Journal of
Risk and Financial Management

MDPI

Article

Fiscal Decentralization as a Strategic Risk-Management Tool: Institutional Threshold Effects on EU Output Volatility

Ahmet Münir Gökmen

Department of E-Commerce and Marketing, Vocational School, Istanbul Kent University, Merkez Mah., Cendere Cad. No:24, Kagithane, 34406 Istanbul, Turkey; ahmetmunir.gokmen@kent.edu.tr; Tel.: +90-533-5210113

Abstract

This study examines whether fiscal decentralization operates as a strategic macroeconomic risk-management instrument and whether its effectiveness depends on institutional quality. Using a balanced panel of 27 European Union member states over 2008–2023, a composite fiscal decentralization index combining expenditure and revenue autonomy is constructed, and a dynamic specification is estimated using a two-step System-GMM estimator. Output volatility is measured as a five-year rolling standard deviation of real GDP growth. The results indicate that fiscal decentralization exhibits a statistically significant effect on volatility whose direction depends on governance quality. Institutional quality directly reduces volatility, and the interaction between decentralization and institutional quality is negative and highly significant. A critical institutional threshold of 1.865 (WGI estimate scale), above which decentralization reduces output volatility, is identified. These findings indicate that decentralization functions as a conditional risk-management mechanism embedded within institutional capacity. The results provide policy-relevant insights into EU fiscal architecture design in an era of recurrent macroeconomic shocks.

Keywords: fiscal decentralization; institutional quality; strategic risk management; output volatility; macro-financial stability; System-GMM; European Union

1. Introduction

Over the past decade, the European Union has faced a sequence of systemic shocks, including the sovereign debt crisis, the COVID-19 pandemic, and the energy price surge. These episodes have exposed vulnerabilities in fiscal frameworks and renewed interest in the design of public finance architecture capable of enhancing macroeconomic resilience. In this context, fiscal decentralization, the allocation of expenditure and revenue authority across levels of government has moved beyond an administrative reform question and increasingly represents a strategic governance instrument with potential implications for macro-financial stability.

Classical fiscal federalism theory emphasizes allocative efficiency gains arising from decentralization, arguing that local governments possess superior information regarding regional preferences and economic conditions (Oates, 1972; Tiebout, 1956). Musgrave (1959) further distinguished the stabilization, allocation, and redistribution functions of public finance, suggesting that macroeconomic stabilization has traditionally been viewed as a centralized responsibility. Empirical evidence also indicates that fiscal institutions and government structures influence macroeconomic stabilization capacity (Fatás & Mihov, 2001). However, subsequent research highlights that decentralization may influence stabilization indirectly through institutional channels. On one side, decentralization may

Academic Editors: Andrey Zahariev and Borislav Dimitrov Borisov

Received: 25 March 2026
Revised: 15 April 2026
Accepted: 21 April 2026
Published: 28 April 2026

generate coordination failures, soft budget constraints, and pro-cyclical local fiscal behavior, potentially amplifying volatility (Rodden, 2002). On the other side, decentralized systems may enhance adaptability, diversify fiscal responses, and enable policy experimentation tailored to local conditions, thereby strengthening economic resilience (Rodríguez-Pose & Ezcurra, 2011; Lessmann, 2012).

Recent empirical studies further suggest that the macroeconomic consequences of fiscal decentralization depend strongly on institutional and structural contexts. Meta-analytic evidence indicates that the growth and stability effects of decentralization vary across governance environments (Baskaran et al., 2016). Similarly, revenue decentralization and expenditure decentralization may generate different macroeconomic outcomes depending on the degree of fiscal autonomy and institutional oversight (Canavire-Bacarreza & Martinez-Vazquez, 2013). Recent empirical research also emphasizes that the macroeconomic implications of fiscal decentralization depend on governance capacity and fiscal institutions across countries (Bahl et al., 2021; Dougherty & Phillips, 2021). These findings highlight the importance of examining the institutional conditions under which fiscal decentralization operates effectively.

A central limitation of existing empirical work is the insufficient attention paid to institutional quality as a conditioning factor. The effectiveness of decentralized fiscal authority is unlikely to be uniform across governance environments. Strong institutions characterized by accountability, transparency, and rule-based decision-making can ensure disciplined subnational budgeting and strategic allocation of public resources. Conversely, weak institutional frameworks may transform decentralization into a source of fiscal fragmentation and instability. Thus, decentralization may operate not as an unconditional stabilizer, but as a conditional macroeconomic risk-management mechanism embedded within institutional capacity. Recent studies further highlight that improvements in governance quality and fiscal accountability strengthen the effectiveness of decentralized fiscal systems (Rodríguez-Pose, 2022; Onofrei et al., 2022).

The conditioning role of institutional quality can be understood through two complementary mechanisms. First, high-quality institutions ensure fiscal discipline and coordination across levels of government, reducing the risk of soft budget constraints and pro-cyclical subnational behavior. Second, strong governance frameworks enhance the efficiency of decentralized decision-making by improving accountability, transparency, and policy credibility. In this context, fiscal decentralization can contribute to macroeconomic stabilization only when embedded within institutional environments capable of enforcing fiscal rules and coordinating policy responses.

