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Recentralization: Large-Panel Evidence**

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International Center for Public Policy  
Andrew Young School of Policy Studies  
Georgia State University  
Atlanta, Georgia 30303  
United States of America

Phone: (404) 413-0235  
Fax: (404) 651-4449  
Email: [paulbenson@gsu.edu](mailto:paulbenson@gsu.edu)  
Website: <http://icepp.gsu.edu/>

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# The Effect of Crises on Fiscal and Political Recentralization: Evidence from a Large-Panel of Countries<sup>\*</sup>

Gustavo Canavire-Bacarreza<sup>†</sup>, Pablo Evia Salas<sup>‡</sup>, and Jorge Martinez-Vazquez<sup>§</sup>

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## Abstract

Economic stability plays a key role in any fiscal and political decentralization process. In the face of financial and economic shocks, when revenues and expenditures are reduced, countries may decide to gather resources at the central level—creating a recentralization scenario—or may take away devolved powers and centralize political institutions. Using data for 75 countries, we examine the effects of economic crisis on fiscal and political decentralization. We find that several types of crises lead to fiscal recentralization; only in the case of domestic borrowing crises is the effect further revenue decentralization, probably reflecting the central government’s willingness to empower subnational governments to avoid similar crises in the future. In addition, we explore the effects of economic crisis on political decentralization and find that they are concordant to the fiscal decentralization effects, suggesting an alignment of effects along political and fiscal dimensions of subnational autonomy. We also examine whether economic crises trigger more permanent, rather than just transitory, changes in the level of decentralization. We generally find more long-lasting effects in the case of fiscal decentralization measured from the expenditure side. This pattern is very apparent in the cases of inflation and banking crises and less clear but still present in the cases of currency and external debt crisis. The main results are robust to different specifications, estimation methods, and measurements of decentralization.

**Keywords:** Fiscal decentralization, political decentralization, economic crises

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<sup>\*</sup> The findings, interpretations, and conclusions expressed in this document do not necessarily reflect the views of the World Bank, the Executive Directors of the World Bank or the governments they represent. The World Bank does not guarantee the accuracy of the data included in this work.

<sup>†</sup> Universidad Privada Boliviana, La Paz Bolivia and The World Bank, Washington D.C., USA

<sup>‡</sup> trAndeS, Berlin, Germany

<sup>§</sup> Georgia State University, Atlanta, Georgia, USA

## **1. Introduction**

Over the past several decades, decentralization has been a trend that has taken over the world, with several distinct features across countries. There is no conclusive evidence regarding the causes or extent of decentralization. Some authors relate a high degree of decentralization to a higher income or urbanization (Letelier, 2005; Panizza, 1999), to other economic variables such as trade openness and income inequality, or to other fundamental country traits such as population and area size, ethnic and linguistic heterogeneity, or geographic fragmentation (Kee, 1977; Pommerehne, 1977). Some decentralization processes occur after political crises while others come from external forces and donor programs (Glimeus & Bustad, 2011) or even because of improvements in the accountability and transparency of local governments (Bos, 2012).

Whatever its causes, decentralization has been found to offer a number of benefits. Through decentralization, policymakers have realized efficiency gains, reduced in operational costs, and improved public sector performance in service delivery because of higher responsiveness and accountability of subnational officials. Decentralization has enhanced democracy and likely decreased the risk of secession (keeping unity within a country); even in times of crisis, these dynamics may be expected to translate into policymakers being able to find better-adapted and possibly more cost-effective solutions (de Mello, Jr., 2000; Martínez-Vázquez, Lago-Peñas, & Sacchi, 2017).

Despite those virtues and advantages, decentralization also presents some potential weaknesses or disadvantages. Perhaps the most entrenched one is that decentralization may weaken the ability of central governments to implement macro stabilization fiscal policies. Economic stabilization policies, which are needed in situations of high levels of inflation, high volatility of gross domestic product as a consequence of exogenous shocks, and unmanageable debt levels, are central government responsibilities, with little role to be played by subnational

governments. Furthermore, fiscal stabilization policies typically need to coordinate with other macroeconomic policies such as monetary policies and exchange rates, functions that are also assigned at the central government (Ter-Minassian, 2009). In addition, some authors argue that under certain conditions (e.g., weak central bureaucracies or deep cultural divisions), decentralization could hamper efforts at macroeconomic stabilization and other economic reforms and potentially facilitate national fragmentation (Treisman, 1999).

Whether fiscal decentralization is actually harmful to the attainment of macroeconomic stability is still very open to debate. Most recent studies seem to indicate that the key lies in the design of the fiscal decentralization system (Baskaran, 2010; Lago-Peñas, Martínez-Vázquez, & Sacchi, 2020; Neyapti, 2013). Regardless of what the actual impact of fiscal decentralization is on the ability of central governments to conduct macro stabilization policies, the important related question remains of whether, in practice, decentralized countries in times of fiscal crisis do actually take measures to recentralize the country fiscally and politically, reducing the effective level of decentralization. Could the impact of the 2008 Great Recession or the COVID-19 Pandemic of 2020 be the catalyst of a changing trend toward centralization? While there have been past studies on fiscal decentralization trends (e.g., Bartolini, Sacchi, Salotti, & Santolini, 2018), little work has been done on the relationships between fiscal and political decentralization and economic crisis, especially at the international level. There is little evidence on the durability or permanence of crisis-induced changes in decentralization; this study fills that vacuum in the literature.

We use data for 75 countries to explore the effects of diverse types of economic crisis on fiscal and political decentralization. We find that several types of crisis do lead to fiscal recentralization, while domestic borrowing crises are associated with further revenue decentralization. The effect of crises on political decentralization are in line with fiscal

decentralization, suggesting there is a correspondence between those two dimensions of subnational autonomy. In the paper, we also explore how durable or permanent those crisis-induced institutional changes are. We find a prevalence of permanent shocks (i.e., no reversion from recentralization) in the case of fiscal decentralization measured from the expenditure side. This pattern is apparent in the case of the inflation and banking crises and less robust but still present when we consider currency and external debt crises.

The balance of the paper is organized as follows: in section two, we review the previous literature regarding decentralization and economic crisis; section three describes the data and lays out our estimation methodology; the empirical results are discussed in section four; section five discusses permanent versus transitory shocks; section six covers robustness checks; and the final section concludes with an overview of the findings and potential future directions of the research.

## **2. Where Do We Stand? A Brief Review of the Literature**

Loosely speaking, “decentralization” refers to the devolution of power from the central governments to lower levels of government. It often involves a fiscal dimension in which the central government hands down expenditure responsibilities and tax and other revenue resources to subnational levels. Fiscal decentralization on the expenditures side sees more functional responsibilities and expenditures realized by subnational governments and on the revenue side includes more taxes assigned and collected at subnational levels as well as transfers received by the subnational governments. From a political dimension, decentralization can also involve a devolution or reallocation of power from the central to the local or regional governments, aiming to give citizens or their elected representatives more power in public decision-making. The two aspects, fiscal and political, often move together but need not always do so. We have seen that several determinants of decentralization have been identified in the literature ranging from income

level to size of geography. However, much less is known about why countries may switch gears and recentralize. As Friedrich (1968) has noted, fiscally decentralized systems are dynamic in nature, always changing and evolving in response to political and economic forces—including economic crises. Generally speaking, countries that decentralize do not always remain decentralized; for example, Bos (2012) describes the significant ups and downs of the Netherlands as a decentralized country over the centuries. What may be the causes behind recentralization? One simple possibility is the reversal in trends of some of the very variables that have been found to be significant determinants of decentralization<sup>1</sup>. However, the very nature of most, if not all, of those variables makes each an unlikely source of recentralization. Alternatively, there are select cases in which substantial recentralization may be due to correcting some perceived major flaws in design. This was the case in China in 1994, where considerable centralization of revenue sources took place when the central government perceived that the provinces were not fairly collecting and sharing revenues upwards with the central government (Bahl & Martinez-Vazquez, 2006). Another noted example, which did not correct but actually caused a large increase in vertical fiscal imbalances, is the 1978 “Pacto Fiscal” in Mexico, where state governments agreed to cede most of their tax autonomous sources to the federal government in exchange for transfers and revenue sharing (Cabrera-Castellanos & Lozano-Cortes, 2008)

Another potential source of recentralization pressures are exogenous shocks to the system of intergovernmental relations. This dynamic sometimes appears in the case of new discovery of oil resources in a country. Using a dataset of 77 countries over the period 1970–2012, Bhattacharyya et al. (2017) find that oil resource discovery (and not minerals) is a main driver of

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<sup>1</sup> Some of the variables found to increase decentralization are population size, ethnic heterogeneity, income inequality, trade openness or geographical fragmentation.

recentralization, but that this effect is moderated by democratization.

