EUROPEAN SMES AND ECONOMIC GROWTH: A FIRM SIZE CLASS ANALYSIS

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Abstract

This paper explores the role of micro, small and medium size enterprises in the growth of per capita gross domestic product at European Union level between 2005 and 2010. Using a panel of data from 25 Member States the results show a positive connection between the prevalence of SME in terms of created value added and GDP per capita growth. When investigating the aforementioned relationship at enterprise size class level the results differ considerably. While microenterprises prevalence in terms of created value added does not appear to cause more growth in per capita income at EU level, small and medium sized enterprises are some of the main drivers of the annual per capita GDP growth.

Keywords: SMEs, economic growth, firm size, European Union
JEL classification: L11, L25, O11

1. INTRODUCTION

The important role that small and medium size enterprises (SMEs) play in creating jobs, favoring innovation, boosting and supporting economic development throughout the world has raised the interest of many researchers in studying this category of enterprises. In 1979 David Bitch in his study "The Job Generation Process: Final Report to Economic Development Administration" proved for the first time using statistical data, how important small businesses are in terms of creating jobs (in 1970, 80% of jobs in the US were provided by SMEs) and stimulating economic growth.

At European Union's (EU) level, SMEs represent 99% of all registered companies. They are the biggest sector of the EU economy, with 20 million enterprises employing around 87 million people. Being responsible for the creation of one in every two new jobs, SME produce considerably more than half of EU's GDP.

In this context, the purpose of this paper is to analyze the importance of the relative size of the SME sector (measured by the share of SMEs created value added) for the economic growth. Basically the study focuses on answering a simple question: Which SME size class has contributed most to the growth in per capita GDP at EU level between 2005 and 2010?

The remainder of the paper is organized as follows. Section 2 presents a brief review of the literature on the issue concerning the role of SMEs in fostering economic growth. Section 3 describes the data and methodology used. Section 4 illustrates the main results and section 5 gives the concluding remarks.

2. LITERATURE REVIEW

Since the late 1980s a series of studies focused on examining the consequences of entrepreneurship development on economic growth have led to a whole literature covering the relationship between SMEs and economic growth. On closer examination, given the unit of analysis, these studies can be divided into three categories: industry level studies, regional level studies and country level studies.

Industry level studies

Industry level studies, carried out by authors like Audretsch, (1995), Davidsson *et al*, (2006) measure economic performance in terms of firms' survival rate and growth. The results of these studies show a positive causal link between entrepreneurial activity, measured in number of firms and economic growth. Generally in western countries were the entrepreneurial activity is high, small firms grow at a faster pace than large firms.

Glaeser *et al* (1992) have examined how factors like specialization, diversity and competition among SMEs increase industry performance. Their analysis revealed that local competition, measured as the relative number of businesses per capita encourages employment growth at industry level. Caves (1998, p.1973) studied the effect of firms' entry and exit rate on industries' productivity. His findings show that in the long run, turnover from entry and exit contributes to the productivity growth at industry level. Further empirical evidence of the impact of SMEs by size class on productivity growth at industry level is provided by Carree and Thurik (1998). In their study conducted on 14 manufacturing industries in 13 European countries in the early '90, they showed that, the share of small firms has had a positive effect on industry output growth for 4 consecutive years.

Audretsch *et al* (2002) proved empirically that the excess growth of small firms over their larger counterparts has led to additional macro-economic growth for European Union member countries in the early 1990. In a similar research Carree *et al* (2007) analyzed the manufacturing industries in 23 OECD countries between 1972 and 2004 and showed that industries dominated by large firms experienced less value added growth.

a) Regional level studies

Studies addressing SMEs impact on economic growth at regional level use as unit of analysis the number of persons employed in SMEs.

Audretsch and Fritsch (2002) showed that during 1980-1990 most German regions experienced significant GDP growth due to increasing share of SMEs in most industries. The positive relationship between SMEs prevalence and economic growth at regional level is not something that characterizes only German regions. Foelster (2000) analyzed the impact of SMEs development on economic growth for some of Sweden's regions between 1976 and 1995. The results showed that, during the analyzed period, the regional growth in Sweden was due to an increase in the share of people working in SMEs.

Hart and Hanvey (1995) examined the contribution of new and small firms to regional manufacturing employment growth in three UK regions in late 1980s. The results indicate the important role played by new and small indigenous firms in the job creation process, particularly in Northern Ireland, in the period 1986-1990. Robbins *et al* (2000) undertook a

review of 48 U.S. states between 1986 and 1995 and found that states dominated by SMEs in terms of number of employees, registered higher rates of productivity growth. Similar results were obtained by Berkowitz and DeJong (2005) in a study conducted on 70 post-Soviet Russian regions during 1993-2000.