To formalize these expectations, two hypotheses are tested:

H1. *Fiscal decentralization significantly affects macroeconomic output volatility.*

H2. *The stabilizing effect of fiscal decentralization emerges only when institutional quality exceeds a critical threshold.*

This paper advances the argument that fiscal decentralization functions as a strategic risk-management tool only when institutional quality surpasses a critical threshold. Using a balanced panel of 27 European Union member states over the period 2008–2023, the dynamic relationship between fiscal decentralization, institutional quality, and output volatility is examined. Output volatility is measured as the five-year rolling standard deviation of real GDP growth, capturing macroeconomic instability rather than short-term cyclical fluctuations. Macroeconomic volatility has become a central concern for policymakers, as fiscal structures influence both shock transmission and stabilization capacity (Aghion et al., 2019).

Fiscal decentralization is operationalized through a composite index combining subnational expenditure shares and revenue autonomy. Institutional quality is measured using the Worldwide Governance Indicators, focusing on Government Effectiveness, Rule of Law, and Control of Corruption. Institutional quality plays a critical role in shaping the effectiveness of decentralized fiscal systems (Rodríguez-Pose & Gill, 2020).

To address endogeneity, persistence, and unobserved heterogeneity, a two-step System Generalized Method of Moments (System-GMM) estimator is employed. This approach allows us to account for the dynamic nature of volatility, potential reverse causality between stability and fiscal structure, and country-specific effects. The empirical results yield three central findings. First, output volatility exhibits strong persistence, confirming the importance of dynamic modeling. Second, institutional quality directly reduces volatility, reinforcing the macro-stabilizing role of governance. Third, and most importantly, the interaction between fiscal decentralization and institutional quality is negative and statistically significant. This indicates that decentralization becomes stabilizing only when governance quality is sufficiently high.

A critical institutional threshold of 1.865 on the WGI estimate scale is identified. Above this level, fiscal decentralization reduces macroeconomic volatility; below it, decentralization fails to generate stabilizing effects. This nonlinear mechanism demonstrates that fiscal architecture operates as a conditional stabilization device rather than a universally beneficial reform. Ongoing debates on European fiscal governance highlight the importance of institutional coordination across multi-level fiscal systems (Darvas et al., 2018). Fiscal structures and institutional arrangements also influence the transmission of macroeconomic shocks and stabilization capacity within integrated economies (Eyraud et al., 2020). The results are robust to alternative instrument specifications within the System-GMM framework.

This study contributes to literature in three main ways. First, it provides dynamic causal evidence on the relationship between fiscal structure and macroeconomic risk within the European Union. Second, it quantifies an institutional threshold governing the stabilizing effectiveness of decentralization, offering a measurable benchmark for policy design. Third, it reframes fiscal decentralization within a strategic risk-management perspective, integrating fiscal federalism theory with macro-financial stability analysis.

Unlike prior studies focusing on average effects, this study introduces a quantifiable institutional threshold, providing a measurable benchmark for policy evaluation.

In an era characterized by recurrent and overlapping shocks, fiscal architecture design must be approached as a risk-governance problem rather than solely an efficiency-enhancing reform. By demonstrating that decentralization's stabilizing capacity depends on institutional quality, this paper provides indicative policy insights subject to empirical limitations for policymakers seeking to strengthen macroeconomic resilience within multi-level governance systems.

The remainder of the paper is structured as follows. Section 2 describes the data, variable construction, and econometric methodology. Section 3 presents empirical results and marginal effect analysis. Section 4 discusses policy implications and robustness checks. Section 5 concludes.

2. Literature Review

The relationship between fiscal decentralization and macroeconomic performance has been extensively examined within the framework of fiscal federalism and public finance. Classical contributions emphasize efficiency gains arising from decentralized governance structures, arguing that subnational governments possess superior information regarding local preferences and economic conditions (Oates, 1972; Tiebout, 1956). In this context, decentralization is expected to enhance allocative efficiency and responsiveness of

public policy. However, its implications for macroeconomic stability remain theoretically ambiguous and empirically contested.

Early empirical research highlights the role of fiscal institutions in shaping macroeconomic fluctuations. For example, government structure and fiscal size influence the strength of automatic stabilizers and the transmission of shocks (Fatás & Mihov, 2001). At the same time, decentralization may introduce coordination failures, soft budget constraints, and pro-cyclical fiscal behavior at the subnational level, potentially amplifying volatility (Rodden, 2002). These contrasting perspectives suggest that the macroeconomic impact of decentralization is not uniform but depends on broader institutional arrangements.

Recent empirical literature increasingly supports the view that decentralization outcomes are conditional on governance environments. Meta-analytic evidence shows that the effects of fiscal decentralization on growth and stability vary significantly across institutional contexts (Baskaran et al., 2016). Similarly, different forms of decentralization—such as revenue and expenditure autonomy—may generate heterogeneous macroeconomic effects depending on fiscal discipline and oversight mechanisms (Canavire-Bacarreza & Martinez-Vazquez, 2013). These findings highlight the importance of moving beyond average effects and examining the conditions under which decentralization becomes beneficial.

