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Exports of Goods and Services in European Countries in the Period 2010-2019

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ABSTRACT : We investigate the degree of "*Exports of Goods and Services*" for 27 European Countries in the period 2010-2019 with an equation of 48 variables. Data are estimated with Panel Data with Fixed Effects, Panel Data with Random Effects, Pooled OLS and WLS. We found that the "*Exports of Goods and Services*" is positively associated to domestic demand, taxes on imports, productivity of workers. "*Exports of Goods and Services*" is negatively associated to inflation, labor-capital substitution, private saving, population, GDP, and capital formation.

Keywords: International Economics, International Trade, Exportations, European Union, International Political Economics.

I.   INTRODUCTION

In this article we estimate the level of Exports of Goods and Services in 27 European Countries in the period 2010-2019 using a complex set of 48 variables. We use various econometric model i.e. Pooled OLS, WLS, Panel Data with Fixed Effects, Panel Data with Random Effects. We use data from Ameco. The presence of determinants able to promote exports is a recurrent theme in the economic literature. There are many elements that can improve the ability of a country to export i.e.: logistics infrastructure; e-commerce, trade policies and multilateral relationships, the presence of financial support, aid for foreign trade. The presence of common culture and institutions can improve the level of international relationship augmenting exports even if there is a relevant geographical distance. Countries tends to specialize in the context of exports and export's structure tend to high concentration level evaluated in the sense of the Herfindahl-Hirschman Index- HHI.

The article continues as follows: the second paragraph presents a literature review, the third paragraph contains the econometric model, the fourth paragraph concludes.

II.   LITERATURE REVIEW

Logistics and international trade. (Gani, 2017) consider the role of logistics as a driver for international trade. The author considers either the overall logistic performance either promotes an evaluation of specific features of the logistic supply chain. The authors estimate the determinants of imports and export in connection with logistic performance. Results show the presence of a positive relationship between trade- considered either as import either as export- and logistic performance. Specifically, there is a deep and statistically significant relationship between exports and the performance of the logistic sector. The author suggestion to policy makers is to improve the investment in the logistic infrastructure to have a positive impact on international trade.

(Buvik & Takele, 2019)consider the relationship between the presence of trade logistics and export in African countries. The authors use the World Bank Logistics Performance Index-LPIs to evaluate the logistics capability of African countries. Data are collected for the 2016. The objective is twofold:

- detect the presence of inefficiency in the African logistics sector;
- investigate the impact of trade logistics capacity on African exports.

The authors use a mix of analytical and metrical tools. The estimation of the relevance of trade logistics on international trade is obtained using a gravity model. Results suggests that:

- African countries have low score in the sense of Logistics Performance Index;
- The level of quality of transportation infrastructure is low in respect to international comparisons;

- The inefficiency of the African logistics sector is also manifested in the sense of on-time delivery and in the monitoring of international shipments;
- Landlocked countries are discriminated in the access to export in respect to coastal countries.

Authors conclude with some recommendation policies suggesting that an improve in the African LPI can improve the ability of African countries to export.

E-commerce and trade policies. (Huo, et al., 2018)consider the role of international e-business in promoting exports in developing countries. Specifically, the authors estimate the impact of the presence of an institutional pro-active policy able to promote e-business in its impact on export trade. The difference in difference model is applied. Results shows that:

- There is a positive relationship between institutional promotion of international e-business and exports;
- The presence of connections and networks among cities can boost the positive relationship between international e-commerce and export at a regional level.

Results are robust and confirmed either using a decision tree and a Bayesian model. Authors suggest to policy maker to actively sustain the positive relationship between international e-commerce and exports.

(Atif, et al., 2017)consider the impact of export on economic growth. The increasing level of exports is not only a strategy to promote economic growth, but also a tool for social emancipation. The authors analyze the agricultural export of the Pakistan economy in the period 1995-2014. The gravity model is used. Results shows that:

- Bilateral exchanges have a positive impact on Pakistan agricultural exports,
- Common borders, common culture, colonial history and trading agreements have a positive impact on agricultural exports;
- Common language has no significative impact on exports,
- Especially the geographical proximity has a positive impact on exports.

Middle East and European countries are the most profitable export areas for the Pakistan agriculture.

Trade Policies, International Commercial Policies, Neo-Multilateralism and Globalization.(Wolford & Kim, 2017) afford the role of military alliances in developing trade policy. Specifically, the authors consider the case of different actors who have heterogenous interests differentiated in the sense of security and cooperation. The authors apply a model based on game theory. The case study is based on heterogenous set of actors differentiated between countries with weak market power and countries with strong market power. If countries having a strong market power threat to engage in commercial retaliation, thencountries that have a scarce market power are more oriented to perform protectionism even in a sub-optimal equilibrium. To promote cooperation among countries in a contest of international trade it is necessary to realize a protection policy based on retaliation. Stronger countries are more oriented to tolerate protectionism performed by smaller allies.

(Aklin, et al., 2015) analyze the relationship between domestic politics and international trade policy. The authors analyze the process of formation of agent's interests and how these interests interact with other to promote international cooperation. But the authors underline that there is biunivocal effect between domestic policy and international cooperation: in effect not only domestic policy affect international cooperation shaping the orientation of firms towards new markets, but alto international cooperation has an impact on domestic policy promoting the interest of some political and commercial group in conflict with others.

(Maciejewski & Wach, 2019)investigates the determinants of the differences in the production factors of exports of European Union countries. Specifically, the authors consider that production factors that are not feasible in the domestic economy. An analysis of the bilateral trade of EU countries is proposed through the usage of statistical data in a comparative analysis. The authors apply a gravity model using data from United Nation Conference on Trade and Development-UNCTAD. One of the main drivers of the export ability of EU countries consists in capacity to attract commercial cooperation. The attractiveness is defined as the sum of sequent elements:

- The economic development of economic partners;
- The geographical distance;
- The presence of a common border;
- EU membership.

Results show that the presence of production factor are not able to explain the export orientation of EU countries. The main determinant of the exports among EU countries consists in the economic cooperation.

(Fugazza & Molina, 2016) consider the relationship between the trade relationships and GDP growth. The authors investigate the determinants of commercial cooperation in three different country clusters: North, Developing South, Emerging South. Data are collected for 96 countries in the period 1995-2004. Results show that:

- There is a positive relationship between the duration of an international commercial relation and the degree of economic development of the exporter;
- Countries that are early bird in exports tend to persist in exportations;

- The degree of competitiveness of a market can expressed in terms of duration of the international commercial relations;
- Fixed costs improve the duration of exports in the Developing South;
- Fixed costs reduce the duration of export in the North and Emerging South.

