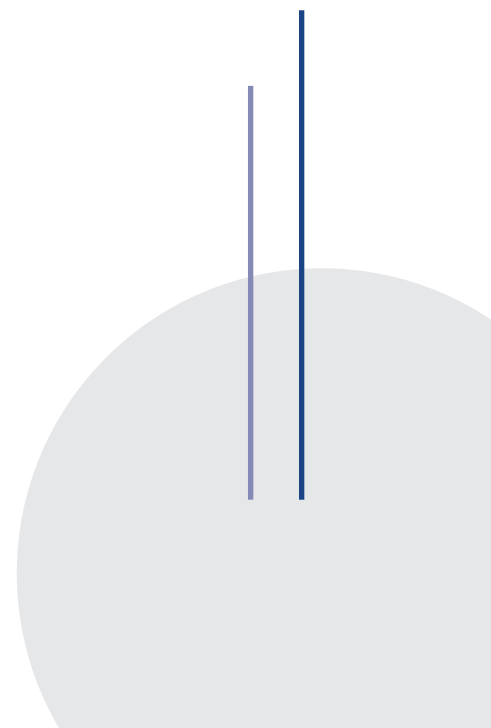




INSTITUTIONAL COORDINATION IN THE FISCAL RESPONSE: LESSONS FROM THE COVID-19 EXPERIENCE IN LATIN AMERICA AND THE CARIBBEAN

Martin Eduardo Yerovi

July | 2025



INSTITUTIONAL COORDINATION IN THE FISCAL RESPONSE: LESSONS FROM THE COVID-19 EXPERIENCE IN LATIN AMERICA AND THE CARIBBEAN*

Martin Eduardo Yerovi **

Abstract

This study examines the role of institutional coordination in shaping post-pandemic economic recovery across nine Latin American and Caribbean countries. By leveraging a novel dataset of binary indicators on fiscal coordination during the COVID-19 crisis, I construct weighted institutional networks that capture the extent and quality of inter-agency collaboration. I quantify each country's coordination structure through its distance from an idealized, fully connected graph, allowing the development of a coordination index. This index is then integrated into a panel regression framework to evaluate its association with GDP growth between 2015 and 2024. The findings reveal a statistically significant and positive relationship between institutional coordination and post-pandemic GDP growth. Countries with more integrated and technically coordinated fiscal governance structures experienced faster and more sustained economic recovery. The results hold across multiple specifications, including country and year fixed effects, reinforcing the robustness of the findings. The results underscore the importance of formal coordination mechanisms—not merely as administrative tools, but as critical determinants of fiscal effectiveness and macroeconomic resilience during systemic shocks.

Keywords: Fiscal response; Institutional Networks; Latin America; Coordination.

* The replication data along with Supplementary Material related to the construction of the database used in this paper can be found at: https://1drv.ms/f/c/d30329ac519aeea0/EiaRXbubar5Fqa_ZUyC6aYgBz8nvp-13tTVV2ARZZsJEsQ?e=mtz8Qq

** Facultad de Ciencias. Escuela Politécnica Nacional, Quito, Ecuador. E-mail: martin.yerovi@epn.edu.ec

Content

1. Introduction	4
2. Data and Index of Institutional Cooperation	6
2.1. Cooperation data	6
2.2. Institutional Networks	8
2.3. Index & Dataset	11
3. Estimation & results	13
4. Discussion	15
5. Limitations	16
6. Conclusions	16
7. References	18
8. Appendix	19
8.1. Example of questions measuring coordination between the Ministry Of Finance and Presidency	19
8.2. Institutional Networks	20
8.3. Index & Dataset	21
8.3.1. The Gromov-Hausdorff (GH) distance	21
8.4. Preliminary Results	21

1. Introduction

The COVID-19 pandemic has represented a significant macroeconomic challenge for Latin America and the Caribbean. Beyond the public health crisis and the tragic loss of lives, the juncture triggered economic disruptions that led to a recession across the region. Furthermore, it seems to have been particularly impactful for countries already facing unfavorable growth conditions prior to 2020 (CEPAL, 2020). In response to the unprecedented crisis, governments throughout the region were compelled to implement monetary and fiscal policies aimed at mitigating the economic effects and human costs.

While monetary interventions were crucial to stabilizing financial markets and preventing deeper financial disruptions, some authors argue that it was the fiscal response that had a more critical impact in sustaining consumption, preserving incomes, and avoiding an even sharper economic contraction (Fischer, 2021). In general terms, the fiscal measures implemented included both budget reallocations and tax relief, as well as government-backed liquidity support (CEPAL, 2020). According to the International Monetary Fund (2020), the region mobilized fiscal packages equivalent, on average, to 8% of GDP, while public revenues saw an unprecedented drop. In the end, there was an economic contraction accompanied by public spending figures that reached historically elevated levels (CEPAL, 2021). But it is estimated that the full implementation of these measures resulted in a regional GDP that is between 6.5 and 7 percentage points higher than the hypothetical GDP without fiscal intervention (IMF, 2020).

At the same time, there is also a strand of literature arguing that the scope and effectiveness of the fiscal packages varied significantly due to country-specific structural and contextual factors. Key elements such as pre-existing levels of debt, access to financing, existing regulation, and institutional credibility played a decisive role in shaping governments' ability to deliver timely and effective fiscal responses (Cárdenas et al., 2021). It has also been argued that the implementation of efficient and well-targeted measures was conditioned by the particular circumstances of each economy, such as its institutional structure and the potential for coordination between institutions, which led to heterogeneous outcomes across the region (IMF, 2020).