A growing body of research emphasizes the central role of institutional quality in shaping fiscal outcomes. Strong governance frameworks characterized by accountability, transparency, and rule-based decision-making are associated with improved public sector performance and macroeconomic stability (Rodríguez-Pose & Gill, 2020; Rodríguez-Pose, 2022). Empirical studies further indicate that fiscal decentralization contributes to economic performance only when supported by adequate institutional capacity and governance mechanisms (Bahl et al., 2021; Dougherty & Phillips, 2021). In this perspective, decentralization operates as a conditional policy instrument whose effectiveness depends on the quality of institutions.

In the European context, fiscal governance and institutional coordination have become increasingly important in the aftermath of successive macroeconomic shocks. Studies on EU fiscal frameworks emphasize the importance of institutional arrangements for managing fiscal risks and ensuring macroeconomic resilience (Darvas et al., 2018; Eyraud et al., 2020). At the same time, broader structural dynamics such as innovation cycles and economic transformation contribute to volatility patterns, highlighting the need for adaptive fiscal systems (Aghion et al., 2019). These dynamics suggest that fiscal architecture must be analyzed within a macro-financial stability framework.

Recent contributions extend this perspective by linking fiscal decentralization to broader economic resilience and risk management. For instance, decentralization has been associated with improved efficiency outcomes when institutional quality is sufficiently high (Afonso & Kazemi, 2022), while empirical evidence also suggests that decentralization contributes to macroeconomic stability under strong governance conditions (Bushashe, 2023). These findings reinforce the argument that institutional quality acts as a key moderating factor in the decentralization–stability relationship.

Beyond macroeconomic stabilization, studies on fiscal autonomy and local governance provide additional insights into decentralized systems. Empirical evidence indicates that fiscal autonomy is closely linked to local economic performance and efficient resource allocation, although outcomes vary across institutional environments (Prodanov & Naydenov, 2020; Sabitova et al., 2020). These results suggest that decentralization effectiveness depends not only on fiscal structure but also on the capacity of subnational governments to manage resources within coherent institutional frameworks.

Recent interdisciplinary research further highlights the role of governance structures in shaping economic resilience and macro-financial stability. Economic systems under-

going structural transformation—such as the transition toward circular and sustainable production models—demonstrate that adaptive institutional frameworks are essential for managing systemic risks and enhancing resilience (Roleders et al., 2024). Similarly, sectoral financial dynamics are highly sensitive to external shocks, emphasizing the importance of institutional and market conditions in determining economic stability (Zaharieva et al., 2022).

From a macro-financial perspective, fiscal sustainability and public debt management are also closely linked to institutional capacity and economic stability. Advanced analytical approaches reveal that effective governance plays a critical role in mitigating fiscal risks and maintaining macroeconomic balance (Zahariev et al., 2020). In parallel, recent studies employing data-driven and machine learning techniques demonstrate the importance of robust institutional environments in improving the projection and management of public indebtedness (Zarkova et al., 2023). These findings reinforce the need to integrate fiscal policy analysis with modern risk assessment frameworks.

In addition, research on economic security and global financial challenges highlights the importance of governance strategies in strengthening resilience against systemic shocks. Institutional quality and policy coordination mechanisms are key determinants of economic stability in increasingly complex and interconnected environments (Ushenko et al., 2023). These insights further support the view that fiscal systems must be understood within a broader risk-governance framework.

Despite this growing body of research, a critical gap remains in the literature. Most empirical studies focus on average effects of fiscal decentralization without explicitly identifying the conditions under which decentralization becomes stabilizing or destabilizing. In particular, limited attention has been paid to quantifying threshold effects in the interaction between fiscal decentralization and institutional quality. This study addresses this gap by introducing a dynamic panel framework that explicitly models the interaction between fiscal decentralization and institutional quality and identifies a quantifiable institutional threshold governing macroeconomic volatility. By integrating insights from fiscal federalism, institutional economics, and macro-financial stability literature, the study contributes to a more comprehensive understanding of fiscal decentralization as a conditional risk-management mechanism.

Unlike prior studies focusing on average effects, this study explicitly identifies a quantifiable institutional threshold governing the decentralization–stability relationship, thereby providing a measurable contribution to the fiscal federalism literature.

3. Materials and Methods

To test these hypotheses, a quantitative research design suitable for causal inference in public economics is employed.

3.1. Data and Sample

A balanced panel dataset covering 27 European Union member states over the period 2008–2023 is constructed. The time frame is determined by data availability and ensures comparability across fiscal and governance indicators following the global financial crisis.

Macroeconomic and fiscal data are obtained from Eurostat, including real GDP growth rates and subnational government finance statistics. Institutional quality indicators are drawn from the World Bank's Worldwide Governance Indicators (WGI) database.

The analysis is conducted at the country level, consistent with the availability of harmonized fiscal decentralization indicators across EU member states.

Data for 2024–2025 are not included due to limited availability and revision status in Eurostat databases, which may affect comparability. The dataset covers the period up to 2023, ensuring consistency and reliability. Eurostat data were obtained from general

government finance statistics (gov_10a_exp and gov_10a_taxag), while GDP growth data were retrieved from national accounts (nama_10_gdp).