(Ikpe, et al., 2020)afford the question of the relationship between trade liberalization and non-oil exports in Nigeria. The authors estimate the impact of liberalization on non-oil export using an Autoregressive Distributed Lag model. Results show that liberalization has promoted the non-oil export. But the efficiency, revenues and economic efficiency of the non-oil exports are limited. To solve the problem of the economic and financial performance of the non-oil exports, the authors suggest promoting a public-private partnership to reinforce the nexus between liberalization and non-oil exports.

(Gnangnon, 2019) analyzes the impact of aid for trade on exports in connection with liberalization at a country level. The author uses three metrics to analyze exports:

- $LOW = \dfrac{LowSkilled + TechnoloyIntensiveManufacurers}{TotalPrimaryExports}$
- $MEDIUM = \dfrac{MediumSkilled + TechnologyIntensiveManufacturers}{TotalPrimaryExports}$
- $HIGH = \dfrac{(HighSkilled + TechnologyIntensiveManufacturers)}{TotalPrimaryExports}$

The author analyzes 121 countries in the period 2002-2015 with a GMM-Generalized Methods of Moments. Results show that:

- Aid for Trade has a positive and significative impact on exports for LOW and HIGH;
- There is no positive and significative relationship between Aid for Trade and MEDIUM;
- For least developed countries there is a positive relationship between Aid for Trade and LOW;
- For least developed countries there is a negative relationship either between Aid for Trade and MEDIUM either between Aid for Trade and HIGH;
- The efficacy of the Aid for Trade is positively associated to the presence of a political economy favorable to liberalization.

(Irshad & Xin, 2017)analyzes the diversification of exports in Pakistan through the methodology of Revealed Comparative Advantage using data for the period 2003-2015. Results show that:

- Pakistan exports are characterized by a low level of diversification;
- The sector in which Pakistan exports have a comparative advantage are textile, vegetable and hides and skin.

The author suggests applying a set of international political economies able to diversify Pakistan exports.

(Salvatore, 2010)consider the economic effects of NAFTA on Mexico. The author considers specifically the impact of NAFTA on employment, trade and investment between USA and Mexico. The author substantially criticize three main theories about the impact of NAFTA on USA-Mexico economic relationships that are:

1. The idea that NAFTA should have improved employment on both borders, reducing ware inequality and migration;
2. The idea that NAFTA would have created a massive unemployment in USA with a migration of American firms in Mexico;
3. The idea that the effect of NAFTA could have been understood just confronting the pre-NAFTA with the post NAFTA condition of Mexico.

The author considers these three propositions as substantially wrong since they miss to analyze the substantial change in the macro-economic scenario during the period of the application of NAFTA. Three main events have reduced the relative economic importance of NAFTA i.e. the Mexican economic crisis of the 1994-1995, the U.S. recession of 2002, and the entering of China in WTO. These three elements have changed the economic relevance of NAFTA as a tool of international political economy either for USA either for Mexico.

(Tu & Giang, 2018)afford the question of the relationship between trade cost and export in the case of Vietnam. The authors consider the international relationship between Vietnam and 70 international partners in the period 2001-2013. The authors use the gravity model. Results show that there is a positive relationship between trade cost and export in Vietnam. But the positive relationship between trade cost and exports requires also the presence of some characteristics in the importing countries i.e. : the trade openness, population country and gross domestic product.

(Agbo, et al., 2018) analyze the impact of the international trade, and specifically the role of export trade, on GDP growth in Nigeria. The authors use a multiple regression analysis to estimate the level of foreign trade in the period 1980-2012. Results suggest that:

- There is a positive relationship between export trade and GDP growth in Nigeria;
- The impact of import trade on GDP growth in Nigeria lacks statistically significance.

The authors, based on the statistical analysis, suggest to promote a political economy able to improve exports and especially increment export diversification.

(Kim, 2019) considers the role of aid for trade in promoting economic growth, and social development.Specifically, the author analyzes the role of aid for trade in export diversification. The article analyzes 133 countries that have obtained aid for trade in the period 1996-2013. Results show that:

- The degree of export concentration is reduced in countries that received Herfindahl-Hirschman Index-HHI at least in the short run;
- Aid for trade has not the ability to change the export structure in the long run.
- The reduction in the concentration of export is not realized through a change in export diversity but as a redistribution of share of products.

(Martínez-Zarzoso, 2019)consider the role of foreign aid in promoting international trade. The authors use a panel data and a structural gravity model for 33 donor countries and 125 recipients countries in the period 1995-2016. Results show that:

- There is a positive relationship between foreign aid and donors exports;
- There is no statistical significant evidence that foreign aid promote exports of recipients;
- There is a positive relationship between foreign aid and income levels.

Trade and environmental policies. (Forslid, et al., 2018) considers the impact of environmental taxes on exports. The authors analyze a data set of Swedish firms. The main idea is that firms realize autonomous investment to reduce the environmental impact of their productions. In the theoretical model proposed it is postulated that there is a positive relationship between the dimension of the firm and the ability to implement a more environmentally sustainable technology of production. The authors find that:

- There is a negative relationship between firm's emission intensity and firm productivity;
- There is a negative relationship between exports and emissions at a firm level;
- Firms that export more are more environmentally sustainable;
- Liberalization has no impact of aggregate emissions.

Finance-Trade nexus. (Niepmann & Schmidt-Eisenlohr, 2017)consider the impact of a financial shock on exports in the U.S. economy. The authors consider the role of banks in financing exporters in many different countries through the letters of credit. Results show that:

- There is a positive relationship between a banking shock and the level of exports;
- The reduction of 1 standard deviation in financing credit letters produce a reduction of 2 percent of export to a certain country on average;
- The smaller and riskier is the destination of the exports the greater is the impact of a banking shock in reducing exports.

The authors suggest that the banks have a relevant role in shaping the trajectories and intensities of international trade.

(Eppinger, et al., 2018)consider the impact of the crisis of 2007 on the Spanish Exports. The authors explore a firm level data set. Results shows that:

- Spanish firms have manifested an increase in export intensity after the financial crisis;
- The level of economic resilience of exporters were greater than the respective level o non-exporters;
- Spanish exporters after 2009 had a positive development of total factor productivity.

The authors explain the positive response of the Spanish economy in the aftermath of the crisis because of the increased competitiveness due to devaluation and substitution of foreign sales to domestic sales.

Trade and gender discrimination. (Chen, et al., 2017)consider the relationship between export orientation at industrial level and female employment in China. Data are collected for the period 2005-2007. Results show that:

- There exists a negative relationship between gender discrimination in employment and firm's exports;
- Enterprises that experiment export continuity improve significantly the assumption of female employees;
- Export oriented firms can participate in creating the conditions for the reduction of gender discrimination but cannot solve completely the question of female inequality in the job market.