Nevertheless, while these claims allude to the role played by each country's institutions and their interplay, there is a considerable lack of empirical evidence to sustain such claims. Essential features of institutional cooperation, such as the level of interconnection between them, or the capacity to coordinate, tend to be difficult to include in a rigorous analysis because their measurement is not straightforward. For these reasons, the main objective of the present study is two-fold: (1) develop a quantitative approach that allows for the measurement of potential insti-

tutional coordination, and (2) determine the effect of institutional coordination in the post-Covid outcomes of a set of Latin American countries.

A particular contribution of the present work is that the solution to the first point results in a new novel dataset containing indicators of cooperation and two-sided contribution in the pandemic between seven main fiscal institutions one would find in a modern country: the presidency, the congress, the ministry of finance, the Social Security institution, the Tax Administration, the fiscal council evaluator, and the ministry of social development. While every country has a different name for each, they all constitute part of the state in all countries of analysis. The countries considered are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Perú, and Uruguay.

On one hand, to construct the cooperation indicators, I developed a dataset of dichotomous variables capturing five dimensions of collaboration between pairs of institutions involved in policy implementation (see Data section). For every institutional pair, there are 5 dimensions of collaboration measured which can be summed up to obtain a single numeric indicator. Each entry includes the source and a descriptive justification for verification and replication purposes. Then, given that every institution and indicator can be thought of as a node and an edge in a graph, it is possible to calculate a global index of institutional collaboration for every country using a measure of distance between adjacency matrices. Ultimately, both the creation of the dataset and the index contribute to research objective (1).

On the other hand, to determine the effect of institutional coordination in the pandemic as indicated in (2), I propose a simple estimation framework with a differences-in-differences approach using fixed-effects and panel data. The benefit of this approach is it allows for simple and compelling statistical evidence of the role played by institutional collaboration as a fiscal response to the pandemic in the LAC region.

The main characteristic of institutional coordination is that it is broad and obscure: it goes beyond fiscal rules or the size of the fiscal budget, encompassing deeper dimensions such as the capacity for targeting and transparency, to the adaptability to macroeconomic contexts, and coordination across levels of government. Its influence is not limited to shaping the effective fiscal space of a state; it also serves as a determinant of the quality and effectiveness of fiscal responses. As noted by Bergant & Forbes (2023), a country's ability to respond to a shock is not determined only by the severity of the event itself—in terms of financial and economic stress—but also by how institutionally prepared it is to deploy tools and resources effectively. Within the current framework of economic policymaking, the concept of effective institutional cooperation has been yet to be analyzed in greater detail.

The rest of the work is organized as follows. In the next section I explain the dataset and the institutional index construction. Then I discuss the methodology related to the empirical part of the paper. Later I discuss the results and finally I conclude.

2. Data and Index of Institutional Cooperation

2.1. Cooperation data

The identification of relationships between institutions was based on a structured set of dichotomous questions, designed to capture the presence (or absence) of direct, functional, and visible collaboration of the fiscal response to the pandemic. For this, I considered a list of seven institutions that one would expect form part of a modern democratic state: a Presidency, a Congress, a Ministry of Finance, a Social Security institution, a Tax Administration, a Fiscal Council Evaluator, and a Ministry of Social Development. The definitions and reasoning behind each are the following:

- Ministry of Finance: The central technical body responsible for designing and implementing fiscal policy.
- National Congress (Budget or Economic Committee): The legislative authority responsible for approving and/or modifying fiscal packages.
- Presidency: The executive authority with capacity of declaring states of emergency, issue decrees and lead inter-institutional coordination.
- Ministry of Social Development: Responsible for administering transfers and implementing targeted social protection programs.
- Social Security Institution: The agency in charge of managing pensions, healthcare, insurance programs, and employer-employee contributions.
- Tax Administration: The body responsible for managing tax relief measures, tax deferrals and ensuring the continuity of revenue collection.
- Fiscal Council Evaluator: The institution asked with providing independent assessments of fiscal sustainability and transparency

These institutions were selected based on their functional roles during pandemic, drawing from public finance theory and empirical evidence on fiscal governance under crisis conditions. Three categories of fiscal evaluators were identified across the countries analyzed: (i) autonomous and formal fiscal councils (as in Colombia, Costa Rica, Perú, Brazil and Chile); (ii) alternative

evaluators with partial technical independence (the case Ecuador¹, Argentina, and Uruguay²); and (iii) countries without any institutionalized fiscal evaluation body (such as Bolivia). The latter group does not have a fiscal evaluator node in the network.

For every pair of institutions out of these seven—i.e., 21 pairs in total—there are 5 dimensions measured through 5 different questions,³ resulting in a dataset of binary variables containing 945 entries. Each question has its own distinctive purpose and aims to measure, as precisely as possible, a characteristic that is expected to provide effective policy design and implementation between the institution pair. To be clear, for each pair, there is a battery of five targeted questions assessing different dimensions of coordination regarding joint policymaking, data sharing, communication, and operational autonomy. These are questions such as *“Did Congress have to approve or discuss tax changes proposed by the Tax Administration for Covid-19 relief?”*, or *“Did the Ministry of Finance and the Tax Administration have to work jointly in the implementation of fiscal measures intended to alleviate the effects of the pandemic?”*. For instance, in the former question, the idea is that, if yes, there is evidence that Congress carried out the role of oversight over the Tax Administration and gave final approval in fiscal matters for the pandemic. For the former question, the justification is that, if yes, there was effective cooperation needed in the design and implementation of tax relief measures between the two institutions.