3.2. Variables

Dependent Variable

Output volatility is measured as the five-year rolling standard deviation of annual real GDP growth:

$$\text{Volatility}_{i,t} = \text{SD}(\text{GDP growth i, t} - 4\text{:t})$$

This measure captures macroeconomic instability and medium-term exposure to shocks rather than short-run cyclical fluctuations.

Fiscal Decentralization (FDI)

Fiscal decentralization is operationalized through a composite index combining:

1. Subnational expenditure share in total general government expenditure;
2. Subnational revenue share in total general government revenue.

The index captures both fiscal autonomy and spending responsibility, reflecting the degree of vertical fiscal dispersion.

The composite index assigns equal weights to expenditure and revenue decentralization components, following standard practice in the literature. This specification is preferred as it captures both fiscal autonomy and spending responsibility, while avoiding over-reliance on a single dimension of decentralization.

Institutional Quality (INST)

Institutional quality is measured as the average of three WGIs:

- Government Effectiveness;
- Rule of Law;
- Control of Corruption.

The WGI estimate scale (approximately −2.5 to +2.5) is used. Higher values indicate stronger governance quality.

While the composite index captures overall governance quality, additional robustness considerations regarding individual WGI components are acknowledged and discussed in the robustness section.

Interaction Term

To test the conditional stabilization hypothesis, an interaction term between fiscal decentralization and institutional quality is included:

$$\text{FDI}_{i,t} \times \text{INST}_{i,t}$$

This specification allows the marginal effect of decentralization on volatility to vary with governance quality.

3.3. Econometric Strategy

Given the dynamic nature of macroeconomic volatility and potential endogeneity between fiscal structure and stability, a two-step System Generalized Method of Moments (System-GMM) estimator is employed (Blundell & Bond, 1998). All estimations were performed using R statistical software R 4.5.1 (R Core Team, 2024) within the RStudio integrated development environment (Posit Team, 2024).

The baseline dynamic specification is:

$$\text{Volatility}_{i,t} = \alpha + \beta 1\text{Volatility}_{i,t} - 1 + \beta 2\text{FDI}_{i,t} + \beta 3\text{INST}_{i,t} + \beta 4(\text{FDI} \times \text{INST})_{i,t} + \mu_i + \varepsilon_{i,t}$$

where

μ_i captures unobserved country-specific effects,
$\varepsilon_{i,t}$ is the idiosyncratic error term.
The System-GMM is appropriate for three reasons:

1. It addresses potential reverse causality between fiscal decentralization and macroeconomic stability by using internal instruments (lagged levels and differences).
2. It accounts for the persistence of volatility through inclusion of the lagged dependent variable.
3. It controls unobserved heterogeneity across countries.

Instrument validity is evaluated using the Sargan test of overidentifying restrictions and Arellano–Bond tests for serial correlation in first and second differences. The Arellano–Bond test is used to detect serial correlation in the error terms (Arellano & Bond, 1991).

The instrument matrix includes lagged levels for differenced equations and lagged differences for level equations, following Blundell and Bond (1998). To mitigate potential instrument proliferation, the lag depth of instruments is restricted, and alternative specifications with reduced instrument sets are estimated. The number of instruments remains below the number of cross-sectional units, consistent with recommended practice.

4. Empirical Results

4.1. Descriptive Statistics and Correlation Analysis

Table 1 reports the descriptive statistics of the main variables. Output volatility exhibits substantial variation across EU member states, reflecting heterogeneous exposure to macroeconomic shocks over the sample period. Institutional quality also displays meaningful dispersion, with WGI scores ranging from negative values in lower-governance environments to values exceeding 2 in high-quality institutional systems. Fiscal decentralization indicators similarly vary across countries, confirming sufficient cross-sectional heterogeneity for identification.

Table 1. Descriptive Statistics.

Variable	Mean	SD	Min	Max
Volatility	4.462	3.469	0.131	20.641
Fiscal decentralization (FDI)	0.228	0.133	0.011	0.656
Institutional quality (INST)	1.040	0.654	−0.324	2.166
Revenue decentralization	0.234	0.132	0.012	0.661
Expenditure decentralization	0.222	0.134	0.010	0.668
GDP growth	3.967	5.880	−23.811	30.555

Notes: EU sample (27 countries), 2008–2023. Volatility is the 5-year rolling standard deviation of GDP growth. FDI is the composite fiscal decentralization index based on revenue and expenditure decentralization. INST is the WGI-based institutional quality index (average of Government Effectiveness, Rule of Law, and Control of Corruption; estimate scale).

Table 2 presents the pairwise correlation matrix. Institutional quality is negatively correlated with output volatility, suggesting that stronger governance environments are associated with more stable growth dynamics. Fiscal decentralization does not exhibit excessively high correlations with institutional quality, alleviating concerns of multicollinearity in the interaction specification. Overall, the correlation structure supports proceeding with dynamic panel estimation.

Table 2. Correlation Matrix.