The authors suggest that it is necessary to promote a vast set of policies to reduce gender discrimination since export-oriented firms cannot alone solve the problem of female inequality

III. The econometric model

We estimated the sequent model for 27 European countries[1] in the period 2010-2019:

The econometric model

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[1]Countries are:Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden.

	Label	Variable
y	A350	*Exports of Goods and Services*
x_1	A8	*Total population (National accounts)*
x_2	A33	*Private final consumption expenditure at current prices per head of population*
x_3	A42	*Actual individual final consumption of households at current prices*
x_4	A48	*Harmonised consumer price index (All-items)*
x_5	A62	*Individual consumption of general government at current prices*
x_6	A68	*Total consumption at current prices*
x_7	A74	*Gross fixed capital formation total economy and sectors*
x_8	A84	*Net fixed capital formation total economy*
x_9	A88	*Net fixed capital formation at current prices sectors*
x_{10}	A92	*Consumption of fixed capital total economy*
x_{11}	A95	*Consumption of fixed capital general government*
x_{12}	A97	*Gross fixed capital formation at current prices: construction*
x_{13}	A101	*Gross fixed capital formation at current prices: non-residential construction and civil engineering*
x_{14}	A109	*Gross fixed capital formation at current prices: other investment*
x_{15}	A112	*Gross fixed capital formation at 2015 prices: dwellings*
x_{16}	A142	*Gross saving: general government :- ESA 2010*
x_{17}	A150	*Net saving: private sector :- ESA 2010*
x_{18}	A152	*Domestic demand excluding stocks at current prices*
x_{19}	A167	*Final demand at current prices*
x_{20}	A177	*Contribution to the change of the final demand deflator of real effective exchange rates*
x_{21}	A179	*Contribution to the change of the final demand deflator of the GDP price deflator*
x_{22}	A187	*Gross national income at current prices per head of population*
x_{23}	A205	*Gross national disposable income per head of population*
x_{24}	A214	*Gross domestic product at current prices*
x_{25}	A238	*Gross domestic product at current prices per head of population*
x_{26}	A248	*Gross domestic product at current prices per person employed*
x_{27}	A260	*Gross domestic product at current prices per hour worked*
x_{28}	A263	*Average annual hours worked per person employed*
x_{29}	A264	*Total annual hours worked: total economy*
x_{30}	A265	*Potential gross domestic product at 2015 reference levels*
x_{31}	A267	*Trend gross domestic product at 2015 reference levels*
x_{32}	A269	*GDP at 2015 reference levels adjusted for the impact of terms of trade per head of population*
x_{33}	A270	*GDP at 2015 reference levels adjusted for the impact of terms of trade per person employed*
x_{34}	A273	*Contribution to the increase of GDP at constant prices of gross fixed capital formation*
x_{35}	A281	*Contribution to the increase of GDP at constant prices of total consumption*
x_{36}	A285	*Domestic income at current prices*
x_{37}	A291	*Gross value added at current basic prices excluding FISIM: total economy*
x_{38}	A296	*Compensation of employees: total economy*
x_{39}	A298	*Taxes linked to imports and production: total economy*
x_{40}	A299	*Taxes linked to imports and production minus subsidies: total economy*
x_{41}	A303	*Net operating surplus: total economy*
x_{42}	A305	*Nominal compensation per employee: total economy*
x_{43}	A319	*Real compensation per employee, deflator GDP: total economy*
x_{44}	A334	*Real unit labour costs: total economy (Ratio of compensation per employee to nominal GDP per person employed.)*
x_{45}	A338	*Net capital stock at 2015 prices: total economy*
x_{46}	A344	*Total factor productivity: total economy*
x_{47}	A347	*Labour-capital substitution: total economy*
x_{48}	A349	*Marginal efficiency of capital: total economy (Change in GDP at constant market prices of year T per unit of gross fixed capital formation at constant prices of year T-.5.)*

Results show that the export of good and services is positively associated with:
- *Actual individual final consumption of households at current prices;*
- *Gross national disposable income per head of population;*

- *Potential gross domestic product at 2015 reference levels;*
- *Domestic demand excluding stocks at current prices;*
- *Gross value added at current basic prices excluding FISIM: total economy;*
- *Nominal compensation per employee: total economy;*
- *Gross domestic product at current prices per head of population;*
- *Taxes linked to imports and production: total economy;*
- *Net operating surplus: total economy;*
- *Total annual hours worked: total economy;*
- *Private final consumption expenditure at current prices per head of population;*
- *Net capital stock at 2015 prices: total economy;*
- *Consumption of fixed capital general government;*
- *Gross fixed capital formation at current prices: non-residential construction and civil engineering;*
- *Marginal efficiency of capital: total economy;*
- *Gross saving: general government :- ESA 2010;*
- *Net fixed capital formation at current prices sectors;*
- *Real compensation per employee, deflator GDP: total economy.*

The analysis shows that there is a negative relationship between exports of goods and services and the sequent variables:

- *Contribution to the change of the final demand deflator of real effective exchange rates;*
- *Contribution to the increase of GDP at constant prices of gross fixed capital formation;*
- *Contribution to the increase of GDP at constant prices of total consumption;*
- *Harmonised consumer price index (All-items);*
- *Contribution to the change of the final demand deflator of the GDP price deflator;*
- *Labour-capital substitution: total economy;*
- *Total factor productivity: total economy;*
- *Real unit labour costs: total economy;*
- *Net fixed capital formation total economy;*
- *Net saving: private sector;*
- *Total population;*
- *Gross fixed capital formation at current prices: other investment;*
- *Gross fixed capital formation total economy and sectors;*
- *Gross fixed capital formation at current prices: construction;*
- *Compensation of employees: total economy;*
- *Final demand at current prices;*
- *Taxes linked to imports and production minus subsidies: total economy;*
- *GDP at 2015 reference levels adjusted for the impact of terms of trade per person employed;*
- *Gross fixed capital formation at 2015 prices: dwellings;*
- *Gross domestic product at current prices;*
- *Gross domestic product at current prices per person employed;*
- *Individual consumption of general government at current prices;*
- *Consumption of fixed capital total economy;*
- *Domestic income at current prices;*
- *GDP at 2015 reference levels adjusted for the impact of terms of trade per head of population;*
- *Trend gross domestic product at 2015 reference levels;*
- *Gross national income at current prices per head of population;*
- *Total consumption at current prices;*
- *Average annual hours worked per person employed;*
- *Gross domestic product at current prices per hour worked.*

A synthesis of the main econometric results is in the sequent table:

	Pooled OLS		FixedEffects		Random Effects		WLS	
Synthesis of the main econometric results								
	Coefficient	**P-value**	**Coefficient**	**P-value**	**Coefficient**	**P-value**	**Coefficient**	**P-value**
A8	-9,98	***	-7,06	***	-7,79	***	-9,92064	***
A33	12,27	**	11,97	**	12,58	***	11,4538	**
A42	436,65	***	395,65	***	398,52	***	436,39	***
A48	-0,39	***	-0,40	***	-0,39	***	-0,412342	***

A62	-50,71	***	-51,87	***	-52,15	***	-52,3106	***
A68	-365,28	***	-331,78	***	-333,71	***	-364,659	***
A74	-15,12	***	-18,96	***	-18,11	***	-14,4951	***
A84	-6,13	***	-5,53	***	-5,62	***	-6,30066	***
A88	1,47	**	1,37	*	1,53	**	1,67743	**
A92	-59,17	***	-62,75	***	-62,24	***	-59,9128	***
A95	9,78	***	8,66	***	8,38	***	10,0092	***
A97	-16,78	***	-19,54	***	-18,19	***	-17,4143	***
A101	7,70	***	10,12	***	9,06	***	8,1707	***
A109	-12,44	***	-13,86	***	-13,04	***	-12,6665	***
A112	-36,61	***	-32,01	***	-33,05	***	-35,9617	***
A142	1,79	**	4,18	***	3,42	***	1,90338	***
A150	-9,78	***	-9,70	***	-9,73	***	-10,1497	***
A152	116,30	***	127,81	***	124,74	***	117,05	***
A167	-24,38	***	-28,50	***	-27,45	***	-24,1945	***
A177	-0,16	**	-0,15	*	-0,15	*	-0,176517	**
A179	-0,40	***	-0,38	***	-0,39	***	-0,318902	***
A187	-113,39	**	-140,80	***	-136,97	***	-129,506	***
A205	140,29	***	169,14	***	167,62	***	159,213	***
A214	-37,75	***	-45,61	***	-42,94	***	-37,8863	***
A238	80,67	***	108,01	***	98,41	***	80,9024	***
A248	-42,74	***	-48,80	***	-47,32	***	-43,5553	***
A260	-759596000,00	***	-871419000,00	***	-841838000,00	***	-7,56E+08	***
A263	-481,68	***	-519,92	***	-513,62	***	-471,753	***
A264	13,81	***	9,42	***	10,51	***	13,8461	***
A265	134,47	***	117,60	***	122,86	***	136,207	***
A267	-104,98	***	-91,60	***	-95,57	***	-104,868	***
A269	-82,84	***	-78,33	***	-81,03	***	-84,5053	***
A270	-29,98	***	-35,69	***	-33,19	***	-30,0726	***
A273	-0,22	***	-0,24	***	-0,24	***	-0,234346	***
A281	-0,37	***	-0,43	***	-0,41	***	-0,389919	***
A285	-69,65	***	-76,77	***	-73,96	***	-70,3621	***
A291	115,71	***	126,36	***	121,28	***	115,563	***
A296	-19,89	***	-19,65	***	-19,56	***	-20,8428	***
A298	34,41	***	41,82	***	39,85	***	37,1522	***
A299	-27,35	***	-35,79	***	-33,00	***	-27,1399	***
A303	27,38	***	31,46	***	30,38	***	28,0489	***
A305	91,77	***	82,56	***	84,91	***	92,2453	***
A319	0,83	***	1,17	***	1,08	***	0,709537	***
A334	-0,84	***	-1,13	***	-1,05	***	-0,726472	***
A338	12,23	**	16,93	***	16,26	***	12,2716	**
A344	-0,73	***	-1,08	***	-0,99	***	-0,589801	***
A347	-0,53	**	-0,92	***	-0,82	***	-0,397649	*
A349	6,13	***	5,72	***	5,85456	***	6,47699	***

IV. CONCLUSION

In this article we have investigated the impact of "*Exports of Goods and Services*" in 27 European Countries in the period 2010-2019 with a model of 48 variables. We analytically discuss the economic literature. Some of the common determinants of exports indicated in the literature are: Aid for Foreign Trade, logistic infrastructure, liberalization, trade policies, common culture, and institutional values. Institutional and political distances are more relevant in reduction of exports than geographical distances. After having discuss the economic and empirical literature, we present our model. Data are estimated with Panel Data with Fixed Effects, Panel Data with Random Effects, Pooled OLS and WLS. We found that the "*Exports of Goods and Services*" is positively associated to domestic demand, taxes on imports, productivity of workers. "*Exports of Goods and Services*" is negatively associated to inflation, labor-capital substitution, private saving, population, GDP, and capital formation.

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Appendix

1	A8	**Total population (National accounts)**
2	A33	**Private final consumption expenditure at current prices per head of population**
3	A42	**Actual individual final consumption of households at current prices**
4	A48	**Harmonized consumer price index (All-items)**
5	A62	**Individual consumption of general government at current prices**
6	A68	**Total consumption at current prices**
7	A74	**Gross fixed capital formation total economy and sectors**
8	A84	**Net fixed capital formation total economy**
9	A88	**Net fixed capital formation at current prices sectors**

| 10	A92	**Consumption of fixed capital total economy**
11	A95	**Consumption of fixed capital general government**
12	A97	**Gross fixed capital formation at current prices: construction**
13	A101	**Gross fixed capital formation at current prices: non-residential construction and civil engineering**
14	A109	**Gross fixed capital formation at current prices: other investment**
15	A112	**Gross fixed capital formation at 2015 prices: dwellings**
16	A142	**Gross saving: general government :- ESA 2010**
17	A150	**Net saving: private sector :- ESA 2010**
18	A152	**Domestic demand excluding stocks at current prices**
19	A167	**Final demand at current prices**
20	A177	**Contribution to the change of the final demand deflator of real effective exchange rates**
21	A179	**Contribution to the change of the final demand deflator of the GDP price deflator**
22	A187	**Gross national income at current prices per head of population**
23	A205	**Gross national disposable income per head of population**
24	A214	**Gross domestic product at current prices**
25	A238	**Gross domestic product at current prices per head of population**
26	A248	**Gross domestic product at current prices per person employed**
27	A260	**Gross domestic product at current prices per hour worked**
28	A263	**Average annual hours worked per person employed**
29	A264	**Total annual hours worked: total economy**
30	A265	**Potential gross domestic product at 2015 reference levels**
31	A267	**Trend gross domestic product at 2015 reference levels**
32	A269	**GDP at 2015 reference levels adjusted for the impact of terms of trade per head of population**
33	A270	**GDP at 2015 reference levels adjusted for the impact of terms of trade per person employed**
34	A273	**Contribution to the increase of GDP at constant prices of gross fixed capital formation**
35	A281	**Contribution to the increase of GDP at constant prices of total consumption**
36	A285	**Domestic income at current prices**
37	A291	**Gross value added at current basic prices excluding FISIM: total economy**
38	A296	**Compensation of employees: total economy**
39	A298	**Taxes linked to imports and production: total economy**
40	A299	**Taxes linked to imports and production minus subsidies: total economy**
41	A303	**Net operating surplus: total economy**
42	A305	**Nominal compensation per employee: total economy**
43	A319	**Real compensation per employee, deflator GDP: total economy**
44	A334	**Real unit labour costs: total economy (Ratio of compensation per employee to nominal GDP per person employed.)**
45	A338	**Net capital stock at 2015 prices: total economy**
46	A344	**Total factor productivity: total economy**
47	A347	**Labour-capital substitution: total economy**
48	A349	**Marginal efficiency of capital: total economy (Change in GDP at constant market prices of year T per unit of gross fixed capital formation at constant prices of year T-.5.)**

