Economics and Management Research Projects: An International Journal – ISSN: 2184-0309
Open Access International Journals Publisher

Economic growth as the result of firms' aggregate performance: Evidence from the OECD countries

João Ferreira Brito - jferreirabrito@gmail.com, REN & FEP University of Porto - Portugal
Pedro Cosme Costa Vieira - pcosme@fep.up.pt, FEP University of Porto – Portugal

Abstract: In recent years cross-country differences in privatelly owned firms' performance have been linked to divergence in economic performance at national level. In this vein, this study aims to investigate if a larger private sector enhances countries output level and economic growth, in accordance with the Washington Consensus (1989), where one of the constituting economic policy prescriptions is the privatization of state enterprises. With the underlying theoretical framework based on economic growth theories to control the model and using an unbalanced panel data we estimated a empirical model using Fixed Effects Weighted Least Squares method (WLS), where countries population is the weighting factor. We conclude that firms are important factor of economic development of the countries.

Keywords: Economic Growth, Firms' Aggregate Performance, OECD Countries

JEL Codes: O47; M21; C23

1. Introduction

With the recent world economic crisis, policymakers throughout the world face the challenge of providing a foundation for renewed stability and growth on their countries (Bernake, 2010). This involves concerns not only about macroeconomic issues, but also about domestic companies and their performance, since they are the main contributors of countries' gross value added in Europe (Eurostat, 2010).

Cross-country differences in patterns of firms' performance have been linked to relative economic performance at national level (e.g., Bartelsman et al., 2005) and there are emerging studies seeking to establish the bridge between aggregates and microfoundations (e.g., Dopfer *et al.*, 2004; Silva, 2006). We argue that it is important to study eventual connections between these two levels of analysis because countries' output is primarily the result of the activity of privately owned firms (Hall and Jones, 1999). In this line of argumentation, it is natural to conjecture that privatelly owned companies' performance is a key determinant of countries' economic growth. In this vein, more than a new theoretical sight, our study intends to contribute to the debate on "more state" / "less state", arguing that 'less state' (increased private sector dynamics) is the answer to the current countries financial and economic crises.

Thus, considering that a large part of the economic dynamics is determined by the performance of firms (Reichstein and Dahl, 2004), the objective of this study is, firstly, to understand how firms' performance, at the aggregate level, influences countries' output level and economic growth; and secondly, to evaluate our conjecture that countries economic growth results primarily from privatelly owned firms' performance.

There has been much research focusing on economic growth and its key determinants, which lead to the construction and development of several growth models and theories. However there are not many theoretical approaches on firms' performance as determinant of economic growth. Some researchers tried to approach this subject by proposing a unifying analytical evolutionary framework establishing a connection between micro-meso-macro levels (e.g., Dopfer *et al*., 2004; Silva, 2006).

Outside evolutionary economics, some researchers have explored firm performance, industry evolution and economic growth, reporting empirical findings confirming the importance of microeconomic approaches on economic growth (e.g., Bradford and McGuckin, 1997), while others deal with the internal organization of firms and economic growth within neoclassical endogenous growth theory (e.g., Acemoglu *et al*., 2002).

Our approach is on a different level, since we introduce a variable representing privatelly owned firms' aggregate performance on an economic growth model, along with the others key determinants found on the literature (control variables). This way, we are able to assess which of the identified variables are important in countries' performance and if our conjecture that private sector has an important role in countries economics is confirmed, reinforcing the 8th economic policy prescription of the Washington Consensus (1989) which claims for the privatization of state enterprises.

Methodologically, our analysis is based on countries' macroeconomic indicators such as the product (GDP), its key aggregated level determinants (e.g., Capital, Labour and Education levels) and a variable representing private firms' aggregate performance. We used an unbalanced panel data model, since we intend to observe

multiple phenomena (cross-sectional) over multiple time periods (time series), estimated using Fixed Effects Weighted Least Squares method (WLS) where countries population is the weighting factor corrected by the fact that the painel is unbalanced. With a sample constituted by 362 observations from 26 OECD countries for the period 1970-2008 (in those years where there is data) and data aggregated on a country basis from World Bank and OECD databases, we intend to test our conjecture that the firms' performance is determinant on the countries' economic growth,

2. Determinants of countries economic growth

Over the years a wide range of studies (e.g. Solow, 1956; Romer, 1990; Aghion and Howitt, 1992; Mankiw et al., 1992; Barro and Sala-I-Martin, 1995; Acemoglu et al., 2002) has investigated the factors underlying economic growth. Using differing conceptual and methodological viewpoints, these studies offer various insights on the sources of economic growth.

