Article

The Opportunity Driven Entrepreneurship in the Context of Innovation Systems in Europe in the Period 2010-2019

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Abstract: In this article we have estimated the value of "*Opportunity Driven Entrepreneurship*" in Europe. We use data from European Innovation Scoreboard-EIS of the European Commission for 36 countries in the period 2010-2019. We use Panel Data with Fixed Effects, Panel Data with Random Effects, WLS, Pooled OLS, and Dynamic Panel. Our results show that "*Opportunity Driven Entrepreneurship*" is positively associated, among others, to "*Innovation Friendly Environment*" and "*Turnover Share Large Enterprises*", while it is negatively associated, among others, to "*Sales Impacts*" and "*R&D Expenditure Business Sectors*".

1. Introduction-Research Question

The following article analyzes the role of opportunity driven entrepreneurship in the context of national innovation systems at European level. This is a variable that takes into consideration the ability of entrepreneurs to carry out business activities with the specific purpose of seizing the opportunities present in the market. The opportunity-driven entrepreneurship variable is an essential variable of the broader variable identified as Total Entrepreneurial Activity together with another variable or necessity-driven entrepreneurship. However, while on the one hand the opportunity-driven entrepreneurship represents those entrepreneurs who do business only to seize new business opportunities in the market, on the other hand the necessity driven entrepreneurship refers to those entrepreneurs who do business not because they seize business opportunities. rather because they need to get out of unemployment.

It therefore follows that the value of Total Entrepreneurial Activity-TEA is made up of the sum of Opportunity Driven Entrepreneurship and Necessity Driven Entrepreneurship. In this regard, three different scenarios are therefore possible, namely:

- *OpportunityDrivenEntrepreneurship > NecessityDrivenEntrepreneurship*: this is a case in which the national economy is very active. In this case, entrepreneurs set up businesses not simply to escape unemployment, but rather to seize the opportunities of a market capable of generating new business opportunities. This is obviously the case of countries which are industrially advanced, technologically advanced and which have a widespread entrepreneurial capacity;

- *OpportunityDrivenEntrepreneurship < NecessityDrivenEntrepreneurship*: in this case the country has a weak entrepreneurial system. It is generally a developing country or a newly industrialized country. In this case, entrepreneurs do business not because they can maximize the business opportunities available on the market but rather to escape unemployment. Entrepreneurs out of necessity also carry out activities with low added value, with poor technology, low human capital;

- *OpportunityDrivenEntrepreneurship = NecessityDrivenEntrepreneurship* : it is the condition of countries that are in a condition of transition from the development economy to middle- and high-income economies. In this case, to increase the presence of opportunity driven entrepreneurs, it is necessary to invest significantly in human capital and in the creation of a credit-financial system that can support the creation of entrepreneurial systems that can also grow thanks to technological innovation and research and development.

Obviously, countries try to create the conditions to generate forms of opportunity driven entrepreneurship. However, the creation of an entrepreneurial class capable of being active in the sense of the ability to seize market opportunities also requires the presence of a set of institutional, cultural and value elements. In fact, to promote opportunity-oriented entrepreneurship, it is necessary to invest in human capital, carry out reforms in credit regulation and create the conditions for an economic system that is legally oriented with a low level of corruption.
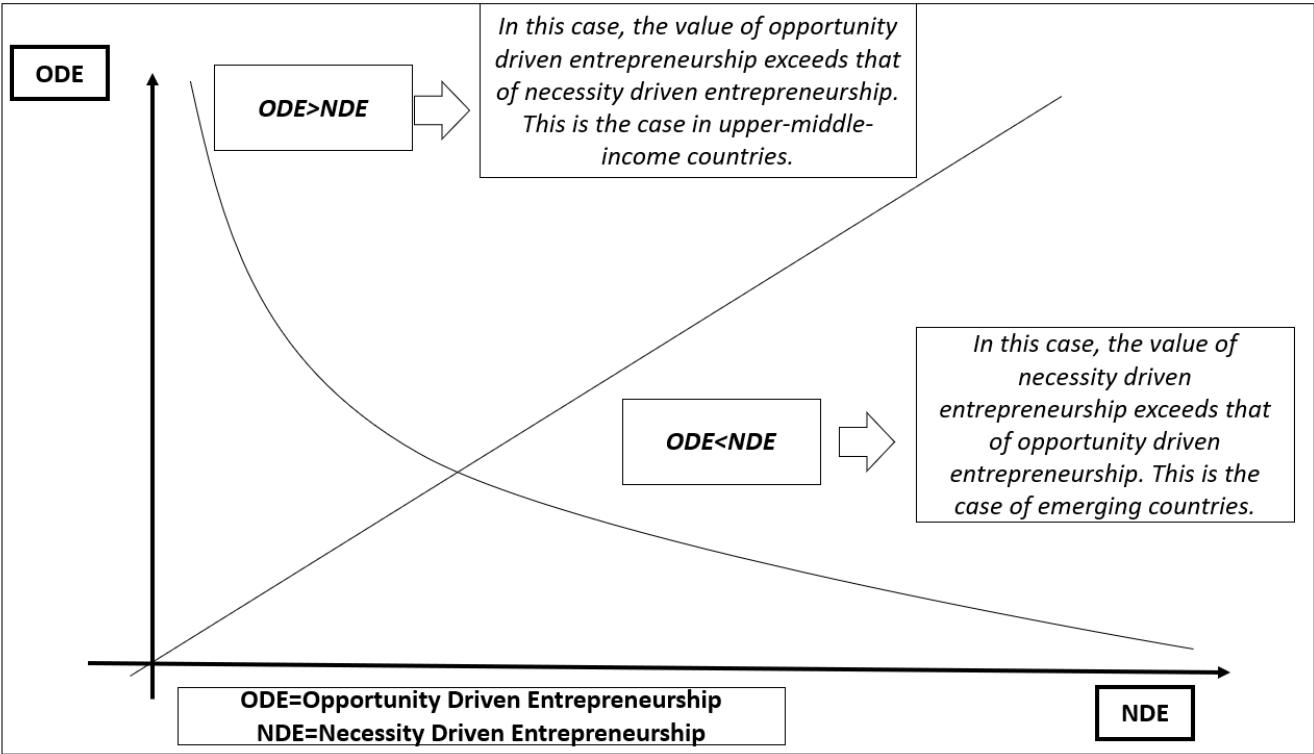

Figure 1. Relationship between ODE and NDE.