Pooled OLS, using 180 observations
Including 27 cross section units
Time series length: minimum 3, maximum 9
Dependentvariable: A350

	Coefficient	*Errore Std.*	*rapporto t*	*p-value*	
const	2,57047e+09	4,62382e+08	5,559	<0,0001	***
A8	−9,98421	1,46415	−6,819	<0,0001	***
A33	12,2722	5,09323	2,410	0,0174	**
A42	436,645	81,1810	5,379	<0,0001	***
A48	−0,389580	0,0651284	−5,982	<0,0001	***
A62	−50,7082	6,60023	−7,683	<0,0001	***

A68	−365,284	71,0170	−5,144	<0,0001	***
A74	−15,1180	3,66032	−4,130	<0,0001	***
A84	−6,13149	1,39728	−4,388	<0,0001	***
A88	1,46762	0,731970	2,005	0,0470	**
A92	−59,1673	5,45597	−10,84	<0,0001	***
A95	9,78026	3,08529	3,170	0,0019	***
A97	−16,7823	3,89924	−4,304	<0,0001	***
A101	7,69567	2,06637	3,724	0,0003	***
A109	−12,4382	3,07002	−4,052	<0,0001	***
A112	−36,6102	5,30111	−6,906	<0,0001	***
A142	1,79220	0,749149	2,392	0,0182	**
A150	−9,77823	1,59461	−6,132	<0,0001	***
A152	116,298	6,79183	17,12	<0,0001	***
A167	−24,3803	6,31254	−3,862	0,0002	***
A177	−0,162859	0,0796979	−2,043	0,0430	**
A179	−0,397254	0,111672	−3,557	0,0005	***
A187	−113,391	48,5205	−2,337	0,0210	**
A205	140,293	50,7984	2,762	0,0066	***
A214	−37,7503	3,53883	−10,67	<0,0001	***
A238	80,6746	12,0458	6,697	<0,0001	***
A248	−42,7364	4,60633	−9,278	<0,0001	***
A260	−7,59596e+08	6,45666e+07	−11,76	<0,0001	***
A263	−481,675	42,7672	−11,26	<0,0001	***
A264	13,8111	2,18992	6,307	<0,0001	***
A265	134,467	21,9693	6,121	<0,0001	***
A267	−104,978	20,4852	−5,125	<0,0001	***
A269	−82,8351	9,53104	−8,691	<0,0001	***
A270	−29,9779	4,23045	−7,086	<0,0001	***
A273	−0,215054	0,0540791	−3,977	0,0001	***
A281	−0,368992	0,0776554	−4,752	<0,0001	***
A285	−69,6547	10,2230	−6,814	<0,0001	***
A291	115,709	10,7054	10,81	<0,0001	***
A296	−19,8902	2,65166	−7,501	<0,0001	***
A298	34,4144	6,73711	5,108	<0,0001	***
A299	−27,3490	5,29815	−5,162	<0,0001	***
A303	27,3806	3,40655	8,038	<0,0001	***
A305	91,7703	10,5558	8,694	<0,0001	***
A319	0,832185	0,212668	3,913	0,0001	***
A334	−0,841816	0,195952	−4,296	<0,0001	***
A338	12,2288	5,40098	2,264	0,0252	**
A344	−0,725945	0,240085	−3,024	0,0030	***
A347	−0,534548	0,244954	−2,182	0,0309	**
A349	6,12985	1,68179	3,645	0,0004	***

Average dependent variable	59692178	Standard deviationdependentvariable	2,31e+08
Square sum residues	9,37e+15	S.E. regression	8457271
R-square	0,999023	Correct R-square	0,998665
F (48, 131)	2790,683	P-value (F)	6,8e-177
Log-likelihood	−3097,907	Akaike's criterion	6293,815
Schwarz's criterion	6450,269	Hannan-Quinn	6357,250

