditional on three factors: (i) economic freedom, (ii) capital mobility, and (iii) trade's share of GDP. Factors (ii) and (iii) come from the Mundell-Fleming model, and factor (i) shapes those factors. To measure the institutional environment, Acevedo et al. employ the Fraser Institute's *Economic Freedom of the World* (EFW) index scores (Gwartney

[☆] This article was supported by a Faculty Summer Grant from the Menard Family Institute for Economic Inquiry at Creighton University. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the institute or Creighton University.

* Corresponding author.

E-mail address: rafaelacevedo@creighton.edu (R. Acevedo).

<https://doi.org/10.1016/j.jge.2024.100098>

Received 28 September 2023; Received in revised form 4 December 2023; Accepted 2 January 2024

Available online 6 January 2024

2667-3193/© 2024 The Authors. Published by Elsevier B.V. on behalf of The Academic Center for Chinese Economic Practice and Thinking, Tsinghua University and the Society for the Analysis of Government and Economics. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

et al., 2019). Their results show that the marginal effect of government expenditures on GDP growth is inversely related to levels of economic freedom, trade openness, and capital mobility. When these variables are at their sample means, the estimated multiplier is approximately 1.9. This estimate is consistent with that reported by Mora and Acevedo (2019).

In this paper, we extend Acevedo et al. (2022) to include most countries for which the relevant data are available. We include not only the real GDP growth rate, government expenditures, trade openness, and capital mobility but also the employment level and the human capital index from Penn World Table 10 and, as in Acevedo et al., some sub-indexes of the EFW. We carry out several tests to analyze whether our results are sensitive to changes in data by employing data from the Heritage Foundation, the World Bank, and Dražanová (2020). We find that most of the estimated fiscal multipliers are statistically significant at the 95 % level and show an inverse relationship with the level of economic freedom.

This article is organized as follows. In Section 2, we describe our econometric specification to estimate the multiplier using a panel of available annual data for 161 countries for the period 2000–2019. By focusing on this period, we can consider changes in spending before, during, and after the Global Financial Crisis. In Section 3, we report the results of our analysis; in Section 4, we analyze how sensitive our results are to including time and other variables; and in Section 5, we summarize our findings and conclude.

2. Econometric specification

Following Acevedo et al. (2022), our baseline specification to estimate the causal effect of economic freedom on the fiscal multiplier is an interaction model. Eq. (1) shows the basic panel-regression form:

$$\begin{aligned} \frac{Y_{i,t} - Y_{i,t-1}}{Y_{i,t-1}} = & \alpha_i + \delta_t + \beta_1 \frac{G_{i,t} - G_{i,t-1}}{Y_{i,t-1}} + \beta_2 \left(\frac{G_{i,t} - G_{i,t-1}}{Y_{i,t-1}} * EF_{i,t} \right) \\ & + \beta_3 EF_{i,t} + \beta_4 Open_{i,t} + \beta_5 \left(\frac{G_{i,t} - G_{i,t-1}}{Y_{i,t-1}} * Open_{i,t} \right) + \beta_6 EF_{i,t} * Open_{i,t} \quad (1) \\ & + \beta_7 \left(\frac{G_{i,t} - G_{i,t-1}}{Y_{i,t-1}} * EF_{i,t} * Open_{i,t} \right) + \beta_z Z_{i,t} + \epsilon_{i,t} \end{aligned}$$

Here, $Y_{i,t}$ is real GDP, $G_{i,t}$ denotes government consumption, $EF_{i,t}$ is the EFW index, $Open$ is trade openness, $Z_{i,t}$ is a vector of control variables such as the real interest rate, a 2007–2009 financial crisis dummy that takes the value of 1 for the recession and 0 otherwise, and an oil price dummy with a value 1 when the annual average price of a barrel of oil was \$100 and zero when it was not, α_i and δ_t are country and year fixed effects, and i and t refer to country and year. Aggregate shocks and country-specific trends in economic freedom, governmental expenditures, and real GDP are captured by the fixed effects. Controls allow us to account for confounding effects.

Eq. (1) captures the causal effect of a country's level of economic freedom on its fiscal multiplier isolating it from the effect that trade openness has on the multiplier. As Acevedo et al. (2022) explain, computing the fiscal multiplier using an interaction model must be done by estimating the marginal effects, as shown by Brambor et al. (2006). Then, from Eq. (1) we can see the following:

$$\begin{aligned} \text{Fiscal Multiplier} = & \frac{\partial \left(\frac{Y_{i,t} - Y_{i,t-1}}{Y_{i,t-1}} \right)}{\partial \left(\frac{G_{i,t} - G_{i,t-1}}{Y_{i,t-1}} \right)} \quad (2) \\ = & \beta_1 + \beta_2 (EF_{i,t}) + \beta_5 (Open_{i,t}) + \beta_7 (EF_{i,t} * Open_{i,t}) \end{aligned}$$

For this research, the fiscal multiplier is defined as the dollar increase in real GDP following a \$1 increase of government spending of a country at a specific level of economic freedom considering that the country is at the mean level of trade openness. We considered the mean level of

openness because this allows us to focus on our research purpose, the effect of economic freedom on the size of the multiplier, and also to use a more conservative approach than using the maximum and minimum values (low and high levels).

Following Basso and Rachedi (2021), Mora and Acevedo (2019), we also use an instrumental-variable interaction form to exploit the heterogeneous sensitivity of countries' governmental spending to changes in national military spending. This allows us to assume by construction that the systematic country-level sensitivity to changes in military spending is orthogonal. Moreover, the correlation between changes in government spending as a share of real GDP and changes in military expenditures as a share of real GDP is around 0.12, suggesting that the bulk of the variation is not driven by country-specific dynamics. We use, as a first-stage regression, the following equation:

$$\frac{G_{i,t} - G_{i,t-1}}{Y_{i,t-1}} = \alpha_i + \delta_t + \gamma_1 \frac{MS_{i,t} - MS_{i,t-1}}{Y_{i,t-1}} + \gamma_2 oil_p_{i,t} + \mu_{i,t} \quad (3)$$

Here, $MS_{i,t}$ is real military expenditures and $oil_p_{i,t}$ is the annual average of the OPEC oil price. Parameters α_i and δ_t are country and year-fixed effects, respectively. When we instrumented in the first stage with oil price we did not include in the second step the dummy oil shock.