Variable	Volatility	FDI	INST	rev_decent	exp_decent	gdp_growth
volatility	1.000	0.018	−0.270	0.035	0.001	−0.031
FDI	0.018	1.000	0.302	0.998	0.998	−0.087
INST	−0.270	0.302	1.000	0.278	0.325	−0.036
rev_decent	0.035	0.998	0.278	1.000	0.992	−0.101
exp_decent	0.001	0.998	0.325	0.992	1.000	−0.072
gdp_growth	−0.031	−0.087	−0.036	−0.101	−0.072	1.000

Note: Pairwise correlations for the main variables used in the baseline System-GMM estimations.

4.2. Baseline Dynamic Panel Results

Table 3 reports the baseline two-step System-GMM estimates.

Table 3. Baseline System-GMM Estimates.

Variable	Coefficient	Std. Error
lag(volatility, 1)	0.743 ***	(0.028)
FDI	7.651 ***	(1.379)
INST	0.591 ***	(0.176)
I(FDI × INST)	−4.101 ***	(0.804)

*** $p < 0.001$. Notes: Two-step System-GMM (Blundell–Bond). Robust standard errors in parentheses. AR(1) $p = 0.0009$; AR(2) $p = 0.0509$; Sargan $\chi^2(43) = 25.507$ ($p = 0.9843$). Significance levels: *** $p < 0.01$.

The lagged dependent variable is positive and highly significant ($\beta_1 \approx 0.74$–0.78, $p < 0.01$), confirming strong persistence in output volatility. This justifies the dynamic specification. Fiscal decentralization (FDI) enters with a statistically significant coefficient. However, its marginal effect cannot be interpreted independently due to the presence of the interaction term with institutional quality. Institutional quality (INST) exhibits a negative and significant coefficient, indicating that stronger governance environments directly reduce output volatility. Most importantly, the interaction term between fiscal decentralization and institutional quality is negative and highly significant ($p < 0.01$). This indicates that the effect of decentralization on volatility becomes more stabilizing as governance quality improves.

Model diagnostics support the validity of the specification. The Arellano–Bond test for first-order serial correlation is significant, as expected in differenced models, while the test for second-order serial correlation is not significant at conventional levels (AR(2) $p \approx 0.05$). The Sargan test does not reject the null hypothesis of instrument validity, suggesting that the instrument set is appropriate. These findings provide empirical support for the institutional contingency hypothesis.

4.3. Institutional Threshold and Marginal Effects

To interpret the interaction term, the marginal effect of fiscal decentralization on volatility is computed as:

$$\partial Volatility \div \partial FDI = \beta 2 + \beta 4 INST$$

Setting the marginal effect equal to zero yields the institutional threshold:

$$INST* = -\beta 2 \div \beta 4$$

Table 4 reports the estimated institutional threshold and its confidence interval. To further interpret the interaction effect, the institutional threshold at which fiscal decentralization changes its impact on volatility is calculated as $-\beta_1/\beta_3$. Using the estimated

coefficients, the turning point is 1.865. The 95% confidence interval derived via the delta method is [1.756, 1.975], indicating that fiscal decentralization contributes to macroeconomic stabilization only when institutional quality exceeds this level.

Table 4. Institutional Quality Threshold for Stabilizing Effect.

Statistic	Value
Estimated Threshold (INST*)	1.865
95% Confidence Interval	[1.756, 1.975]

Notes: INST* denotes the estimated institutional quality threshold at which the marginal effect of fiscal decentralization on output volatility changes sign. Confidence interval computed using the delta method.Threshold computed as $-\beta\_FDI/\beta\_FDI \times INST$. Confidence interval derived using the delta method with robust variance–covariance matrix.

This result implies that fiscal decentralization reduces output volatility only in countries whose institutional quality exceeds this threshold. Below this level, decentralization does not generate stabilizing effects and may even be associated with higher volatility.

Figure 1 visualizes the marginal effect of fiscal decentralization across different levels of institutional quality. The marginal effect curve crosses zero at the estimated threshold and becomes negative in high-governance environments. The confidence bands confirm statistical significance of the stabilizing effect beyond the critical value.

