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## Empirical analysis of foreign direct investments at NUTS 2 region, in European Union and Romania

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#### Abstract

Foreign Direct Investment (FDI) plays an important role in the development of national and regional economies and it has been considered a force for European Union integration, especially for developing regions. More, the FDI represent a key-tool for sustain development and economic growth at regional/local level. Foreign firms bring new technologies, knowledge and management skills, and local firms can learn from this. Therefore, the presence of foreign firms can improve region's competitiveness, but fears can also be raised that foreign competitors crowd out local firms, and a net positive effect on the regional economy cannot be taken for granted. The understanding FDI determinants for development regions represent a field of interest both policy makers and investors because they are a particularly driven to market globalization. This study provides an empirical analysis of FDI at regional level (NUTS 2 regions) in European Union and Romania.

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#### 1. Introduction

In the opinion of specialists, foreign investments have an important impact on a host location's development, the

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main reason being that the direct capital financing it supplies. Also, FDI represent a valuable source of technology, innovation, know-how and may be a complement to local investments and local production capacity. At regional level, FDI can stimulate growth by efficiency and productivity resulting from spillovers to local firms. FDI may be considerate the main mechanism through which host economies can obtain rapid and direct access to advanced technologies, managerial knowledge, skills. *In enhancing regions' performance, both of quantitative and qualitative characteristics, FDI matter.* As *qualitative characteristics* of FDI, we can identify the country of origin and the sector affiliation (high tech manufacturing sectors, business and financial services). As *quantitative characteristics*, it can be mentioned here the volume of local market, number of region population, infrastructure, skills opportunity of local labour market, legislation, some facilities etc.

Regional FDI can be understood from two points of view:

- 1. First, FDI can be seen like an process of creation, at regional level, of productive assets by foreigners actors,
- 2. Second, purchase of existing regional assets by foreigners (through acquisitions, mergers, takeovers).

The understanding of how FDI affects regional economies is important to design the strategies able to attract FDI suitable to achieve local development goals and, more important, increasing the probability to keep them for a long time. This paper aims to identifying the main elements of FDI at regional level, in European Union and Romania and present a comprehensive analysis of the factors influencing the regional attractiveness for foreign investors.

#### 2. Concept definition

Foreign direct investments (FDI) represent a direct effect of an imperfect global market environment (Kindleberger<sup>†</sup>, 1969, Hymer<sup>‡</sup>, 1972, Horaguchi<sup>§</sup>, 1990), that takes place as replace external markets with more efficient internal ones (Krugman 1985, 1986). When internalization occurs across national boundaries, FDI leads to the creation of multinational corporations (Krugman<sup>\*\*</sup>, 2002). In recent period, FDI emerges because of location comparatives or competitive advantages<sup>††</sup>(Dunning J.H., 1988). Most empirical studies classify FDI determinants into demand- and supply-side determinants (Root and Ahmed, 1978 and 1979; Agarwal, 1980). They suppose that the demand determinants of FDI are aggregate variables classifiable into three main categories: economic, social and political. Some researchers have given limited attention to social and political influences (Root and Ahmed, 1979; Dunning, 1981; Schneider and Frey, 1985) while others have focused largely on economic factors (Dunning, 1973; Lunn, 1980 and 1983; Scaperlanda and Balough, 1983; and Culem, 1988).

Few studies have evaluated the financial aspects of the FDI demand; usually such host-country or region allure studies inappropriately subsume financial market environment in the economic. In 2004 year, World Bank defines the concept of FDI as the investment net inflows to acquire a lasting management interest in an enterprise operating in a regions/economy other than that of the investor. More, the FDI is a sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments (WDR, 2004). In a broader definition, FDI consists of the acquisition or creation of assets (e.g. firm equity, land, houses, oil-drilling rigs.) undertaken by foreigners. If in these enterprises they are not alone but act together with local firms and/or governments, one talk of "joint ventures".