The article continues as follows, that is: in the second paragraph a brief analysis of the scientific literature is presented, in the third paragraph the results of the econometric model are presented, in the fourth paragraph conclusions are presented.

2. Literature Review

A summary of some articles relating to the scientific literature relating to opportunity driven entrepreneurship is presented below.

[1] present a study on the relationship between economic inequality, the Great Recession, and entrepreneurial ability. The authors analyzed data from 17 Spanish autonomous communities. The authors' thesis is that the Great Recession has increased inequality and that economic inequality has a very negative impact on entrepreneurship regardless of whether it is an entrepreneurship motivated by necessity or by opportunity. The net effect of the combined provisions of the Recession and inequality consists in the reduction of the percentage of the population that is dedicated to the development of entrepreneurial activities.

[2] analyze the socio-economic cultural and institutional determinants on the relationship between necessity and opportunity driven entrepreneurship in explaining the total entrepreneurial activity in connection with the business cycle trend. The authors analyze 32 countries and consider both a phase of economic expansion in the period 2001-2008 and a phase of crisis or between 2009 and 2016. The results show that both necessity and opportunity driven entrepreneurship have a positive impact on total entrepreneurial activity. The authors verify that during the expansionary phases it is necessary that there are restrictive fiscal policies to promote opportunity driven entrepreneurship, while in the adverse phases of the economic cycle it is necessary to focus on expansive monetary policies. In summary, the analysis shows that opportunity driven entrepreneurship tends to be closely linked to elements of governance and monetary policy much more than necessity driven entrepreneurship.

[3] consider the impact of foreign investment in determining domestic entrepreneurial capacity both in terms of opportunity driven entrepreneurship and in the sense of necessity driven entrepreneurship. The authors believe that the presence of foreign companies reduces the role of necessity driven entrepreneurship thanks to the offer of more employees. However, the presence of foreign companies also has the possibility of increasing opportunity driven entrepreneurship by increasing business opportunities thanks also to the dissemination of new technologies and scientific knowledge for industry. The authors analyzed data from 30 countries between 1980 and 2008. The authors conclude that the countries in which there is a greater presence of foreign companies also have a greater chance of increasing the presence of opportunity driven entrepreneurship. From this derives the possibility of changing the structure of the types of companies through the presence of foreign companies.

[4] analyzes the case of the relationship between young people and opportunity driven entrepreneurship in Kenya. The author aims to establish the characteristics of opportunity driven entrepreneurship in Kenya, to identify the incentives capable of promoting opportunity driven entrepreneurship and to find the social and cultural determinants that can support the opportunity driven entrepreneurship. The author analyzed 193 opportunity driven entrepreneurs from the Nairobi region. The results show that:

- Young people who have a specialization in Information Communication Technology-ICT are more likely to implement forms of opportunity-driven entrepreneurship;
- Opportunity driven entrepreneurs are generally aged between 21 and 30, and generally come from families of entrepreneurs;
- From a motivational point of view, young people who choose to do business to seize market opportunities have the following motivations: "I have the opportunity to do exciting work", "I wanted the freedom to be my own boss", "I saw a business opportunity ";
- There is no relationship between public and private incentives and the creation of opportunity driven enterprises;
- The social and family reputation supports young Nigerians in undertaking business activities oriented towards market opportunities;
- Participation in school programs helps the training of opportunity driven entrepreneurs;

The author concludes their article by emphasizing the role of public incentives to promote the presence of opportunity driven entrepreneurship, especially by addressing the issue of gender differences.

[5] refer to the impact of the emigration of the most talented in creating a favorable climate for opportunity driven entrepreneurship in the countries of origin. The authors analyze the case of the Balkans. The result shows that the development of an opportunity-oriented entrepreneurial system at the national level also depends on the migration of the most talented. In fact, despite the existence of a brain drain phenomenon, emigration generates positive effects in terms of entrepreneurship in the countries of origin thanks to the transfer of knowledge. [6] analyze the positive relationship between the regional dimension and opportunity-driven entrepreneurship in Vietnam. [7] analyze the characteristics of opportunity driven entrepreneurship in the Middle East and North Africa in the period between 2009-2014 using a sample of 12,515 companies cataloged in the Global Entrepreneurship Monitor. The results show that opportunity driven entrepreneurship is positively associated with the level of education, full-time work previously done to the choice of becoming entrepreneurs. Conversely, individuals with a personal history of unemployment and low education levels are more likely to become entrepreneurs out of necessity. The choice to become an entrepreneur, both opportunity-driven, and necessity-driven, is independent of gender.

[8] afford the question of the differences between opportunity driven entrepreneurship and necessity driven entrepreneurship. Opportunity driven entrepreneurship tends to have significantly better positive impacts in the long run than necessity driven entrepreneurship. The authors analyze 57 countries with reference to 2017. The authors verify that to increase opportunity driven entrepreneurship, elements relating to social equality, education and sustainability are also relevant together with the presence of a dynamic and favorable economic context.

[9] analyze the role of the entrepreneurial, labor, credit, and gender gap system in determining the institutional context favorable to opportunity driven entrepreneurship. The authors analyzed data from 41 countries over the period 2005-2016. The results show that opportunity-driven entrepreneurship is positively associated with:

- the liberalization of the credit market both in high-income countries and in emerging countries;
- business regulation in emerging countries.

[10] analyze the relationship between opportunity-driven entrepreneurship and economic development in the context of talent immigration. In fact, since in general it is people with greater talent and training who create opportunity-driven businesses, it follows that if these individuals were to emigrate, there would be serious damage to the entrepreneurial capital of the country of origin. The authors analyze what are the elements that can induce to emigrate the students who are more likely to undertake an opportunity-driven enterprise. The data was collected through an analysis of 354 students from the Technological University State of Zacatecas in Mexico. The results show that students who have a high perception of corruption or insecurity are more likely to emigrate.

[11] consider the role of the gender gap in determining opportunity-driven entrepreneurship. The authors wonder what are the reasons that prevent women from having the same opportunities as men in carrying out business activities able to seize the opportunities of the market. The authors analyzed 115,367 individuals in 62 countries considering data from the 2016 Global Entrepreneurship Monitor. The results show that women are less likely to engage in opportunity-oriented business activities due to insufficient training and a lack of social networks.