Since we are measuring the causal effect of government spending shocks on output conditioned on the economic freedom level and country and year-fixed effects, our identification strategy relies on cross-country and intertemporal differences in economic freedom. For all periods, there are large differences among countries' economic freedom levels, with a minimum value of around 2 and a maximum value approximately equal to 9. Beside, evidence suggests that the level of economic freedom depends on a country's initial GDP and its ethnolinguistic fractionalization, as Lawson et al. (2020) explain. Hence, instrumenting economic freedom with initial GDP and ethnic fractionalization allows us to identify the causal effect of the level of economic freedom on the fiscal multiplier.

Finally, including other covariates in Eq. (1) allows us to account for other factors, such as shocks to trade openness, real interest rates, financial recessions, and oil prices. Moreover, the correlation between trade openness and economic freedom is 0.488, between the real interest rate and economic freedom is -0.013, while, the correlation between trade openness and the real interest rate is -0.115. Given the moderate positive relationship between trade openness and economic freedom, the potential collinearity among the model variables is fixed with the inclusion of the interaction terms in Eq. (1). In this way, our interactive model captures the causal effect of economic freedom on the effect of government spending on GDP.

3. Empirical evidence

In this section, we provide empirical evidence that fiscal multipliers have an inverse relationship with economic freedom. The evidence comes from a panel of 161 countries for 2000–2019 chosen to estimate the causal effect of government spending on real output, conditional on economic freedom. To carry out this estimation, we employ real GDP, government purchases, and economic-freedom scores and exploit cross-country and intertemporal variation in economic-freedom levels and changes in government spending as a share of real output.

3.1. Data and descriptive statistics

We built a data set using the expenditure side of real GDP (US\$, constant 2017 prices), the share of government consumption in GDP, the share of exports and imports in GDP, the employment level, and the human capital index from Penn World Table 10. Following Acevedo et al. (2022), we calculated a net economic-freedom index by using areas 2 (legal system and property rights), 3 (sound money), 4 (freedom to trade internationally), and 5 (regulation) from the Fraser Institute's EFW index. Additionally, we included a net economic-freedom index

computed with information from the Heritage Foundation data set. From the World Bank, we obtained military spending and the real interest rate. We used the annual average oil price of the OPEC basket (US \$ per barrel) as an energy-price proxy. We complete our data set with the ethnic-fractionalization index (Drazanova, 2020) and the Heritage Foundation's V-Dem and Polity5 indexes. Descriptive statistics are summarized in Table 1.

3.2. Empirical results: a first view

Panels 1.A to 1.H of Fig. 1 plot the marginal effects of government spending (the fiscal multiplier) against economic freedom at the mean level of trade openness. These are based on regressions of the baseline model (equation [1]) and on robustness tests using instrumental variables for government spending and economic freedom. In the estimations used to plot panels 1.A, 1.E, and 1.G, the robust standard errors are clustered at the country level, while panels 1.B, 1.C, 1.D, 1.F, and 1.H are plotted using estimations with Driscoll and Kraay (1998) robust standard errors, which allows for a more precise estimation of the effect of economic-freedom level on the fiscal multiplier.

The evidence suggests that the fiscal multiplier is positive for all countries and has a negative relationship with the economic freedom level when trade openness is at its mean level. Results show that most of our estimated fiscal multipliers (except panels 1.F and 1.E) are statistically significant at the 95 % level and that countries with higher levels of economic freedom have lower fiscal multipliers. The differences between our OLS and instrumental-variable (IV) estimations are similar to those in a large part of the literature (see Acevedo et al. 2022, Basso and Rachedi 2021, Chodorow-Reich 2019, Suárez et al. 2016, among others) using any interactive or instrumenting methodology and dependent variable.

Panels 1.A to 1.D refer to the OLS (baseline) model. Here, the fiscal-multiplier estimate is around 1.02 when economic freedom is at the mean level of the sample (6.85) and statistically significant at 95 %. When the level of economic freedom is high, around 9.2, the multiplier is around 0.63. Conversely, if economic freedom is low, as in Sudan (3.4) and Venezuela (3.8), the multiplier is around 1.61 and 1.54, respectively. This means that conditional on economic freedom, a \$1 increase in government spending has a positive but diminishing effect on real GDP as economic freedom increases. For example, Sudan—the country with the lowest average level of economic freedom (3.4) in the sample—would see its real GDP increase by \$1.61 following a \$1 increase in government spending. Venezuela—the country with the second-lowest average economic freedom index (3.8)—would see its real GDP increase by \$1.54 following a \$1 increase in government spending. For Colombia, with a level of economic freedom of 6.6, a \$1 increase in

government spending would result in a \$1.07 increase in real GDP. In Germany and Japan, with an economic-freedom average of 8.3, a \$1 increase in government spending would cause real GDP to increase by only \$0.78. Similarly, the USA, with an economic-freedom average of 8.6, would experience an increase of \$0.73, and in Singapore—the country with the highest average of economic freedom (at 9)—real GDP would increase by \$0.66. As mentioned before, all these estimates are statistically significant at the 95 % level.

When instrumenting by governmental expenditures with the share of military spending in GDP and oil prices, see panels 1.E and 1.F, estimates are not statistically significant under either the clustered by country robust standard errors or the Driscoll-Kraay (1998) robust standard errors.

Moving to panels 1.G and 1.H, in which we instrument only economic freedom, the fiscal multipliers are around 1.03 at the mean level of economic freedom and are statistically significant at the 95 % level of confidence in both estimations. Our results show the same trend for the effect of economic freedom on the size of the fiscal multiplier, which is statistically significant and around 1.76 and 0.53 when economic freedom has a value of 2 and 9.2, respectively.

Finally, the differences in results between OLS and the other estimation methods are driven by two factors: by the endogenous reaction of the level of economic freedom to an output shock, and by the ethnic fractionalization that could be affected by a government spending shock.

Our baseline model is a more conservative approach to estimating the sensitivity of fiscal multipliers to economic freedom in comparison with the rest of the methodologies we used. Our results suggest that our estimations are statistically significant and robust in the presence of exogenous shocks and other confounding effects. However, in Sections 3.3 and 4, we carry out other tests by considering different areas of the economic freedom index, time sensitivity, and other variables to determine the robustness of our results.