Finally, Bos (2012) identifies, in the case of the Netherlands, the “deterioration of economic and political circumstances” as a main cause for recentralization, which we may simply term “crises.” In this paper, we focus on the potential role of much more general (across multiple countries) external shock: global economic and financial crises. As Bordo and James (2011) note, institutional developments in fiscal federalism are most often driven by exceptional events and deep crises such as the Great Depression of the 1930s, which led significant fiscal centralization processes in five federal countries they studied (Argentina, Brazil, Canada, Germany, and the United States).

While the existing literature does not have a lot to say about the effects of crises on fiscal and political decentralization, we can still identify some previous studies exploring several channels through which economic crisis can affect decentralization levels (Fedelino, 2008; Martinez-Vazquez & Smoke, 2011). First, there are the direct effects of crises, such as decline of tax bases (e.g., falls in asset prices and economic activity), decline in tax compliance, upward pressure on cyclically sensitive expenditure programs, and also some more specialized consequences, such as pressure to bailout enterprises and banks, increases in interest payments, loss of market access, and so on.. How these direct effects of crises affect measured fiscal decentralization levels will depend on the overall composition effects; while tax bases will decrease for both the central and subnational governments and cyclically sensitive expenditure programs will likewise increase for both, the changes in revenue and expenditure decentralization measures will be affected by the relative size of the changes at the subnational and central levels.

However, it is central government discretionary fiscal policy measures, which may be considered indirect effects of the crisis, that are likely to affect the greatest number of subnational

governments and the overall level of decentralization. After all, fiscal decentralization is often perceived, especially in ministries of finance, as a potential impediment for conducting macro stabilization policies (de Mello, 2000; Lago-Peñas et al., 2020). The indirect effects of a crisis will include losses of shared revenues and equalization funds resulting from automatic stabilizers and formula-driven determination of the pool of funds to be allocated, from discretionary tax cuts and the centralization of some tax sources, and/or from the weakened tax enforcement at the central government level. Conditional transfers from the central government may also decrease as part of discretionary actions by the central authorities or simply as another automatic response to funding mechanisms and revenue sharing rules that are based on current central revenue collections. Given the significant vertical fiscal imbalances (or, equivalently, the transfer dependence) that most decentralized systems exhibit, these measures are likely to have an important impact on the centralization of public expenditures. Recentralizing measures will vary depending on the history and relative successes and failures of the fiscal decentralization system in each country, but crises may offer the opportunity to redress some perceived design issues. The final outcome is likely to vary depending on the severity of the downturn in different regions, the structure of subnational debt, the structure of own and shared revenues of subnational governments, the extent of subnational responsibility for more cyclically-sensitive expenditures, and the nature and extent of central government support (Ter-Minassian, 2009). National governments may also hand the burden of fiscal adjustment down to subnational levels in times of fiscal stress (Ahrend et al., 2014). Political destabilization from increased autonomy of regions within the country may be perceived as another potential downside of decentralization from a political perspective (Glimeus & Bustad, 2011) and economic crises may be taken as an opportunity to address that issue.

### **3. Data and Methodology**

#### ***3.1 Data***

In this section of the paper, we empirically revisit the explanatory power of economic crises and select other factors on recentralization processes in both fiscal and political dimensions and how durable or permanent those changes are. The sources of data for our analysis are the International Monetary Fund (IMF), government finance statistics (GFS) (which was used to create the fiscal decentralization measures), the Reinhart-Rogoff economic crisis data, the polity IV index, the Varieties of Democracy (V-Dem) Project data, and the World Development Indicators (which provides us with information such as child mortality and world population).

As discussed by Panizza (1999) and Oates (1972), among many others, the main problem when empirically examining decentralization is finding a method to quantify the activity of local governments that results from autonomous expenditure decision-making and own-tax revenue raising. In practice, the data available do not allow us to measure true levels of autonomy, especially at a cross-country level. Instead, in the estimations we use the standard measures of fiscal decentralization (following Pryor (1968), Oates (1972), Panizza (1999), and Martinez-Vazquez and Timofeev (2009) among many others). We define decentralization ratios as the percentage of revenues and expenditures of the subnational governments to the total revenues and expenditures of the public sector from 1960 to 2007.

In addition to the main measures described above, we incorporate other determinants of fiscal decentralization that have consistently been found to play a significant role in the previous literature. Several studies have examined the main determinants of fiscal decentralization using a fairly consistent set of variables. One of the most-used variables is a proxy for development. Decentralization may itself be “a superior good, the demand for which is likely to grow with per capita income” (Tanzi, 2000). As people become richer, more educated, and more urbanized, they

may have more time and greater motivation to participate in making local political decisions. They may also become more skilled at organizing to pressure the central government to devolve authority and fiscal resources. Increases in development may also induce a shift in tastes towards public goods and services that are most efficiently provided locally. Bahl and Nath (1986), Letellier (2005), Martinez-Vazquez and Timofeev (2009), and Desai et al. (2005) find a positive relationship between economic development and fiscal decentralization. However, this result is not conclusive: Oates (1972) finds a negative relation of economic development and fiscal decentralization and Panizza (1999) finds that the effect differs when outliers are excluded from the analysis. This complexity calls for the inclusion of one or more proxies for economic development in our analysis; therefore, we include GDP per capita and infant mortality in the controls.

As Alesina and Spalaore (1997), along with Triesman (2006), argue, institutional variables play a key role in the design of the state. In this line of reasoning, another set of empirical studies of the determinants of decentralization also include the extent of democracy as a control variable but results tend to be ambiguous. Some have suggested there is a natural affinity between political rights and decentralization; political participation at the local level might educate citizens in democratic practices and would push for higher levels of political rights. At the same time, strong local governments might serve as a check on abusive central authorities and would push for better social controls. In this sense, less corrupt countries would push for stronger local governments, implying higher levels of fiscal decentralization. Indeed, across Eastern Europe, the collapse of regimes in which power was centralized in the communist party prompted strong demand for autonomous local self-government (World Bank, 2001). Accordingly, we include controls such as a measure of political rights and a corruption index in the analysis to control for institutional support of the state.

Panizza (1999), Letellier (2005), and Martinez-Vazquez and Timofeev (2009) argue that ethnic fractionalization captures changes in the preferences of individuals; therefore, this argument is an economic efficiency one, since tastes for public goods and services are likely to vary across ethnic groups. Triesman (2006) sets an additional argument towards the inclusion of ethnic variables based on practical politics. He argues that where ethnic divisions are politicized (and ethnic groups are territorially compact), decentralizing authority over such contentious policy issues as education and culture may help to restrain communal violence or even prevent civil war. To be credible, policy decentralization must have some fiscal component. Thus, to preserve stability, central elites in more ethnically divided societies may choose a higher level of fiscal decentralization. Of course, they also may not. Central leaders may care more about other goals—retaining fiscal resources at the center, for instance—than about avoiding communal violence. Moreover, even if they do decentralize, this may fail to prevent ethnic violence or to preempt demands for secession.

Regarding the crisis variables employed in the paper, we rely on the Reinhart-Rogoff (2010) dataset. The authors built an annual crisis dataset spanning 1800 to 2010 with information on a variety of economic crises such as banking, currency, domestic and external default or restructuring, and inflation for 70 countries. In order to match this data to the decentralization dataset (GFS), we use the crisis dataset from the year 1970 to 2010.

The corruption variable is a composite index of the perceived level of corruption. This indicator is constructed as a Bayesian index that relies on data from well-known sources, such as the Corruption Perception Index (Transparency International) and the Worldwide Governance Indicators (World Bank). The construction of the index and its main characteristics are described in Standaert (2015). Regarding our instruments for the 2SLS strategy, the exchange rate regime

comes from Ilzetzki et al. (2017) while the short-term liabilities proportion is derived using information from the IMF.

### 3.2 Summary Statistics

Typically, we observe a high correlation between economic development and fiscal decentralization: on average, more developed nations present higher levels of fiscal decentralization and have also been exposed to a higher number of crisis episodes (see Table 1).

**Table 1: Decentralization Levels, 1970-2016**

<b>Income Level</b>	<b>Average percentage of total expenditures for subnational governments</b>	<b>Average percentage of total revenues for subnational governments</b>	<b>Crisis episodes</b>
Lower	14.53	12.54	148
Lower-Middle	20.39	13.96	448
Upper-Middle	20.13	12.15	363
High-Income, non-OECD	12.81	11.07	-(**)
High-Income, OECD	33.38	20.90	581

Source: Own elaboration, from IMF Fiscal Decentralization Dataset, OECD World Observatory on Subnational Spending and Finance (expenditures and revenues), and Harvard's Behavioral Finance and Financial Stability. (\*\*): It is not that there were no crises in high-income non-OECD countries. We are simply missing information about crisis episodes in these countries: Cyprus, Israel, Malta, Slovenia, and UAE.