The FDI use the foreign technology and management techniques to exploit low-cost local resources. There is a clear distinction between FDI and portfolio investment: in the situation of FDI, the origin-company has direct and ultimate control over the scope and nature of daily operations, and is transferring not just capital to the host countries, but also technology and management skills. On the other hand, portfolio investment is simply the supply of capital from a lender to a borrower; it is motivated by the rate of return per capita, and requires borrowers to pay

<sup>†</sup> Kindleberger, C.P. (1969), "American Business Abroad: Six Lectures on Direct Investment," New Haven, NJ: Yale University Press

<sup>&</sup>lt;sup>‡</sup> Hymer, S.H. (1972), "The Multinational Corporation and the Law of Uneven Development," in J. N. Bhagwati (Ed.), Economics and World Order, New York, NY: MacMillan, pp. 113-40.

<sup>&</sup>lt;sup>9</sup> Horaguchi, H. and B. Toyne (1990), "Setting the Record Straight: Hymer, Internalization Theory and Transaction Cost Economics," Journal of International Business Studies, 21, 487-494.

<sup>\*\*</sup> Krugman, P. (1992), "Does the New Trade Theory Require a New Trade Policy?" World Economy 15(4).

<sup>&</sup>lt;sup>††</sup> Dunning J H. 1988. The eclectic paradigm of FDI: a restatement and some possible extensions. Journal of International Business Studies 19(1): 1-31.

back the loan plus interest. Investment portfolio can involve the purchase of foreign stocks, bonds, or other securities, and has no controlling interest in the investment. The main components of FDI are: *equity capital, reinvested earnings* (the investor's share of earning not distributed as dividends by affiliates, in proportion to its share in the equity) and intra-*company loans* (when the investor borrows funds to the affiliate, usually without the intention of asking the money back). Also, FDI has four important determinants:

1. *upstream integration*, by purchasing a provider, whose input will now be sold cheaper (or exclusively) to it or be differentiated along particular features;

2. *horizontal integration*, by purchasing a firm making the same product, to expand its production, reduce costs, improving logistics;

3. *downstream integration*, by purchasing a firm using or distributing its products, to get higher value added along the chain and to aggressively push distribution;

4. *diversification*, by purchasing a firm doing somewhat different activities than the purchaser, to seize new opportunities.

Usually, FDI concentrates in the richest part of the country, where wages are higher, also because there the investor can find a better infrastructure and easier logistical accessibility from abroad. This empirical evidence weakens the relationships between FDI and low wages. Inflow of Foreign Direct Investments increases with the attractiveness of the region or country, due to the following factors in different proportions depending on the industry: large GDP and market potential - advanced know-how, skilled work-force, low labour cost, low taxation, lower environmental protection - high tariff protection, favourable laws and public incentives, intentional and professional territorial marketing. There are other variables to affect or influenced FDI flow, present in the next table:

| Variable            | Comments  |
|---------------------|---|
| Financial variables | The equity capital component of FDI generates an increase in "total equity" of the foreign economy. As an inflow of   |
|                     | capital it is, FDI changes the balance of payments. FDI increases the official reserves of foreign currency.  |
| External trade and  | A concentration of FDI in a short period of time (e.g. a purchase of a newly privatized big state company) can lead to  |
| industrial          | modify of the currency exchange rate. If significant flows of FDI are aimed to real investments (e.g. building a  |
| variables           | factory), then total investment will rise, other things equal. In this situation, the foreigners will import machines as  |
|                     | well as raw and intermediate inputs for the production process (from their country or their providers' one). Imports  |
|                     | will rise after a FDI inflow. If the good produced in the host country is sold there, consumption composition will  |
|                     | change, possibly with a loss in market shares of local producers and of foreign producers based abroad. In the latter   |
|                     | case, FDI is crowding out imports. If the product is new for the host country, it fills a gap and increases the variety of  |
|                     | available goods, thus opening the path to higher productivity for industrial users and higher satisfaction for consumers. A FDI in an electricity generation plant will allow more firms to operate in the region and wider |
|                     | availability of energy for inhabitants. If the production is exported, FDI boosts exports of the host country, providing  |
|                     | it with foreign currency.   |
| Knowledge and       | Usually, foreign firms have higher productivity than local ones, due, in specially, of innovation. The local workforce  |
| entrepreneurial     | is put into contact with that innovation and, more in general, with the foreigners' mentality.  |
| variables           | All this might generate knowledge spillovers to workers, as well as to local providers and to local competitors (who  |
|                     | could imitate the foreign firm). Thus, a mid-term effect can be the mushrooming of new businesses in the same   |
|                     | industry by competitors and past key workers. In parallel, the presence of a big foreign investor can re-orient the   |
|                     | education & training courses offered in the region, giving rise to a "pool" of specialized skills, which in turn become   |
|                     | a competitive advantage for the investor as well as an incentive for other international firm to locate there.  |
| Political variables | Politicians can use FDI for their region to catch up with international standards in some industries. The FDI can put   |
|                     | an external pressure to obtain a preferential treatment against the local firms, giving rise to political attrition between   |
|                     | the two groups. This situation can take the form of funds for electoral expenses. Sometime, FDI can be considerate a  |
|                     | "window to the world" and sometimes can conducted to attain the democracy.  |