Capital increase (*i.e.*, liquid investment) and labour are identified as the most fundamental determinant of economic growth by both neoclassical (e.g., Solow, 1956) and endogenous (e.g., Barro and Sala-I-Martin, 1995) growth models. The importance attached to investment by the economic theory has led to a considerable number of empirical studies examining the relationship between investment and economic growth (e.g., Mankiw et al., 1992; Barro and Sala-I-Martin, 1995). The general conclusions from most of these studies are that investment and economic growth have a positive robust relationship.

Human capital condenses hour's labour heterogeneity in its ability to generate output (Mincer, 1958). Although it is part of labour, due to the process of its build up, human capital is accounted as a component of capital. The term 'human capital' refers principally to workers' acquisition of skills and know-how through education and training being important not only the quantity measured as years of schooling but also its level of quality (Barro *et al*., 1995). Human capital is identified as the main source of output per worked hour growth (Arvanitidis *et al*., 2007).

Althought large number of theoretical studies has suggest that educated population is the key determinant of economic growth (e.g., Barro, 1991; Barro and Sala-i-Martin, 1995), such findings are dificult to empirically comprove.

Innovation and R&D activities playes a major role in long term economic progress by increasing productivity (Arvanitidis et al., 2007) being even pointed out as being, after capital accumulation, the most important factor in per capita economic growth (see, Fagerberg, 1987). This is due to the fact that R&D discoveries enables introduction of new and superior products and induces increased efficiency of production processes. This role has been acknowledged in theoretical endogenous growth models (e.g., Aghion and Howitt, 1992), and it has also been empirically validated (e.g., Zachariadis, 2003).

Openness to trade has been extensively used in the economic growth literature as determinant of economics performance (Irwin, 2002) particularly since the second wave of endogenous growth theory (e.g., Grossman and Helpman, 1991) aiming to explain trade and its effect on endogenous growth. A country open to international trade may experience faster technological progress and increased economic growth because the cost of developing new technologies and products dilutes as market increases.

Foreign Direct Investment (FDI) is identified in the literature as a contributor to economic growth through several channels. From the neoclassical growth theory viewpoint, FDI inflows increase the stock of capital in host countries thereby allowing higher rates of growth than would be possible from reliance on domestic savings. On the other side, FDI can enhance growth by allowing host countries access to advanced technologies not available domestically, being pointed as a primary source of technology transfer and economic growth. Moreover, FDI plays a crucial role on internationalizing economic activity since it has the potential to expand access to export markets and, consequently. The empirical literature examining the impact of FDI on growth has provided consistent findings affirming a significant positive link between the two (e.g., Borensztein et al., 1998; Ram and Zhang, 2002; Li and Xiaming, 2005).

Economic policies and macroeconomic conditions have, also, attracted much attention as determinants of economic performance (e.g., Barro, 1991, 1997; Fischer, 1993; Barro and Sala-i-Martin, 1995) since they can set the framework within which economic growth takes place. Economic policies can influence several aspects of an economy through, for example, investment in human capital and infrastructures or in the improvement of political and legal institutions (Kormendi and Meguire, 1985).

Institutions are another source of growth highlighted in the literature. The important role that institutions play in shaping economic performance has been acknowledged for many years (Lewis, 1955) because it is the institutional structure that defines penalties and incentives, shapes social behaviour and articulates collective action, thus conditioning development (Alonso and Garcimartín, 2010). It is even argued that none of the traditional factors would have any impact on economic performance out of a stable and trustworthy institutional environment (Easterly, 2001).

2.1. Firms' aggregated performance as key determinant of economic growth

There are not many theoretical approaches on firms' performance as determinant of economic growth. Since a crucial goal of industrial dynamics and economic growth theories is the understanding of the economy's aggregate growth patterns, there is a fundamental modeling problem concerned with the relation between the observed macroeconomic patterns and the microfoundations of firms (see, Dopfer et al., 2004; Silva, 2006).