Table 1 shows the summary statistics of all the variables for the estimation of our models. Because the data comes from different non-uniform sources, there is some variability in the years available for some variables depending on the country. For OECD countries, older information regarding the degree of decentralization is available, while for emergent and developing countries, this availability is more limited. In this sense, given the information available, the time span of the panel runs from 1970 to 2010.

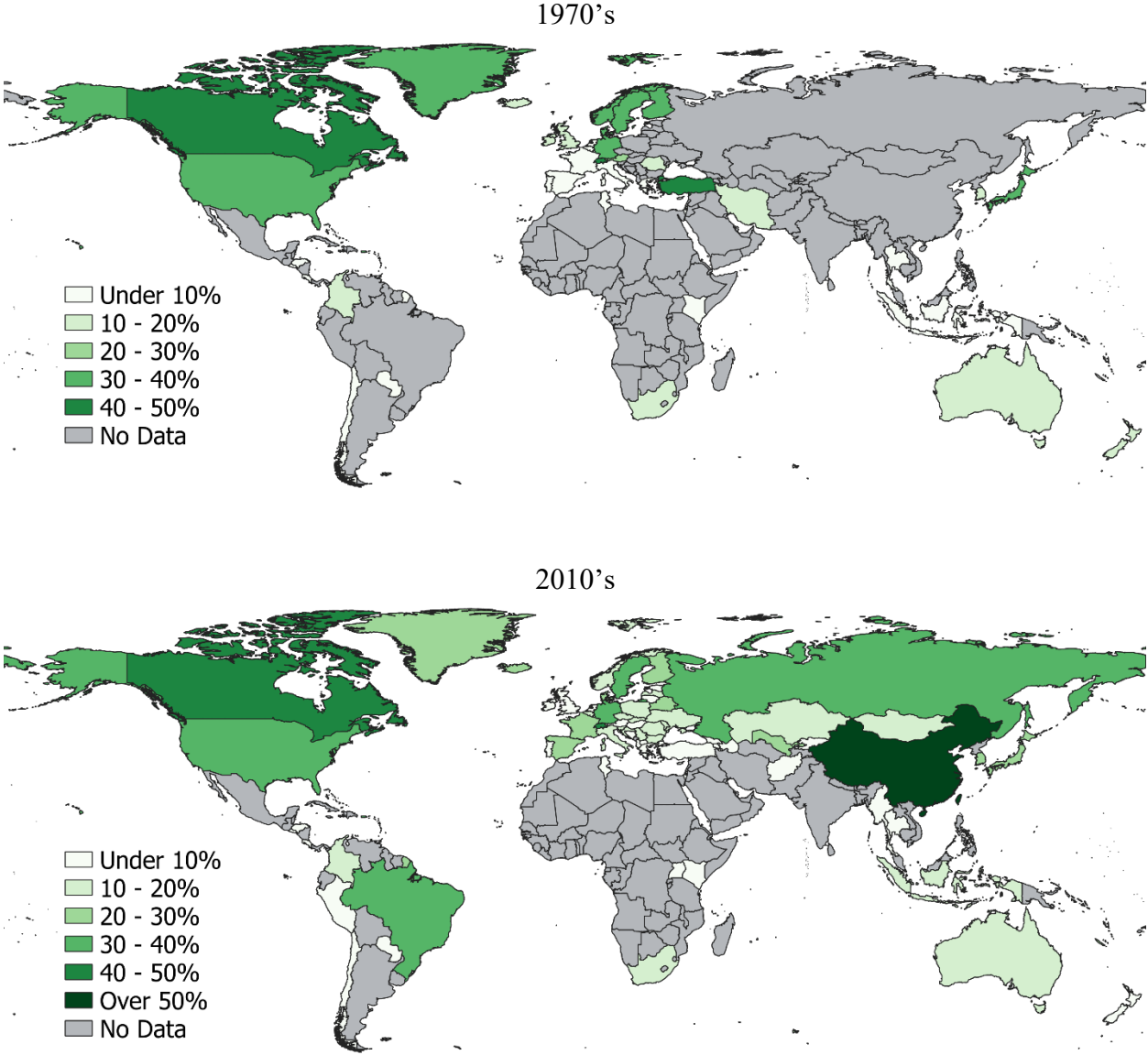
**Table 2: Summary Statistics**

	Average	SD	Min	Max
Local revenues	16.62	13.42	0.04	89.22
Local expenditures	25.50	16.20	0.18	81.36
Currency crisis	0.18	0.38	0	1
Inflation crisis	0.12	0.32	0	1
Stock market crisis	0.27	0.45	0	1
Banking crisis	0.17	0.38	0	1
Domestic debt crisis	0.02	0.15	0	1
External debt crisis	0.10	0.30	0	1
Crisis episodes	0.77	0.99	0	6
Any crisis dummy	0.35	0.48	0	1
GDPpc (log)	9.30	1.06	6.58	12.41
Population MM (log)	2.40	1.66	-1.59	7.20
Polity IV Index	4.68	6.95	-10	10
Mortality(log)	2.84	0.99	0.64	5.33
Primary enrollment rate	101.71	11.80	17.31	165.65

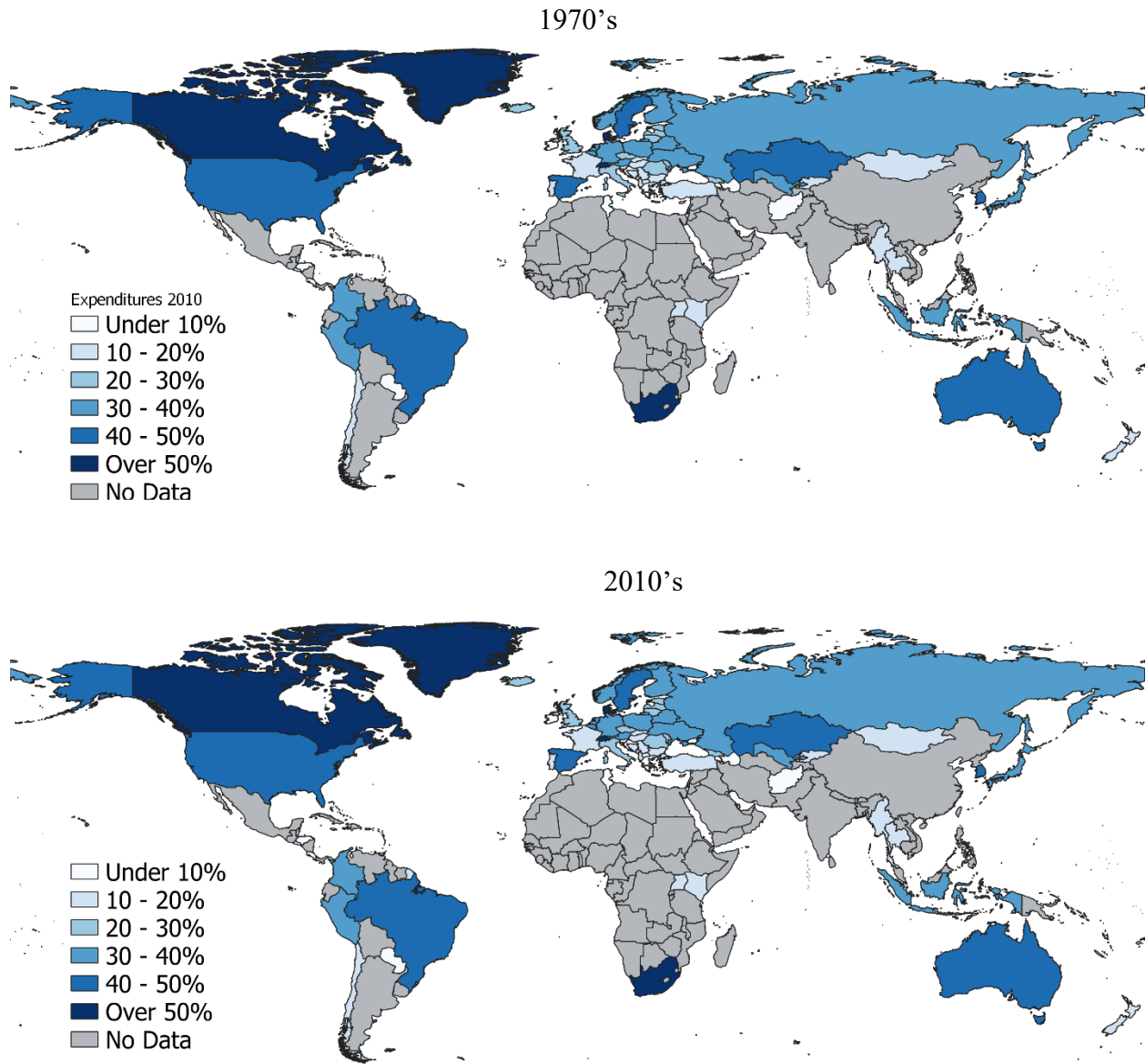
Source: Own elaboration

In Table 2, we can see that decentralization from the expenditures side is slightly higher than from the revenue side. However, as we have panel data, the summary statistics conceal potentially higher variability in the data. Concerning the information related to the different types of crises, the information in Table 1 shows that the stock market crisis is the most prevailing among them, followed closely by inflation and banking crisis. On average, 71% of the countries have suffered at least one crisis during the period covered by the sample (1970 – 2010), which may seem a high percentage but is in line with the figures declared in Reinhart (2010). We further explore the geographical pattern of decentralization and crisis in Figures 1, 2, and 3.