3. The Econometric Model to Estimate the Value of Opportunity Driven Entrepreneurship

In this paragraph we present an econometric model for estimating the value of the variable "*Opportunity Driven Entrepreneurship*" in Europe. We use a set of econometric models namely Panel Data with Fixed Effects, Panel Data with Random Effects, Pooled OLS, WLS, and Dynamic Panel. The "*Opportunity Driven Entrepreneurship*" variable is included in the context of the European Innovation Scoreboard-EIS. The variable measures the percentage of people who are engaged in the development of opportunity driven entrepreneurship and of people who are instead engaged in necessity-driven entrepreneurship. Opportunity driven entrepreneurship including two types of entrepreneurs, namely: entrepreneurs who are very sensitive to opportunities for doing business and entrepreneurs who are not satisfied with maintaining their income and are instead interested in improving their economic condition. On the contrary, necessity-driven entrepreneurs do business because they have no other possible job option. The indicator, therefore, considers the percentage of opportunity-driven entrepreneurs out of the total number of entrepreneurs.

In particular, the following equation was estimated:

$$\boldsymbol{OpportunityDrivenEntrepreneurship}_{it}$$
$$= \boldsymbol{a_1} + \boldsymbol{b_1}(\boldsymbol{BroadbandPenetration})_{it} + \boldsymbol{b_2}(\boldsymbol{DesignApplications})_{it}$$
$$+ \boldsymbol{b_3}(\boldsymbol{InnovationFriendlyEnvironment})_{it} + \boldsymbol{b_4}(\boldsymbol{InnovativeSalesShare})_{it}$$
$$+ \boldsymbol{b_5}(\boldsymbol{KnowledgeIntensiveServicesExports})_{it}$$
$$+ \boldsymbol{b_6}(\boldsymbol{NonR\&DInnovationExpenditures})_{it} + \boldsymbol{b_7}(\boldsymbol{PublicPrivateCoPublications})_{it}$$
$$+ \boldsymbol{b_8}(\boldsymbol{R\&DExpenditureBusinessSector})_{it} + \boldsymbol{b_9}(\boldsymbol{R\&DExpenditurePublicSector})_{it}$$
$$+ \boldsymbol{b_{10}}(\boldsymbol{SalesImpacts})_{it}$$
$$+ \boldsymbol{b_{11}}(\boldsymbol{EmploymentShareOfHighAndMediumHighTechManufacturing})_{it}$$
$$+ \boldsymbol{b_{12}}(\boldsymbol{TurnoverShareLargeEnterprises})_{it}$$

Where $i = 36$[1] and $t = [2010; 2019]$.

We found that the variable "*Opportunity Driven Entrepreneurship*" is positively associated with the following variables:

- *Innovation-Friendly Environment:* it is a variable consisting of two elements: Broadband penetration and "*Opportunity-Driven Entrepreneurship*" [12] . There is a positive relationship between "*Opportunity-Driven Entrepreneurship*" and the value of the "*Innovation-Friendly Environment*". This relationship can be better understood considering that the ability to develop opportunity-oriented entrepreneurship depends on the presence of an environment favorable to technological innovation. In national economies that have the possibility of creating an environment more favorable to technological innovation, there is also a greater presence of opportunity-driven entrepreneurs. In fact, in the most dynamic economies there are more business opportunities and therefore it is more likely that companies are created that are opportunity driven entrepreneurship.

- *Turnover Share Large Enterprises:* is a variable that represents the share of turnover of large companies as a percentage. It is a ratio constituted in the numerator by the turnover in companies with more than 250 employees and in the denominator the turnover produced by companies in the private sector. There is a positive relationship between the value of the turnover of large companies and the value of opportunity-driven entrepreneurship. This positive relationship can be understood by considering where there are large companies there is also generally a more active entrepreneurial system and therefore the probability of the presence of opportunity driven

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[1] Countries are: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Lithuania, Luxembourg, Malta, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine, UK.

enterprises increases. Obviously, if the industrial and entrepreneurial system is more evolved with a very pronounced private sector then the conditions are also created for a type of entrepreneurship that is much more oriented towards opportunities than the entrepreneurship of necessity.

- *Knowledge-Intensive Services Exports:* is a variable that considers the exports of knowledge-intensive services to the total exports of services [13]. It is therefore an indicator that measures the competitiveness of knowledge-intensive services. Economies characterized by the export of knowledge-intensive services also have lower unemployment rates and a more profitable business sector. There is a positive relationship between the value of opportunity driven entrepreneurship and the value of exports of high-quality services. This relationship can be better understood considering that generally in countries where there is a greater orientation towards the export of knowledge-intensive services there are also greater investment opportunities, there is a higher level of technology and therefore it is more It is easy to create entrepreneurial structures that are able to seize the profit opportunities offered by the market.

- *Public-Private Co-Publications:* It is an indicator that takes into consideration the number of publications that have been produced in collaboration between public and private bodies [14]. The variable excludes advertising in the medical-health sector. It is therefore an indicator that takes into consideration the ability of public and private bodies to cooperate in scientific production. There is a positive relationship between the value of public-private publications and the value of opportunity driven entrepreneurship. This relationship can be understood considering that scientific collaborations between public and private generally can have positive externalities that are expressed in the entrepreneurial sector with the creation of new businesses, start-ups, and spin offs. Hence the ability to generate a positive effect in terms of growth of opportunity driven entrepreneurship with the construction of new businesses and new business opportunities.

- *R&D Expenditure Public Sector:* it is a variable that considers the value of public expenditure on Research and Development as a percentage of the Gross Domestic Product. Public spending on Research and Development can generate very positive impacts in terms of economic growth in the knowledge economy. The growth in R&D spending is considered a proxy for the future competitiveness and wealth of the European Union. Spending on research and development allows countries to have full access to a knowledge-based economy. There is a positive relationship between the value of opportunity driven entrepreneurship and the value of public spending on research and development. This relationship can be understood considering that the value of opportunity driven entrepreneurship also depends on the fact that there are patents, new inventions, of the innovations that companies, especially start-ups and spin-offs, can use to create new business models.

- *Innovative Sales Share:* is a variable that considers the turnover deriving from new or significantly improved products that have an impact for companies or for the market. This value is calculated in relation to the value of the total turnover of the companies. It is therefore an indicator that refers to companies that can generate new products and new services capable of innovating both the company and the market. Using this variable, it is possible to consider both the creation of new cutting-edge technologies and their diffusion. There is a positive relationship between the value of sales made thanks to the investments of technological innovation and the value of opportunity driven entrepreneurship. In fact, the companies that are more likely to seize the opportunities of technological innovation are more likely to make productive investments in new business models, new product lines and open to the possibility of creating new markets.