However, in recent decades cross-country differences in patterns of firms' performance and growth have been linked to diferences in economic performance at national level, for example, in terms of new job creation or in terms of growth in productivity per worker (Bartelsman et al., 2005). In fact, some factors of the aforementioned determinants of economic growth, particularly, human capital and physical capital, lay largely on privatelly owned firms (Hall and Jones, 1999). Due this macro-micro connection has consequences on employment and macroeconomic activity, policymakers are more and more attentive to privatelly owned firms' performance (Wagner, 1992).

Still, it is widely recognized that firms are mainly treated as a black-box in neoclassical theory even if this literature distinguishes the essential role that firms have in the growth process by allocating resources among the economy's sectors and promote innovation (Silva, 2006). Therefore, neoclassical microeconomics has recently made several efforts to build a theory of the firm that puts the organization of the production process and the structure of contractual transactions at the core of analysis.

2.2 - Empirical studies: a fundamental problem

The existent literature on the impact of the firms' performance as determinant of economic growth differ in approaches. Dopfer et al. (2004) proposed a unifying analytical evolutionary framework: the micro-meso-macro division. This approach seeks to analyze coordination and change in economics, in a way that the specific treatment of institutional decisions within distinct levels of aggregation may be better incorporated.

In a similar line to Dopfer et al. (2004), Silva (2006) tried to seek for a formal mechanism to establish the bridge between aggregates and the micro evolutionary behavior. However, the developed framework only establishes a connection between micro and meso levels, not reaching the macro (aggregate) level. This research goal is also pointed out in Carlaw and Lipsey (2004). However, the latter approach is a macro to micro one while Silva's (2006) conveys the inverse, a micro to macro or bottom-up perspective. Moreover, whilst the contribution made in Carlaw and Lipsey (2004) stresses the role of General Purpose Technologies (GPT) on economic growth, Silva's (2006) approach deals mainly with the influence of institutional settings, particularly within the firm, on such process, and with the industry dynamics that lies behind more aggregate behaviors.

Bradford and McGuckin (1997) explored firm performance, firm and industry evolution, and economic growth, reporting empirical findings confirming the importance of microeconomic approaches to economic research and placing the firm at the center of economic growth.

Since it is virtually impossible to aggregate from micro-theoretical foundations to the macroeconomic level in any analytically tractable way without very strong and unrealistic assumptions (Foster and Potts, 2007), evolutionary economics is theoretically nebulous (Dopfer et al., 2004).

Besides, over the last two decades, the simulation and calibration approach to modeling has become more popular as an alternative to traditional econometric strategies. However, in contrast to the well-developed methodologies that now exist in econometrics, simulation/calibration remains exploratory and provisional, both as an explanatory and as a predictive modelling technique (Foster and Potts, 2007) although clear progress has recently been made in this regard (see, Brenner and Werker, 2006).

Our study aims to contribute not with a new theoretical sight, but with an extended economic growth model with the addition of a variable for the firms' performance at aggregate level (proxy), which allows for an analysis whether the performance of privately owned firms contributes more to countries economic level and growth than public firms.

2.3. Firms' efficiency (public / private)

Although the classical microeconomic textbook tends to approach all manufacturing firms as homogeneous producing units and consequently assuming that all firms are operating at the same level of efficiency, empirical studies have frequently showed that some firms are indeed more efficient than others (e.g., Caves, 1989).

Therefore, the identification of the factors underlying the differences in efficiency is fundamental for improving the results of firms that have impact at the macro level.

Market Competitive Conditions - More competition induces efficiency increase since it implies that, when firms move away from the optimum management position, the profits of this less efficient firms will become more rapidly negative. Then, inefficient (privatelly owned) firms either increase their efficiency or fail, opening an opportunity for a new and more efficient firm to enter the market. As an outcome of this selection process, in which efficient firms grow and survive while inefficient firms stagnate or exit the industry, results an economy with more efficient firms. It adds that the presence of competitors in an economy increases the diffusion of information and technical knowledge, which can be considered as a source of experience, increasing the efficiency of the participating agents in this same economy (e.g., Carlsson, 1972; Caves and Barton, 1990).

Financial competition - Firms need capital to operate. Zingales (1998) presents strong evidence that firms need both economic efficiency (fitness) and financial resources (fatness) for survival. Due to competition for financial resources, inefficient (privatelly owned) firms have more difficulty in accessing financial markets paying a higher interest rate that decreases firms' surviving probability (e.g., Harris and Raviv, 1990).

2.4. Efficiency of Public vs. Private Ownership

Public firms are not subjected to market competition neither financial competition. Then, public firms does not embrace the dinamic process that improves firms efficiency.