3.3. The impact of individual areas of the Economic Freedom of the World index

As mentioned before, we calculate the net economic-freedom index by using areas 2 (legal system and property rights), 3 (sound money), 4 (freedom to trade internationally), and 5 (regulation) from the EFW index. We now estimate the size of the multiplier using each area separately as a proxy for the level of overall economic freedom.

The findings displayed in Fig. 2, are qualitatively similar to the ones obtained in our baseline specification (Fig. 1), except that when we used regulation (area 5), results are somewhat different. However, the size of the fiscal multiplier is negatively affected by three out of the four areas of the EFW index. Estimates of fiscal multipliers are relatively similar to

Table 1
Summary statistics.

	Source	N	Mean	SD	Min	Max
$\frac{Y_{it} - Y_{it-1}}{Y_{it-1}}$	Penn World Table 10	3059	0.049	0.081	-0.813	0.818
$\frac{G_{it} - G_{it-1}}{Y_{it-1}}$		3059	0.009	0.023	-0.185	0.466
Trade Openness		3220	0.618	0.532	0.000	5.490
Employment		3220	18.327	72.404	0.038	799.307
Human Capital		2860	2.513	0.696	1.069	4.352
Net Economic Freedom	Fraser Institute	2878	6.847	1.197	2.103	9.143
Net Economic Freedom H	Heritage Foundation	3070	61.369	12.865	17.957	92.386
$\frac{MS_{it} - MS_{it-1}}{Y_{it-1}}$		2703	0.001	0.004	-0.052	0.058
Real Interest Rate	World Bank	1949	6.380	9.219	-78.518	93.915
Oil Price (Annual Average)	OPEC	3220	62.393	27.898	23.12	109.45
Ethnic Fractionalization	Drazanova (2020)	1746	0.450	0.254	0.015	0.884
Democracy (polity2)	Polity5 Project	2816	4.343	5.981	-10	10
Executive Constraints		2847	2.881	13.749	-88	7
Corruption (v2x_corr)	V-Democracy	2825	0.479	0.310	0.002	0.967

Note: Y is real GDP; G stands for government spending; MS represents military spending.

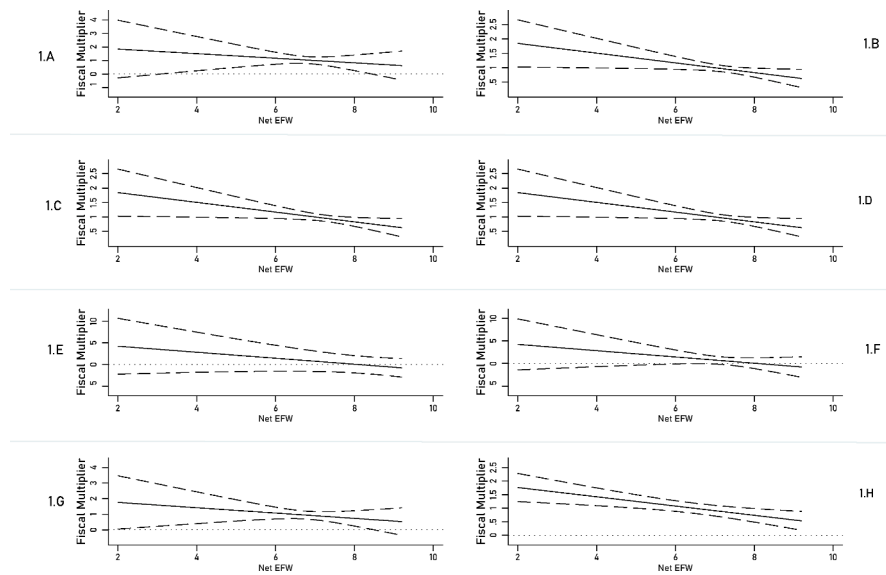


Fig. 1. Fiscal multipliers conditional on economic freedom

Trade openness at the mean level.

Note: For all plots the black solid lines are the fiscal multipliers estimated at the different levels of net economic freedom and at the mean level of trade openness (see Eq. (2)); the dashed lines are the 95 % confidence intervals. 1.A, 1.B, 1.C, and 1.D use our baseline model, in basic OLS form (see Eq. (1)). 1.E and 1.F use our IV-2SLS model, instrumenting only governmental expenditure. 1.G and 1.H use the IV-2SLS model, instrumenting only economic freedom. 1.A, 1.E, and 1.G cluster robust standard errors by country. 1.B, 1.C, 1.D, 1.F, 1.G and 1.H use Driscoll-Kraay robust standard errors. The dependent variable is the same for all specifications. All specifications include year and country fixed effects and control for real interest rates; 1.C, 1.E, and 1.F also include a dummy for the financial recession; and 1.D, 1.G, and 1.H include both financial recession and oil price dummies. Governmental expenditure is instrumented with national military expenditure (as a fraction of national real GDP) and the oil price. Economic freedom is instrumented with lagged national real GDP and the ethnic-fractionalization index. When instrumenting both economic freedom and governmental expenditure, the fiscal multipliers estimates are not statistically significant, these results are available upon request to the corresponding author.

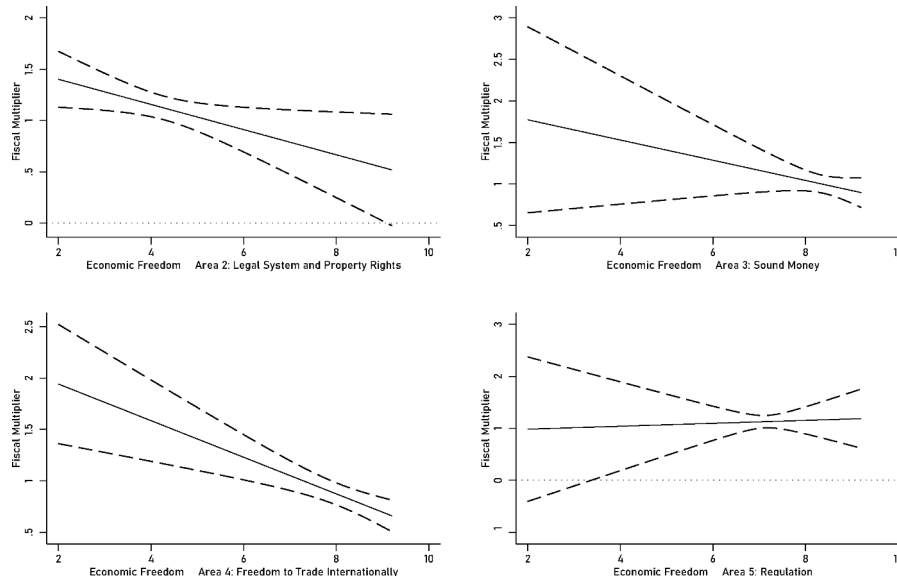


Fig. 2. Fiscal multiplier conditional on individual areas of economic freedom

Trade openness at the mean level.