- *Design Applications:* is an indicator that considers the value of the design applications presented before the European Union Intellectual Property Office as a percentage of

the Gross Domestic Product [15]. It is a variable that therefore recognizes the value of design applications or those interventions that are carried out to modify the external and external elements of industrial or artisanal products. However, industrial design does not consider the value of software design. In the field of industrial and artisan design, products that can be made up of several components are also taken into consideration. There is a positive relationship between requests for registration of industrial and artisanal design and the value of opportunity driven entrepreneurship. Obviously, design applications may be able to generate new entrepreneurial activities in the advanced services sector, or in those sectors in which significant business opportunities exist.

	Econometric Results of the Models Used for the Estimate of the Variable Opportunity-Driven Entrepreneurship											
A39	Opportunity-driven entrepreneurship	Random Effects		Pooled OLS		Fixed Effects		Dynamic Panel		WLS		Average
		Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value	Coefficient
	Costant	-0,42854		-0,494703		-0,309762		-2,75746		-3,1081	**	-1,419713
A5	Broadband penetration	-0,251974	***	-0,161538	***	-0,266776	***	-0,244089	***	-0,222433	***	-0,229362
A7	Design applications	0,195933	***	0,200482	***	0,190856	***	0,264301	**	0,130872	***	0,1964888
A25	Innovation-friendly environment	0,679481	***	0,516565	***	0,70673	***	0,816609	***	0,680848	***	0,6800466
A26	Innovative sales share	0,319592	***	0,399042	***	0,301826	***	0,315293	***	0,294476	***	0,3260458
A31	Knowledge-intensive services exports	0,480702	***	0,537185	***	0,463712	***	0,508576	***	0,435993	***	0,4852336
A38	Non-R&D innovation expenditure	-0,113775	***	-0,157157	***	-0,102297	***	-0,0977719	**	-0,0994417	***	-0,11408852
A45	Public-private co-publications	0,365363	***	0,381597	***	0,364027	***	0,299189	***	0,348586	***	0,3517524
A46	R&D expenditure business sector	-0,453597	***	-0,366015	***	-0,464513	***	-0,471091	***	-0,367963	***	-0,4246358
A47	R&D expenditure public sector	0,362541	***	0,378042	***	0,356793	***	0,281144	***	0,291127	***	0,3339294
A49	Sales impacts	-0,630334	***	-0,752373	***	-0,603728	***	-0,648075	***	-0,539985	***	-0,634899
A50	Share High and Medium high-tech manufacturing	-0,463853	***	-0,552808	***	-0,455054	***	-0,308234	**	-0,287312	***	-0,4134522
A57	Turnover share large enterprises	0,682826	***	0,766529	***	0,67318	***	0,466073	***	0,541245	***	0,6259706
A39(-1)	Opportunity-driven entrepreneurship							0,0420865				

We also found that the variable "*Opportunity Driven Entrepreneurship*" is negatively associated with the following variables:

- *Non-R&D Innovation Expenditure:* is a value that considers the total expenditure for technological innovation of companies net of investments in research and development as a percentage of the value of the companies' turnover [16]. It is therefore a value that considers the investment in technological innovation not deriving from Research and Development as a percentage of turnover. For example, investments in plants and machinery, patents and licenses are an example of technological innovation that the company obtains without incurring the direct costs of investment in Research and Development. There is therefore a negative relationship between the value of technological innovation not connected to R&D and the value of opportunity driven entrepreneurship. This relationship can be understood considering that indeed investments in non-R&D innovation represent a type of innovation of the second degree compared to that supported by R&D. It follows that even business opportunities, product or service innovation, are more limited than in those economic systems that instead create new business opportunities by investing directly in R&D.
- *Broadband Penetration:* is the total number of companies that have an internet connection with a maximum download speed equal to an amount of 100Mb / s out of the total number of companies [17]. It is an indicator that takes into consideration the value of the companies that have the possibility of using a fast broadband perhaps to carry out business activities such as in the case of e-commerce. There is a negative relationship between the value of using broadband and the value of opportunity driven entrepreneurship. This negative relationship can be understood considering that the fact that there is broadband does not in itself increase the possibility for companies to find new business opportunities. Of course, broadband is useful for e-commerce. However, even e-commerce can no longer be considered as an innovative type of business, being widely subjected to forms of monopoly or oligopoly. This negative relationship between the value of broadband and the value of opportunity driven entrepreneurship is very relevant and suggests that although infrastructures are relevant for the development of entrepreneurship, they increase their value only in connection with the presence of a human capital able to derive value and generate new business models.
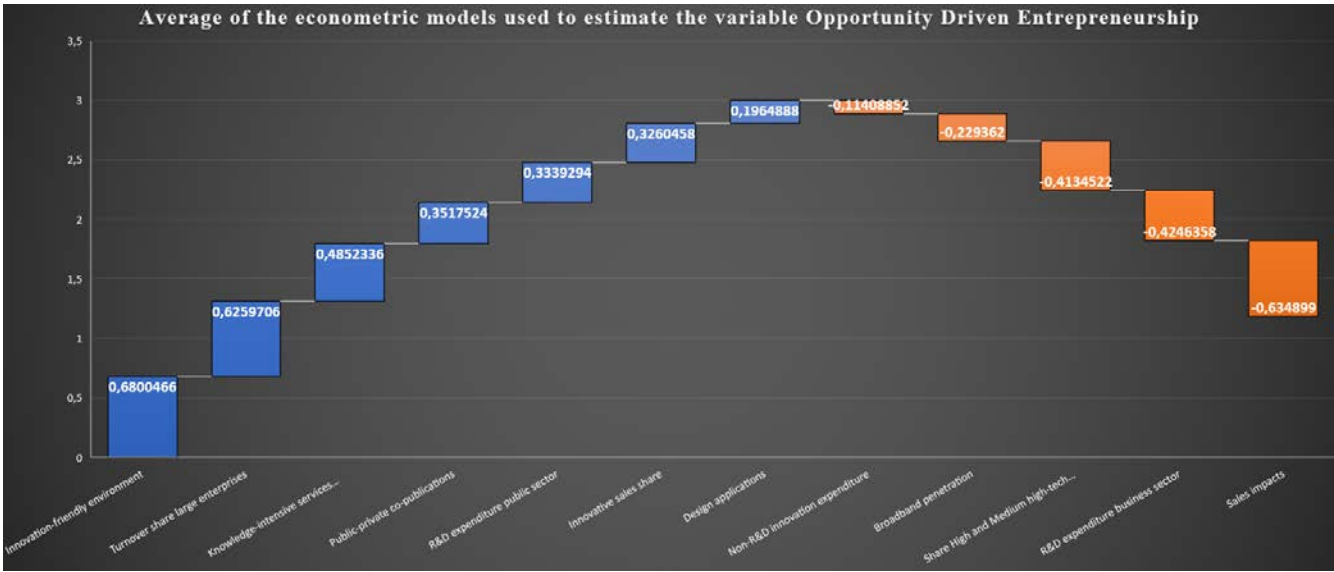

Figure 2. Average of the econometric models used to estimate the variable "Opportunity Driven Entrepreneurship".