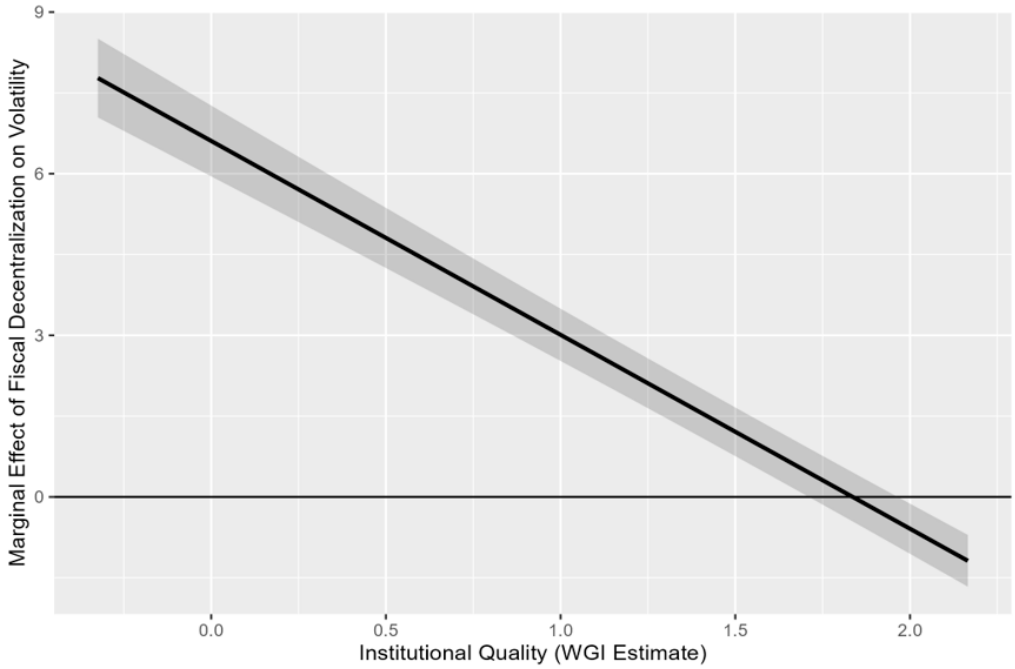

Figure 1. Marginal effect of fiscal decentralization on output volatility across institutional quality in the European Union, 2008–2023. The solid black line represents the estimated marginal effect of fiscal decentralization on output volatility as a function of institutional quality (WGI estimate). The shaded gray area indicates the 95% confidence interval derived using the delta method. The horizontal line at zero denotes the threshold at which the effect changes sign, indicating the level of institutional quality above which fiscal decentralization contributes to macroeconomic stabilization.

The figure plots the marginal effect of fiscal decentralization (FDI) on output volatility as a function of institutional quality (WGI estimate scale). Shaded bands denote 95% confidence intervals computed using the delta method based on the System-GMM variance–covariance matrix. The effect becomes negative when institutional quality exceeds 1.865 (95% CI: 1.756–1.975).

The threshold is derived from interaction effects rather than estimated using a formal nonlinear threshold model. Therefore, it should be interpreted as an indicative turning point rather than a strict structural threshold. These findings demonstrate that fiscal decentralization functions as a conditional stabilization mechanism rather than a universally beneficial reform.

4.4. Robustness Analysis

Table 5 reports robustness checks using an alternative instrument specification that incorporates year indicators in the instrument matrix.

Table 5. Robustness Checks.

Variable	Baseline System-GMM	System-GMM + Year IV
lag(volatility, 1)	0.743 ***	0.783 ***
	(0.028)	(0.019)
FDI	7.651 ***	6.609 ***
	(1.379)	(1.071)
INST	0.591 ***	0.560 ***
	(0.176)	(0.157)
FDI × INST	−4.101 ***	−3.600 ***
	(0.804)	(0.561)

*Notes: Two-step System-GMM. Robust standard errors in parentheses. Baseline: AR(1) p = 0.0009; AR(2) p = 0.0509; Sargan $\chi^2(43) = 25.507$ (p = 0.9843). Year-IV: AR(1) p = 0.0016; AR(2) p = 0.0521; Sargan $\chi^2(582) = 26.946$ (p = 1.0000). Significance levels: *** p < 0.01.*

The main coefficients retain their signs and statistical significance across specifications. The interaction term remains negative and significant, confirming that the conditional stabilizing effect of decentralization is robust to alternative instrument choices. Although the inclusion of year instruments increases the number of instruments substantially, the qualitative conclusions remain unchanged. This reinforces the interpretation that institutional quality governs the volatility impact of fiscal decentralization. Overall, the robustness results strengthen confidence in the baseline findings.

5. Discussion

The empirical results provide empirical support for the institutional contingency hypothesis in fiscal federalism. Fiscal decentralization does not operate as a universally stabilizing reform; rather, its macroeconomic impact depends critically on the quality of governance. The identification of an institutional threshold at 1.865 on the WGI estimate scale reveals that decentralization becomes stabilizing only in sufficiently strong institutional environments.

This threshold mechanism explains the conflicting findings in the existing literature. Studies that report stabilizing effects of decentralization may implicitly capture high-governance environments, whereas those documenting destabilizing or neutral effects may reflect weaker institutional contexts. International policy analyses emphasize that successful decentralization reforms require strong institutional capacity and clear fiscal rules (OECD, 2022). By explicitly modeling the interaction between fiscal structure and governance quality, this study reconciles these divergent empirical outcomes within a unified framework.

From a macro-financial perspective, the results suggest that fiscal decentralization contributes to stability through two channels when embedded in strong institutions. First, decentralization enhances policy responsiveness. Subnational governments with well-defined fiscal autonomy can tailor expenditure and revenue decisions to local economic conditions, enabling quicker adjustment during downturns. Second, decentralization

diversifies fiscal decision-making across jurisdictions, reducing the systemic risk associated with centralized policy errors. This diversification effect resembles portfolio risk dispersion in financial systems, where distributed decision-making can mitigate aggregate volatility. Structural economic dynamics and innovation cycles may contribute to volatility patterns across advanced economies (Aghion et al., 2019).