With available information in archival sources found on official documents from the institutions themselves, I answered to these questions for every pair and country.⁴ To illustrate this, section 8.1 in the Appendix contains the set of questions associated to the Finance ministry and Congress pair, with the responses—and the information sources supporting the responses—for Uruguay (see also the Supplementary Material online).

¹ Official documents mandate that Ecuador’s finance ministry continuously monitor public finances and fiscal-rule compliance, whereas the Contraloría General conducted ex-post audits of COVID-19 spending. Thus, the MEF’s internal Unidad Técnica Fiscal (UTF) was the most relevant fiscal-evaluation node, despite the lack of autonomy and being considered an “alternative”.

² In Uruguay, the Consejo Fiscal Autónomo (CFA) was established in late 2021 and became operational in 2022. During the COVID-19 pandemic, the Asesoría Macroeconómica of the Ministry of Economy and Finance undertook key fiscal evaluation functions.

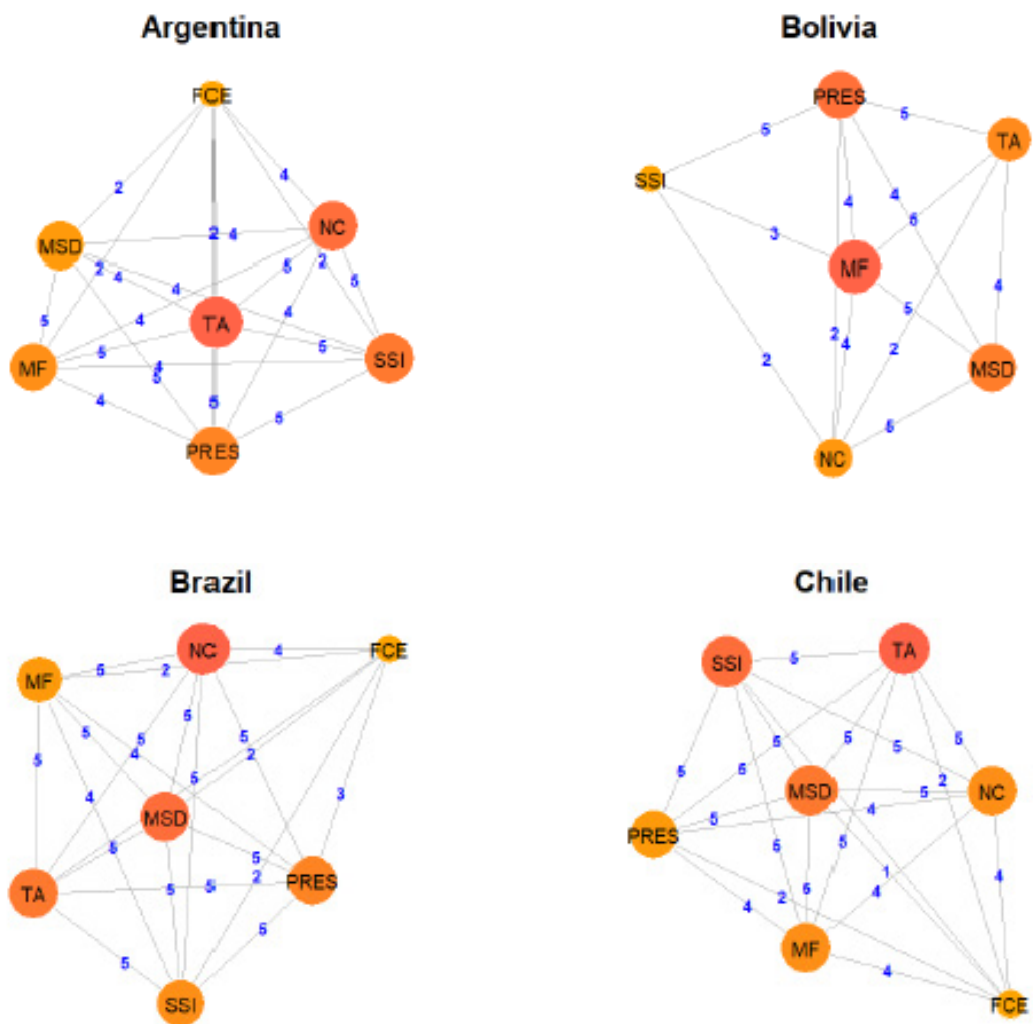
³ An important aspect of course, is that every question measures a dimension that is not (at least perfectly) correlated to another one. The justification, or main purpose, of each question for each institution pair is described in greater detail in the supplementary materials.

