# RESEARCH ON FACTORS INFLUENCING THE STATE BUDGET AND ECONOMIC GROWTH IN THE EUROPEAN UNION

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***Abstract***

*Our study delves into factors that influence state budget elements (revenue, spending) and economic growth across EU-27 during the period 2011–2021. With the help of panel data modelling and secondary data provided by reliable regional and international bodies, we showed that government revenue, government expenditure and gross domestic product per capita were significantly impacted by macroeconomic indicators related to institutional quality, namely: government effectiveness; political stability and absence of violence/terrorism; regulatory quality, voice and accountability. The longitudinal study delves into strategies that public authorities can use to improve budgetary resources, outlays and the way in which economies function.*

***Keywords:*** *state budget, European Union, government revenue, government expenditure, political stability, government effectiveness, requlatory quality, voice and accountability*

***JEL Classification: H71, H72, P24***

## 1. Introduction

The quality of public institutions determines the way public money is amassed and spent by authorities, in addition to how the national economy evolves [1]-[2]-[3]-[4]. In well-functioning societies that generaly boast efficieny, stability, civil liberties and incentives for business development, authorities have sufficient resources that can be collected and spent adequately to support individual and corporate taxpayers' needs [5]-[6]-[7].

It goes without saying that "advanced economies have a different capacity to intervene, and different needs for their governments to do so, than developing countries" (Afonso, Schuknecht, & Tanzi, 2023, p. 11) [8].

By means of panel data modelling, we investigated whether variables capturing different institutional quality aspects impacted on state budgets and economic growth across the European Union for more than a decade. Empirical results show that total general revenues and outlays register an increasing trend when authorities provide high quality public services following the enactment of public policies and when citizens are actively participating in public life via democratic levers.

We deem that empirical insights on determinants of state budget elements and economic growth across members of the European Union open new conversations on which policies are more adequate to boost public revenue, finance public spending and encourage economic growth.

The remainder of the manuscript is as follows. Section 2 briefly presents the research methodology and variables of interest. Section 3 describes the econometric models and empirical outcomes. Section 4 discusses main results and presents concluding remarks.

## 2. Methodology and variables of interest

Our country sample comprised all 27-EU members that were analyzed for the decade 2011–2021. Macroeconomic variables were retrieved from the Eurostat and World Bank databases. We used the statistical software EViews version 12 to conduc econometric analyses.

The study favored a multimodal approach and examined empirical data with descriptives, correlation analyses and panel data modelling with two estimators (i.e., ordinary least squares, dynamic ordinary least squares).

The set of *dependent variables* included the following:

- Total general government revenue (GOVREV), an element of state budget;
- Total general government expenditure (GOVEXP), an element of state budget;
- Gross domestic product per capita (GDPC), which proxies economic growth.

The set of *independent variables* included the following:

- Government effectiveness (GE), which comprises perceptions regarding the quality of public services, quality of drafting and implementing policies, credibility of government commitment toward its policies;
- Political stability and absence of violence/terrorism (PS), which captures perceptions regarding the possibility of political instability and politically driven violence or terrorist acts;
- Regulatory quality (RQ), which gatheres perceptions on government's capacity to draft and enact policies and regulations that facilitate the development of private sector;
- Voice and accountability (VA), which captures perceptions on citizens' possibilities to participate in ellections, freedom to express beliefs, associate and get informed from free media.

Independent variables registered values that ranged approximately from –2.5 to 2.5.

In our investigation, we advanced the following research hypotheses:

*Hypothesis 1: There is a significant link between GOVREV and the variables GE, PS, RQ and VA.*
*Hypothesis 2: There is a significant link between GOVEXP and the variables GE, PS, RQ and VA.*
*Hypothesis 3: There is a significant link between GDPC and the variables GE, PS, RQ and VA.*

To test whether our estimated results could be biased by multicolinearity issues, we determined the variance inflation factors (VIFs) with respect to each predictor. According to the literature, values under 10 would imply a low risk of multicolinearity. Moreover, we ran the White cross-section test to establish whether the hull hypothesis of heteroscedasticity could be rejected.