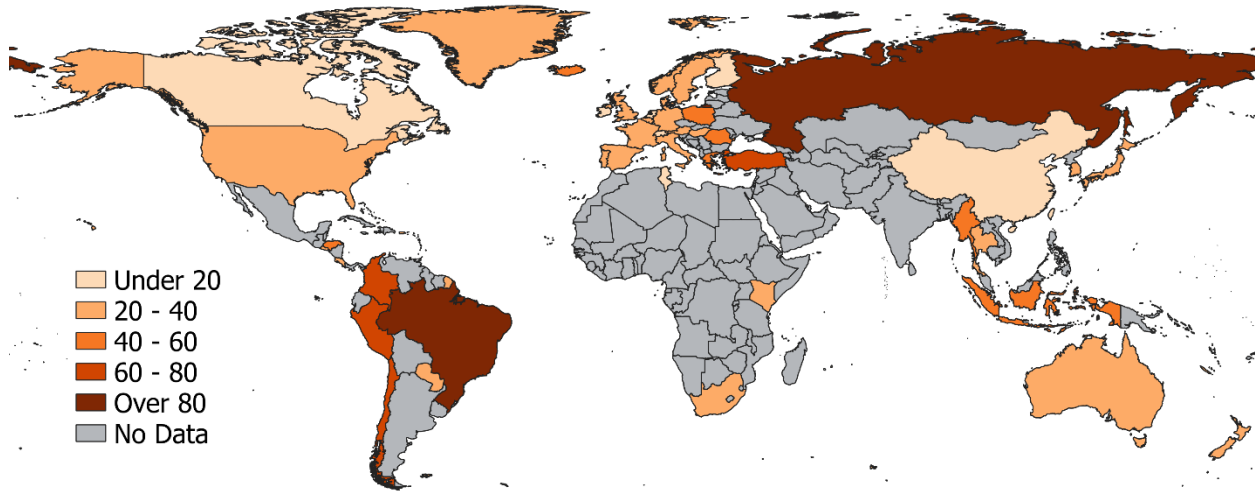
**Figure 1. Fiscal Decentralization (Revenues)**



**Figure 2. Fiscal Decentralization (Expenditures)**



**Figure 3. Accumulated Crisis Episodes**



### **3.3 Methodology**

In order to identify the relationship between crisis and fiscal/political decentralization, we aim to estimate the following equation:

$$fiscal/political\ decentralization_{it} = \alpha_0 + \alpha_1 \cdot crisis_{it} + \beta \cdot X_{it} + \epsilon_{it} \quad (1)$$

where "fiscal decentralization" is measured by the proportion of expenditures or revenues transferred/earned by local governments to the total government expenditures and revenues, respectively; "political decentralization" is measured using the Varieties of Democracy (V-Dem) dataset (Coppedge, 2020). Specifically, we used the following variables as potential proxies to political decentralization:

- Regional government index: "Are there elected regional governments, and — if so — to what extent can they operate without interference from unelected bodies at the regional level?"
- Local government index: "Are there elected local governments, and — if so — to what extent can they operate without interference from unelected bodies at the regional level?"

“Crisis” is a dummy variable that takes the value of 1 if a specific type of crisis (inflation, exchange rate, sovereign debt, domestic debt, stock exchange, or banking) has been observed in the country  $i$  and year  $t$ .

In order to get a sense of the direction of the main variables (i.e., fiscal/political decentralization and crisis), we first rely on calculating simple correlations (without covariates). While regressions without controls do not give a good or complete picture of the true link between two variables, we first looked at these relationships in order to explore the data and get a sense of the magnitude and direction of the potential effect of crisis on decentralization. For all of our comparisons, both fiscal decentralization in expenditures and fiscal decentralization in revenues are analyzed. This comparison gives a general idea of what to expect when controls are added and show how the results can vary dependent on the type of crisis. We then run the regressions with controls, which were chosen based on what we thought could affect a government's decision to decentralize in addition to typical controls such as GDP and population.

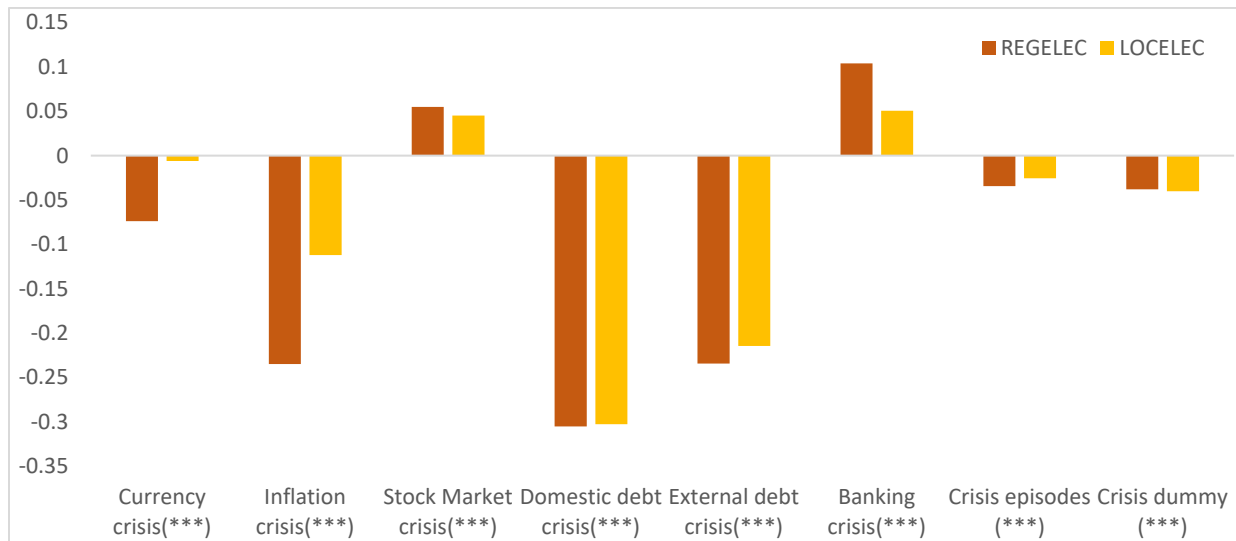
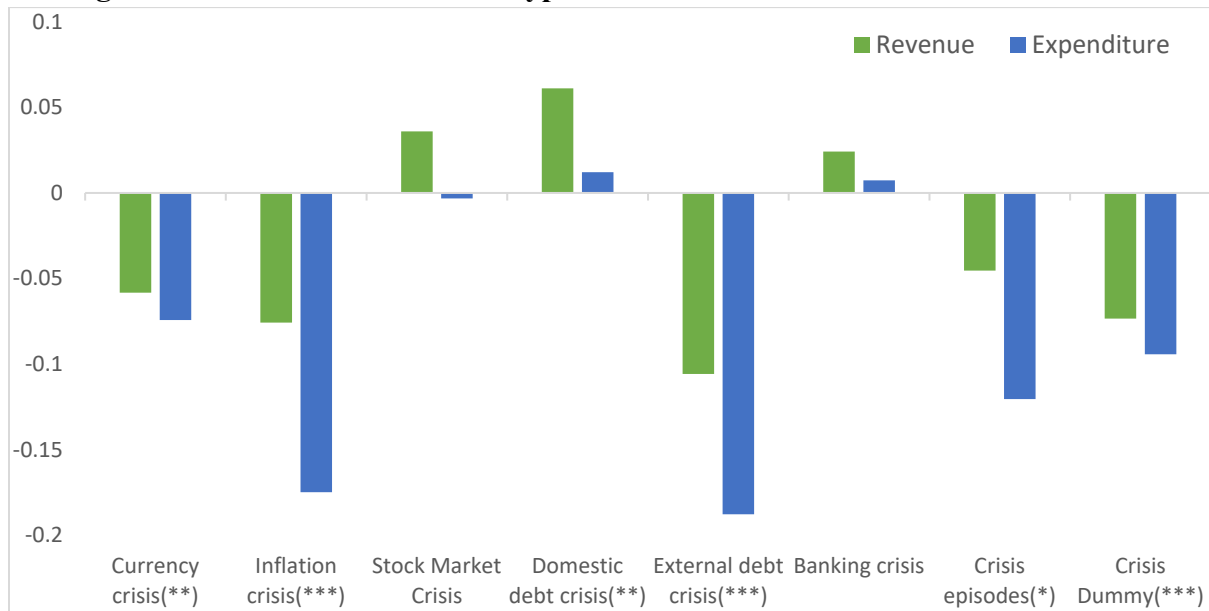
Furthermore, to the estimation of equation (1) using panel data fixed-effects model (assuming both country and year- fixed effects-FE), we explore the use of instrumental variables (specifically, a 2SLS strategy), in order to overcome the potential bias remainder of the F.E. model. In specific, we estimate the following equations:

$$Y_i = \beta X_i + u_i \tag{2}$$

$$X_i = \delta Y_i + \gamma Z_i + v_i \tag{3}$$

in which  $Z$  represents a valid instrument for our "crisis" variable.

**Figure 4: Correlations Between Type of Crisis and Fiscal/Political Decentralization**



Source: Own elaboration.

\*\*\* p<0.01 \*\* p<0.05 \* p<0.1

As Figure 4 shows, external debt and inflation crises episodes are those that show the strongest correlation with the level of decentralization. As one would expect, the sign of this correlation is negative, which means that the occurrence of these types of crisis triggers a recentralization of expenditures and revenues (a decrease in the level of decentralization).

Currency crises are also associated with a decreasing level of decentralization. Additionally, statistically significant effects are observed when the number of crisis episodes and a crisis dummy (which takes the value of one if any type of crisis is observed and zero otherwise) are taken into account, with the expected effect on the level of decentralization (i.e., a negative effect). With respect to political decentralization, excepting stock market and banking crises, there seems to be a negative and statistically significant correlation between both proxies of political decentralization and the occurrence of an economic crisis. The strongest relationships are those regarding debt episodes (both domestic and external).

As one of the archetypical categories of crisis, we expect to see an inflation crisis have a negative correlation with decentralization. Latin America has experienced around 282 inflation crises from 1950 to 2004. During times of high inflation, it is sensible that the central government will pull back funds from subnational governments. Central governments need to take quick action when an inflation crisis arises before hyperinflation or a currency crisis can occur. Inflation crises are combated by curbing spending and central banks must raise interest rates to garner investment and discourage debt. As the previous literature has emphasized, strong subnational governments pose a threat in unstable times, especially if they rely on transfers from the central government. The central government will not want to risk subnational deficits, thus another reason for the negative correlation. In addition to the inflation crisis, the external debt crisis and currency crisis show the strongest correlations when considering decentralization from either the revenues or expenditures side.

It is interesting to note that the correlation of domestic debt and banking crisis with revenue and expenditure decentralization is positive, in contrast with other types of crises. In particular, domestic debt crises are often related to the default of subnational governments in their debt and

often involve the subsequent rescue or bail out of those subnational governments by the central or federal authorities—as was the case in Argentina and Brazil over several of the last decades of the twentieth century. In these cases, the response of the central/federal authorities may be to accompany the measures of the bail out with empowering subnational government with additional revenue autonomy so to avoid similar situations of insolvency in the future. The importance of this observation is that not all crises may lead to recentralization. As is logical in the case of subnational debt crises, the result would seem to be greater decentralization on the revenue side.

After exploring these correlations, we aim to exploit the panel structure of the dataset in order to account for unobserved effects by country and by year. This strategy gives us some advantages in the form of the inclusion of unobserved fixed effects that could be correlated with the error terms in the regressions. However, one fundamental assumption of this approach is that these fixed effects are constant in time, an assumption that is difficult to test. In order to overcome this strong assumption, we later use an IV methodology in order to get rid of the potential endogeneity between crisis and decentralization.

#### **4. Results**

As mentioned above, the results of pooled OLS estimation could be biased if we do not consider the panel data dimension of the model. In this sense, we estimate a panel data fixed-effects model, in which the fixed effect corresponds to each country of our sample. Hence, it absorbs all the unobservable factors that are constant in time, but that vary country to country, and that could be correlated with our covariates. Table 3 shows the results of the F.E. model using the fiscal and political decentralization variables, and considering only country fixed effects, and both country and year fixed effects.

**Table 3: Results from the F.E. Model**

	Expenditures		Revenues		Regional Govt Index		Local Govt Index	
Currency crisis	-0.0049 (0.0060)	-0.0020 (0.0074)	-0.0047 (0.0067)	-0.0024 (0.0068)	-0.0020 (0.0217)	0.0049 (0.0197)	0.0124 (0.0117)	0.0215* (0.0126)
Inflation crisis	-0.0160 (0.0108)	-0.0193 (0.0147)	-0.0051 (0.0155)	-0.0061 (0.0157)	-0.0584 (0.0504)	-0.0548 (0.0515)	-0.0464* (0.0263)	-0.0340 (0.0335)
Stock market crisis	-0.0009 (0.0052)	-0.0074 (0.0077)	0.0026 (0.0046)	0.0031 (0.0059)	-0.0189 (0.0158)	-0.0280 (0.0197)	-0.0112 (0.0100)	-0.0176 (0.0135)
Banking crisis	-0.0146* (0.0074)	-0.0126 (0.0078)	-0.0021 (0.0058)	-0.0007 (0.0058)	-0.0027 (0.0262)	0.0073 (0.0248)	-0.0229 (0.0136)	-0.0112 (0.0145)
Domestic debt crisis	0.0017 (0.0194)	0.0011 (0.0191)	0.0487*** (0.0132)	0.0460*** (0.0151)	-0.0232 (0.0486)	-0.0064 (0.0487)	-0.0128 (0.0422)	0.0135 (0.0427)
External debt crisis	-0.0290 (0.0185)	-0.0115 (0.0178)	0.0145 (0.0184)	0.0221 (0.0177)	-0.0298 (0.0708)	-0.0117 (0.0683)	-0.0227 (0.0454)	-0.0050 (0.0488)
Crisis episodes	-0.0071** (0.0032)	-0.0069* (0.0037)	-0.0002 (0.0029)	0.0007 (0.0029)	-0.0141 (0.0156)	-0.0116 (0.0167)	-0.0100 (0.0080)	-0.0065 (0.0100)
Crisis dummy	-0.0118** (0.0054)	-0.0084 (0.0060)	-0.0031 (0.0048)	-0.0013 (0.0046)	-0.0023 (0.0227)	0.0089 (0.0215)	-0.0054 (0.0119)	0.0071 (0.0139)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed effects	No	Yes	No	Yes	No	Yes	No	Yes

\*\*\* p<0.01 \*\* p<0.05 \* p<0.1

The F.E. model using the decentralization variable from the expenditure side implies a statistically significant relationship with the banking crisis dummy, with the number of crisis episodes, and with the crisis dummy (not considering year fixed effects). The sign of the relationship is as anticipated (negative) and implies a recentralization between 1 and 2 percentage points. The effect regarding the crisis episodes and the crisis dummy are weaker and imply marginal effects of less than one percentage point. Interestingly, the fixed-effects specification implies again a *positive* coefficient regarding the domestic debt crisis, as compared with the simple correlation (OLS). As we mentioned above, this could reflect the central government willingness to empower subnational governments, perhaps with increased revenue autonomy or other types of self-determination to avoid similar crisis in the future.

With respect to our political decentralization variables, there is not a clear pattern that we

could distinguish from the regressions. While all the results using the regional government index are statistically non-significant, the local government index regressions show diverging effects concerning only the currency and inflation crisis.