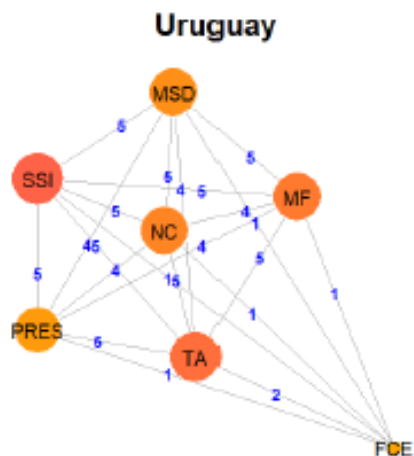
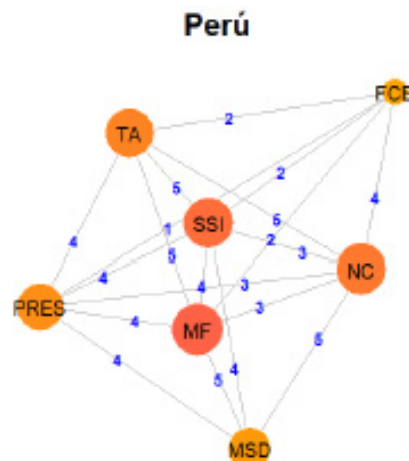
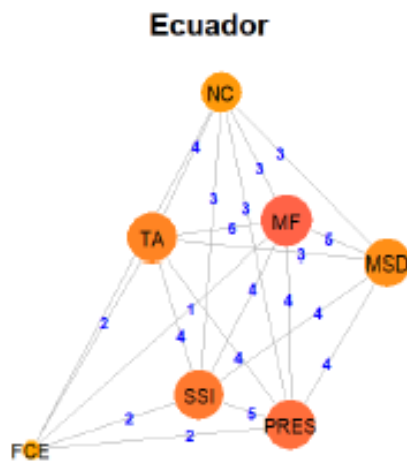
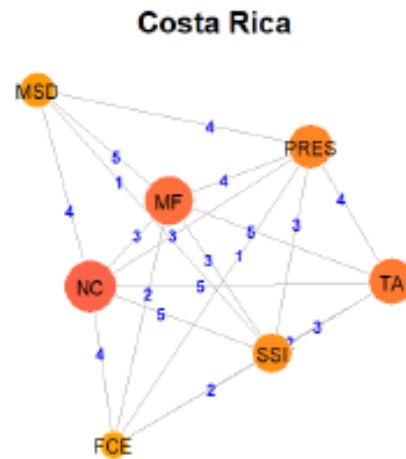
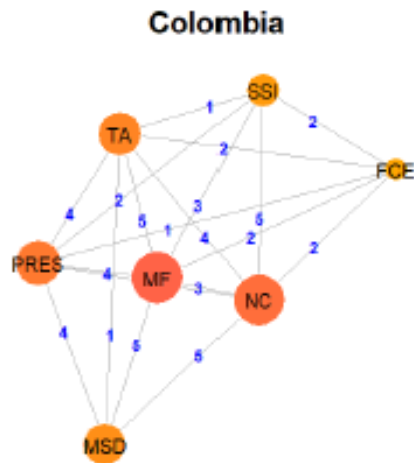
⁴ The data used were drawn from official documentation and national response plans.

2.2. Institutional Networks

With the help of elementary network theory, one can assess the structure and quality of institutional coordination during crisis management with data. By modeling public entities as nodes and their interactions as links, it is possible to measure the intensity and configuration of fiscal governance across countries. Figure 1 shows the institutional network visualizations for the nine countries.

Figure 1. Institutional Networks per country





Source: Own elaboration based on the adjacency matrix of binary questions assessing institutional coordination, constructed from official governmental documentation.

Note: The size and color of each node represents the magnitude of its eigenvector centrality. While the bigger and redder the node is, the more eigenvector centrality it has. The distance between the nodes is due to the Fruchterman-Reingold (FR) layout, which places closely coordinated institutions nearer to each other, visually reflecting the strength and centrality of their fiscal coordination ties. The institutional nodes in each network are labeled using standardized acronyms: MF = Ministry of Finance, PRES = Presidency, NC = National Congress, TA = Tax Administration, MSD = Ministry of Social Development, SSI = Social Security Institution, FCE = Fiscal Council Evaluator

The network visualizations reveal recurring structural patterns and notable variations in institutional coordination. Most notably, in nearly all countries, we can infer that the Ministry of Finance (MF), Presidency (PRES), and National Congress (NC) tend to occupy central and highly connected positions, suggesting that they exhort their role as primary fiscal decision-makers. In contrast, Social Security Institutions (SSI) and Fiscal Council Evaluators (FCE) are often located at the periphery, with lower connection density and lower links. This marginality supports the idea that oversight institutions played a limited operational role during the emergency. Country-specific nuances include Brazil's and Uruguay's highly dense and symmetrical networks, and Bolivia's relatively sparse structure, reflecting weaker institutional integration.

Two sets of indicators were calculated for the networks: one at the institutional level (including degree, betweenness, and eigenvector centrality) and another at the country level (including density, average degree, clustering coefficient, and network diameter). Full results are presented in Appendix Tables 3 and 4.

The Ministry of Finance (MF) consistently stands out across all countries with the highest eigenvector centrality, with full connectivity (degree = 6), and, in some cases, notable betweenness scores—confirming its role as the systemic hub of fiscal decision-making. In many cases, the National Congress (NC) and the Presidency (PRES) also exhibit high centrality, with NC frequently acting as a bridge in countries like Colombia and Peru, where it registers high betweenness values. Meanwhile, social development ministries (MSD) and social security institutions (SSI) tend to be structurally peripheral. Their lower eigenvector values and lack of intermediary roles suggest limited involvement in inter-institutional coordination, even when they had implementation responsibilities. Fiscal councils (FCE), though formally part of the networks, consistently show low influence across all metrics, reinforcing their observational—rather than operational—status.