rho	−0,153225	Durbin-Watson	1,425641

A350: **Real and estimated value**

	Coefficient	Std.Error	t		p-value	
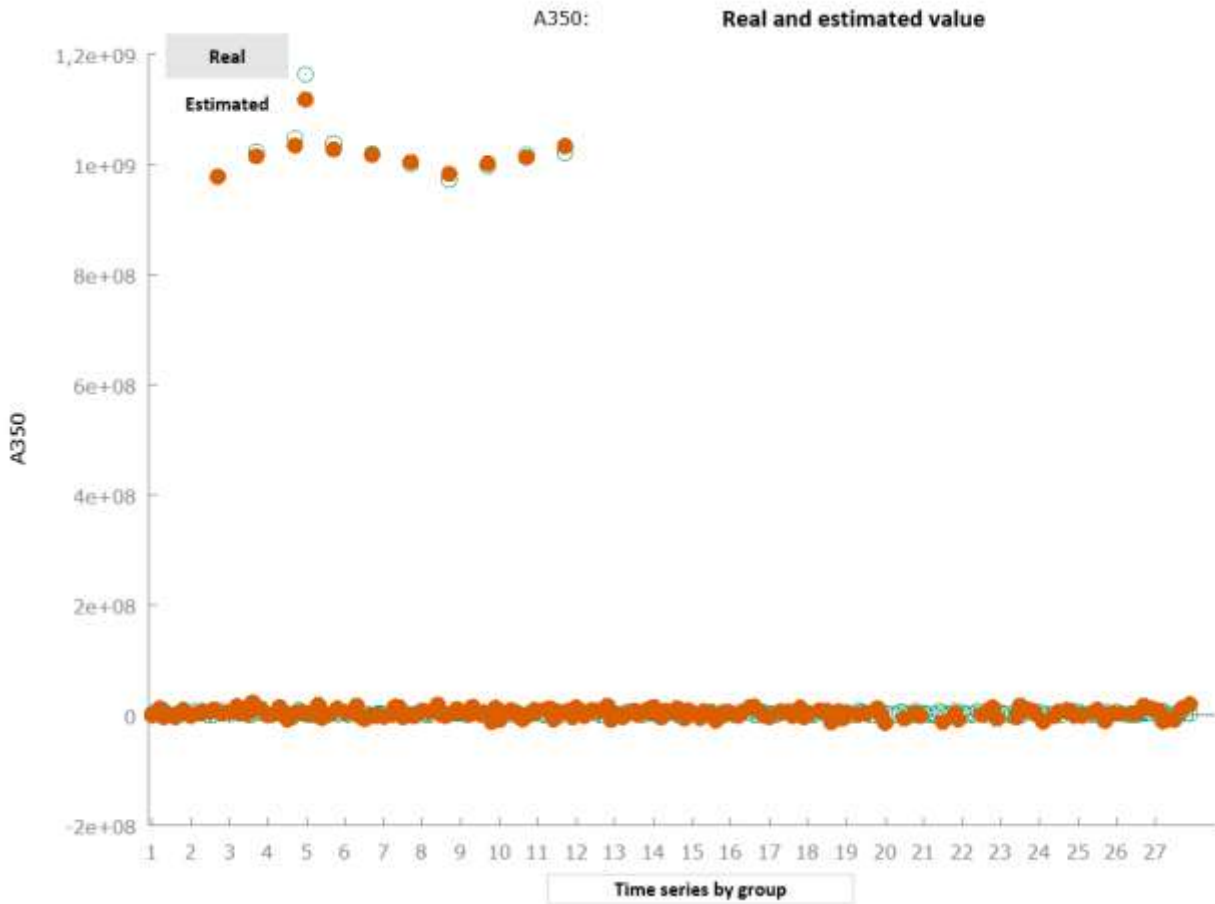
Fixed effects, using 180 observations
Including 27 cross section units
Time series length: minimum 3, maximum 9
Dependentvariable: A350

	Coefficient	Std.Error	t	p-value	
const	3,36223e+09	4,55581e+08	7,380	<0,0001	***
A8	−7,05531	1,70360	−4,141	<0,0001	***
A33	11,9658	4,96878	2,408	0,0178	**
A42	395,646	81,7113	4,842	<0,0001	***
A48	−0,397885	0,0645929	−6,160	<0,0001	***
A62	−51,8671	6,69125	−7,751	<0,0001	***
A68	−331,777	71,4539	−4,643	<0,0001	***
A74	−18,9627	3,64284	−5,205	<0,0001	***
A84	−5,53422	1,33935	−4,132	<0,0001	***
A88	1,37121	0,752199	1,823	0,0712	*
A92	−62,7516	5,91783	−10,60	<0,0001	***
A95	8,66362	3,27098	2,649	0,0093	***
A97	−19,5379	4,17709	−4,677	<0,0001	***
A101	10,1204	2,29485	4,410	<0,0001	***
A109	−13,8553	2,96150	−4,678	<0,0001	***
A112	−32,0111	5,24226	−6,106	<0,0001	***
A142	4,17844	0,874243	4,779	<0,0001	***

A150	−9,70078	1,51485	−6,404	<0,0001	***
A152	127,809	7,84433	16,29	<0,0001	***
A167	−28,4966	6,12555	−4,652	<0,0001	***
A177	−0,153864	0,0851728	−1,806	0,0737	*
A179	−0,383763	0,109383	−3,508	0,0007	***
A187	−140,797	46,9084	−3,002	0,0034	***
A205	169,139	49,1525	3,441	0,0008	***
A214	−45,6123	3,87886	−11,76	<0,0001	***
A238	108,011	14,2792	7,564	<0,0001	***
A248	−48,8028	4,86429	−10,03	<0,0001	***
A260	−8,71419e+08	6,85811e+07	−12,71	<0,0001	***
A263	−519,917	42,3152	−12,29	<0,0001	***
A264	9,42341	2,49576	3,776	0,0003	***
A265	117,604	24,0811	4,884	<0,0001	***
A267	−91,6031	22,6378	−4,046	<0,0001	***
A269	−78,3312	11,4844	−6,821	<0,0001	***
A270	−35,6888	4,75272	−7,509	<0,0001	***
A273	−0,241752	0,0531215	−4,551	<0,0001	***
A281	−0,432372	0,0790642	−5,469	<0,0001	***
A285	−76,7717	10,3282	−7,433	<0,0001	***
A291	126,360	11,1898	11,29	<0,0001	***
A296	−19,6516	2,66623	−7,371	<0,0001	***
A298	41,8182	7,19877	5,809	<0,0001	***
A299	−35,7918	5,93338	−6,032	<0,0001	***
A303	31,4612	3,63457	8,656	<0,0001	***
A305	82,5619	11,8362	6,975	<0,0001	***
A319	1,16736	0,206144	5,663	<0,0001	***
A334	−1,13164	0,192572	−5,876	<0,0001	***
A338	16,9252	5,25366	3,222	0,0017	***
A344	−1,07951	0,235983	−4,575	<0,0001	***
A347	−0,918605	0,238384	−3,853	0,0002	***
A349	5,71933	1,70698	3,351	0,0011	***

Meandependentvariable	59692178	Standard Errordependentvariable	2,31e+08
Residual standard error	5,96e+15	Standard ErrorRegression	7532593
R-Squared LSDV	0,999379	R-quadro intra-groups	0,999333
LSDV F(74, 105)	2282,686	P-value(F)	3,5e-144
Log-likelihood	−3057,154	Akaike	6264,308
Schwarz	6503,780	Hannan-Quinn	6361,404
rho	−0,350347	Durbin-Watson	1,925963

Test on regressor

Teststatistics: F(48, 105) = 3275,64

p-value = P(F(48, 105) > 3275,64) = 2,66979e-148

Group Intercept Difference Test -
  Null hypothesis: groups have a common intercept