Source: http://www.economicswebinstitute.org/main.htm

Location advantage depends of the region or country characteristic and ownership advantage and it is correlated with characteristic of local firms. One of the most attractive elements of location is represented by the comparative cost of region-specific inputs (e.g., materials, labour, and natural resources)<sup>‡‡</sup> (Figure 1).

<sup>&</sup>lt;sup>‡‡</sup>Hashai N., Buckley P., Is competitive advantage a necessary condition for the emergence of the multinational enterprises?http://pluto.huji.ac.il/~nironh/GSJ-13-0258.R1\_Hashai\_Edited\_2[1].pdf

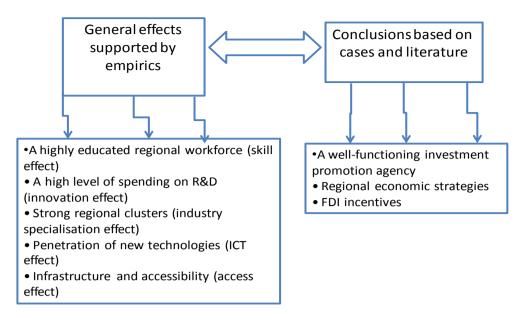


Fig.1: Regional policy factors for FDI Source: http://ec.europa.eu/regional\_policy/sources/docgener/studies/pdf/fdi2006.pdf

The firms' choice of region is explained by the specific or general factors: market size, host country's development level, agglomeration (loction and urban), share of foreign direct investment, taxes, infrastructure, accessibility and proximity to home region, skills, unemployment rate and level of innovation and ICT.

#### 3. FDI empirical analysis

#### 3.1. At regional level in EU-27

After 2011, the flow of FDI showed signs of recovery following the recent financial and economic crisis. Outward flows of FDI increased for the first time in four years, rising by 154 % when compared with 2010. Also, inward flows of FDI also more than doubled compared with the previous year – up 117 %. Despite the growth of FDI, these gains only partially compensated the considerable reduction that was recorded in the crisis period (2008 to 2010). As an effect, EU-27 FDI flows with the rest of the world still remained, in 2011, well below their record peaks of 2007 for both inward and outward flows. FDI flows can vary considerably from one year to another and from a country to country, been influenced by large mergers or acquisitions. So, Luxembourg recorded a large share (36 %) of EU-27 FDI outward flows (when averaged over a three-year period from 2009 to 2011), as a result of importance of special purpose entities (some 85 % of Luxembourg's total direct investment).

In 2011, looking at the distribution of FDI across European Union, there seems to be clear evidence that the outwards stocks of extra-EU are larger than inwards stocks of extra-EU.

The next, we will investigate how regional characteristics affect the ability to attract foreign direct investment in European Union. For location choices at regional level, we find the next explanations:

- 1. The foreign investors prefer the regions with a high *level of development*. Furthermore, regions with international airports tend to attract more FDI. Moreover, the regional *industry clustering* (positive) and *regional monopoly structure* (negative) matters when regions plans to attract foreign direct investments. Beyond that, clustering of foreign firms (high *share of foreign direct investment*) attracts other foreign companies;
- 2. For the regions in the new member state, we find that infrastructure has a high impact of attracting FDI;

- 3. Another explanation for location choice in attracting investments to these regions is the low level of labour cost. The level of tertiary education has a positive effect on attracting foreign direct investments in region;
- 4. The policy variable for the foreign investors could be subsidies (Head, 1999 and Crozet<sup>\$</sup>, 2000).