Note: For all plots, the black solid lines are the fiscal multipliers estimated at the different levels of each economic-freedom area (see Eq. (2)) at the mean level of trade openness; the dashed lines are the 95 % confidence intervals. All models follow our baseline specification in basic OLS form (see Eq. (1)) using Driscoll-Kraay robust standard errors. The dependent variable is the same for all specifications. All specifications include year and country fixed effects and control for real interest rates and include dummies for oil shocks and financial recession.

the baseline model at the minimum value of freedom for these areas.

Interestingly, “regulation” (area 5) shows a statistically positive impact on fiscal multipliers when economic freedom takes values equal or greater than 4. Regulation refers to restrictions to entry into the market and the interference to engage in voluntary exchanges.

Consequently, less restriction to freedom of markets and voluntary exchanges are shown by a high level of the regulation index. In this sense, our results suggest that in those countries where regulations have a lower level of interference and there are no barriers to entry, the effect of the multiplier could be high. A plausible explanation for this result is

that the private sector in an economy that does not have interference and barriers to entry could take advantage of a shock in government spending through innovation, entrepreneurship, flexible labor regulations, low costs business start-ups, or low licensing restrictions, among others, which could result in a high multiplier. Nevertheless, that isolated relationship should be addressed in further research.

In this research, our general results demonstrate that the effect of the area “Regulations” does not stand for the whole effect of economic freedom on the fiscal multipliers. Results could be signaling that the level of restrictions in the other areas can amplify or diminish the fiscal multiplier with a higher and statistically significant effect than the area regulations. These results show that the outcomes shown in Fig. 1 are robust.

Our main findings confirm, at the worldwide level, what Acevedo et al. (2022) find for Latin American countries: the level of economic freedom is inversely related to the size of the multiplier. Our estimates for the size of the fiscal multiplier are also consistent with the values reported in the literature.

4. Robustness tests

4.1. Time sensitivity

The literature on the dynamics of fiscal multipliers is not conclusive. Scholars have used different lags for changes in output and government spending. Our baseline specification followed Acevedo et al. (2022), Mora and Acevedo (2019), Karras (2011, 2012), among others, and considered one-year changes in output and government spending. This allowed us to capture the short-run dynamic effects of fiscal policy in a parsimonious way. However, Basso and Rachedi (2021), Nakamura and Steinsson (2014), among others, consider two-year changes in output and spending. Thus, to conduct time-sensitivity robustness tests, we control for the dynamic effects of fiscal policy by adding two-, three-, four-, and five-year changes in output and spending.

Fig. 3 plots the estimates with the different specifications. Results

suggest that the negative relationship also holds in the long run (4 and 5 years; see Fig. 3C and D) as well as when shorter periods are considered (two and three years; see Fig. 3A and B). As a result, the inverse relationship between fiscal multipliers and economic freedom is unchanged for periods of two-, three-, four-, and five-years. Our main result is not sensitive to changes in the number of fiscal-policy lags.

4.2. Other robustness tests

In this section, we present the results of a final set of robustness tests. For this, we used a substitute for our economic freedom measure and added other control variables.

4.2.1. Including other control variables

Following Faria et al. (2016), we build two sets of control variables: economic controls (the employment rate, the inflation rate, and the capital stock) and institutional controls (ethnic fractionalization, democracy [Polity2 score], executive constraints, and corruption [v2x_corr]).

Panels 4.A to 4.C show our estimates when we include two sets of control variables to our baseline model specification (see Eq. (1)). Results indicate that all estimated fiscal multipliers are statistically significant, and they show the negative conditionality on economic freedom. When we use just the institutional controls (see Fig. 4, panel B), the negative slope becomes steeper. Finally, we estimate the fiscal multipliers controlling for both sets of controls. Results are qualitatively similar (see Fig. 4, panel C) to those reported in Fig. 1. Looking at these estimates, when economic freedom is at its lowest level (2) the size of the fiscal multiplier is around 1.74 and when economic freedom is at its highest level (9.2) the size of the multiplier is 0.57. At the mean level of economic freedom (6.85) the fiscal multiplier is 0.95. Thus, our results shown in Section 3.2, are robust even when we include other control variables. These tests support our findings that fiscal multipliers are inversely affected by changes in economic freedom.

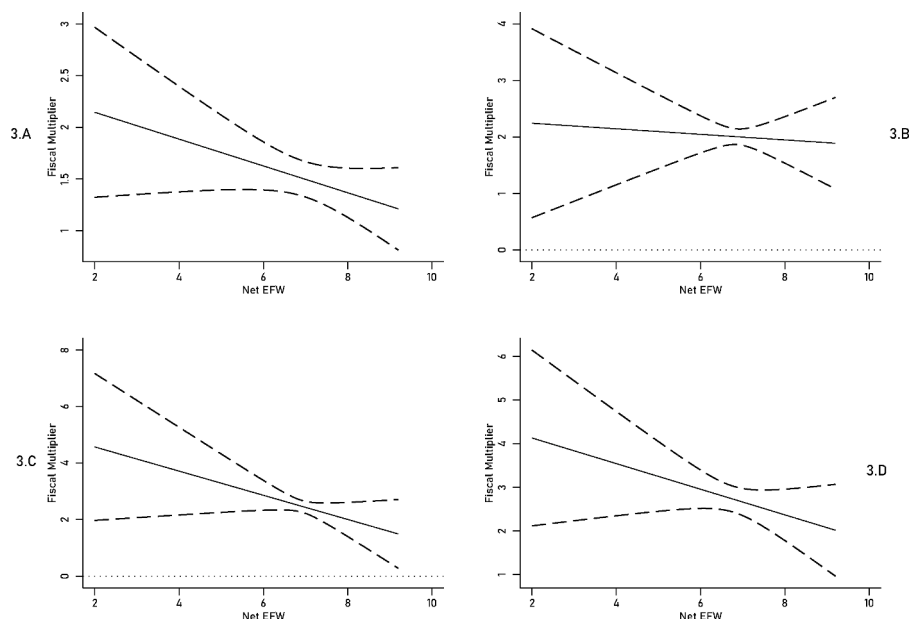


Fig. 3. Time-sensitivity test: fiscal multiplier conditional on economic freedom Trade openness at the mean level.