At a country level, structural indicators reveal meaningful contrasts. Argentina, Brazil, Chile, and Uruguay exhibit the most cohesive architectures, with full network density, maximum connectivity (avg. degree = 6), and shortest path lengths. In contrast, Bolivia shows the least integrated structure, with lower density, fewer average connections, and the highest diameter, reflecting a less compact institutional setup. Mid-range configurations—such as Colombia, Costa Rica, Peru, and Ecuador—combine relatively high clustering with some structural gaps, suggesting partially integrated but functionally active coordination environments.

2.3. Index & Dataset

11

The aggregation of binary responses can be used to obtain an index of coordination strength. Given that for every institution pair each coordination indicator can be thought of as a node and an edge in a graph, it is then possible to draw concepts from graph theory to do a more aggregated analysis. It also allows us to assess with a single metric whether institutional coordination helped or hindered economic outcomes after the pandemic using empirical data.

Given that the values of the coordination indicators take positive values, one can view each coordination-pair indicator as an edge in a graph where institutions conform the nodes.⁵ Then, we can calculate a measure of distance between a graph representing a fully weighted and connected graph and the one for each country.

Let K^i be the 7×7 adjacency matrix associated to the graph observed for country i , and let \hat{K} denote the matrix representing full coordination between all pairs of institutions,

$$\hat{K} = \begin{bmatrix} 0 & 5 & \dots & 5 \\ 5 & 0 & \dots & 5 \\ \vdots & \vdots & \ddots & \vdots \\ 5 & 5 & \dots & 0 \end{bmatrix}.$$

It follows that it is straightforward to calculate the adjacency distance between \hat{K} and K^i by:

$$d_i = \sqrt{\sum_{n=1}^7 (\hat{K}_n - K_n^i)^2}$$

where K_n^i denotes the n -th column (vector) of matrix K^i . With this we can set the index for i , call it τ_i , as inversely proportional to d_i and well-defined for all $d_i \geq 0$:

$$\tau_i \equiv \frac{1}{\sqrt{d_i + 1}} \in (0, 1].$$

⁵ Intuitively, if all the question answers for an institution pair are “no”, then the indicator of coordination for such pair will be zero and there is no edge connecting the nodes. If the complete lack of connection seems unrealistic, it is possible to still assign a small positive value to the edge with 0 value and compute another measure distance. In such case, a better-suited metric would be the Gromov-Hausdorff distance (see Appendix).

The squared root in the denominator “flattens” the curve in the $d \times \tau$ space compared to the denominator with no squared root, with the purpose of preserving the distance between observations after inversion. Although one could also define some linear $\tau_i' = a - d_i$ for the same purpose, the determination of the constant a would be arbitrary and lead to a less general indicator. Hence, I did not opt for this approach.

In the end, I obtained a panel dataset by merging the institutional connection information with economic data for all countries between 2015 and 2024 obtained from FLAR. I use GDP growth as the outcome variable of interest. Tables 1A and 1B show the summary statistics for the index and growth data. Descriptive statistics for the index and GDP growth rates before (ΔGDP_{pre}) and after (ΔGDP_{post}) the COVID-19 pandemic are reported.

Before going to the main estimation and results, I estimated preliminary regressions without controlling endogeneity to understand the correlation relationship between the variables of interest. These are of the form

$$\Delta GDP_{it} = \beta_0 + \beta_1 \tau_i + \beta_2 1_{\{t \geq 2020\}} + \beta_3 (\tau_i \times 1_{\{t \geq 2020\}}) + \varepsilon_{it}.$$

where $1_{\{t \geq 2020\}}$ is a (dummy) variable that equals one when the year is greater than or equal to the start of the pandemic. The interaction estimate of τ_i and $1_{\{t \geq 2020\}}$ is intended to capture the additional economic growth experienced by countries that, on average, have higher levels of the coordination index. The results of this estimation can be found in Appendix section 8.4 Table 5, where the estimates are mostly insignificant, highlighting the need for controlling endogeneity.

Table 1A. Summary statistics

	N	Mean	St. Dev.	Min	Max
ΔGDP_{pre}	44	0.183	0.385	−0.108	2.150
ΔGDP_{post}	44	0.262	0.032	0.210	0.312
Index	44	0.262	0.032	0.210	0.312

Note: Summary statistics for all countries and for all years in the sample (2015–2024).

Table 1B. Summary statistics

Country	ΔGDP_{pre}	ΔGDP_{post}	Index
Argentina	0.364 (0.067)	1.032 (0.718)	5.757
Bolivia	0.045 (0.044)	0.031 (0.099)	4.027
Brazil	0.050 (0.010)	0.099 (0.058)	6.112
Chile	0.058 (0.015)	0.096 (0.061)	5.994
Colombia	0.068 (0.008)	0.106 (0.117)	4.843
Costa Rica	0.062 (0.013)	0.054 (0.061)	5.060
Ecuador	0.011 (0.046)	0.033 (0.088)	4.993
Peru	0.060 (0.011)	0.083 (0.123)	5.279
Uruguay	0.082 (0.010)	0.084 (0.060)	5.173

Note: Summary statistics for each country and for all years in the sample (2015-2024). Sample standard deviations are reported in parentheses.