The local firms from region will be affected by FDI. The analysis show that local firms will learn from foreign firm through transfer of new technologies, management skills and new business models from foreign to local firms. Local firms will increase their productivity ("learning effect"), but the foreign investor capturing market shares. The local firms have to close down and the local industry restructuring that inevitably follows add to the average productivity of the remaining local firms ("Competitive effect"). The average productivity increases due to both learning effects (local industry productivity gains through technology transfer) and competitive effects.

#### 3.2. At regional level in Romania

At national level, after Romanian integration in EU structure, foreign firms have been a stimulant factor for entrepreneurship incentives at local and regional level. At the beginning of 2014, at national level, there are 192,416 foreign companies, with 6.624 more than the same period of the last year (National Office of Trade Register). Amount of subscribed capital to these firms reached, almost 38 billion Euros, but the actual heritage of companies being considerably larger. In a top of subscribed capital, on the first place Netherlands, with a value of 7.3 billion Euros, followed by Austria (4.9 billion), Germany (4.3 billion Euros), Cyprus (2.4 billion Euros) and France (2.1 billion Euros). Also, investments of Greece – 1.68 billion Euros, Italy with 1.61 billion Euros, Spain – 1.12 billion Euros and Luxemburg with 1.04 billion Euros there are notable here. Regarding interest areas for foreign investment, there are very diverse ranges. Most of the firms with foreign capital were oriented commercial activities (40.13%). Runners come from mining and manufacturing businesses (13%), the administrative, scientific and technical activities (9.22%), construction (8.74%) and transport (6.97%). For foreign investors are not neglected area businesses - hotels and restaurants (3.67%) or agriculture (3.42%). The Top ranking suffering severe mutations if we replace the numerical criterion with value amount of subscribed capital. From this perspective, almost 39% t of the capital was attracted to mining and manufacturing. The following places are financial intermediation and insurance (16.55%), trade (11.75%), construction (7.52%) and transport (6.05%). Under the impact of economic and financial crisis, FDI declined in 2011, the total amount was 1.815 billion Euros, and 18.2% lower in 2011 than 2010. However, Romania has attracted more foreign investment than Bulgaria, which showed a level of 1.34 billion FDI or than Greece, with FDI inflows of 1.3 billion Euros in 2011.

During the 1991-2012 periods, there is a very disparate distribution of foreign investments in the eight development regions. Under the circumstances that the number of companies with foreign capital participation incorporated and the foreign capital value paid by the investors, the Bucharest-Ilfov region visible detaches from the other regions.

The investors' interest to regions from west part of country is observed; under the circumstances that the foreign capital stability invested in the West and North West regions is net superior to that in the North-East and South regions. The structural analysis shows that, although foreign capital oriented to the other regions is more reduced, investors have performed capital increases higher than the paid in capital. Interest for business development represents factors that shall contribute to the economical increase of regions that remained behind. At the regions level, there are economic and social disparities determined by diversity of development areas. The low-developed regions are dependent of agriculture, with great rural population where trans-border transport is little developed.

The regional economic performance and attractiveness to FDI in Romania are better expressed by the number of firms with foreign capital. This is quite reasonable as some lagging regions attracted large amounts of foreign capital due to the privatization of the heavy industry (such as the steel and energy sector or the automotive industry). These activities do not guarantee prosperity for the region as a whole nor seem these region to be too attractive for other kinds of investors. In the period 2007-2013, the co-financing of investment programs for development from national

<sup>§§</sup>Crozet M., Mayerb T., Mucchielli, (2002), How do firms agglomerate? A study of FDIin France, http://www.parisschoolofeconomics.eu/IMG/pdf/Mayerarticle.pdf.

and local public sources shall be of 549,04 EUR Million, covering 14.25% from the total public expense of the Operation Program for Regional Development. The co-financing from national private sources is estimated at approximately 28.90 EUR Million (0.75%), and that of the European Fund for Regional Development shall represent 85% from the total of eligible expenses. Foreign capital inflows estimated at 6.6 EUR Billion, along with contracting extern credits from BEI, BERD and BM may accelerate the elimination of competition differences and some of the inter-regional disparities.

#### 4. Methodology and data

In the current section we examine what the existing FDI has contributed to economic growth in Romania regions NUTS 2. In doing this, graphical and regression analysis will be used. The data for FDI flow are from the database of National Institute of Statistics and National Bank of Romania. The data cover 2000-2012. The methodology involve for the empirical finding on this article involves graphic analysis and technical of regression. Economic growth, as measured by total regional GDP is the dependent variable.