- *Employment Share of High and Medium High-Tech Manufacturing:* measures the percentage of employment in the high and medium-high tech sectors. These include, for

example, employment in the pharmaceutical, computer, technology, weapons, and ammunition sectors, with unclassified machinery and equipment. There is a negative relationship between the value of employment in the high and medium technology sectors and the value of opportunity driven entrepreneurship. It is necessary to consider that the possibility of carrying out business activities that are more oriented to market opportunities certainly depends on the presence of medium and high-tech products, however there are also limitations in this relationship. In fact, it is necessary to consider that in countries where there are medium and high technology products there are also large and very large companies. In fact, the medium and high technology sectors are sectors characterized by oligopolies or monopolies. As a result, new business opportunities for small and medium-sized enterprises tend to shrink significantly.

- *R&D Expenditure Business Sector:* is a variable that considers the value of R&D spending in the private sector. This is the total value of R&D expenditure in the private enterprise sector relative to gross domestic product. It is therefore the percentage of gross domestic product generated by R&D expenditure. It is a variable that also takes into consideration the ability of companies to create new knowledge through private investments. Obviously, there are some sectors, such as the pharmaceutical sector, in which the value of research and development is generated with the creation of specific departments and research laboratories. There is a negative relationship between the value of private sector R&D spending and the value of opportunity driven entrepreneurship. This relationship can be understood considering that the companies that do R&D in general are already large and very large companies that develop patents and a type of research that they aim at in the commercialization of the market. Therefore, new business opportunities are not created for companies because the added value produced is maximized by the same companies that invest privately in R&D.

- *Sales Impacts:* is a variable that takes into account between sub-variables, namely "Medium and high tech product exports", "Knowledge-intensive services exports" and "Sales of new to market and new to firm product innovations" [18]. It is therefore a set of variables that show the impact in terms of sales of the technological innovations developed at the company level. There is a negative relationship between the value of the impact of technological innovations on sales and the value of opportunity driven entrepreneurship. This relationship can be better understood considering that the fact that a company obtains sales growth from technological innovation does not automatically create business opportunities for other companies. In fact, the content of technological innovation is already maximized by investing companies and there is no creation of new business opportunities.

Average Value of the Econometric Models to Estimate the Value of Opportunity Driven Entrepreneurship	
Variables	*Average Value*
Innovation-friendly environment	0,6800466
Turnover share large enterprises	0,6259706
Knowledge-intensive services exports	0,4852336
Public-private co-publications	0,3517524
R&D expenditure public sector	0,3339294
Innovative sales share	0,3260458
Design applications	0,1964888
Non-R&D innovation expenditure	-0,1140885
Broadband penetration	-0,2293620

Share High and Medium high-tech manufacturing	-0,4134522
R&D expenditure business sector	-0,4246358
Sales impacts	-0,6348990

4. Conclusions

In this article we have estimated the value of Opportunity Driven Entrepreneurship-ODE in Europe. The Opportunity Driven Entrepreneurship-ODE is contrasted with the Necessity Driven Entrepreneurship-NDE. The sum of ODE and NDE constitutes the Total Entrepreneurial Activity-TEA variable. There is a significant difference between ODE and NDE. In fact, while on the one hand ODE represents entrepreneurs who do business by exploiting the opportunities in the market, on the other hand NDE represents entrepreneurs who do business to escape unemployment. The fact that ODE or NDE is dominant in a country defines the orientation of the country from an economic-entrepreneurial point of view. The countries where ODE>NDE are in fact the middle-high income countries. Countries where NDE>ODE are low-income countries. However, moving from an ODE>NDE condition to an NDE>ODE condition requires investment in law, in university education, in the fight against corruption.

From the data point of view, we used the European Innovation Scoreboard-EIS of the European Commission for 36 countries in the period 2010-2019. We use Panel Data with Fixed Effects, Panel Data with Random Effects, WLS, Pooled OLS, and Dynamic Panel. Our results show that "*Opportunity Driven Entrepreneurship*" is positively associated, among others, to "*Innovation Friendly Environment*" and "*Turnover Share Large Enterprises*", while it is negatively associated, among others, to "*Sales Impacts*" and "*R&D Expenditure Business Sectors*".

In European countries there is generally a dominance of ODE over NDE values. However, it must be considered that the presence of ODEs is not indifferent to the adversity of the economic cycle, to the international economic situation or to structural changes in the macro-economic assets. In this sense, to ensure that in Europe there is a further strengthening of ODE compared to NDE it is necessary to invest in the formation of human capital at university level, in the reform of business credit, in the fight against corruption, and in creating an egalitarian context. able to reduce the exclusion of women from entrepreneurial activities.

Declarations

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Appendix

Modello 56: Effetti casuali (GLS), usando 360 osservazioni
Incluse 36 unitÃ cross section
Lunghezza serie storiche = 10
Variabile dipendente: A39

	Coefficiente	*Errore Std.*	*z*	*p-value*	
const	-0,428540	4,90301	-0,08740	0,9304	
A5	-0,251974	0,0277690	-9,074	<0,0001	***
A7	0,195933	0,0428446	4,573	<0,0001	***
A25	0,679481	0,0426649	15,93	<0,0001	***
A26	0,319592	0,0595264	5,369	<0,0001	***
A31	0,480702	0,0759445	6,330	<0,0001	***
A38	-0,113775	0,0283588	-4,012	<0,0001	***
A45	0,365363	0,0371445	9,836	<0,0001	***
A46	-0,453597	0,0611403	-7,419	<0,0001	***
A47	0,362541	0,0636346	5,697	<0,0001	***
A49	-0,630334	0,117474	-5,366	<0,0001	***
A50	-0,463853	0,118972	-3,899	<0,0001	***
A57	0,682826	0,116208	5,876	<0,0001	***