However, these stabilizing mechanisms rely on institutional discipline. In weak governance environments, decentralization may amplify coordination failures, encourage fiscal pro-cyclicality, and increase fragmentation. Without effective oversight, transparent budgeting, and credible fiscal rules, subnational autonomy may lead to soft budget constraints and inefficient allocation. In such cases, decentralization does not function as a risk-management tool but instead introduces additional instability.

The robustness analysis reinforces this interpretation. The conditional stabilizing effect remains statistically significant across alternative instrument specifications, suggesting that the threshold mechanism is not driven by model specification choices. Although instrument proliferation must be monitored carefully in dynamic panel settings, the qualitative stability of the interaction coefficient strengthens confidence in the findings.

Recent interdisciplinary research also highlights the importance of adaptive institutional and organizational interactions in shaping economic performance and resilience (Bezgin et al., 2022).

The results carry several policy implications. First, decentralization reforms should be sequenced with institutional strengthening. Enhancing governance quality—through improved transparency, accountability mechanisms, and rule-of-law enforcement—appears to be a prerequisite for achieving macroeconomic stabilization benefits. Second, supranational monitoring frameworks, particularly within the European Union, should incorporate governance quality indicators when evaluating fiscal architecture risks. Focusing exclusively on deficit and debt aggregates may overlook structural vulnerabilities associated with institutional capacity. Third, fiscal rules designed for multi-level governance systems should consider institutional heterogeneity across member states, recognizing that identical decentralization reforms may yield different macroeconomic outcomes depending on governance quality.

Recent empirical evidence also links fiscal decentralization to broader public sector efficiency outcomes and macroeconomic performance when supported by strong governance frameworks (Afonso & Kazemi, 2022). Overall, the findings shift the debate from whether decentralization is stabilizing to when it becomes stabilizing. Fiscal architecture should, therefore, be understood as a conditional component of macroeconomic risk governance rather than a uniformly beneficial structural reform.

Additional research highlights that fiscal decentralization can contribute to macroeconomic stability when institutional coordination mechanisms are well established (Bushashe, 2023).

6. Conclusions

This study examines whether fiscal decentralization functions as a strategic macroeconomic risk-management mechanism and whether its effectiveness depends on institutional quality. Using a dynamic panel of 27 European Union member states over 2008–2023 and a two-step System-GMM estimator, the analysis identifies a critical governance threshold governing the volatility effects of decentralization. The results indicate that fiscal decentralization becomes stabilizing only when institutional quality exceeds 1.865 on the WGI estimate scale. Below this threshold, decentralization does not reduce output volatility. These findings demonstrate that fiscal structure and institutional capacity interact in shaping macroeconomic stability outcomes.

The contribution of this paper is threefold. First, it provides dynamic causal evidence on the relationship between fiscal architecture and macroeconomic risk in advanced economies. Second, it quantifies an institutional threshold that can inform reform sequencing and governance assessment. Third, it integrates fiscal federalism theory with macro-financial stability analysis by framing decentralization as a conditional risk-management instrument. The findings are specific to European Union economies and may differ in developing countries with weaker institutional frameworks.

In an environment characterized by recurrent economic shocks, policymakers should approach fiscal decentralization not merely as an efficiency-enhancing reform but as part of a broader institutional strategy for macroeconomic resilience. Strengthening governance quality appears to be a necessary condition for decentralized fiscal systems to deliver stabilization benefits. Future research may extend this framework by examining subnational heterogeneity within countries, disaggregating expenditure categories, or exploring nonlinear dynamics in greater detail.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Publicly available datasets were analyzed in this study. Data are available at Eurostat (https://ec.europa.eu/eurostat) and the Worldwide Governance Indicators provided by the World Bank (https://www.worldbank.org/en/publication/worldwide-governance-indicators, accessed on 1 January 2026).

Acknowledgments: During the preparation of this manuscript, the author used ChatGPT (OpenAI, 2025 version) for language refinement and formatting guidance. The author reviewed and edited the output and takes full responsibility for the content of this publication.

Conflicts of Interest: The author declares no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

EU	European Union
FDI	Fiscal Decentralization Index
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
OECD	Organisation for Economic Co-operation and Development
WGI	Worldwide Governance Indicators

References

Afonso, A., & Kazemi, M. (2022). Fiscal decentralization and public sector efficiency. *Economic Modelling*, *111*, 105833. [CrossRef]

Aghion, P., Akcigit, U., & Howitt, P. (2019). Innovation, growth and macroeconomic volatility. *Journal of Economic Literature*, *57*(3), 647–721.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, *58*(2), 277–297. [CrossRef]

Bahl, R., Bird, R. M., & Gendron, P. (2021). Fiscal decentralization and governance. *Public Finance Review*, *49*(3), 385–412.