More recent studies (Audretsch *et al*, 2006) emphasized the role of small businesses in promoting innovation as a means of ensuring economic growth. Studying the German regions, Audretsch and Keilbach (2008) and Mueller (2006) explained that regional economic growth can be achieved by promoting entrepreneurship, research and development activities and cooperation between enterprises and universities.

b) Country level studies

Studies aimed at identifying the impact of SMEs development on economic performance at country level are still limited. This is due to constraints related to the lack of a universal SME definition which impedes pertinent comparisons between countries.

Nevertheless in recent years attempts have been made to perform pertinent cross-country analysis of SMEs role in ensuring income stability, growth and employment. In this context a successful venture has been the study conducted by Beck, Demirguc-Kunt and Levine (2005) on SMEs in 45 countries across the world. Their investigation revealed a strong, positive association between SMEs presence in terms of employment and GDP per capita growth. The results do not, however, support the conclusion that SMEs exert a causal impact on growth. They simply show that the prevalence of SMEs is a feature of market economies which record significant economic growth.

Hall (2002) studied the impact of SMEs in the economy of Asia-Pacific Economic Cooperation (APEC) Member States. The analysis was conducted using two methods for measuring SMEs prevalence in APEC countries: the number of entities and number of employees. The author highlighted two trends: i. a positive causal relationship between GDP per capita growth and the number of existing SMEs and ii. a negative causal relationship between per capita GDP growth and employment in SMEs. The negative correlation suggests that in least developed economies the share of SMEs in terms of number of employees is higher than in developed economies which registered significant growth rates.

Thurik (1996) conducted an analysis of the impact of SMEs sales on the gross national product using statistical data for 12 EU countries (predictions for 1992, 1993 and 1994) and 16 EU countries (predictions for 1993 and 1994). Despite the small number of observations, the impact was statistically significant proving that, compared to large companies, small firms' sales have a greater impact on GDP growth in the coming years. This suggests that SMEs may represent an independent source of economic growth.

3. METHODOLOGY AND DATA

To examine whether European Union SMEs contribute to GDP growth the present analysis follows Beck *et al* (2008) methodology with some exceptions.

First of all in constructing the regression equation a panel data set and estimation techniques suitable for such data have been used. The advantage of running a panel regression instead of averaging data over the studied period is that it renders more accurate results by controlling for the effect of omitted variables. The data used in the analysis were drawn from European Commission SMEs dataset, over the 2005 to 2010 period. Due to lack of data availability, Cyprus and Malta have been excluded from the investigation, leaving under consideration only 25 EU Member States.

Second, SMEs data at country level have been sampled in accordance with the SME definition set out by the European Commission in 2003. The common SME definition states that, "the category of micro, small and medium-sized enterprises is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million" (European Commission 2003). Within the SME category the ceilings used to establish whether an enterprise is a micro, small or medium are the following:

Table no. 1 Ceilings used for differentiating SMEs by size class

Enterprise category	Headcount	Turnover or Balance sheet total	
Medium-sized	< 250	≤ € 50 million	≤ € 43 million
Small	< 50	≤ € 10 million	≤ € 10 million
Micro	< 10	≤ € 2 million	≤ € 2 million

Source: [European Commission, 2003]

The dependent and explanatory variables used in the regression model are:

A. Dependent variable

Similar to Beck *et al* (2005), Tambunan (2006), Beck *et al* (2008), Leegwater and Shaw, (2008), Kalhoro et al (2011), this study uses the year on year growth rate of real GDP per capita as a measure of economic growth.

B. Explanatory variables

B1. Enterprise prevalence. To measure the role of size class SMEs in the EU Member States economy, four indicators have been constructed using the statistical data from the Annual Report of the SME Performance Review prepared by the Directorate General for Enterprise and Industry of the European Commission (EIM Business & Policy Research, 2010). These indicators assess the share of gross value added created by micro, small and medium sized enterprises in total gross value added at country level in each year of the analyzed period 2005-2010. They have been coded and included in the analysis as follows:

SME = measures the prevalence of SMEs in the economy of a country. The indicator was calculated for each country, as a percentage of gross value added created by SMEs in total gross value added at county level

MICRO = measures the prevalence of micro enterprises in the economy of a country. The indicator was calculated for each country, as a percentage of gross value added created by micro enterprises in total gross value added at country level

SMALL = measures the prevalence of small businesses in the economy of a country. The indicator was calculated for each country, as a percentage as a percentage of gross value added created by small businesses in total gross value added at country level