Note: For all plots, the black solid lines are the fiscal multipliers estimated at the different levels of economic freedom (see Eq. (2)) at the mean level of trade openness; the dashed lines are the 95 % confidence intervals. All models follow our baseline specification, in basic OLS form (see Eq. (1)) using Driscoll-Kraay robust standard errors but changing the lag used to calculate the change of real GDP and government spending. 3.A was estimated using 2-years change; 3.B 3-years, 3.C 4-years, and 3.D 5-years change. All specifications include year and country-fixed effects and control for real interest rates and include dummies for oil prices and financial recessions.

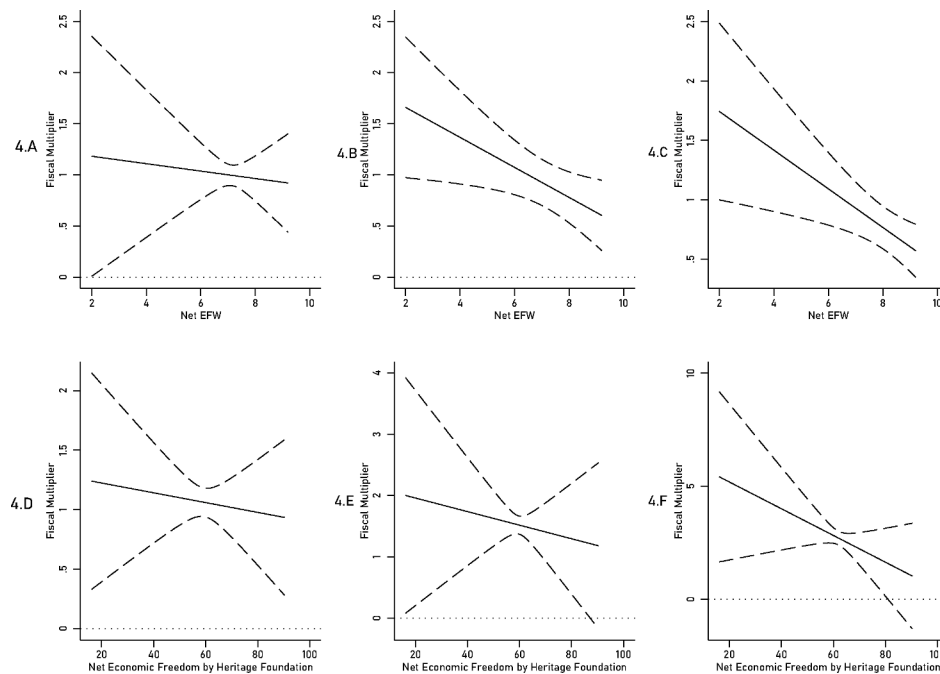


Fig. 4. Other robustness tests: fiscal multiplier conditional on economic freedom

Trade openness at the mean level.

Note: For all plots, the black solid lines are the fiscal multipliers estimated at the different levels of economic freedom (see Eq. (2)) and at the mean level of trade openness; the dashed lines are the 95 % confidence intervals. All models follow our baseline specification, in basic OLS form (see Eq. (1)) using Driscoll-Kraay robust standard errors. The dependent variable is the same for all specifications. All specifications include year and country-fixed effects and control for real interest rates, financial recession, and oil shocks. Panel 4.A to 4.C are estimated using the net economic freedom calculated with the Fraser Institute's dataset. Panel 4.A includes a set of economic controls (employment, inflation, and capital stock); 4.B includes a set of institutional control variables (democracy, ethnic fractionalization, corruption, executive constraints, and human capital); 4.C includes both sets of control variables (economic and institutional). Panels 4.D, 4.E, and 4.F are estimated using net economic freedom measured as the average of (i) property rights, (ii) business freedom, (iii) labor market freedom, (iv) monetary freedom, (v) trade freedom, (vi) investment freedom, and (vii) financial freedom components of the economic freedom index published by the Heritage Foundation. Panel 4.D is estimated using a one-year lag, 4.E using a two-year lag, and 4.F using a five-year lag.

4.2.2. Validating our findings by using another economic freedom index

Murphy (2016) says that the two major sources, and widely used in academic research, are the economic freedom indexes published by the Fraser Institute, the one we have used, and the Heritage Foundation. The author also suggests that researchers should use them “as robustness checks for one another as applicable” (p. 74). However, the same author explains that there are differences in the measure of the overall economic freedom index between these two institutes. Finally, he shows that the relationship between both indexes is around 0.88, meaning that both are highly correlated and measure “the same thing” (p. 72).

In this direction, we conducted a robustness check to validate the relationship between fiscal multipliers and economic freedom by using the Heritage Foundation data. It is important to point out, that the Heritage Foundation index measures the overall economic freedom using twelve components including some institutional variables and weights that the Fraser Institute EFW index does consider. For this reason, we recalculated net economic freedom, now from 0 to 100 being 100 the freest, as the average of the following components of the Heritage Foundation dataset: (i) property rights, (ii) business freedom, (iii) labor market freedom, (iv) monetary freedom, (v) trade freedom, (vi) investment freedom, and (vii) financial freedom. The variables net economic freedom using the Heritage Foundation and the Fraser Institute datasets have a correlation of around 0.89 which is similar to the found by Murphy (2016) for the measure of the overall index of these 2 sources.