## 3. Empirical results

As a first step, we determined descriptive statistics for our variables of interest (see Table 1).

**Table 1. Descriptive statistics**

| | GOVREV | GOVEXP | GDPC | GE | PS | RQ | VA |
|---|---|---|---|---|---|---|---|
| Mean | 42.9633 | 45.5478 | 1.8530 | 1.0757 | 0.7295 | 1.1452 | 1.0773 |
| Median | 42.9000 | 45.2000 | 1.8202 | 1.0569 | 0.7722 | 1.1178 | 1.0569 |
| Maximum | 56.4000 | 62.8000 | 23.2009 | 2.2349 | 1.4394 | 2.0455 | 1.6904 |
| Minimum | 22.3000 | 24.3000 | –11.7576 | –0.2574 | –0.2303 | 0.1444 | 0.2619 |
| Std. Dev. | 6.5473 | 7.1353 | 3.8343 | 0.5620 | 0.3514 | 0.4671 | 0.3555 |
| Skewness | –0.2528 | –0.1900 | 0.1622 | –0.2321 | –0.4493 | 0.0270 | –0.3179 |
| Kurtosis | 2.8601 | 2.9007 | 7.6296 | 2.3978 | 2.8335 | 1.9187 | 2.3103 |
| Jarque-Bera | 3.4047 | 1.9099 | 266.5426 | 7.1539 | 10.3339 | 14.5054 | 10.8885 |
| Probability | 0.1823 | 0.3848 | 0.0000 | 0.0279 | 0.0057 | 0.0007 | 0.0043 |
| Observations | 297 | 297 | 297 | 297 | 297 | 297 | 297 |

*Source*: Authors' computations.

In terms of volatility, the variables GOVREV and GOVEXP registered the highest values, while PS had the lowest value. Based on the skewness, we noticed that only two variables were skewed to the right. Moreover, the kurtosis statistic indicated that most variables had platykurtic distributions (with values under the threshold of 3).

We also ran the Jarque-Bera test, which indicated that two variables had normal distributions (i.e., GOVREV and GOVEXP), while the rest had non-normal distributions.

As a second step in the analysis procedure, we determined bivariate correlations and inspected the ones between independent variables (see Table 2).

**Table 2. Correlation coefficients**

| | GOVREV | GOVEXP | GDPC | GE | PS | RQ | VA |
|---|---|---|---|---|---|---|---|
| **GOVREV** | 1 | | | | | | |
| **GOVEXP** | 0.896 | 1 | | | | | |
| **GDPC** | –0.322 | –0.458 | 1 | | | | |
| **GE** | 0.433 | 0.291 | –0.117 | 1 | | | |
| **PS** | 0.098 | –0.039 | 0.035 | 0.618*** | 1 | | |
| **RQ** | 0.225 | 0.047 | –0.024 | 0.878*** | 0.588*** | 1 | |
| **VA** | 0.413 | 0.282 | –0.142 | 0.919*** | 0.599*** | 0.874*** | 1 |

*Note*: The symbol *** indicates statistical significance at the 0.1% level.

Based on correlation coefficients, we observed that associations between predictors were positive, with three of them exceeding the threshold of 0.8.

As a third step, we estimated three econometric models for the dependent variables GOVREV, GOVEXP and GDPC. In the case of the first two dependent variables, we used ordinary least squares (OLS) as estimator, while for the third one we applied dynamic ordinary least squares (DOLS).

Econometric estimations are displayed in Table 3.

**Table 3. Econometric estimations**

| | VIF | GOVREV model Method: OLS | GOVEXP model Method: OLS | GDPC model Method: DOLS |
|---|---|---|---|---|
| ***C*** | | 38.8735*** (31.5219) | 43.7491*** (33.0693) | 3.0101*** (4.0586) |
| ***GE*** | 7.855 | 9.4993*** (6.1792) | 10.4982*** (6.3658) | –1.2625 (–1.1251) |
| ***PS*** | 1.649 | –4.51247*** (–4.0052) | –6.2883*** (–5.2028) | 1.4113** (2.0648) |
| ***RQ*** | 5.025 | –10.6718*** (–7.2126) | –15.5446*** (–9.7933) | 1.9180 (1.4587) |
| ***VA*** | 7.474 | 8.7109*** (3.6743) | 11.9691*** (4.7061) | –2.7774* (–1.6691) |
| $R^2$ | - | 0.3526 | 0.3727 | 0.0627 |
| Adjusted $R^2$ | - | 0.3437 | 0.3641 | 0.0485 |
| *F*-statistic | - | 39.7593 | 43.3741 | - |
| Prob(*F*-statistic) | - | 0.0000 | 0.0000 | - |
| Observations | - | 297 | 297 | 270 |