According to the Social View (see, Shapiro and Willig, 1990), a state owned firm is expected to maximize social welfare whereas a privately owned firm is expected to maximize profits. In this perspective, state owned enterprises (SOEs) are capable of curing market failures by implementing pricing policies that take account of social marginal costs and benefits of production (Okten and Arin, 2006). For example, in a natural monopoly market structure, efficiency demands the existence of one firm only. Conversely, a profit maximizing monopoly tends to charge too high of a price and produce too low of a quantity and thus state ownership can solve this potential inefficiency. The problem is that, over time, the public owned firm inefficiency tends to overpass the monopoly potential inefficiency.

The Agency View presents a strong critique to the welfare theory and focus on the relationship between the principal (the State, in this case) and an agent of the principal. We can find two complementary strands of the literature differing on whether the agency conflict is with the politician or with the manager. Shleifer and Vishny (1994) stress that political interference in the firm results in poor choices of product and location, excessive employment, lack of investments and ill-defined incentives for managers. Vickers and Yarrow (1988) argue that managers of state owned enterprises may lack well-defined incentives or proper monitoring. Moreover, models of Agency View, predict that inefficient technologies will be chosen by politicians/managers, either through having low investment levels (Shleifer and Vishny, 1994) or using excess capital as well as excess labor (Vickers and Yarrow, 1988).

The theoretical arguments for the advantages of private ownership of the means of production are based on a fundamental theorem of welfare economics: a competitive equilibrium is Pareto Optimal. Thus, a theoretical argument for government intervention based on efficiency grounds must use the argument that markets have failed in some way and that the government can resolve the market failure. Intellectual arguments for government intervention based on efficiency considerations have been made in many areas. Governments perceive the need to regulate (or own) natural monopolies or other monopolies, intervene in the case of externalities (such as regulating pollution), and help provide public goods (such as providing national defense and education, or in areas where there is a public good aspect to providing information). The arguments for government intervention become more complicated when they extend to distributional concerns.

Contracting ability - Government ownership of firms tends to result in unclear objectives to the firm. The advantages of having well-defined corporate goals have made the shareholder's wealth-maximizing model of corporate organization become increasingly dominant (see, Hansmann and Kraakman, 2000). Instead, governments have many objectives other than profit or shareholder-wealth maximization, which can even change from one administration to the next. Hence, the inability of the government to credibly commit to a policy can significantly reduce the efficiency of a firm's operations and governance (Megginson and Netter, 2001). Besides, the government's goals can be inconsistent with efficiency, inconsistent with maximizing social welfare, or even malevolent (see, Shleifer, 1998).

In addition, it still remains difficult to establish complete and adequate contracts that tie managers' incentives even if the government and the nation's citizens agree that profit maximizing is the goal of the firm. As Shleifer (1998) argues, the diffuse nature of the owners of public firms (the nation's citizens) reduces the ability to write complete contracts with SOE's managers.

Funding and Budget constraints - One of the main sources of inefficiency in public firms is related to government funding, since even the less-prosperous firms are allowed to continue their activity relying on public funds, resulting in soft budget constraints (Megginson and Netter, 2001). The probability of a government allowing a large SOE to face bankruptcy is minor. Hence, the discipline enforced on private firms by the capital markets and the threat of financial distress is less important for state-owned firms.

3. Empirical model construction

To assess whether private firms' performance determines OECD countries economics level and growth, we assume a production function where the product of a country (Y) results from its technological progress level (A) and from a function of physical capital (K) and labour (L), according to the Solow (1956) decomposition. Further, we correct the quantity of labour with its quality, i.e. the built-in level of human capital, H. Given that we intend to analyze countries output, we need to bring imported intermediate inputs inside the model framework by including them as a factor input to production (Domar, 1961; Eldrige and Harper, 2010) as the variable II. Finally, we add variables for innovation and R&D (RD), openness to trade (T), foreign direct investment (FDI), economic policies (P) and institutions (INS). In order to measure the influence of privatelly owned firms on countries' output, which is the main

purpose of our study, we complete the model with a variable that measures firm's output.

3.1. Variable proxies and data sources

Our analysis is based on panel data, since we intend to observe multiple phenomena (cross-sectional) for the OECD countries over multiple time periods (time series). The estimation uses country-level data extracted from the OECD Statistics and World Bank databases. The selection criterion of the time-series is related with data availability and refers to the period between 1970 and 2008. The sample is constituted by 30 of the OECD countries.