These new results are qualitatively comparable to our earlier findings. When using a 1-year lag (see Fig. 4.D), at the mean level of openness, the fiscal multiplier is 1.23 when economic freedom is at its lowest level (around 18) and is 0.9 when freedom is at its highest level (92). Under this new net economic freedom index, the average level of

freedom in our sample is 61.4 and reports a fiscal multiplier of 1.05, all our estimated fiscal multipliers are statistically significant at the 95 % level. Results show the same inverse relationship with the level of economic freedom when using a lag of 2- and 5-year lags (see Fig. 4.E and F). Therefore, our baseline results, reported in Fig. 1, are robust and remain the same even when we use another source for the level of economic freedom and different lags.

Finally, our baseline-model results are statistically significant and qualitatively consistent with the ones reported by (among others) Basso and Rachedi (2021), Metelli and Pallara (2020), Hagedorn et al. (2019), Suárez et al. (2016), Auerbach and Gorodnichenko (2012), Romer and Romer (2010) for the USA; Restrepo (2020), López Piñeros (2020), Ojeda-Joya and Guzman (2017) for Colombia; Owyang et al. (2013) for Canada; Matheson and Pereira (2016) for Brazil; Baum and Koester (2011) for Germany; Acconcia et al. (2014) for Italy; Šimović and Deskar-Škrbić (2013) for Croatia; and Guo et al. (2016) for China.

5. The case for asymmetry

Results signal the causal effect of the level of economic freedom on the size of the fiscal multiplier. However, as in recent literature (see Born et al. 2023), an analysis should be conducted to investigate whether the economic freedom level has an asymmetric effect on the multiplier considering a negative or positive fiscal shock.

Under this consideration, our main results show that as lower the economic freedom, the higher the fiscal multiplier. Such as result should not be analyzed only thinking on a positive fiscal shock that would lead to an increase in real output. The problem with larger fiscal multipliers is that countries are highly affected by fiscal policies, and not only when it is an expansionary one but also when it is a contractionary. The potential

benefit of a larger multiplier means that real output in such countries would increase by more than in countries with a lower multiplier when an expansionary policy is applied. However, the cost occurs when a contractionary policy is applied because the economy with a larger fiscal multiplier will have a larger decrement in its output than an economy with a lower multiplier. The latter could imply that fiscal policy in countries with low economic freedom tend to amplify the business cycle due to their procyclical configuration.

In that regard, we estimated the asymmetric effects of contractionary and expansionary fiscal policies conditional on economic freedom. For this purpose, we used the specification of our baseline model (see Eq. (1)) and estimated, separately, the effects of negative and positive fiscal shocks on the fiscal multiplier. Results are shown in Fig. 5.

When economic freedom is between 4.2 and 7.4 all fiscal multipliers are statistically significant in both estimations, see Fig. 5. A positive shock in a country with an economic freedom around 4.2 has a fiscal multiplier around 1.12 while the multiplier in a country with an economic freedom of 7.2 is approximately 1.04. If this is the case, that means that for each \$1 of increment of government expenditures real output increases by \$0.08 more in an economy with a low level of economic freedom than in an economy with a high level of economic freedom. Conversely, if these two economies apply a contractionary policy, results suggest that for each \$1 of decrement in government expending, the economy with 4.2 of economic freedom would see its real output fall by \$3.91 while the economy with 7.4 of economic freedom would suffer a contraction of \$0.43. Then, the difference in a negative shock is higher than in a positive shock (\$3.54 Vs \$0.08) making the country with low level of freedom more vulnerable to fiscal shocks.

6. Conclusions

The Global Financial Crisis and Great Recession drew attention to the literature on the effectiveness of fiscal policy and the size of the fiscal multiplier. But economists are far from reaching a consensus on this issue. The literature shows that the size of the fiscal multiplier and its effectiveness vary across countries and over time. These variables depend on the exchange rate regime, international trade and capital movements, the percentage of foreign debt in GDP, the age of the population, and the institutional infrastructure. Economists disagree even when discussing the same country. We argued that not only the above factors matter but also other institutional factors, such as the level of economic freedom, that shape agents' decision-making in a country. Thus, we investigated how economic freedom affects the effectiveness of

fiscal policy and the size of the multiplier.

To accomplish this task, we adapted an interaction model following Acevedo et al. (2022), Basso and Rachedi (2021), Brambor et al. (2006) and included most countries for which data are available. We considered some areas of the Fraser Institute's EFW index to compute our index of economic freedom. We conducted several tests employing information from other sources to see whether our results are sensitive to changes in data. We found that in all specifications and at the 95 % confidence level, the fiscal-multiplier estimates are around 1.0 when economic freedom is at the mean level of the sample (6.9). When economic freedom is high (above 8), the multiplier is 0.7. When economic freedom is low, as in Sudan (3.4) and Venezuela (3.8), the multiplier is around 1.6. These results illustrate the inverse relationship between the fiscal multiplier and the level of economic freedom. Additionally, our findings are robust to different specifications and data sources. After considering several outcomes—such as exchange rate regimes, financial systems, tightness of monetary policy, the ratio of foreign debt to GDP—and the level of economic freedom, we find that the estimated values for the fiscal multiplier are consistent with the results reported in the literature.

Our results should not be misread or misinterpreted. They seem to suggest that a benefit arises from a low level of economic freedom because fiscal policy could have a larger effect, however, the cost of a prolonged economic expansion based on sustained expansionary fiscal policy is a progressive increase in the price level and an oversized government. This is unfavorable for developing countries, which are those with lower levels of freedom, because having larger fiscal multipliers also expose them to a higher cost when a contractionary fiscal policy must be applied. On the other hand, in countries with a high or mean level of economic freedom, an expansionary policy could affect firms' and individuals' decision-making, causing a misallocation of resources and, possibly, opening the doors to a higher level of government interventionism, which would lead them to a decrement of the economic freedom; at the end, with less economic freedom than at the beginning, the costs associated with stopping the expansionary fiscal policy would be higher than the benefits obtained.