#### ***4.1 IV Model***

The model showed so far neglects that the relationship between decentralization and crisis (whatever its nature) could be endogenous: while crisis affects decentralization, the contrary could also be possible. For example, decentralization reform would trigger an economic crisis because the central government in a decentralized country now receives less revenue. In addition, the reform itself could be costly, and, in a situation of financial fragility, it could cause fiscal difficulties or an inflationary spiral. In that sense, we take this potential endogeneity into account by estimating an IV model with our sample. We rely on two types of instruments: the exchange rate regime and the country's short-term liabilities share. The rationale is that a fixed exchange rate regime would make it difficult for a country to solve their balance-of-payments crisis via an exchange rate depreciation. On the other hand, a high share of short-term liabilities would imply that a country is more vulnerable to capital flights, which in turn might unchain a different type of crisis.

Exchange rate regimes that are fixed or close to fixed have been considered as more prone to a crisis than their more flexible counterparts. For example, Bubula and Ötoker (2003) consider them "... susceptible to speculative attacks and devaluations, and the intensity and scope of the crisis episodes have called into question the viability of these regimes in a world of highly integrated international capital markets."

A seminal paper regarding exchange rate regimes and its relationship with crises also mentions that the picking of such a scheme (in particular, a soft peg) could be related to the

likelihood of a financial crisis (Calvo & Reinhart, 2002, p. 379). Maintaining a hard peg is considerably difficult, with a median duration of one year (Bubula & Ötoker, 2003). Other authors consider that, in order to prevent currency crises, countries should apply either full floating or completely fixed exchange regimes (Edwards, Cavallo, Fraga, & Frenkel, 2003). There is evidence that pegged regimes could be more subject to speculative attacks, making them more prone to crises (Bubula & Ötoker, 2003).

Table 4 shows the results of the IV model using an instrument based on the exchange rate regime of the country. We create several dummy variables according to the exchange rate regime (making a total of five dummy variables to avoid the dummy variable trap). The results regarding the fiscal decentralization using this instrument are shown in Table 4. While the estimated coefficients have the expected negative sign, the F-statistic from the first stage is insufficient to satisfy the rule of thumb of  $F\text{-stat} > 10$ . Indeed, only the coefficient corresponding to the inflation crisis is statistically significant and, at the same time, accompanied by a non-weak instrument from the first-stage results. The coefficients corresponding to the banking crisis and domestic debt crisis are significant, but the instrument associated with its estimation is weak. The magnitude of the estimated coefficients varies from 1 to 5 percentage points. Interestingly, the results from the fiscal decentralization specification (expenditures' side) are quite similar to the results for our political decentralization proxies (regional government index), reinforcing the idea that economic crises could cause “recentralization” with respect to the political dimension of decentralization. This is especially true when the domestic debt crisis, banking crisis, number of crises episodes, and crisis dummy are considered as factors behind recentralization. On the other hand, a higher level of government (in this case the regional government, compared to the local government) seems to be more responsive to the different types of economic crises in terms of recentralization of political

authority.

**Table 4: Results from the FE-IV Model, using Exchange Rate Regime Dummy Instrument**

Crisis Type	Expenditures		Revenues		Regional Govt Index		Local Govt Index	
	IV	F-stat	IV	F-stat	IV	F-stat	IV	F-stat
Currency	-0.0289**	15.6	0.0016	15.476	-0.0433	27.028	-0.0384	29.159
Inflation	-0.0412***	28.691	-0.0027	26.332	-0.0615	56.689	-0.0318	69.923
Stock	-0.2105	0.681	-0.0582	0.764	0.1171	1.943	-0.2826**	1.946
Banking	-0.0759***	4.412	-0.0043	4.075	-0.1458*	6.156	-0.0482	5.207
Domestic debt	-1.2993	0.606	-0.2068	0.525	0.2815	2.191	1.0439**	2.204
External debt	-0.2132***	4.336	-0.036	5.308	-0.1708**	12.22	-0.0199	11.279
Crisis episodes	-0.0211***	19.287	-0.0023	20.12	-0.0248*	43.352	-0.0119	42.1
Crisis dummy	-0.0746***	17.307	-0.0111	17.25	-0.0780*	31.979	-0.0372	33.826
Country F.E.	Yes		Yes		Yes		Yes	
Controls	Yes		Yes		Yes		Yes	

\*\*\* p<0.01 \*\* p<0.05 \* p<0.1

### 5. Permanent Versus Transitory Shocks: Reversion of Recentralization

Our IV estimation results using an exchange rate regime dummy as an instrument showed that the effect of economic crises on fiscal decentralization resulted in reduced decentralization (at least from the expenditure side). However, a relevant question to ask in this context is how permanent these changes are.

To further investigate whether the effect of economic crises in reducing decentralization is permanent or transitory, we make use of a Panel Vector Autoregression model (PVAR) to estimate the impulse-response functions of a shock from a determinate type of crisis and its effect on the reduction (or increase) in decentralization levels, and most importantly, whether this effect tends to be permanent or transitory.

VAR models, well established in applied macroeconomics, have been increasingly used in applied research to capture the dynamic interdependencies present in the data; in particular, shock identification can transform these reduced-form models into structural ones, allowing impulse response analyses or policy counterfactuals, among others (Canova & Ciccarelli, 2013).

We estimated the impulse-response functions (IRF) of the different types of crises on our

fiscal decentralization indicator (both from the expenditure and revenue sides). The pattern that emerges is the prevalence of permanent shocks (i.e., no reversion from recentralization) in the case of fiscal decentralization measured from the expenditure side. This pattern is apparent in the case of the inflation and banking crises and less clear but still present when we consider the currency and external debt crisis.

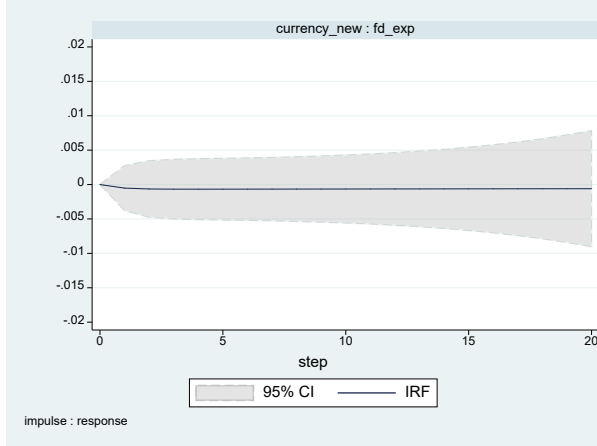
A potential explanation of these results would be that the expenditure recentralization is persistent due to the central government's reluctance to decentralize spending powers to local governments after a crisis. In contrast, fiscal decentralization from the revenue side would be more "flexible" (in the sense of reversing the recentralization trend after some time) considering that local governments need to cover their needs even after a crisis, and therefore could envisage other venues to fundraising. The graphs in Figure 5 show the effects of "shock" in a determinate type of crisis on the level of decentralization over time.

It is important to mention that, in line with our results from the OLS and fixed-effects models, the shock from domestic debt crisis seems to be to the reverse of the results with the other types of crisis (that is, implying a movement towards *greater* decentralization). As we mentioned above, this result may be explained by the central government's objective of strengthening the revenue raising powers of local management to avoid future crises.

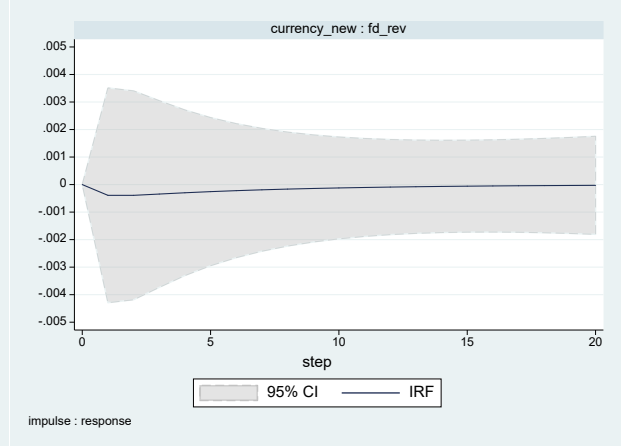
**Figure 5: Impulse-Response Functions According to Different Types of Crisis**