Test statistics: F(26, 105) = 2,31294

con p-value = P(F(26, 105) > 2,31294) = 0,00149018

A350:   Real and estimated value
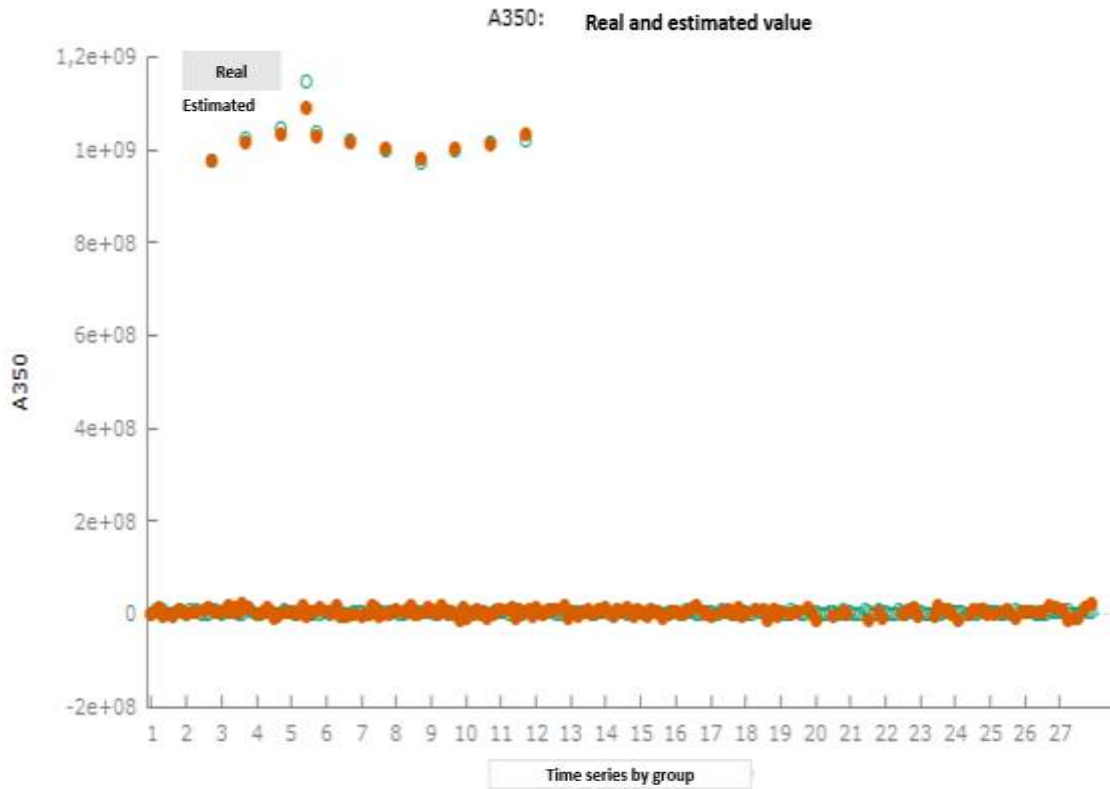
	Coefficient	Std.Error	z	p-value	
Random Effects (GLS), using 180 observations **With transformation of Nerlove** **Including 27 cross section units** **Time series length: minimum 3, maximum 9** **Dependentvariable: A350**					
const	3,16168e+09	4,22276e+08	7,487	<0,0001	***
A8	−7,79015	1,54370	−5,046	<0,0001	***
A33	12,5762	4,63604	2,713	0,0067	***
A42	398,523	75,6687	5,267	<0,0001	***
A48	−0,393043	0,0601067	−6,539	<0,0001	***
A62	−52,1467	6,19767	−8,414	<0,0001	***
A68	−333,711	66,1469	−5,045	<0,0001	***
A74	−18,1081	3,38318	−5,352	<0,0001	***
A84	−5,61837	1,25061	−4,493	<0,0001	***
A88	1,52524	0,697833	2,186	0,0288	**
A92	−62,2379	5,38928	−11,55	<0,0001	***
A95	8,37726	2,99484	2,797	0,0052	***
A97	−18,1880	3,82401	−4,756	<0,0001	***
A101	9,06288	2,08873	4,339	<0,0001	***
A109	−13,0357	2,75733	−4,728	<0,0001	***
A112	−33,0532	4,88386	−6,768	<0,0001	***
A142	3,41568	0,776100	4,401	<0,0001	***
A150	−9,73100	1,41893	−6,858	<0,0001	***
A152	124,735	7,12688	17,50	<0,0001	***
A167	−27,4511	5,72348	−4,796	<0,0001	***
A177	−0,152870	0,0784992	−1,947	0,0515	*
A179	−0,394881	0,101603	−3,887	0,0001	***
A187	−136,966	43,8657	−3,122	0,0018	***

A205	167,623	45,9325	3,649	0,0003	***
A214	−42,9377	3,50466	−12,25	<0,0001	***
A238	98,4083	12,7890	7,695	<0,0001	***
A248	−47,3181	4,44121	−10,65	<0,0001	***
A260	−8,41838e+08	6,26780e+07	−13,43	<0,0001	***
A263	−513,624	39,4992	−13,00	<0,0001	***
A264	10,5060	2,26421	4,640	<0,0001	***
A265	122,860	21,8062	5,634	<0,0001	***
A267	−95,5733	20,4140	−4,682	<0,0001	***
A269	−81,0306	10,4281	−7,770	<0,0001	***
A270	−33,1907	4,27954	−7,756	<0,0001	***
A273	−0,237833	0,0496123	−4,794	<0,0001	***
A281	−0,413463	0,0732480	−5,645	<0,0001	***
A285	−73,9571	9,53510	−7,756	<0,0001	***
A291	121,275	10,2643	11,82	<0,0001	***
A296	−19,5564	2,47854	−7,890	<0,0001	***
A298	39,8473	6,61778	6,021	<0,0001	***
A299	−33,0038	5,41726	−6,092	<0,0001	***
A303	30,3809	3,31340	9,169	<0,0001	***
A305	84,9143	10,8629	7,817	<0,0001	***
A319	1,07875	0,191464	5,634	<0,0001	***
A334	−1,05435	0,178725	−5,899	<0,0001	***
A338	16,2551	4,88744	3,326	0,0009	***
A344	−0,986622	0,218712	−4,511	<0,0001	***
A347	−0,822050	0,221499	−3,711	0,0002	***
A349	5,85456	1,58109	3,703	0,0002	***

MeanDependentVariable	59692178	Standard Error	2,31e+08
Residual Sum of Squares	1,45e+16	E.S. della regressione	10476837
Log-likelihood	−3137,137	Criterio di Akaike	6372,274
Schwarz	6528,729	Hannan-Quinn	6435,710
rho	−0,350347	Durbin-Watson	1,925963

Variance'between' = 9,31213e+013
Variance'within' = 3,30983e+013
theta medio = 0,769407
Joint test on regressors -
Asymptotic Test Statistics:Chi-quadro(48) = 178113
p-value = 0
Test Breusch-Pagan -
Null hypothesis: variance of unit-specific error = 0
Asymptotic Test Statistics:Chi-quadro(1) = 0,224367
con p-value = 0,635732
Test di Hausman -
Null hypothesis: GLS estimates are consistent
Asymptotic Test Statistics:Chi-quadro(38) = 36,0982
p-value = 0,557651