Another important point is that the countries with high economic freedom are mostly developed or those developing countries which have created institutions to respect private property and promoted investment and the transformation of their productive apparatus as the main elements for sustained economic growth. These countries have not restricted economic freedom and have not used active fiscal policy to reach their current state of development. On the contrary, it is economic freedom and strong institutions that have allowed them to become the

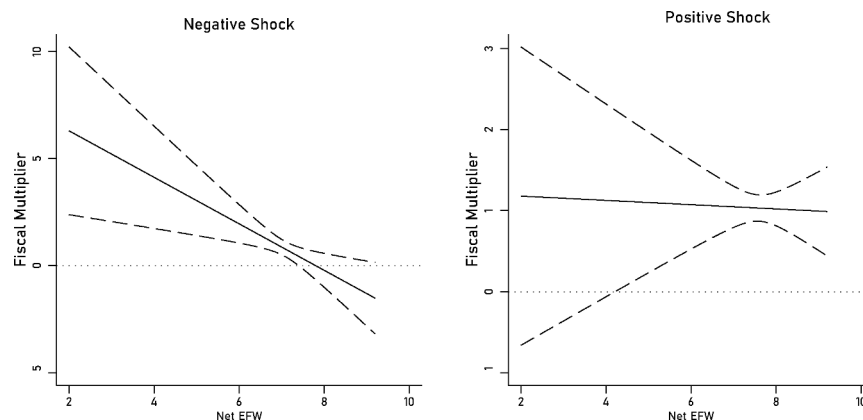


Fig. 5. Asymmetric effects of economic freedom on fiscal multipliers

Trade openness at the mean level.

Note: For all plots, the black solid lines are the fiscal multipliers estimated at the different levels of economic freedom (see Eq. (2)) at the mean level of trade openness; the dashed lines are the 95 % confidence intervals. All models follow our baseline specification, in basic OLS form (see Eq. (1)) using Driscoll-Kraay robust standard errors but only using negative or positive changes of government spending. All specifications include year and country-fixed effects and control for real interest rates and include dummies for oil shocks and financial recession.

leading economies in the world.

Finally, in recent literature focused on fiscal shocks, there is special attention to the asymmetric effects of positive and negative fiscal shocks (see Born et al. 2023, among others). We measured the asymmetric effects and the results show that the differences in the multipliers conditioned on economic freedom are very low under fiscal expansions compared with the larger differences under fiscal contractions. This means that there is no such thing as a benefit of bartering economic freedom for a higher fiscal multiplier.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgments

The authors thank the Menard Family Institute for Economic Inquiry at Creighton University for supporting this research. Dr. Jose Mora thanks the Menard Family Institute for Economic Inquiry for generously inviting him as a Faculty Visiting Fellow for the academic year 2022–2023, during his visit he could work on this paper. The authors also thank an anonymous reviewer, the editor of the Journal of Government and Economics, and some participants of the APEE 2023 meeting, and Econintech Research Seminars, for their comments and suggestions. Any error is solely the responsibility of the authors.