*Note*: We indicated robust *t*-statistics in parentheses. The symbols ***, **, * show statistical significance at the 0.1%, 1% and 5% levels. All variance inflation factors registered values below the threshold of 10, suggesting a low risk of multicolinearity.

The *first model* estimated the impact of the independent variables on government revenue by means of panel ordinary least squares. Results showed that the impact was significant, with $F = 39.76, p < 0.001$. Hence, all predictors played an important role in shaping government revenue and explained 34.37% of the variance in GOVREV. That is, government effectiveness and voice and accountability had a positive influence on the phenomenon: should GE and VA increase by one unit, GOVREV would increase by 9.49 and 8.71 units, respectively. At the same time, the predictors PS and RQ yielded a negative impact: should these predictors increase by one unit, GOVREV would decrease by 4.51 and 10.67 units, respectively.

The *second model* tested the impact of our predictors on government expenditure by means of panel ordinary least squares. According to estimations, all exogenous variables had an influence on the phenomenon, $F = 43.37, p < 0.001$, and explained 36.41% of the variance in GOVEXP. Similarly to the previous model, GE and VA had a direct impact: when predictors increased by one unit, GOVEXP would increase by at least 10.49 and 11.97 units, respectively. Should the other two predictors register an increase of one unit, GOVEXP would mitigate by 6.29 and 15.54 units, respectively.

In the case of the *third model* (explaining 4.85% of the variance), we examined the connection between gross domestic product per capita and the four predictors. This time, only PS and VA were significant. If PS was augmented by one unit, GDPC would follow the same trend with 1.41 units. At the same time, if VA improved by one unit, GDPC would mitigate by 2.77 units.

## 4. Discussion and conclusions

Our study examined the determinants of state budget metrics and economic growth by means of panel data modelling with two estimators (i.e., ordinary least squares, dynamic ordinary least squares) for the EU-27 countries. The period of analysis spanned from 2011 to 2021 and the variables were retrieved from Eurostat and the World Bank.

We took into consideration predictors dealing with institutional quality because such aspects may trigger considerable changes in the way authorities manage public revenue, public outlays and the overall economy. In this sense, *effective governments* can better monitor tax systems, improve tax collection, increase tax-to-GDP ratio and amass more money for public budgets (which mainly come from taxation), which will ultimately fund public goods and services. Moreover, effective governments can manage better public outlays and direct investments towards projects that can improve cultural heritage, education, healthcare, public infrastructure, social security, etc.

When citizens have the perception that their *voices* count and they have an important say into decision-making through democratic levers (voting, freedom of speech, sensible questioning of authorities), they are more likely to cooperate with decision-makers and express their needs. Fueled by citizens' trust and support, authorities respond to democratic legitimacy by raising more public funds and increasing expenditure to meet citizens' expectations.

Countries with stable political scenes are more likely to register higher gross domestic product per capita considering that businesses thrive on predictability, efficient markets and capital inflows from investors drawn to stable environments.

At the same time, should the level of *regulatory quality* improve (i.e., less red tape and fewer requested permits or licensing fees), government revenue and expenses would mitigate for a certain period because certain revenue streams would be reduced. Similarly, improvements in *political stability* may also shrink state budgets (at least for a limited period) because foreign investors can receive tax holidays or reductions, corruption lowers and unsustainable revenue sources tend to fade away.

In conclusion, studies focused on state budgets and economic growth across decades are important because they provide insights into how state authorities can manage public resources while yielding efficient policies and incentivising economic growh [9]-[10]-[11].

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