Media var. dipendente	85,06958	SQM var. dipendente	86,21969
Somma quadr. residui	347074,8	E.S. della regressione	31,58071
Log-verosimiglianza	-1747,632	Criterio di Akaike	3521,265
Criterio di Schwarz	3571,784	Hannan-Quinn	3541,352
rho	0,618283	Durbin-Watson	0,661502

Varianza 'between' = 685,674

Varianza 'within' = 425,833

Theta usato per la trasformazione = 0,758188

Test congiunto sui regressori -

 Statistica test asintotica: Chi-quadro(12) = 2716,94

 con p-value = 0

Test Breusch-Pagan -

Ipotesi nulla: varianza dell'errore specifico all'unità = 0

Statistica test asintotica: Chi-quadro(1) = 399,856

con p-value = 5,91864e-089

Test di Hausman -

  Ipotesi nulla: le stime GLS sono consistenti

  Statistica test asintotica: Chi-quadro(12) = 7,64936

  con p-value = 0,811897

A39: valori effettivi e stimati

Modello 57: Pooled OLS, usando 360 osservazioni

Incluse 36 unità cross section

Lunghezza serie storiche = 10

Variabile dipendente: A39

| | *Coefficiente* | *Errore Std.* | *rapporto t* | *p-value* |

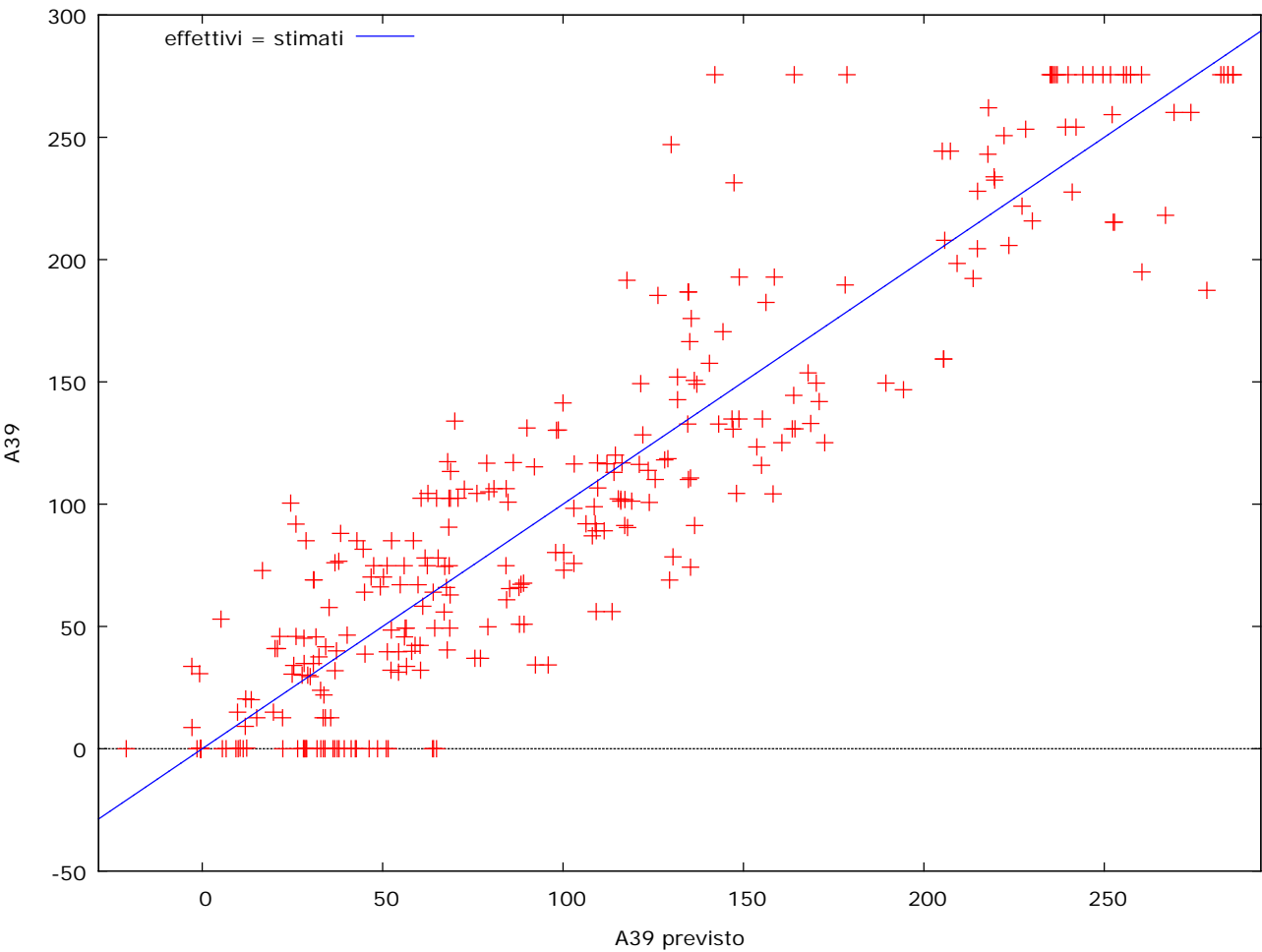|					
const	−0,494703	3,18317	−0,1554	0,8766	
A5	−0,161538	0,0275085	−5,872	<0,0001	***
A7	0,200482	0,0378418	5,298	<0,0001	***
A25	0,516565	0,0439580	11,75	<0,0001	***
A26	0,399042	0,0628884	6,345	<0,0001	***
A31	0,537185	0,0616263	8,717	<0,0001	***
A38	−0,157157	0,0272853	−5,760	<0,0001	***
A45	0,381597	0,0305115	12,51	<0,0001	***
A46	−0,366015	0,0544068	−6,727	<0,0001	***
A47	0,378042	0,0540170	6,999	<0,0001	***
A49	−0,752373	0,104832	−7,177	<0,0001	***
A50	−0,552808	0,121496	−4,550	<0,0001	***
A57	0,766529	0,117563	6,520	<0,0001	***

Media var. dipendente	85,06958	SQM var. dipendente	86,21969
Somma quadr. residui	320891,3	E.S. della regressione	30,40985
R-quadro	0,879760	R-quadro corretto	0,875601
F(12, 347)	211,5737	P-value(F)	1,8e-151
Log-verosimiglianza	−1733,514	Criterio di Akaike	3493,027
Criterio di Schwarz	3543,546	Hannan-Quinn	3513,115
rho	0,911568	Durbin-Watson	0,301950