References

- Acevedo, R.A., Mora, J., Young, A.T., 2022. The government spending multiplier in Latin American countries: does the institutional environment matter? *J. Financ. Econ. Policy* 14 (4), 476–490. <https://doi.org/10.1108/JFEP-02-2021-0030>.
- Acconcia, A., Corsetti, G., Simonelli, S., 2014. Mafia and public spending: evidence on the fiscal multiplier from a quasi-experiment. *Am. Econ. Rev.* 104 (7), 2185–2209. <http://www.jstor.org/stable/42920883>.
- Alesina, A., Campante, F.R., Tabellini, G., 2008. Why is fiscal policy often procyclical? *J. Eur. Econ. Assoc.* 6 (5), 1006–1036. <https://doi.org/10.1162/JEEA.2008.6.5.1006>.
- Auerbach, A., Gorodnichenko, Y., 2012. Measuring the output responses to fiscal policy. *Am. Econ. J. Macroecon.* 4 (2), 1–27. <https://doi.org/10.1257/pol.4.2.1>.
- Barro, R.J., 2009. Government spending is no free lunch. *Wall Street J.* A.17, 22nd of January 2009. https://scholar.harvard.edu/files/barro/files/ws_j_09_0122_govspend_nofree_lunch-2.pdf.
- Basso, H.S., Rachedi, O., 2021. The young, the old, and the government: demographics and fiscal multipliers. *Am. Econ. J. Macroecon.* 13 (4), 110–141. <https://doi.org/10.1257/mac.20190174>.
- Baum, A. & Koester, G.B. (2011). The impact of fiscal policy on economic activity over the business cycle—Evidence from a threshold VAR analysis. *Deutsche Bundesbank Discussion Paper Series 1: Economic Studies* No 03/2011. <https://www.econstor.eu/bitstream/10419/44961/1/65618079X.pdf>.
- Brambor, T., Roberts, W., Golder, M., 2006. Understanding interaction models: improving empirical analyses. *Political Anal.* 14 (1), 63–82.
- Born, B., D'Ascanio, F., Mueller, G., Pfeifer, J., 2023. Mr. Keynes meets the classics: government spending and the real exchange rate. *J. Political Econ.* <https://doi.org/10.1086/727707>.
- Chodorow-Reich, G., 2019. Geographic cross-sectional fiscal spending multipliers: what have we learned? *Am. Econ. J. Econ. Policy* 11 (2), 1–34. <https://doi.org/10.1257/pol.20160465>.
- Corsetti, G., Meier, A., Müller, G.J., Devereux, M.B., 2012. What determines government spending multipliers? *Econ. Policy* 27 (72), 521–565. <http://www.jstor.org/stable/23271745>.
- Costa, C.J., Garcia-Cintado, A., Vaz Sampaio, A., 2017. Post-2008 Brazilian fiscal policy: an interpretation through the analysis of fiscal multipliers. *Estud. Econ.* 47 (1), 93–124. <https://doi.org/10.1590/0101-41647149caa>.
- Didier, T., Constantino, H., Schmukler, S., 2012. How resilient and countercyclical were emerging economies to the global financial crisis. *J. Int. Money Financ.* 31 (8), 2052–2077. <https://doi.org/10.1016/j.jimonfin.2012.05.007>.
- Drazanova, L., 2020. Introducing the historical index of ethnic fractionalization (HIEF) dataset: accounting for longitudinal changes in ethnic diversity. *J. Open Humanit. Data* 6 (September). <https://doi.org/10.5334/johd.16>.
- Driscoll, J.C., Kraay, A.C., 1998. Consistent covariance matrix estimation with spatially dependent panel data. *Rev. Econ. Stat.* 80 (4), 549–560. <http://www.jstor.org/stable/2646837>.
- Faria, H.J., Montesinos-Yufa, H.M., Morales, D.R.M., Navarro, C.E., 2016. Unbundling the roles of human capital and institutions in economic development. *Eur. J. Political Econ.* 45 (supplement), 108–128. <https://doi.org/10.1016/j.ejpoleco.2016.08.001>.
- Gavin, M., Perotti, R., 1997. Fiscal policy in Latin America. Ben S. Bernanke and Julio Rotemberg NBER Macroecon. Annu. 12, 11–72. <http://www.nber.org/chapters/c11036>.
- Gootjes, B., de Haan, J., 2022. Procyclicality of fiscal policy in European Union countries. *J. Int. Money Financ.* 120 (February), 1–29. <https://doi.org/10.1016/j.jimonfin.2020.102276>.
- Guo, Q., Liu, C., Ma, G., 2016. How large is the local fiscal multiplier? Evidence from Chinese counties. *J. Comp. Econ.* 44 (2), 343–352. <https://doi.org/10.1016/j.jce.2015.06.002>.
- Gwartney, J.D., Lawson, R.A., Hall, J., Murphy, R., 2019. *Economic Freedom of the World: 2019 Annual Report*. Fraser Institute, Vancouver, Canada.
- Halland, H., & Bleaney, M. (2011). Explaining the procyclicality of fiscal policy in developing countries, CREDIT Research Paper, No. 11/09, The University of Nottingham, Centre for Research in Economic Development and International Trade (CREDIT), Nottingham. <http://hdl.handle.net/10419/65471>.
- Hagedorn, M., Manovskii, I., & Mitman, K. (2019). The fiscal multiplier. NBER Working Paper 25571. <http://www.nber.org/papers/w25571>.
- Karras, G., 2012. Trade openness and the effectiveness of fiscal policy: some empirical evidence. *Int. Rev. Econ.* 59 (3), 303–313. <https://doi.org/10.1007/s12232-011-0126-9>.
- Karras, G., 2011. Exchange-rate regimes and the effectiveness of fiscal policy. *J. Econ. Integr.* 26 (1), 29–44. <https://doi.org/10.11130/jei.2011.26.1.29>.
- Lawson, R.A., Murphy, R., Powell, B., 2020. The determinants of economic freedom: a survey. *Contemp. Econ. Policy* 38, 622–642. <https://doi.org/10.1111/coep.12471>.
- López Pinerós, M., 2020. Fiscal multipliers and balance sheet effects in a small open economy. *Rev. Econ. Rosario* 23 (2), 1–42. <https://doi.org/10.12804/revistas.urosario.edu.co/economia/a.9178>.
- Matheson, T.D. & Pereira, J. (2016). Fiscal multipliers for Brazil. IMF Working Paper WP/16/79. <https://www.imf.org/en/Publications/WP/Issues/2016/12/31/Fiscal-Multipliers-for-Brazil-43831>.
- Metelli, L. & Pallara, K. (2020). Fiscal space and the size of fiscal multiplier. Banca d'Italia. Temi di Discussione (Working Paper) 1293. https://www.bancaditalia.it/pubblicazioni/temi-discussione/2020/2020-1293/en_Tema_1293.pdf.
- Mora, J.U., Acevedo, R.A., 2019. Fiscal policy effects and capital mobility in Latin American countries. *J. Econ. Integr.* 34 (1), 159–188. <https://doi.org/10.11130/jei.2019.34.1.159>.
- Murphy, R.H., 2016. A comment on “Measuring economic freedom: a comparison of two major sources. *J. Priv. Enterp.* 31 (3), 69–91.
- Nakamura, E., Steinsson, J., 2014. Fiscal stimulus in a monetary union: evidence from US regions. *Am. Econ. Rev.* 104 (3), 753–792. <https://doi.org/10.1257/aer.104.3.753>.
- Ojeda-Joya, J. & Guzman, O.E., 2017). The size of fiscal multipliers and the stance of monetary policy in developing economies. Borradores De Economía No 1010, Banco de La República. https://www.banrep.gov.co/sites/default/files/publicaciones/archivos/be_1010.pdf.
- Owyang, M., Ramey, V.A., Zubairy, S., 2013. Are government spending multipliers greater during periods of slack? Evidence from twentieth-century historical data. *Am. Econ. Rev.* 103 (3), 129–134. <https://doi.org/10.1257/aer.103.3.129>. Papers and Proceedings.
- Restrepo, J., E. (2020). How big are fiscal multipliers in Latin America? IMF Working Paper WP/20/17. <https://www.imf.org/en/Publications/WP/Issues/2020/01/31/How-Big-are-Fiscal-Multipliers-in-Latin-America-48959>.
- Romer, C., & Bernstein, J. (2009). The job impact of the American recovery and reinvestment plan. Mimeo. Council of Economic Advisers. https://obamawhitehouse.e.archives.gov/sites/default/files/docs/cea_9th_arra_report_final.pdf.
- Romer, C.D., Romer, D.H., 2010. The macroeconomic effects of tax changes: estimates based on a new measure of fiscal shocks. *Am. Econ. Rev.* 100, 763–801. <https://doi.org/10.1257/aer.100.3.763>.
- Šimović, H., Deskar-Škrbić, 2013. Dynamic effects of fiscal policy and fiscal multipliers in Croatia. *J. Econ. Bus.* 31 (1), 55–78. <https://hrcak.srce.hr/file/153170>.
- Strawczynski, M. & Zeira, J. (2013). Procyclicality of fiscal policy in emerging countries: the cycle is the trend. Central Banking, Analysis, and Economic Policies Book Series. In Luis Felipe Céspedes & Jordi Galí. *Fiscal Policy and Macroeconomic Performance*. Santiago de Chile: Central Bank of Chile, 427–66. 10.2139/ssrn.2124456.
- Suárez S., Juan C. & Wingender, P., (2016). Estimating local fiscal multipliers. NBER Working Paper 22425. <http://www.nber.org/papers/w22425>.
- Talvi, E., Vegh, C.A., 2005. Tax base variability and pro-cyclical fiscal policy in developing countries. *J. Dev. Econ.* 78 (1), 156–190. <https://doi.org/10.1016/j.jdeveco.2004.07.002>.
- Vegh, C.A., Vuletin, G., 2014. The road to redemption: policy response to crises in Latin America. *IMF Econ. Rev.* 62 (4), 526–568. <http://www.jstor.org/stable/43297891>.