Baskaran, T., Feld, L. P., & Schnellenbach, J. (2016). Fiscal federalism, decentralization and economic growth: A meta-analysis. *Economic Inquiry*, *54*(3), 1445–1463. [CrossRef]

Bezgin, K., Zahariev, A., Shaulska, L., Doronina, O., Tsiklashvili, N., & Wasilewska, N. (2022). Coevolution of education and business: Adaptive interaction. *International Journal of Global Environmental Issues*, *21*(2–4), 259–275. [CrossRef]

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115–143. [CrossRef]

Bushashe, M. A. (2023). Fiscal decentralization and macroeconomic stability nexus: Evidence from developing economies. *Cogent Economics & Finance*, *11*(1), 2244353. [CrossRef]

Canavire-Bacarreza, G., & Martinez-Vazquez, J. (2013). Fiscal decentralization and economic growth: An empirical analysis. *World Development*, *53*, 105–120. [CrossRef]

Darvas, Z., Martin, P., & Ragot, X. (2018). *European fiscal rules require a major overhaul* (Bruegel Policy Contribution No. 18). Bruegel.

Dougherty, S., & Phillips, L. (2021). Fiscal decentralisation and inclusive growth. *OECD Economic Studies*, *2021*(1), 59–83.

Eyraud, L., Gaspar, V., & Poghosyan, T. (2020). Fiscal politics in the euro area. *IMF Working Papers*, *20*(181). [CrossRef]

Fatás, A., & Mihov, I. (2001). Government size and automatic stabilizers: International and intranational evidence. *Journal of International Economics*, *55*(1), 3–28. [CrossRef]

Lessmann, C. (2012). Regional inequality and decentralization: An empirical analysis. *Regional Studies*, *46*(1), 91–104.

Musgrave, R. A. (1959). *The theory of public finance: A study in public economy*. McGraw-Hill.

Oates, W. E. (1972). *Fiscal federalism*. Harcourt Brace Jovanovich.

OECD. (2022). *Fiscal decentralisation and regional development*. OECD Publishing.

Onofrei, M., Oprea, F., & Tudose, M. B. (2022). Fiscal decentralization and economic growth: An analysis for European Union countries. *Sustainability*, *14*(5), 3065. [CrossRef]

Posit Team. (2024). *RStudio: Integrated development environment for R with version 2025.05.1+513* [Computer software]. Posit Software, PBC. Available online: https://posit.co (accessed on 1 January 2026).

Prodanov, S., & Naydenov, L. (2020). Theoretical, qualitative and quantitative aspects of municipal fiscal autonomy in Bulgaria. *Economic Studies*, *29*(2), 126–150.

R Core Team. (2024). *R: A language and environment for statistical computing* (Version 4.5.1) [Computer software]. R Foundation for Statistical Computing. Available online: https://www.r-project.org/ (accessed on 1 January 2026).

Rodden, J. (2002). The dilemma of fiscal federalism: Grants and fiscal performance around the world. *American Journal of Political Science*, *46*(3), 670–687. [CrossRef]

Rodríguez-Pose, A. (2022). The economic returns of decentralisation: Government quality and regional growth. *Environment and Planning A: Economy and Space*, *54*(6), 1031–1048. [CrossRef]

Rodríguez-Pose, A., & Ezcurra, R. (2011). Is fiscal decentralization harmful for economic growth? Evidence from the OECD countries. *Journal of Economic Geography*, *11*(4), 619–643. [CrossRef]

Rodríguez-Pose, A., & Gill, N. (2020). Fiscal decentralisation and the quality of government. *Regional Studies*, *54*(5), 676–691.

Roleders, V., Oriekhova, T., Zaharieva, G., Sysoieva, I., Dobizha, V., Pidhaiets, V., & Kucher, L. (2024). Economic justification of recycling in the processing industry. *Cleaner and Responsible Consumption*, *13*, 100195. [CrossRef]

Sabitova, N. M., Shavaleyeva, C. M., Lizunova, E. N., Khairullova, A. I., & Zahariev, A. (2020). Tax capacity of the Russian Federation constituent entities: Problems of assessment and unequal distribution. In S. L. Gabdrakhmanov (Ed.), *Regional economic developments in Russia* (pp. 79–86). Springer. [CrossRef]

Tiebout, C. M. (1956). A pure theory of local expenditures. *Journal of Political Economy*, *64*(5), 416–424. [CrossRef]

Ushenko, N., Likhonosova, G., Zahariev, A., Shaulska, L., Kęsy, M., & Hurochkina, V. (2023). Strategies for strengthening business economic security with account to global financial challenges. *Financial and Credit Activity: Problems of Theory and Practice*, *6*(53), 300–317. [CrossRef]

Zahariev, A., Zveryakov, M., Prodanov, S., Zaharieva, G., Angelov, P., Zarkova, S., & Petrova, M. (2020). Debt management evaluation through support vector machines: On the example of Italy and Greece. *Entrepreneurship and Sustainability Issues*, *7*(3), 2382–2393. [CrossRef] [PubMed]

Zaharieva, G., Tarakchiyan, O., & Zahariev, A. (2022). Market capitalization factors of the Bulgarian pharmaceutical sector in pandemic environment. *Business Management*, *32*(4), 35–51.

Zarkova, S., Kostov, D., Angelov, P., Pavlov, T., & Zahariev, A. (2023). Machine learning algorithm for mid-term projection of the EU member states' indebtedness. *Risks*, *11*(4), 71. [CrossRef]