**CURRENCY CRISIS**

*FD Expenditure side*

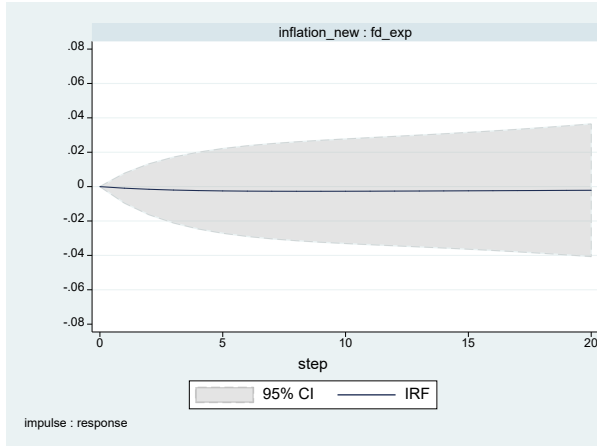


*FD Revenue side*

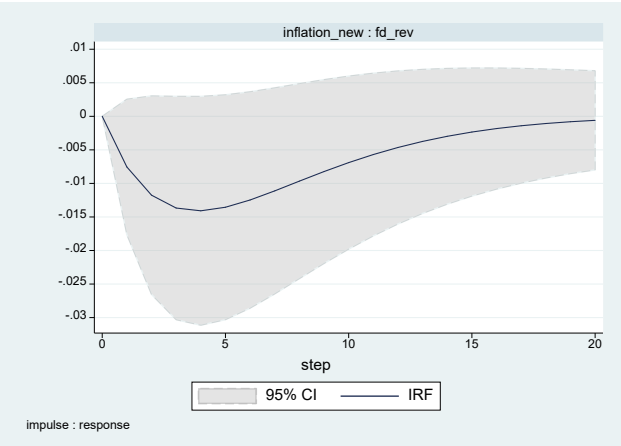


**INFLATION CRISIS**

*FD Expenditure side*

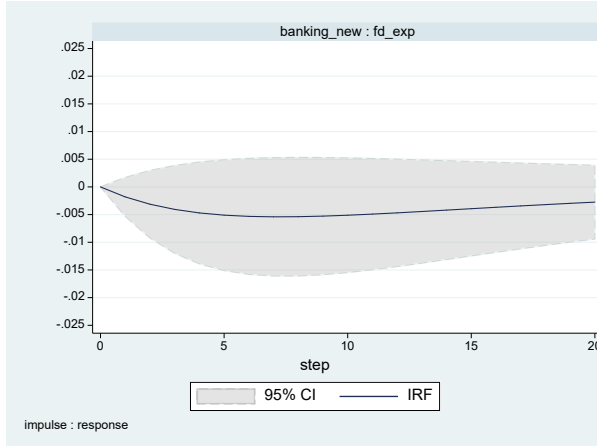


*FD Revenue side*

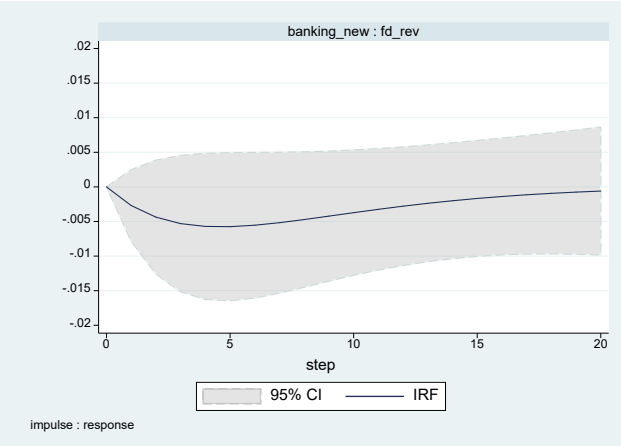


**BANKING CRISIS**

*FD Expenditure side*

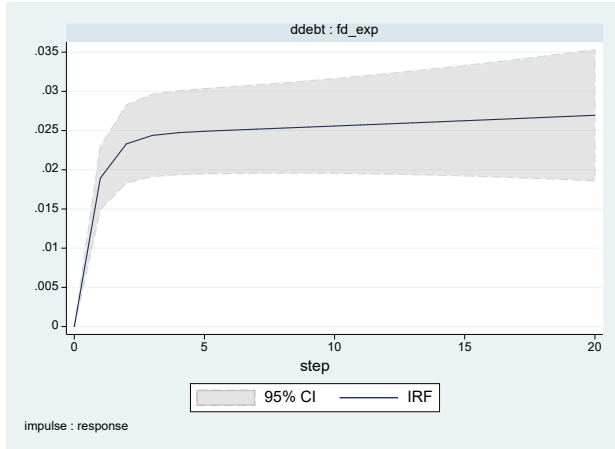


*FD Revenue side*

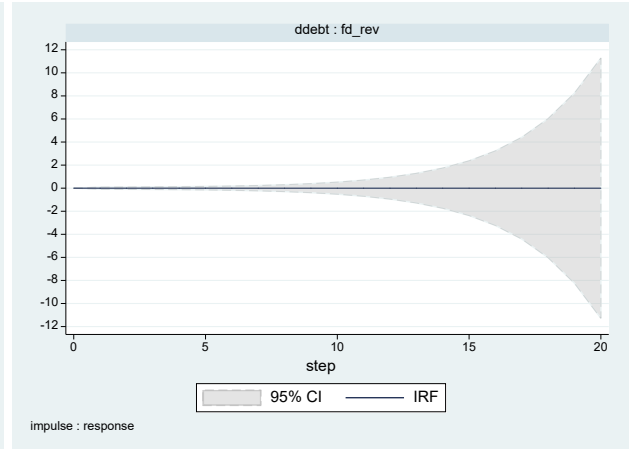


## DOMESTIC DEBT CRISIS

*FD Expenditure side*

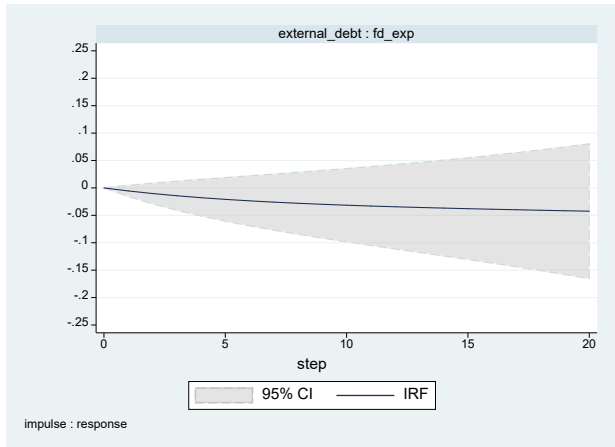


*FD Revenue side*

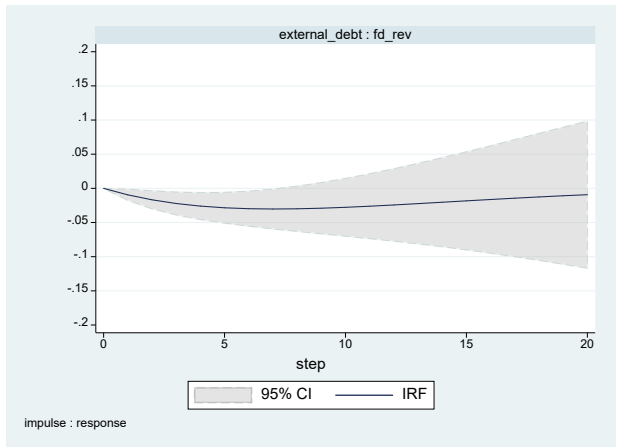


## EXTERNAL DEBT CRISIS

*FD Expenditure side*

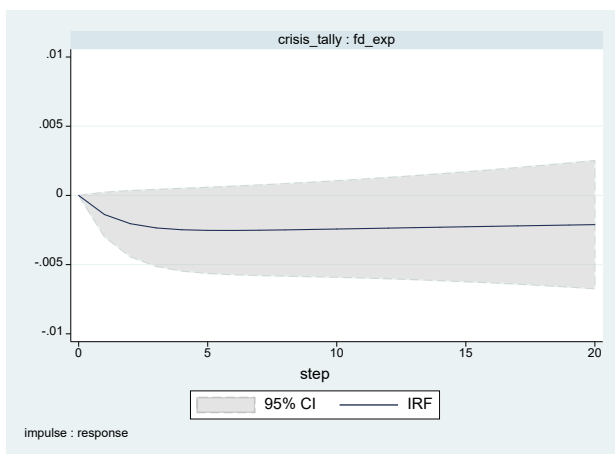


*FD Revenue side*

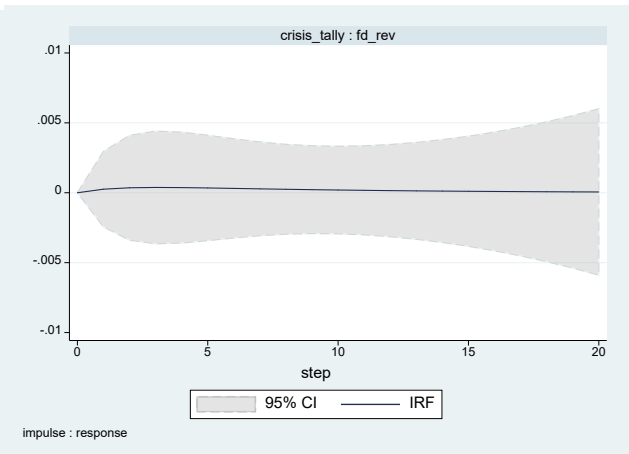


## CRISIS EPISODES

*FD Expenditure side*

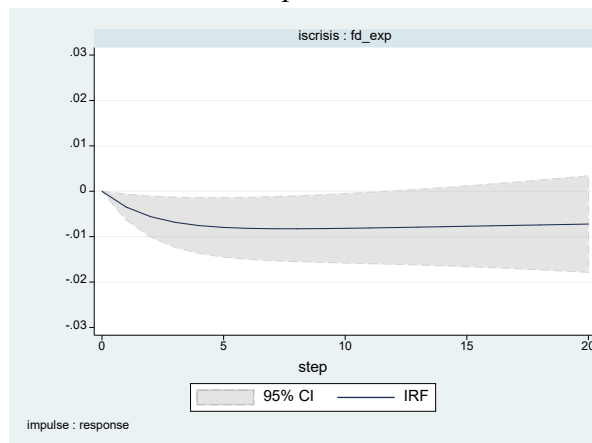


*FD Revenue side*

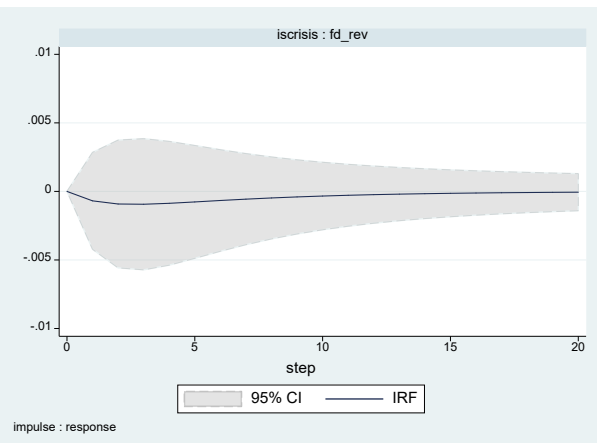


## CRISIS DUMMY

*FD Expenditure side*



*FD Revenue side*



## 6. Robustness Checks

### 6.1 Exploring Heterogeneous Effects by Income

Do the effects of crises differ by the level of country development? We split the sample between low, middle, and high-income countries according to the OECD classification in order to examine potential heterogeneous effects. In particular, it is possible that countries in one group that are more prone to decentralization reforms are also more vulnerable to a certain (or most) type of crises. Alternately, it may be the effects vary by how recent decentralization reforms are, as in the case of many developing countries vis-à-vis more established and flexible decentralized institutions in developed countries. The estimation results from applying this sample split are shown in Table 5. We can see that the results for middle- and high-income countries are stronger (in a statistical sense) than for low-income countries. These results may be related to the strength of the shocks or for institutional design reasons. In the case of the former, lower-income countries may be less vulnerable to some types of crises, such as capital market-type crises, because they are less intertwined with global capital markets. From an institutional perspective, more recent developments of decentralization may be more difficult to reverse or adjust. However, we can also see that middle-income countries are much more affected than high-income countries. This latter may be due to better regulations and coping mechanisms by higher-income countries (with the

exception of banking crises).

**Table 5: Heterogeneous Effects (Regarding Income Level) from the IV Model**

Crisis type	Low Income				Middle Income				High Income			
	Exp.	F-test	Rev.	F-test	Exp.	F-test	Rev.	F-test	Exp.	F-test	Rev.	F-test
Currency	0.0122	19.804	0.0100	44.269	-0.0230	8.913	0.0054	10.561	-0.0786	1.932	-0.1231	1.516
Inflation	0.0088	30.265	0.0092	54.098	-0.0829***	13.352	-0.0034	17.149	0.2496	0.744	0.3192	0.849
Stock	0.0005	3.224	0.0331	1.650	-0.2200	0.497	-0.0316	0.628	-0.0177	0.665	0.2163	0.802
Domestic debt	0.0000	.	0.0000	.	-1.4426	0.502	-0.3151	0.505	-6.2089	0.316	0.0000	.
Foreign debt	-0.0100	1.865	-0.0242	3.158	-0.2053***	5.956	0.0069	7.603	-1.7019	1.603	-0.6153	0.952
Banking	-0.0144	4.338	0.0003	5.134	-0.1612***	2.389	0.0024	2.544	-0.1880**	1.553	-0.2053**	2.181
Crisis episodes	0.0029	11.071	0.0034	14.202	-0.0318***	12.190	0.0004	16.095	-0.2749	0.456	-0.1882	0.620
Crisis dummy	0.0292	4.092	0.0024	3.062	-0.0882***	9.186	0.0045	11.671	-0.3981	0.545	-0.3616*	1.032

### 6.2 A Different Measure of Decentralization Level

As a last robustness check we use a different data set to measure decentralization.

Specifically, we approximate the decentralization “level” of the countries in our sample with the Regional Authority Index (RAI) (Hooghe et al., 2016). The RAI measures the authority exercised by regional governments within countries. The latest release of the data expands geographical coverage to 96 countries (including China, India, Pakistan), extends the time period from 1950 through 2018, and also covers metropolitan regions. The RAI includes five dimensions of self-rule: institutional depth, policy scope, fiscal autonomy, borrowing autonomy, and representation; and also five dimensions of shared rule: law making, executive control, fiscal control, borrowing control, and constitutional reform. Results of the regressions using the RAI as a dependent variable (and still considering the exchange regime variable as the instrumental variable) are shown in Table 6.

