# THE UNFREE, THE FREER, AND THE GOVERNMENT: ECONOMIC FREEDOM AND THE FISCAL MULTIPLIER\*

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### Abstract

We investigate the causal effect of government spending on real output conditional on economic freedom. Using data for 161 countries from 2000–2019, results show that countries with the mean level of economic freedom of the sample (6.9) had a multiplier of around 1, and the size of the fiscal multiplier is inversely related to the level of freedom. 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. We conclude that countries should strengthen institutions to promote development.

JEL Codes: H11; P10; E12; E62; E63

Keywords: fiscal policy, fiscal multiplier, economic freedom, interaction model

<sup>\*</sup>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. An early version of this research was circulated as a Working Paper on SSRN and Researchgate with the title "*The Conditional Effect of Economic Freedom on Fiscal Multipliers*."

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### 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 & Guzman, (2017), Costa et al. (2017), and 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 & 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 & 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 & Haan, 2022; Strawczynski & Zeira, 2013; Gavin & Perotti 1997; Talvi & Vegh, 2005) and used the fiscal stimulus to combat the Great Recession (Didier, et al. 2012; Vegh & 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), and 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 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 & 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 subindexes 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 Drazanova (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.

#### **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. Equation (1) shows the basic panel-regression form:

$$\frac{Y_{i,t} - Y_{i,t-1}}{Y_{i,t-1}} = \alpha_i + \delta_t + \beta_1 \frac{G_{i,t} - G_{i,t-1}}{Y_{i,t-1}} + \beta_2 \left(\frac{G_{i,t} - G_{i,t-1}}{Y_{i,t-1}} * EF_{i,t}\right) + \beta_3 EF_{i,t} + \beta_z Z_{i,t} + \dot{\mathbf{O}}_{t,t}$$
(1)

Here,  $Y_{i,t}$  is real GDP,  $G_{i,t}$  denotes government consumption,  $EF_{i,t}$  is the EFW index,  $Z_{i,t}$  is a vector of control variables,  $\alpha_i$  and  $\delta_t$  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. The controls allow me to account for confounding effects.

Equation (1) captures the causal effect of a country's level of economic freedom on its fiscal 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 equation (1) we can see the following:

Fiscal Multiplier = 
$$\frac{\partial \left(\frac{Y_{i,t} - Y_{i,t-1}}{Y_{i,t-1}}\right)}{\partial \left(\frac{G_{i,t} - G_{i,t-1}}{Y_{i,t-1}}\right)} = \beta_1 + \beta_2 \left(EF_{i,t}\right)$$
(2)

The fiscal multiplier is defined here as the dollar increase in real GDP following a \$1 increase of government spending of a country at a specific level of economic freedom.

Following Basso & Rachedi (2021) and Mora & 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:

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

Here,  $MS_{i,t}$  is real military expenditures and  $inf_{i,t}$  is the inflation rate. Parameters  $\alpha_i$  and  $\delta_t$  are country and year-fixed effects, respectively.

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. Besides, 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 equation (1) allows us to account for other factors, such as trade openness and the real interest rate, widely accepted as confounding effects in the literature about determinants of fiscal multipliers. In this way, our interactive model captures the causal effect of economic freedom on the effect of government spending on GDP.

#### **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.

#### Data and descriptive statistics

We build 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 calculate 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 include a net economic-freedom index computed with information from the Heritage Foundation data set. From the World Bank, we obtain military spending, the real interest rate, and the inflation rate. 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.

	Source	Ν	Mean	SD	Min	Max	
$\frac{Y_{i,t} - Y_{i,t-1}}{Y_{i,t-1}}$		3,059	0.049	0.081	-0.813	0.818	
$\frac{G_{i,t} - G_{i,t-1}}{Y_{i,t-1}}$	Penn World Table 10	3,059	0.009	0.023	-0.185	0.466	
Openness		3,220	0.618	0.532	0.000	5.490	
Employment		3,220	18.327	72.404	0.038	799.307	
Human Capital		2,860	2.513	0.696	1.069	4.352	
Net Economic Freedom	Fraser Institute	2,878	6.847	1.197	2.103	9.143	
Net Economic Freedom H	Heritage Foundation	3,069	60.479	12.044	16.250	90.245	
$\frac{MS_{i,t} - MS_{i,t-1}}{Y_{i,t-1}}$	World Bank	2,703	0.001	0.004	-0.052	0.058	
Real Interest Rate	ti offici Duffic	1,949	6.380	9.219	-78.518	93.915	
Inflation (CPI)		2,752	5.508	14.414	-8.975	513.907	
Ethnic Fractionalization	Drazanova (2020)	1,746	0.450	0.254	0.015	0.884	
Democracy (polity2)	Polity5 Project	2,816	4.343	5.981	-10	10	
Executive Constraints		2,847	2.881	13.749	-88	7	
<i>Corruption (v2x_corr)</i>	V-Democracy	2,825	0.479	0.310	0.002	0.967	

Table 1Summary Statistics

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

# Empirical results: A first view

Panels 1.A and 1.B of figure 1 plot the marginal effects of government spending (the fiscal multiplier) against economic freedom. These are based on regressions of the baseline model (equation [1]) and on robustness tests using instrumental variables for government spending, economic freedom, and both spending and freedom. In the estimations used to plot panels 1.A, 1.C, 1.E, and 1.G, the robust standard errors are clustered at the country level, while panels 1.B, 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.