The relationship between the growth rates of FDI and GDP can be characterized as follows: if the FDI growth rate is proportional to that of GDP, it might be due to FDI determining the growth of GDP (comparison is made between the annual growth rates). Also, we can observe that the two variables are not moving at the same rate, which might suggest that FDI flow is not the main determinant of growth in Romania; the rate of change of GDP is not so volatile.

At any period, the GDP growth rate is not more than 7%. For FDI, the rate of change is very volatile. For instance the rate of change between one year and the next could be as high as 166.3%. The FDI line is not moving in the same proportion as that of GDP. For instance, FDI was reduced in 2009 by almost 63.3% compared to 2008 figure whereas the aggregate GDP for Romania increased 5,9% in the same period. It should be noted that this does not show the contribution of FDI to growth, it only shows the relationship between the growth rates of the two variables. Modelling the impact of FDI from regional economic growth in 2012 involves a simple linear regression. Economic growth, as measured by the GDP growth rate, is the dependent variable, while FDI inflow is the independent variable of interest. The regression equation is formulated as below.

 $\hat{Y} = \alpha + \beta f di + \varepsilon$   $\hat{Y} = (GDP_t - GDP_{t-1})/GDP_{t-1}$  f di = GDP/FDIwhere:

- Ŷ represents the dependent variable, more precisely, the real growth rate of GDP
- $\alpha$  free parameter;
- $\beta$  parameter of the independent variable;
- di independent variable,
- represents the growth rate of FDI;
- $\varepsilon$  error term.

We can see the effect of this variable of the previous period on economic growth. The impact of FDI flow in particular is not likely to be felt on economic growth the same year it came. The results of our data analysis are presented below:

- 1. **Multiple R represent** the correlation coefficient its value 0,984 present a positive and strong relationship between regional GDP and regional FDI;
- 2. **R square this is r2**, the Coefficient of determination has a value 0,969, mean that 96% of the values fit the model;
- 3. Adjusted R square- the adjusted R-squared is 0,964;
- 4. Standard Error: 1,188;
- 5. Number of observations: eight development region.

|  |  | ect investments upor |  |
|--|--|----------------------|--|
|  |  |                      |  |

|            |              |            |                  | Regression    | n Statistics     |          |                |                |                |
|------------|--------------|------------|------------------|---------------|------------------|----------|----------------|----------------|----------------|
|            |              |            | Multiple         | Regression    | 0,984            | 4551516  |                |                |                |
|            |              |            | R Square         |               | 0,969341687      |          |                |                |                |
|            |              |            | Adjusted         | R Square      | 0,964            | 4231969  |                |                |                |
|            |              |            | Standard         | Error         | 1,13             | 8835966  |                |                |                |
|            |              |            | Observat         | tions         |                  | 8        |                |                |                |
|            |              |            |                  | Source: Autho | or compilations  |          |                |                |                |
| ANOVA      |              |            |                  |               |                  |          |                |                |                |
|            |              | df         |                  | SS            | MS               | F S      | Significance F |                |                |
| Regression |              |            | 1                | 267,9018      | 267,9018         | 189,7055 | 9,11E-06       |                |                |
| Residual   |              |            | 6                | 8,473192      | 1,412199         |          |                |                |                |
| Total      |              |            | 7                | 276,375       |                  |          |                |                |                |
|            |              |            |                  | Source: Autho | or compilations  |          |                |                |                |
|            | Coefficients |            | Standar<br>Error | d<br>t Stat   | P-value          | Lower 95 | 5% Upper 95%   | Lower<br>95,0% | Upper<br>95,0% |
| Intercept  | -9,09022846  |            | 1,046935         | -8,68271      | 0,000129         | -11,652  | -6,52847       | -11,652        | -6,52847       |
| PIB total  | 0,000804373  |            | 5,84E-05         | 13,77336      | 9,11E-06         | 0,000661 | 0,000947       | 0,000661       | 0,000947       |
|            |              |            |                  | Source: Autho | or compilations  |          |                |                |                |
| RESIDUAL   | OUTPUT       |            |                  |               |                  | PROBAB   | ILITY OUTPUT   |                |                |
| Observa    |              | cted FDI   | R                | esiduals St   | andard Residuals |          |                | -              |                |
|            |              | 1 22 20 10 |                  | 0.102.40      | 0.1655           |          |                | _              |                |