Modello 58: Effetti fissi, usando 360 osservazioni

Incluse 36 unità cross section

Lunghezza serie storiche = 10

Variabile dipendente: A39

	Coefficiente	Errore Std.	rapporto t	p-value	
const	−0,309762	2,32392	−0,1333	0,8940	
A5	−0,266776	0,0292876	−9,109	<0,0001	***
A7	0,190856	0,0460651	4,143	<0,0001	***
A25	0,706730	0,0447691	15,79	<0,0001	***
A26	0,301826	0,0623522	4,841	<0,0001	***
A31	0,463712	0,0830851	5,581	<0,0001	***
A38	−0,102297	0,0300358	−3,406	0,0007	***
A45	0,364027	0,0405979	8,967	<0,0001	***
A46	−0,464513	0,0658264	−7,057	<0,0001	***
A47	0,356793	0,0688152	5,185	<0,0001	***
A49	−0,603728	0,126752	−4,763	<0,0001	***

A50	−0,455054	0,124771	−3,647	0,0003	***
A57	0,673180	0,122067	5,515	<0,0001	***

Media var. dipendente	85,06958	SQM var. dipendente	86,21969
Somma quadr. residui	132859,8	E.S. della regressione	20,63571
R-quadro LSDV	0,950216	R-quadro intra-gruppi	0,889331
LSDV F(47, 312)	126,7048	P-value(F)	3,7e-176
Log-verosimiglianza	−1574,788	Criterio di Akaike	3245,576
Criterio di Schwarz	3432,109	Hannan-Quinn	3319,745
rho	0,618283	Durbin-Watson	0,661502

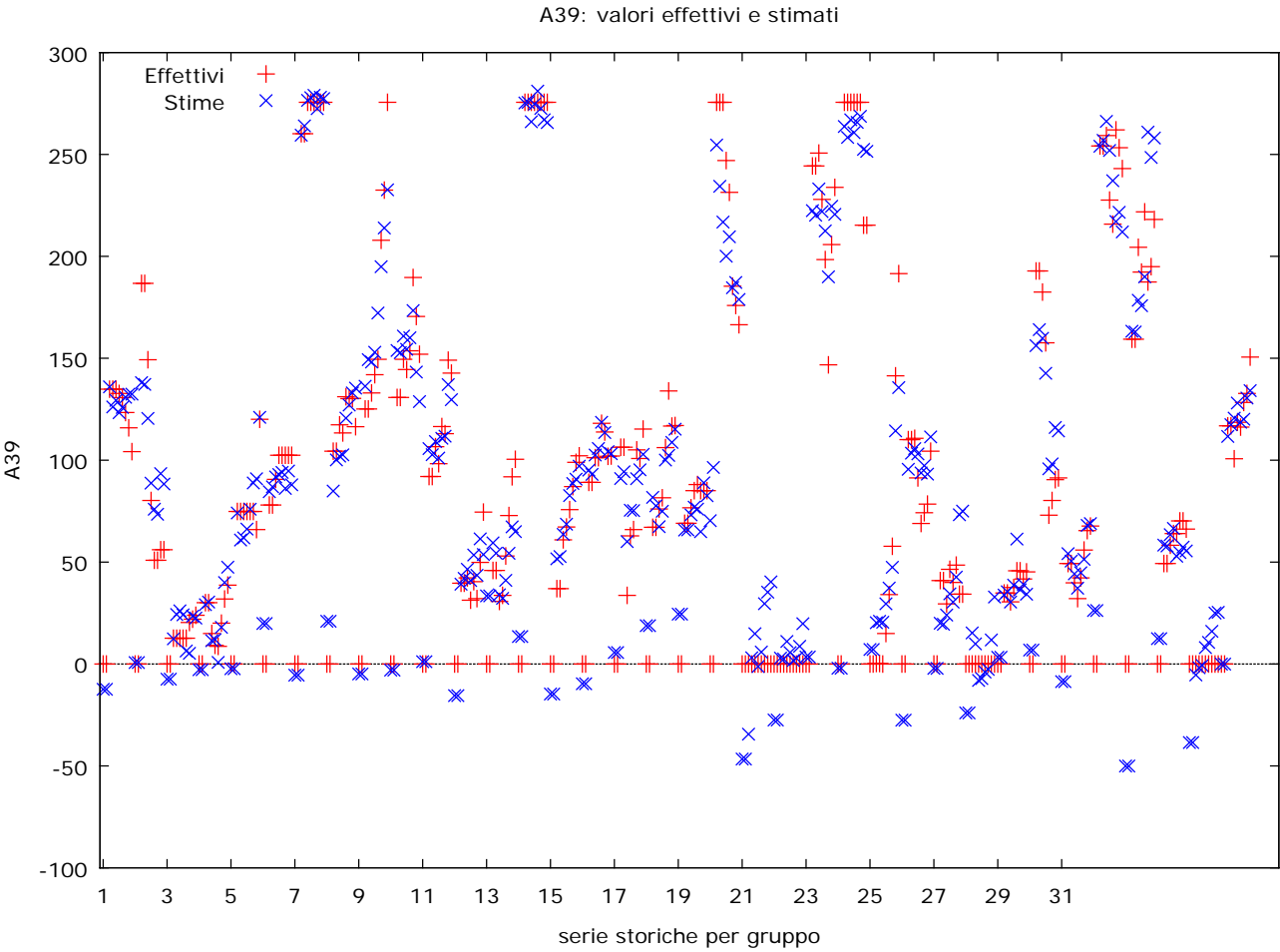Test congiunto sui regressori -
  Statistica test: F(12, 312) = 208,935
  con p-value = P(F(12, 312) > 208,935) = 3,4883e-141