As countries have different dimension, we used as the output the GPD *per capita* (World Bank, 2000) which allows a better judgment of each country's level of economic development.

Regarding to physical capital input (K), we follow Levy (1995) using a standard dynamic capital-investment evolution equation written as $K_t = I_{t-1} + K_{t-1}.(1-\delta)$, where I denotes gross capital investment, and δ denotes the depreciation rate which by assumption remains unchanged at 10% for all countries. Following this equation, we use permanent inventory procedure to obtain an estimative of physical capital stock of each country. Complementary to this estimation procedure, we use, when available, World Bank physical capital estimations. Even though the capital stock variation, *i.e.* liquid investment, is the determinant of economic growth, it is important to clarify that we use the capital stock because we estimate an isoelastic model which allow us, having the capital stock and GDP level, to obtain estimations to the influence of the capital variation rate on the GDP variation rate.

In what concerns to labour input (L), the most appropriately measure is the number of hours actually worked per worker (OECD, 2003), since it bears a closer relation to the amount of productive services provided by workers than simple head counts, which neither reflects changes in the average work time per employee nor changes in multiple job holdings and the role of self-employed persons. For this effect, we use the "average annual hours actually worked per worker" presented on OECD Factbook 2010.

Further, for the human capital input (H), we use the average educational level, namely the average number of years of schooling (World Bank), which represents a proportional scale factor, proxy variable, to human capital (e.g., Petrakis and Samatakis, 2002).

For imported intermediate inputs (II), we intended to use the value of imports of intermediate goods and services, however, due to data availability, we use imports of goods and services as a percentage of GDP (OECD Statistics) as a proxy.

As for the innovation and R&D input (RD) we use the total expenditure on R&D as a percentage of GDP published (OECD Statistics, e.g., Griffith et al., 2004).

As regards to openness to trade (T), we use a simple measure of trade intensity which is the ratio of exports plus imports to GDP (e.g., Butkiewicz & Yanikkaya, 2008).

For the foreign direct investment (FDI) input, we use the total amount of capital directly invested from foreign countries published in the OECD Statistics, (e.g., Li and Xiaming, 2005). As the countries dimension are very heterogeneous, we build and index for each country with mean 100 and standard deviation 25.

To the economic policies and macroeconomic conditions variable (P) we use the Human Development Index which measures development that combines indicators for life expectancy, educational attainment and income into a composite index (e.g., Guimarães, 2011). It's published by the United Nations and serves as a frame of reference for both social and economic development ranging between 1 (high development) to 0 (very low development).

To measure the quality of institutions (INS) we intended to use the International Country Risk Guide composite indicator which provides annual averages of political, financial and economic risk indicators (Guimarães, 2011) that is published by the PRS Group and it ranges in a scale of 0 (highest risk) to 100 (lowest risk). However, due to data unavailability, we use the Political Risk indicator.

Finally, for the firms output (F), at aggregate level, we use the proxy $F_t = 1 - G_t$ where G_t denotes the proportion of the government expenditure on GDP. This is based on the assumption that, in aggregate terms, the GDP equals the sum of the firms output plus the government output. Therefore, the weight of the government expenditure is a proxy for the weight of the government on the global domestic production.

3.2. Econometric model specifications

The production function is assumed to be of the Cobb-Douglas in a ln form where $\varepsilon_{t,c}$ is a random term with mean value equals to 1. The index t refers to the time period and c to the country. It is assumed that, during the time period analyzed, there is no technical change. The powered coefficients measure the elasticity of output with respect to the stocks of the different factors.

3.3. Model estimation method and sample specifications

As mentioned on the previous chapters, we attempt to evaluate the hypothesis that private firms have an important contribute to countries output and growth. Using World Bank data aggregated on a country basis and, as control variables, those variables found on the literature as determinants of output and of economic growth we estimated a model by using Weighted Least Squares method, WLS, where countries population is the weighting factor, corrected by the fact that the panel is unbalanced.

Our sample consists in an unbalanced panel since each of the selected countries has a different number of observations. Besides, we controlled the countries "variable" by assuming a fixed effects model which

considers for each country an "independent term" dummy variable and by assuming homoscedasticity in our model which means that all observations for all countries have the same finite variance.