| 1 | 1,735019027  | -0,18248 | -0,16586 | 6,25  | 1,109058 |
|---|--------------|----------|----------|-------|----------|
| 2 | 2,176619627  | -0,33733 | -0,3066  | 18,75 | 1,552536 |
| 3 | 4,165028885  | -1,98388 | -1,80319 | 31,25 | 1,839294 |
| 4 | -0,660402805 | 1,769461 | 1,608298 | 43,75 | 1,966249 |
| 5 | 1,400399994  | 0,798405 | 0,725686 | 56,25 | 2,18115  |
| 6 | 2,493542462  | -0,52729 | -0,47927 | 68,75 | 2,198805 |
| 7 | 2,571566611  | -0,1124  | -0,10216 | 81,25 | 2,459171 |
| 8 | 19,057989    | 0,575511 | 0,523094 | 93,75 | 19,6335  |

Source: Author compilations

#### Conclusion

FDI are determined by firm, sectoral and regional characteristics, but also more importantly *dependent on geographical proximity*. FDI contribute to regional development process through their effects and impact. The main conclusion of this paper is generated by the hypertrophy overheads Bucharest-Ilfov region, deviating significantly from the other seven regions, both by GDP and FDI. In addition to these, a central role of redistribution of national income has the concentration of power in decision-making role in the economic faith of other regions.

The most competitive region from the FDI point of view is in western and centre regions of country. They are also physically closer to the in Western Europe markets, quickly assimilating to European spirit (tolerance, decentralization, competition, etc against a more expressive ethnic diversity compared to other regions).

Actually, we can sum up the idea that there are two big tendencies at regional level:

- 1. the strong gap between the west part and the east part of Romanian regions;
- 2. the big discrepancy between the capital region Bucharest-Ilfov and the rest of the country (the capital sums up 59% of the total foreign investments made in the last years).

FDI need a regional dimension: to pay more attention to endogenous (firm sizes) and exogenous (proximity to agglomerations) characteristics that influence local abilities to attract the FDI. The goal of this idea is to directing FDI to less dynamic, less urbanised and less competitive regions – particularly relevant in the "fast-track" era of foreign investment. Also, the objective should not be to maximise the volume of FDI, but rather to optimise its location. Although the process of FDI attraction at regional level is dependent on the national policy and strategy, respectively local and coherent actions, might stimulate the investors' interest. The regional development policy should ensure the diminishment of disparities between the different regional levels through encouraging foreign direct investment. More, the FDI can consider strategic alternative for disparities reduction through elimination and accelerating the restructuring marketing context of actually crisis.

# Apendix A. Evolution of maximum and minimum value, variance coefficients of FDI at regional level (NUTS2) in Romania

|                         | 2003    | 2007     | 2009     | 2010     | 2011      |
|-------------------------|---------|----------|----------|----------|-----------|
| Mean                    | 1207,75 | 5346,25  | 6248     | 6573,12  | 6892,37   |
| Standard Error          | 582,58  | 3182,65  | 3650,31  | 3750,56  | 3892,02   |
| Median                  | 696     | 2406,5   | 3016,5   | 3368     | 3478,5    |
| Standard Deviation      | 1647,79 | 9001,91  | 10324,6  | 10608,2  | 11008,3   |
| Sample Variance         | 2715218 | 81034427 | 1,07E+08 | 1,13E+08 | 121182776 |
| Kurtosis                | 7,42    | 7,76     | 7,81     | 7,80     | 7,79      |
| Skewness                | 2,69    | 2,77     | 2,78     | 2,78     | 2,78      |
| Sum                     | 9662    | 42770    | 49984    | 52585    | 55139     |
| Count                   | 8       | 8        | 8        | 8        | 8         |
| Largest(1)              | 5236    | 27516    | 31699    | 32720    | 34021     |
| Smallest(1)             | 211     | 672      | 975      | 1244     | 1627      |
| Confidence Level(95,0%) | 1377,58 | 7525,78  | 8631,61  | 8868,68  | 9203,17   |
| Variance coefficients   | 1,36    | 1,68     | 1,65     | 1,61     | 1,59      |

Source: Author compilations

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