Test per la differenza delle intercette di gruppo -
  Ipotesi nulla: i gruppi hanno un'intercetta comune
  Statistica test: F(35, 312) = 12,6161
  con p-value = P(F(35, 312) > 12,6161) = 1,26694e-041
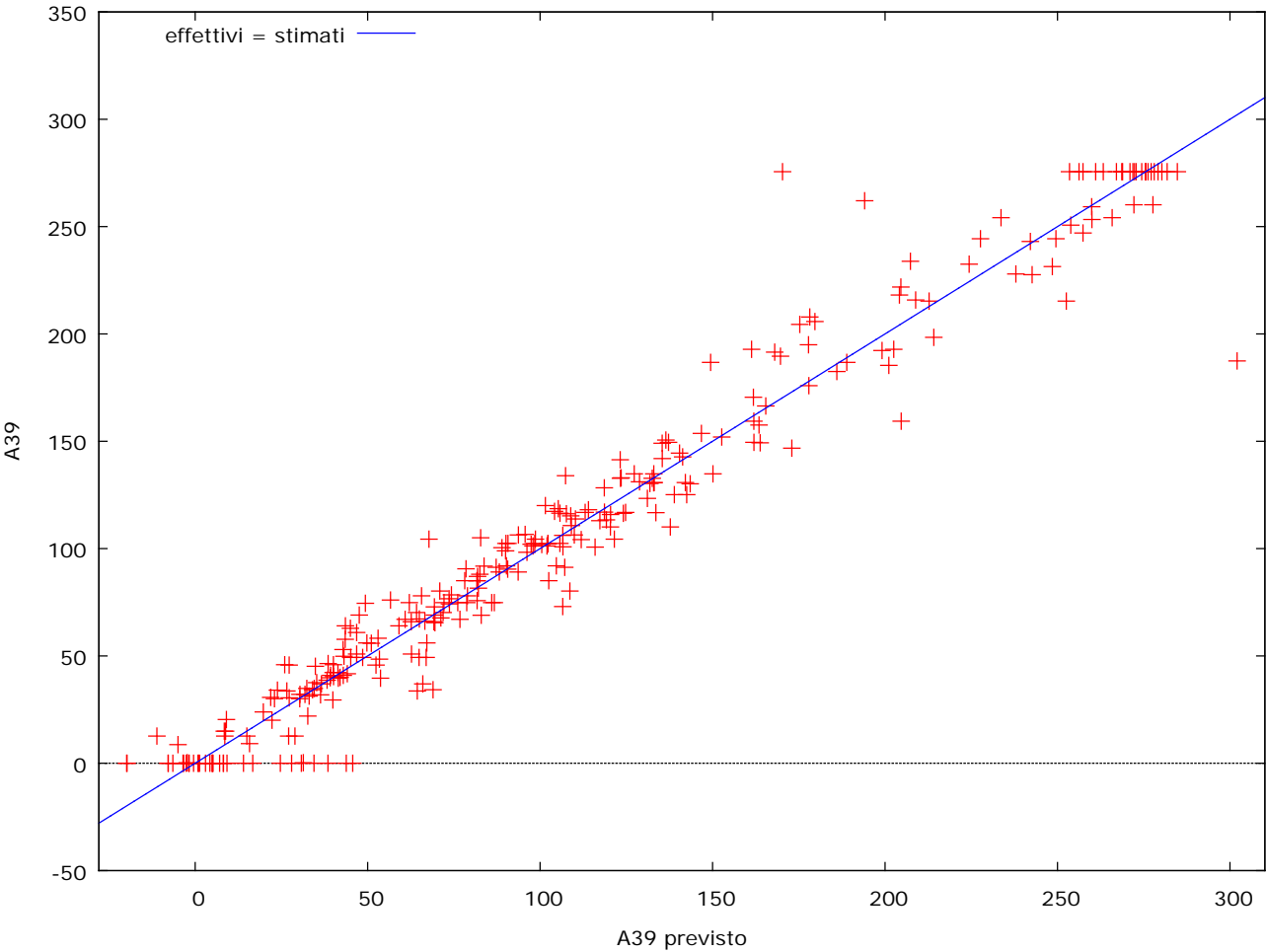
A39: valori effettivi e stimati

Modello 59: Panel dinamico a un passo, usando 288 osservazioni
Incluse 36 unità cross section
Matrice H conforme ad Ox/DPD
Variabile dipendente: A39

	Coefficiente	Errore Std.	z	p-value	
A39(-1)	0,0420865	0,0718811	0,5855	0,5582	
const	−2,75746	2,07919	−1,326	0,1848	
A5	−0,244089	0,0926207	−2,635	0,0084	***
A7	0,264301	0,115417	2,290	0,0220	**
A25	0,816609	0,134272	6,082	<0,0001	***
A26	0,315293	0,100273	3,144	0,0017	***
A31	0,508576	0,193097	2,634	0,0084	***
A38	−0,0977719	0,0450361	−2,171	0,0299	**
A45	0,299189	0,0556243	5,379	<0,0001	***
A46	−0,471091	0,116777	−4,034	<0,0001	***
A47	0,281144	0,0723149	3,888	0,0001	***
A49	−0,648075	0,204124	−3,175	0,0015	***
A50	−0,308234	0,146212	−2,108	0,0350	**

A57	0,466073	0,139965	3,330	0,0009	***

Somma quadr. residui	80414,00	E.S. della regressione	17,13131

Numero di strumenti = 29
Test per errori AR(1): z = 0,118794 [0,9054]
Test per errori AR(2): z = -0,327781 [0,7431]
Test di sovra-identificazione di Sargan: Chi-quadro(15) = 21,3364 [0,1264]
Test (congiunto) di Wald: Chi-quadro(13) = 1118,33 [0,0000]

Modello 60: WLS, usando 360 osservazioni
Incluse 36 unità cross section
Variabile dipendente: A39
Pesi basati sulle varianze degli errori per unità

	Coefficiente	Errore Std.	rapporto t	p-value	
const	−3,10810	1,54157	−2,016	0,0446	**
A5	−0,222433	0,0218807	−10,17	<0,0001	***

A7	0,130872	0,0250114	5,233	<0,0001	***
A25	0,680848	0,0366794	18,56	<0,0001	***
A26	0,294476	0,0352533	8,353	<0,0001	***
A31	0,435993	0,0395322	11,03	<0,0001	***
A38	−0,0994417	0,0143943	−6,908	<0,0001	***
A45	0,348586	0,0192124	18,14	<0,0001	***
A46	−0,367963	0,0349837	−10,52	<0,0001	***
A47	0,291127	0,0338258	8,607	<0,0001	***
A49	−0,539985	0,0658050	−8,206	<0,0001	***
A50	−0,287312	0,0767047	−3,746	0,0002	***
A57	0,541245	0,0683486	7,919	<0,0001	***

Statistiche basate sui dati ponderati:

Somma quadr. residui	303,2080	E.S. della regressione	0,934772
R-quadro	0,969159	R-quadro corretto	0,968093
F(12, 347)	908,6944	P-value(F)	8,9e-254
Log-verosimiglianza	−479,9146	Criterio di Akaike	985,8292
Criterio di Schwarz	1036,349	Hannan-Quinn	1005,917

Statistiche basate sui dati originali:

Media var. dipendente	85,06958	SQM var. dipendente	86,21969
Somma quadr. residui	362580,8	E.S. della regressione	32,32493

A39: valori effettivi e stimati