**Table 6. Results from the RAI Variable to Measure Decentralization**

	<b>Exchange Regime Instrument (Standard Error)</b>	<b>F-stat</b>
Currency crisis	-2.3702* (1.2906)	25.021
Inflation crisis	-1.5651* (0.8342)	65.140
Stock market crisis	35.4637 (99.4221)	0.137
Domestic debt crisis	-3.6931 (2.2668)	10.056
External debt crisis	-16.3887 (12.2786)	4.217
Banking crisis	-2.0979* (1.1785)	45.720
Crisis episodes	-0.5699** (0.2885)	65.382
Crisis dummy	-2.3128* (1.2567)	21.774

The results show at least weakly significant negative coefficients for the expected effects of recentralization in reaction to most types of economic crisis and the F-stats indicate a strong instrument. Thus, the effect of a currency crisis, an inflation crisis, a domestic debt crisis, a banking crisis, the number of crisis episodes, and our dummy indicate that the occurrence of a crisis generates recentralization even when the level of decentralization is measured from a broader perspective (the RAI variable).

## 7. Conclusions

Over the years, the literature on decentralization and fiscal federalism has paid a lot of attention to the determinants and impact of decentralization processes. However, even though it is often observed, the literature has paid much less attention to why countries that have decentralized reverse that process and proceed to recentralize along fiscal and political dimensions. In this paper, we examine the potential role of economic crises on recentralization processes.

Our main finding is that economic stability indeed plays a key role in fiscal and political decentralization process. In the face of financial and economic shocks, when revenues are reduced and expenditures are also under pressure to be cut, we find that most countries decide to gather

fiscal resources at the central level, as well as take away previously devolved powers and centralize political institutions.

Using data for 75 countries covering a period of four decades (1970 to 2010), we examine the effects of different types of economic crisis on fiscal and political decentralization. We find strong evidence that several types of economic crises lead to fiscal recentralization. However, in the case of domestic borrowing crises, the effect is further revenue decentralization, probably reflecting the central government's willingness to further empower subnational governments with greater revenue autonomy to avoid a similar crisis in the future. In addition, we explore the effects of economic crisis on political decentralization and find that they are concordant to those for fiscal decentralization. This alignment of effects along political and fiscal dimensions of subnational autonomy underlines the system-wide structural nature of the recentralization response. It is also significant that the economic crises end up triggering more permanent, rather than just transitory, changes in the level of decentralization, at least from the perspective of fiscal decentralization measured from the expenditure side. This pattern is especially present in the cases of inflation and banking crises and less clear but still present in the cases of currency and external debt crisis. These main findings are robust to different specifications, estimation methods, and measurements of decentralization.

With virtually the entire world having recently experienced an economic crisis associated with the COVID-19 pandemic and the hard policy coordination issues that have consequently appeared in many multi-level governance systems, it will be interesting to see in the coming years whether these types of crises also lead to recentralization processes along fiscal and political dimensions.

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