A350: **Real and estimated value**
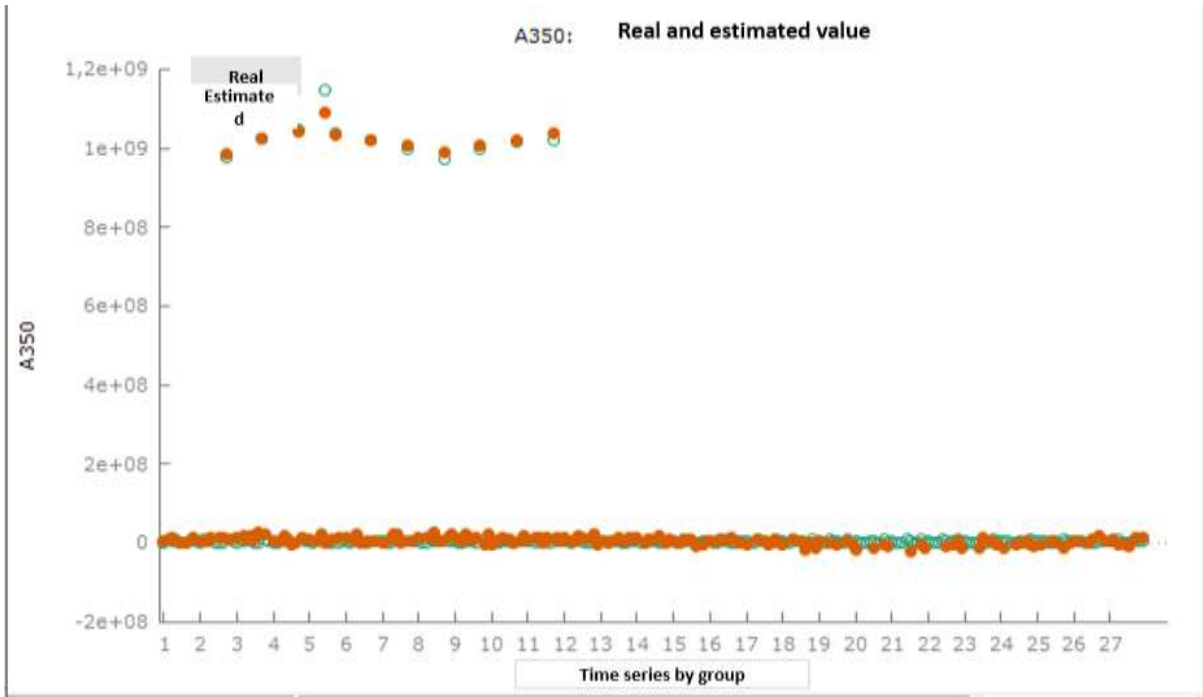
WLS, using 180 observations Including 27 cross section units Dependent variable: A350 Weights based on variances of errors per unit					
	Coefficient	*Std.Error*	*t*	*p-value*	
const	2,29891e+09	4,31768e+08	5,324	<0,0001	***
A8	−9,92064	1,24801	−7,949	<0,0001	***
A33	11,4538	4,57144	2,506	0,0135	**
A42	436,390	72,5077	6,019	<0,0001	***
A48	−0,412342	0,0572893	−7,198	<0,0001	***
A62	−52,3106	5,46795	−9,567	<0,0001	***
A68	−364,659	63,3110	−5,760	<0,0001	***
A74	−14,4951	3,27642	−4,424	<0,0001	***
A84	−6,30066	1,25692	−5,013	<0,0001	***
A88	1,67743	0,671248	2,499	0,0137	**
A92	−59,9128	4,87150	−12,30	<0,0001	***
A95	10,0092	2,71233	3,690	0,0003	***
A97	−17,4143	3,56601	−4,883	<0,0001	***
A101	8,17070	1,76365	4,633	<0,0001	***
A109	−12,6665	2,60033	−4,871	<0,0001	***
A112	−35,9617	4,72102	−7,617	<0,0001	***
A142	1,90338	0,644631	2,953	0,0037	***
A150	−10,1497	1,40758	−7,211	<0,0001	***
A152	117,050	6,03730	19,39	<0,0001	***
A167	−24,1945	5,44184	−4,446	<0,0001	***
A177	−0,176517	0,0755331	−2,337	0,0210	**
A179	−0,318902	0,0990379	−3,220	0,0016	***
A187	−129,506	43,6291	−2,968	0,0036	***
A205	159,213	45,8810	3,470	0,0007	***
A214	−37,8863	3,17591	−11,93	<0,0001	***
A238	80,9024	10,6737	7,580	<0,0001	***
A248	−43,5553	4,18405	−10,41	<0,0001	***

A260	−7,55919e+08	5,83814e+07	−12,95	<0,0001	***
A263	−471,753	37,7947	−12,48	<0,0001	***
A264	13,8461	1,87352	7,390	<0,0001	***
A265	136,207	20,5115	6,641	<0,0001	***
A267	−104,868	19,1987	−5,462	<0,0001	***
A269	−84,5053	8,31783	−10,16	<0,0001	***
A270	−30,0726	3,81534	−7,882	<0,0001	***
A273	−0,234346	0,0490764	−4,775	<0,0001	***
A281	−0,389919	0,0679649	−5,737	<0,0001	***
A285	−70,3621	8,76328	−8,029	<0,0001	***
A291	115,563	9,32409	12,39	<0,0001	***
A296	−20,8428	2,36662	−8,807	<0,0001	***
A298	37,1522	5,73194	6,482	<0,0001	***
A299	−27,1399	4,66494	−5,818	<0,0001	***
A303	28,0489	3,16139	8,872	<0,0001	***
A305	92,2453	9,23694	9,987	<0,0001	***
A319	0,709537	0,201184	3,527	0,0006	***
A334	−0,726472	0,184864	−3,930	0,0001	***
A338	12,2716	4,83507	2,538	0,0123	**
A344	−0,589801	0,224134	−2,631	0,0095	***
A347	−0,397649	0,233347	−1,704	0,0907	*
A349	6,47699	1,54662	4,188	<0,0001	***

Statistics based on weighted data:			
Residual Sum of Squares	169,6164	Standard ErrorRegression	1,137885
R-square	0,999264	R-squaredadjusted	0,998994
F(48, 131)	3703,661	P-value(F)	6,2e-185
Log-likelihood	−250,0614	Akaike Criterion	598,1227
Schwarz Criterion	754,5776	Hannan-Quinn	661,5584

Statistics based on original data:			
MeanDependentVariable	59692178	Standard ErrorVariables	2,31e+08
Residual Sum of Squares	9,78e+15	Standard ErrorRegression	8642028

A350:   Real and estimated value