3. Estimation & results

Based on the institutional coordination index derived from each country's network structure, a regression approach was used to assess its association with post-pandemic economic performance while controlling for unobserved factors. The main estimation is the following fixed-effects regression at the country-level:

$$\Delta GDP_{it} = \beta_0 + \beta_1 \tau_i + \beta_2 1_{\{t \geq 2020\}} + \beta_3 (\tau_i \times 1_{\{t \geq 2020\}}) + \delta_i + \varepsilon_{it}.$$

The fixed effects control for not-observed characteristics that do not vary over time but across entities, such as cultural factors or pre-existing regulation which might have influenced the recovery of the pandemic differently for each country.

The results confirm a significant positive relationship between the coordination index and post-pandemic GDP growth. In the baseline model, without time fixed effects,⁶ a one-unit increase in the coordination index is associated with approximately a 0.2 percentage point increase in economic growth (on average) post-pandemic. The consistency and magnitude of the coefficient reinforce the idea that greater density and formalization in institutional fiscal coordination contributed to a faster and more sustained recovery.

Table 2. Fixed-effects regressions

	ΔGDP			
	(1)	(2)	(3)	(4)
Index	2.155*** (0.351)	2.211*** (0.337)	2.078*** (0.346)	2.099*** (0.339)
covid			−0.522 (0.354)	−0.327 (0.361)
Index * covid			0.236* (1.342)	0.220* (1.312)
Constant	−5.536*** (0.971)	−5.771*** (0.941)	−5.393*** (0.956)	−5.480*** (0.945)
Country FE	Yes	Yes	Yes	Yes
Time FE	No	Yes	No	Yes
Observations	87	87	87	87
R ²	0.509	0.605	0.560	0.626
Adjusted R ²	0.459	0.507	0.502	0.527
F Statistic	10.111***	6.211***	9.679***	6.313***

*p<0.1; **p<0.05; ***p<0.01

Note: Summary statistics for each country and for all years in the sample (2015-2024). Sample standard deviations are reported in parentheses.

⁶ For robustness purposes, I include the results of adding time-fixed effects to the regression even though the additional dummy variables may absorb the effect I intend to measure: institutional cooperation as measured by τ_i is a time-varying characteristic. Also, one would expect the dummy covid variable to be correlated with them. Nevertheless, the results show that the estimates of β_1 and β_3 remain statistically significant.

In both specifications with country and year fixed effects, the index remains a relevant predictor, suggesting that its impact extends beyond persistent structural factors. Taken together, the results provide empirical evidence that more integrated and technically coordinated fiscal governance arrangements were associated with more effective economic responses in the aftermath of the shock. If we were to allude to consider these regressions in a quasi-experimental setting, the fact that the estimate of β_3 remains significant and positive in the specifications allows us to interpret the estimate as the magnitude of additional growth attributable to institutional coordination, assuming that in the absence of institutional cooperation the rate of growth would have remained constant (parallel trends assumption).

4. Discussion

These findings align with existing literature that emphasizes the positive role of institutional strength in post-pandemic recovery. As noted by Capano et al., (2020), countries with robust institutional structures and prior experience with epidemics like SARS-CoV-1 or MERS—particularly in Asia—responded more quickly and effectively. In contrast, limited preparedness and lack of recent experience were associated with delayed and poorly coordinated responses, especially in parts of Europe and Latin America. Institutional architecture not only shaped governments' capacity to act but also influenced problem framing, use of technical evidence, and the degree of intra-governmental coordination.

Fiscal response capacity is closely tied to pre-existing institutional strength, credibility, and operational efficiency. Gourinchas et al., (2021) found that many fiscal packages were inefficiently designed, with up to 89% of funds allocated to firms that did not require support, highlighting the institutional challenges in delivering targeted interventions.

In Latin America and the Caribbean, institutional frameworks tend to be fragmented, with multiple semi-autonomous decision-making centers. Rather than emerging from integrated planning, fiscal responses often reflected improvised or disorganized arrangements—exacerbated by agencies with divergent agendas and uneven capacities (Fanelli et al., 2011). The COVID-19 pandemic reinforced these dynamics: while countries like Brazil and Colombia implemented measures swiftly, others such as Perú and Chile experienced delays and administrative rigidities, limiting the effectiveness of their responses until later in the year (Cárdenas et al., 2021).

5. Limitations

Although this study employs a systematic and comparative approach to measurement and estimation, certain factors may have introduced some divergence between the results and institutional realities. For instance, using a broad set of dichotomous variables in the construction of an index may overrepresent isolated interactions as broader structural coordination, particularly in contexts with dispersed or fragmented responses. Moreover, limitations in the availability or clarity of official documentation in some countries may have affected the precision of the coding process. While the analysis followed consistent logic, a degree of interpretative judgment—based on observable evidence—is unavoidable. A longer discussion on the limitations of the dataset is provided in the Supplementary Material.

It is also important to acknowledge that the methodology primarily captures formal institutional arrangements. While essential elements such as managerial capacity, informal coordination, and the long-term stability of institutional interactions are crucial for understanding state effectiveness, they fall beyond the scope of this study and are not always reflected in official records.

6. Conclusions

This study provides robust empirical evidence on the relationship between institutional coordination and economic recovery in the aftermath of the COVID-19 crisis. By analyzing the structure of fiscal coordination networks in nine Latin American countries and quantifying their overall cohesion, the research identifies how the quality of inter-institutional collaboration influenced the effectiveness of fiscal responses.