Although our study aims to study all of the 34 OECD countries, we removed from study Chile, Estonia, Israel, Slovenia, Mexico, New Zealand and Turkey due to lack of data.

We proceeded to the estimation of the proposed model using the statistical method of linear model regression on R Project software. The R Project for Statistical Computing is a free software environment for statistical computing and graphics (see, www.r-project.org). The used estimation commands where:

```
# Import data
Data.set <- read.csv("e:/paper/gdp_data.txt")
#estimation
Model <- lm(LY~., weights= W, data = Data.set)
Summary(Model)
```

We observe that "privately owned firms" have a significant positive and impact in the GDP level (an increase in 1% induces an increase in GDP per capita of 0,27) and a positive (although statistically no-significant) impact on growth.

Results are resumed in Table 1.

Table 1: Model variables, proxies, data sources and results

Determinante	**Variable**	**Indicator**	**Source**	**Level (t value)**	**Growth (t value)**
GDP	Country Output	GDP per capita (lnY)	OECD Stats		
Technical Progress	Technical Efficiency	Total Factor Productivity (A)	Est. Residue		
Capital Investment	Physical Capital Stock	Physical Capital Estimation (lnK)	World Bank	0.421*** (9.20)	-0.043* (2.11)
Labor	Work Force	Hours Actually Worked per Worker (lnL)	OECD Stats	1.45*** (5.28)	0.471** (5.48)
Human Capital	Education Level	Average Number of Years of Schooling (lnH)	World Bank	0.405** (2.88)	0.007001 (0.168)
Imported Intermediates	Imported Intermediates	Imported Intermediates Goods and Services (lnII)	World Bank	0.948*** (11.8)	0.184545 (1.417)
Inovation and R&D	R&D Investment	Expeditur on R&D (lnRD)	OECD Stats	-0.058 (-1.19)	-0.408 -0.526
Trade	Openness to Trade	Ration of exports plus imports to GDP (lnT)	OECD Stats	-0.659*** (-8.02)	-0.026 (-0.211)
FDI	FDI Inflows	Total Amount of Capital Directelly Invested from Forigner Countries (lnFDI)	OECD Stats	0.100***	-0.004 (-0.54)
Economic Policies / Macroeconomic Conditions	Public, Finantial and Economic Risk	International Country Risk Guide – Political Risk (P)	The PRS Group	-0.268** (-3.02)	0.038 (1.45)
Institutions	Institutional Quality	Human Capital Index (INS)	United Nations	5.48*** (13.4)	0.142 (1.14)
Private Firms Performance	**Wheight of Firms on Country Output**	**(1 - % of Government Expenditure on GDP) (F)**	**OECD Stats**	**0.274** (3.09)**	**0.033 (1.299)**
Multiple R^2				0.976	0.441
Signif. codes: '***'- 0.001; '**' - 0.01; '*' – 0.05					

Conclusion

There are not many studies on the literature seeking to identify the direct relationship between firm's aggregate performance and economic growth. This occurs mainly due to a fundamental modelling problem concerned with the relation between the observed macroeconomic patterns and the microfoundations. Besides, the existing works tend to follow an evolutionary behaviour approach, trying to establish a bridge between aggregates and the micro evolutionary behaviour, instead of assuming a variable representing firm's aggregate performance on an economic growth model.

In our study, we aimed to assess, for the same set of countries and controlling for traditional determinants of economic growth, whether the private firms aggregate performance influence Output Level and Economic Growth. For this purpose, we identified two hypotheses, namely, that firm's aggregate performance has positive

effect on countries output level and, on a complementary basis, in countries economic growth rate. These issues were endorsed in an unbalanced panel data model estimated using Fixed Effects Weighted Least Squares method (WLS), where countries population is the weighting factor. We used data aggregated on a country basis and, as control variables, those variables found on the literature as determinants of output and of economic growth. Our final sample was an umbalanced painel constituted by 26 OECD countries and we used data from World Bank and OECD Statistics databases.

We conclude that privatelly owned firms' aggregate performance variable emerges as statistically significant as determinante if the GDP per capita level (an 1% increase in the percentage of privatelly owned firms induces an increase of 0.27% in the GDP per capita). In the case of growth, sign is positive but it is not statistically significant..

Despite the encouraging results, the present study is not absent from limitations, which might constitute a path for future research. Specifically, data limitations and the choice of the proxy used to represent firms' aggregate performance might be developed in order to achieve a more accurate testing of the above mentioned research questions.

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