Note: For all plots the black solid lines are the fiscal multipliers estimated at the different levels of net economic freedom found in the sample (see equation [2]); the dashed lines are the 95% confidence intervals. 1.A and 1.B use our baseline model, in basic OLS form (see equation [1]). 1.C and 1.D use our IV-2SLS model, instrumenting only governmental expenditure. 1.E and 1.F use the IV-2SLS model, instrumenting only economic freedom. 1.G and 1.H use the IV-2SLS model, instrumenting governmental expenditure and economic freedom. 1.A, 1.C, 1.E, and 1.G cluster robust standard errors by country. 1.B, 1.D, 1.F, and 1.H use Driscoll-Kraay robust standard errors. Dependent variable is the same for all specifications. All specifications include year and country fixed effects and control for trade openness and real interest rates. Governmental expenditure is instrumented with national military expenditure (as a fraction of national real GDP) and inflation. Economic freedom is instrumented with lagged national real GDP and the ethnic-fractionalization index.

The evidence suggests that the fiscal multiplier is positive for all countries and has a negative relationship with the economic-freedom level. Results (except panel 1.G) show that our estimated fiscal multipliers 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 & Rachedi, 2021; Chodorow-Reich, 2019; and Suárez & Wingender, 2016, among others) using any interactive or instrumenting methodology and dependent variable.

Panels 1.A and 1.B refer to the OLS (baseline) model. Here, the fiscal-multiplier estimate is around 1.01 when economic freedom is at the mean level of the sample (6.85). When the level of economic freedom is high (between 8.57 and 9.14), the multiplier is around 0.69 and 0.57. Conversely, if economic freedom is low, as in Sudan (3.4) and Venezuela (3.8), the multiplier is around 1.6. 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 \$1.67 following a \$1 increase in government spending. Venezuela-the country with the secondlowest average economic freedom index (3.8)—would see its real GDP increase by \$1.6 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 \$1.06 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 \$0.74. Similarly, the USA, with an economic-freedom average of 8.6, would experience an increase of \$0.68, and in Singapore—the country with the highest average of economic freedom (at 9)—real GDP would increase by \$0.6. As mentioned before, all these estimates are statistically significant at the 95% level.

Panels 1.C and 1.D show the fiscal multiplier when we instrument government spending with the share of military spending in GDP. Following a \$1 increase in government spending, the fiscal multiplier increases to 2.54 at the mean value of economic freedom, and remains statistically significant up to values of economic freedom of 7.61 and 7.87, depending on the robust standard methodology used. At those values, the estimated multipliers are around 1.63 and 1.31, respectively. The difference in the estimates could be driven by the attenuation bias generated by errors in measuring government spending shocks, which might also explain the differences observed in panels 1.E and 1.F, in which we instrument only economic freedom. Under the last specification (panels 1.E and 1.F), the fiscal multipliers are around 0.98 at the mean level of economic freedom and are statistically significant at the 95% level of confidence under 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 0.6 at the highest value of economic freedom (8.4).

Finally, the differences in results between OLS and the other estimation methods are driven by three factors: by the correction of errors in measuring government spending, 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 on 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.

#### 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 Figure 2, are qualitatively similar to the ones obtained in our baseline specification (Figure 1). The fiscal multiplier is indirectly related to each area of the EFW index. Estimates of fiscal multipliers are relatively similar to the baseline model at the minimum value of freedom. The strongest negative relationship arises between the fiscal multiplier and the freedom to trade internationally. The area titled "regulation" seems to have a very low impact on fiscal multipliers; the relationship is nearly flat. Nevertheless, our results demonstrate that the area "Regulations" does not account for the whole effect on the fiscal multipliers. However, the level of restrictions in the other areas can amplify or diminish the fiscal multiplier. The results we just presented thus show that the outcomes shown in figure 1 are robust.



Figure 2. Fiscal Multiplier Conditional on Individual Areas of the Economic Freedom Baseline Model Specification—Driscoll-Kraay Robust Standard Errors

*Note*: For all plots, the black solid lines are the fiscal multipliers estimated at the different levels of each economic-freedom area (see equation [2]); the dashed lines are the 95% confidence intervals. All models follow our baseline specification in basic OLS form (see equation [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 trade openness and real interest rates.