MEDIUM = measures the prevalence of medium-sized enterprises in the economy of a country. The indicator was calculated for each country, as a percentage of gross value added created by medium-sized enterprises in total gross value added at country level

B2. Business environment. To control for other primary determinants of economic growth, and thereby isolate the effects of micro, small and medium sized enterprises at country level, an aggregate indicator was included in the analysis. This indicator was constructed using the principal component method in accordance with Ayyagari *et al* (2003, p.11) methodology. The variables used to build the *business environment* indicator for each country were extracted from World Bank's "Doing Business" reports and included:

- *Entry cost* is the cost associate with starting a business procedure. The cost is recorded as a percentage of the economy's income per capita. It includes all official fees and fees for legal or professional services if such services are required by law.

- *Exist cost* is the cost associated with closing a business. It includes court fees and government levies; fees of insolvency administrators, auctioneers, assessors and lawyers; and all other fees and costs. This cost is recorded as a percentage of the value of the debtor's estate.

- *Enforcing contracts* is an indicator which measures the efficiency of the judicial system in resolving a commercial dispute. This indicator includes three types of costs: court costs, enforcement cost and average attorney fees. The costs are recorded as a percentage of the claim, assumed to be equivalent to 200% of income per capita.

- *Registering property costs* are the costs associated with all the necessary procedures for a business (buyer) to purchase a property from another business (seller) (e.g. fees, transfer taxes, stamp duties and any other payment to the property registry, notaries, public agencies or lawyers). The costs are recorded as a percentage of the property value, assumed to be equivalent to 50 times income per capita.

- *Depth of credit information index* measures rules and practices affecting the coverage, scope and accessibility of credit information available through either a public credit registry or a private credit bureau. The index ranges from 0 to 6, with higher values indicating the availability of more credit information, from either a public credit registry or a private credit bureau, to facilitate lending decisions.

- *Total tax rate* measures the amount of taxes and mandatory contributions borne by the business in the second year of operation, expressed as a share of commercial profit.

B3. Domestic credit to private sector as a share of GDP refers to financial resources provided to the private sector, such as through loans, purchases of nonequity securities, trade credits and other accounts receivable that establish a claim for repayment.

B4. Government consumption is the share of general government final expenditure in GDP

B5. Imports is the volume of imports as a percentage of GDP

B6. Exports is the volume of exports as a percentage of GDP

B7. Education represents the tertiary education enrolment in percentages

B8. Inflation is the annual growth rate of the GDP deflator

The statistical data used for constructing variables B3, B4, B5, B6, B7 and B8 have been taken from World Bank database.

The regression equation that describes how the dependent variable, GDP per capita growth, is related to the explanatory variables presented above takes the following form:

$$GDP_{i,t} = c + a_1 X_{i,t} + a_2 BE_{i,t} + a_3 GOV_{i,t} + a_4 DCR_{i,t} + a_5 I_{i,t} + a_6 E_{i,t} + a_7 STUD_{i,t} + a_8 INFL_{i,t} + \varepsilon_{i,t}$$

(1)

where:

$GDP_{i,t}$ = year on year per capita gross domestic product growth in country "i", year "t" in logarithmic form.

$X_{i,t}$ = is the natural logarithm of the variables measuring the prevalence of various SMEs categories in the country "i", year "t"

$BE_{i,t}$ = is the first main component of the 6 variables chosen to characterize the business environment of each country.

$GOV_{i,\ t}$ = is the natural logarithm of the share of government expenditure in GDP in the country "i" and year "t"

$DCR_{i,\ t}$ = represents the domestic credit to private sector as a share of GDP in county "i" year "t" in logarithmic form

$I_{i,\ t}$ = is the natural logarithm of the share of imports in GDP in the country "i" and" year "t"

$E_{i,t}$ = is the natural logarithm of the share of exports in GDP in the country "i" and" year "t"

$STUD_{i,t}$ = is the natural logarithm of the proportion of the population which are enrolled in higher education institutions

$INFL_{i,\ t}$ = is the natural logarithm of the GDP deflator in country "i" year "t"

$\varepsilon_{i,\ t}$ = is the error term

4. MAIN RESULTS

In estimating the regression model a pooled OLS regression with Driscoll and Kraay standard errors has been used. Driscoll and Kraay (1998) modifies the standard Newey and West (1987) covariance matrix estimator rendering robust results even for unbalanced panels (Hoechle, 2007) which is the case with the present dataset. The regressions' results are presented in the figure below, where (1), (2), (3) and (4) represent the results of equation (1) where X is replaced by the variables measuring the prevalence of different SME categories:

The coefficient of determination R^2 is significant (Prob.> F = 0.000) for all four regressions and shows that GDP per capita growth in the 25 EU Member States is explained by the chosen variables.