Using network representations derived from institutional interactions, an index of coordination strength was constructed based on the structural distance of each country's graph from a fully integrated coordination system. This index was then linked to macroeconomic performance through fixed-effects regressions. The results demonstrate a consistent and statistically significant relationship: higher levels of institutional coordination were associated with greater post-pandemic GDP growth. This finding reveals that beyond the size or content of fiscal packages, the structural capacity of institutions to collaborate, share information, and coordinate decision-making processes was a key factor in determining the speed and effectiveness of fiscal responses. Countries that maintained stronger coordination structures were better able to mitigate the economic fallout of the pandemic and recover more swiftly.

The consistency and significance of the results validate the central hypothesis of this research: institutional coordination matters for economic resilience. The methodological approach—combining network theory with econometric modeling—allowed not only for a visual and structural understanding of coordination, but also for a quantifiable and policy-relevant estimation of its impact. Ultimately, this work contributes a replicable framework to assess institutional response capacity in times of crisis, offering valuable insights for governments, multilateral organizations, and researchers seeking to understand and improve public sector performance in future emergencies. Strengthening coordination is not just a matter of administrative efficiency, it is a lever for sustained economic stability and resilience.

7. References

- Bergant, K., & Forbes, K. (2023). Bergant_EER. *European Economic Review*, 158, 104499. <https://doi.org/10.1016/j.euroecorev.2023.104499>
- Capano, G., Howlett, M., Jarvis, D. S. L., Ramesh, M., & Goyal, N. (2020). Mobilizing Policy (In)Capacity to Fight COVID-19: Understanding Variations in State Responses. *Policy and Society*, 39(3), 285-308. <https://doi.org/10.1080/14494035.2020.1787628>
- Cárdenas, M., Ricci, L. A., Roldos, J., & Werner, A. (2021). Fiscal Policy Challenges for Latin America During the Next Stages of the Pandemic: The Need for a Fiscal Pact (FMI Working Paper No. WP/21/77; p. 35). International Monetary Fund (IMF) – Western Hemisphere Department. <https://www.imf.org/en/Publications/WP/Issues/2021/03/26/Fiscal-Policy-Challenges-for-Latin-America-During-the-Next-Stages-of-the-Pandemic-The-Need-502931>
- CEPAL. (2021). Panorama Fiscal de América Latina y el Caribe (No. LC/PUB.2021/5-P; p. 130). Naciones Unidas - CEPAL. <https://repositorio.cepal.org/server/api/core/bitstreams/d19f9382-48ee-47f7-82f7-44a8ee957288/content>
- CEPAL, Bárcena, A., Titelman, D., & Pérez, N. (2020). CEPAL 2020 (No. LC/PUB.2020/6-P; p. 170). United Nations- CEPAL. <https://www.cepal.org/es/publicaciones/45378-panorama-fiscal-america-latina-caribe-2020>
- Choi, J. (2019). Gromov-hausdorff distance between metric graphs. Fanelli, J. M., Jiménez, J. P., Kacef, O., Serpell, C., & Isabel, L. (2011). Volatilidad macroeconómica y respuestas de políticas (No. LC/W.396; Documentos de proyectos, p. 215). Comisión Económica para América Latina y el Caribe (CEPAL). <https://www.cepal.org/es/publicaciones/39592-volatilidad-macroeconomica-respuestas-politicas>
- Fischer, S. (2021). Comparing the Monetary Policy Responses of Major Central Banks to the Great Financial Crisis and the COVID-19 Pandemic [Research Paper]. MIT Sloan School of Management. <https://mitsloan.mit.edu/sites/default/files/2022-01/Monetary-Policy-Research-Paper-Stanley-Fischer-Nov2021.pdf>
- Gourinchas, P.-O., Kalemli-Özcan, Sebnem, Penciakova, V., & Sander, N. (2021). Fiscal Policy in the Age of COVID: Does it 'Get All the Tracks?' (No. w29293; p. w29293). National Bureau of Economic Research. <http://www.nber.org/papers/w29293.pdf>
- IMF, Alichí, A., & Faruquee, H. (2020). IMF 2020 (pp. 1-21) [Capítulo de informe regional]. <https://www.imf.org/en/Publications/REO/WH/Issues/2020/10/13/regional-economic-outlook-western-hemisphere>
- Tuzhilin, A. A. (2020). Lectures on Hausdorff and Gromov-Hausdorff Distance Geometry (No. arXiv:2012.00756). arXiv. <https://doi.org/10.48550/arXiv.2012.00756>

8. Appendix

8.1. Example of questions measuring coordination between the Ministry Of Finance and Presidency

Q1. During the COVID-19 pandemic, did these two institutions collaborate directly, visibly, and functionally in the design or implementation of at least one relevant fiscal policy?

Answer: Yes

Justification: The COVID-19 Fund was publicly announced and coordinated by both the Presidency and MEF.

Source: Conferencia de prensa del Presidente Lacalle Pou, 17 de marzo de 2020

Q2. Were key fiscal policy decisions during the pandemic made within a cabinet or committee led by the Presidency?

Answer: Yes

Justification: Fiscal decisions were discussed and validated within the Council of Ministers, chaired by the President.

Source: Actas del Consejo de Ministros, marzo-abril 2020

Q3. Did the Presidency directly intervene in the design or announcement of fiscal measures (e.g., bonuses, reforms, exemptions)?