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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.

## **Robustness tests**

## 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 & Acevedo (2019), and 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 & Rachedi (2021) and Nakamura & 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.

Figure 3 plots the estimates with the different specifications. Results suggest that the negative relationship also holds in the long run (four and five years; see Figures 3.C and 3.D) and when shorter periods are considered (two and three years; see Figures 3.A and 3.B). As a result, the inverse relationship between fiscal multipliers on economic freedom is unchanged in the long run and is not sensitive to changes in the number of fiscal-policy lags.

# Other robustness tests

As a final set of robustness tests, we use a substitute for our economic-freedom measure or add other control variables. 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]), following Faria (2016).

Results indicate that all estimated fiscal multipliers are statistically significant, and they show the negative conditionality on economic freedom (see figure 4, panel A). When we use just the institutional controls (see Figure 4, panel B), the negative slope becomes steeper. Finally, we estimate the fiscal multipliers controlling for both sets of controls; the results are qualitatively similar (see Figure 4, panel C). Fiscal multipliers are negatively affected by the level of economic freedom even after controlling for several economic and institutional variables.



Figure 3. Time-Sensitivity Test: Fiscal Multiplier Conditional on Economic Freedom Baseline Model Specification - Driscoll-Kraay Robust Standard Errors

*Note*: For all plots the black solid lines are the fiscal multipliers estimated at the different levels of economic freedom (see equation [2]); the dashed lines are the 95% confidence intervals. All models follow our baseline specification, in basic OLS form (see equation [1]) using Driscoll-Kraay robust standard errors but changing the lag used to calculate the change of real GDP

and government spending: 
$$\frac{Y_{i,t} - Y_{i,t-n}}{Y_{i,t-n}} = \alpha_i + \delta_t + \beta_1 \frac{G_{i,t} - G_{i,t-n}}{Y_{i,t-n}} + \beta_2 \left( \frac{G_{i,t} - G_{i,t-n}}{Y_{i,t-n}} * EF_{i,t} \right) + \beta_3 EF_{i,t} + \beta_2 Z_{i,t} + \dot{\mathbf{O}}_{i,t}$$

Here, n = 2, 3, 4, and 5 for panels 3A, 3B, 3C, and 3D respectively. All specifications include year and country fixed effects and control for trade openness and real interest rates.

The Heritage Foundation measures overall economic freedom as the average of twelve varieties of freedom, in a similar way to the Fraser Institute. Using this new data source, we compute a new variable (net economic freedom) which is the level of economic freedom excluding the government-spending component. Our new estimated results are qualitatively comparable to the ones we reported in figure 4, panels A, B, and C. Most of the estimated fiscal multipliers are statistically significant at the 95% level and show the same inverse relationship with the level of economic freedom (Figure 4, panels D, E, and F). Therefore, our baseline results are robust and remain the same even when we use another source for the level of economic freedom.



Figure 4. Other Roubustness Tests: Fiscal Multiplier Conditional on Economic Freedom Baseline Model Specification - Driscoll-Kraay Robust Standard Errors

*Note*: For all plots, the black solid lines are the fiscal multipliers estimated at the different levels of economic freedom (see equation [2]); the dashed lines are the 95% confidence intervals. All models follow our baseline specification, in basic OLS form (see equation [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 trade openness and real interest rates. Panel 4A includes a set of economic controls (employment, inflation, and capital stock); 4B includes a set of institutional control variables (democracy, ethnic fractionalization, corruption, executive constraints, and human capital); 4C includes both sets of control variables (economic and institutional). Panels 4D, 4E, and 4F are estimated using net economic freedom measured as the average of all areas of the economic-freedom index published by the Heritage Foundation without the "government spending" area. Panel 4D is estimated using a one-year lag, 4E using a two-year lag, and 4F using a five-year lag.

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

## 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 & Rachedi (2021), and 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 0.6. 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.

Finally, although the results seem to suggest a benefit arises from restricting economic freedom, the cost of a prolonged economic expansion based on sustained expansionary fiscal policy is a progressive increase in the price level. This can be unfavorable for developing countries. Uncontrolled use of fiscal policy could open the doors to high inflation and, as a result, high inflation expectations that affect firms' and individuals' decision-making, causing a misallocation of resources. This could trigger periods of scarcity and abundance of unwanted goods and services, which in the end would affect unemployment, real wages, interest rates, economic growth, and citizens' well-being. Another important point is that the countries with high economic freedom are mostly developed or those developing countries which have adopted monetary policy and the transformation of their productive apparatus as the main elements for sustained economic growth. Developed 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 leading economies in the world.

## Acknowledgments

The authors thank the Menard Family Institute for Economic Inquiry at Creighton University for supporting their research. The authors thank the participants of the Southern Economic Association 2022 Meeting for their insights and suggestions.

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