As can be noticed from figure no. 1, the causal relationship between SME prevalence and economic growth is positive and statistically significant for the full 2005 to 2010 period. This indicates that, on average, countries with higher SME prevalence experience higher economic growth.

By size class the results show that micro enterprises are not the causal force behind economic growth. The relationship between micro enterprises prevalence and GDP per capita growth is negative and statistically insignificant. Greater micro enterprise prevalence does not cause more growth in per capita income. When moving from micro enterprises to small and medium size enterprises, the results for the OLS model change in both sign and statistical significance. The observed relationship goes from negative and statistically insignificant to positive and statistically significant. This means that small and medium size enterprises contribute to the annual GDP per capita growth. If we compare the countries at the 25th and 75th percentiles of SME prevalence, the results suggest that, in 2006, Finland's GDP per capita would have grown 0.91% faster if it had had the same SME share as Portugal. This is large, considering that the sample mean GDP annual growth rate for the analyzed period is 1.08%.

To isolate the contribution to growth of micro, small and medium sized enterprises seven control variables at the macro/country level have been included in the regression. Controlling for the national policy environment in each country reduces the statistical significance of the relationship between micro, small and medium sized enterprises prevalence and economic growth. When looking over the results in Table 1, the observer will notice that out of the seven controlling variables included in the analysis only four of them influenced the GDP per capita growth. These were: domestic credit to private sector, the imports volume, the proportion of population enrolled into higher education institutions and inflation.

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--------------------------------------------------------------------
                    (1)           (2)           (3)           (4)
                    GDP           GDP           GDP           GDP
--------------------------------------------------------------------
SME              0.942***
                 (0.23)
Micro                         -0.073
                              (0.16)
Small                                        0.397**
                                             (0.14)
Medium                                                     0.905*
                                                           (0.33)
BE              -0.012        -0.008        -0.010        -0.007
                (0.01)        (0.01)        (0.01)        (0.01)
GOV             -0.376        -0.379        -0.425*       -0.299
                (0.24)        (0.19)        (0.20)        (0.26)
DCR             -0.808***     -0.622***     -0.745***     -0.645***
                (0.08)        (0.09)        (0.08)        (0.06)
I                0.668*        1.059***      0.754**       0.777*
                (0.25)        (0.21)        (0.21)        (0.35)
E               -0.419        -0.689*       -0.465        -0.559
                (0.29)        (0.26)        (0.26)        (0.32)
STUD             0.179***      0.176***      0.198**       0.253***
                (0.05)        (0.03)        (0.05)        (0.05)
INFL             0.097*        0.122*        0.107**       0.096**
                (0.04)        (0.05)        (0.03)        (0.03)
_cons            4.485***      2.541*        4.274***      4.309***
                (0.63)        (1.11)        (0.67)        (0.31)
--------------------------------------------------------------------
F                29.314        54.109        122.248       31.413
N                75.000        75.000        75.000        75.000
r2               0.426         0.414         0.418         0.436
--------------------------------------------------------------------
Driscoll si Kraay standard errors are reported in parenthesis
* p<0.05, ** p<0.01, *** p<0.001
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Source: [Author's calculations using STATA]

Figure no. 1 Estimation results

5. CONCLUSIONS

This paper has provided a systematic investigation into the importance of the value added created by SMEs for the economic growth of the EU countries between 2005 and 2010.

The analysis results show that, although micro enterprises dominate the private sector of all EU Member States, in terms of unit number, they do not contribute to GDP per capita growth. The explanation for this phenomenon is the low labor productivity that characterizes most micro firms caused mainly by their lack of new equipment and innovative production technologies. At the level of small and medium firms there is sustained evidence of a positive, causal relationship between their prevalence and economic growth.

Lisbon Strategy for Growth and Jobs and its successor Europe 2020 strategy identify the important role that SMEs play in achieving the objectives of economic growth. In this context, given the present paper's results it can be conclude that the European Commission should orientate its SME long term policy towards changing the share structure of SMEs size category from micro firms to small and medium sized ones. If small and medium-sized enterprises are those that contribute to GDP per capita growth at European Union level than,

on long term, their share in total private sector should surpass that of micro enterprises. This outcome can only be achieved if EU Member States focus on the development of micro enterprises, by improving their access to finance, facilitating their transactions in international trade and reducing their tax burden.

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