Answer: Yes

Justification: The President announced fiscal measures such as the COVID Fund and solidarity tax directly to the public.

Source: Declaraciones públicas 17 y 23 de marzo de 2020

Q4. Did the Presidency subordinate and/or technically direct decisions of the Ministry of Finance during the pandemic?

Answer: No

Justification: The MEF maintained technical leadership, while the Presidency provided political coordination.

Source: Entrevista a Azucena Arbeleche, El Observador, 25 de abril de 2020

Q4. Did the Ministry of Finance act with technical autonomy in implementing fiscal measures?

Answer: No

Justification: MEF drafted and executed the fiscal package autonomously, including the COVID Fund and tax changes.

Source: Ley 19.874; documentos técnicos del MEF

8.2. Institutional Networks

Table 3. Network Metrics by Country

Country	Density	Average Degree	Average Path Length	Diameter	Clustering Coefficient
Argentina	1.000	6.000	3.380	5	1.000
Bolivia	0.867	4.330	3.930	7	0.900
Brazil	1.000	6.000	3.950	5	1.000
Chile	1.000	6.000	3.710	5	1.000
Colombia	0.905	5.430	2.810	5	0.924
Costa Rica	0.905	5.430	3.140	5	0.924
Ecuador	0.952	5.710	3.000	5	0.952
Peru	0.905	5.430	3.620	7	0.924
Uruguay	1.000	6.000	2.000	3	1.000

Table 4. Institution-Level Network Metrics by Country

Country	Institution	Degree	Betweenness	Eigenvector
Argentina	MF	6	0.000	0.932
	NC	6	4.000	0.971
	PRES	6	0.000	0.948
	MSD	6	0.000	0.930
	SSI	6	0.000	0.968
	TA	6	0.000	1.000
Bolivia	FCE	6	0.000	0.524
	MF	5	0.500	1.000
	NC	5	0.000	0.766
	PRES	5	2.000	0.935
	MSD	4	1.500	0.924
	SSI	3	0.000	0.531
Brazil	TA	4	0.000	0.860
	FCE	-	-	-
	MF	6	0.000	0.903
	NC	6	4.000	1.000
	PRES	6	0.000	0.953
	MSD	6	0.000	0.964
Chile	SSI	6	0.000	0.935
	TA	6	0.000	0.964
	FCE	6	0.000	0.557
	MF	6	1.830	0.975
	NC	6	1.830	0.975
	PRES	6	0.000	0.936
Colombia	MSD	6	0.000	0.981
	SSI	6	0.000	1.000
	TA	6	0.000	1.000
	FCE	6	0.000	0.575
	MF	6	2.000	1.000
	NC	6	2.500	0.980
Costa Rica	PRES	6	0.000	0.872
	MSD	4	0.000	0.812
	SSI	5	0.000	0.649
	TA	6	0.500	0.842
	FCE	5	0.000	0.446
	MF	6	0.000	0.936
Ecuador	NC	6	0.000	0.936
	PRES	6	0.000	0.902
	MSD	6	0.000	0.935
	SSI	6	0.000	1.000
	TA	6	5.000	0.977
	FCE	6	0.000	0.281
Peru	MF	6	0.500	1.000
	NC	6	3.500	0.964
	PRES	6	0.000	0.905
	MSD	4	0.000	0.849
	SSI	6	0.000	0.965
	TA	5	0.000	0.947
Uruguay	FCE	5	0.000	0.519
	MF	6	0.000	0.936
	NC	6	0.000	0.936
	PRES	6	0.000	0.902
	MSD	6	0.000	0.935
	SSI	6	0.000	1.000

8.3. Index & Dataset

8.3.1. The Gromov-Hausdorff (GH) distance

In the case where every element of \hat{K} is greater than 0, finding an index is mathematically equivalent to a graph isomorphism problem since all graphs will have same number of vertices and nodes. Furthermore, each graph can be viewed as a metric space and the distance between \hat{K} and K^i measures how far the spaces are from being isometric. Thus, the Gromov-Hausdorff (GH) distance can be used to measure the dissimilarity, which in our basic case is simply (see and:

$$d_i^{GH} = \frac{1}{2} \text{diam}(\hat{K}, K^i)$$

where $\text{diam}(X, Y) = \sup\{d(x, y) \mid (x, y) \in X \times Y\}$ and $d(., .)$ can be taken to be the Euclidean distance. The results are replicated with this measure in the Supplementary Material found online.

8.4. Preliminary Results

	ΔGDP		
	(1)	(2)	(3)
Index	2.128** (0.921)	2.103** (0.914)	0.950 (1.268)
Post-covid dummy		0.092 (0.059)	-0.529 (0.480)
Index * covid			2.375 (1.820)
Constant	-0.420* (0.243)	-0.460* (0.242)	-0.159 (0.334)
Observations	87	87	87
R ²	0.085	0.109	0.132
Adjusted R ²	0.074	0.088	0.100
Residual Std. Error	0.276 (df = 85)	0.274 (df = 84)	0.272 (df = 83)
F Statistic	7.849*** (df = 1; 85)	5.125*** (df = 2; 84)	4.190*** (df = 3; 83)

*p<0.1; **p<0.05; ***p<0.01

Note: Post-covid dummy is a variable that equals one if the year is 2020 or later. The index variable is in 100% terms. Standard errors are reported in parentheses.