

**World Economics Association
Conferences, 2015
Ideas towards a new international financial architecture?
2015, n. 1: 15th May – 15th June**

Title of paper: The influence of the global economic crisis on the international investment position of European Union member states

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Abstract

In the last decades, the international flow of investments considerably grew. They increased dynamically until 2008, when the sudden decline occurred, being caused by the global economic crisis. It had a direct bearing on the structure and the proportions of the internal investment position of many countries. The present paper conducts the analysis of the changes in international investment position rating of European Union member states. With that purpose in mind, the statistical method of linear regression by Hellwig was used.

Keywords

International investment position, Hellwig method

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Introduction

The global economic crisis 2007+ largely affected many areas of global economy. The effects were manifested most palpably in the realm of international capital flow. Multi-billionaire corporations, financial institutions, the governments of particular countries were hurriedly allocating their financial means. The fear of redundant losses incited them to optimize portfolio investment under critical circumstances. These actions to a large extent influenced the size and dynamism of the streams of international investments. The purpose of this paper is to show the changes in the international investment position (IIP) of EU member states, caused by the financial crisis. The analysis will be conducted by dint of the method of linear ordering, including Hellwig's synthetic measure.

1. The essence of international investment position

The international investment position is one of the two reports (statistical reports) reflecting the position of the economy on the global market. It is the balance of financial external resources, that is the balance of international financial assets and liabilities of a given economy. It indicates whether a given country is a borrower net or a creditor net. The above statistics embraces the amounts due from non-residents (external assets) and the liabilities towards residents (external liabilities).

The international investment position at the end of fiscal year (calendar year) reflects financial transactions, pricing of changes and other corrections which occurred in the analyzed period related to the level of external assets or liabilities. This statistics is fully consistent with the categories of profits in the current account of the balance of payments, with the financial account and it has a telling significance when determining the resources and streams as well as the returns on foreign investments.

The international investment position may be also defined by dint of the following formula:

$$IIP = FDI_A + PI_A + OFI_A + RA - FDI_L - PI_L - OFI_L$$

where:

IIP – international investment position,
FDI – direct foreign investments,
PI – foreign portfolio investments (equity and debt ones),
OFI – remaining investments ,
RA – reserve assets,
letter A denotes the position of assets,

letter L denotes the position of liabilities (Śliwiński 2008, s.158).

The annual change in the international investment position net (ΔIIP) is a differential between the international investment position at the end of the year (IIP_t) and its status at the end of the previous year (IIP_{t-1}).

$$\Delta IIP = IIP_t - IIP_{t-1}.$$

2. Methodology of research

In order to create the rating of EU member states with respect to their respective quality of international investment position, the present study took advantage of the methods of linear regression (Zielaś 1991; Grabiński, Wydymus, Zielaś 1989; Kolenda 2006; Nowak 1990). That sort of taxonomical analysis is a set of methods serving to evaluate the level of distinctiveness of items by dint of the closed set of statistical properties.

The first stage of construct exploited in the present study of synthetic measure is the in-depth analysis of properties describing objects. The analysis in this case is relatively simple. That is because diagnostic variables are the constituents of international assets and liabilities. In the conducted study one resigned from attributing coefficients to particular diagnostic variables.

The next state of constructing the synthetic measure is the standardization of properties. It may be done in a variety of ways. The method of selecting the standardization of properties is predicated upon the assumed method of determining the synthetic measure. Basically, the “procedures of the determination of the synthetic measure may be divided into two groups:

- non-model methods,
- model methods” (Ostasiewicz 1998, p.119).

In the present study, the model method was employed, in which what is assumed is the existence of the model-patterned object (or simply stated: the pattern), against the benchmark of which the taxonomic distance between studied objects is determined. “The typical and the most usually employed method in practical research by dint of synthetic measure of that group of methods is Hellwig’s measure (due to its original applications to study the economic growth that measure is also referred to as the measure of growth)”(Ostasiewicz 1998, p.120).

In the case of employing Hellwig's measure, the standardization of properties follows according to the formula below

$$x_{ij} = \frac{x_{ij} - \bar{x}_j}{S_j}$$

x_{ij} – empirical values of j-property in i-object

\bar{x}_j – the arithmetic mean of j-property

S_j – standard deviation of j-property.

The determination of the pattern involves the selection from the standardized matrices, by dint of the above model of properties, of the maximal value for stimulants or alternatively the minimal value for properties other than stimulants

$$x_{0k} = \begin{cases} \max_i x_{ij} \text{ dla } j \in S \\ \min_i x_{ij} \text{ dla } j \notin S \end{cases}$$

The synthetic measure is the following value:

$$d_i = 1 - \frac{d_{i0}}{d_0}$$

where:

d_{i0} – Euclidean distance between the object x_i from the model object x_0 ,

d_0 – the critical distance of a given unit from the model.

Euclidean distance is calculated according to the following formula:

$$d_{i0} = \sqrt{\sum_{j=1}^p (x_{ij} - x_{0j})^2}$$

Whereas the critical distance of the unit from the model is calculated as follows:

$$d_0 = \bar{d}_0 + 2s_d$$

where:

\bar{d}_0 – arithmetic mean of taxonomic distances:

$$\bar{d}_0 = \frac{\sum_{i=1}^n d_{i0}}{n}$$

s_d – standard deviation from taxonomic distances:

$$s_d = \sqrt{\frac{\sum_{i=1}^n (d_{i0} - \bar{d}_0)^2}{n}}$$

3. The taxonomy of international investment positions of European Union member states

In order to conduct the taxonomic study of the international investment position structure of European Union member states, nine of the following properties of objects were distinguished:

X_{1t} – the share of direct foreign investments in the external assets in general,

X_{2t} – the share of indirect foreign investments in external assets in general,

X_{3t} – the share of remaining foreign investments in external assets in general,

X_{4t} – the share of official reserve assets in external assets in general,

X_{5t} – the share of financial derivatives in external assets in general,

X_{6t} – the share of direct foreign investments in external liabilities in general,

X_{7t} – the share of indirect foreign investments external liabilities in general,

X_{8t} – the share of remaining foreign investments external liabilities in general,

X_{9t} – the share of financial derivatives in external liabilities in general.

Properties X_{5t} and X_{9t} manifested in relations to each other a too high level of correlation; in the light of this the property X_{9t} was rejected. The properties X_{1t} , X_{4t} , X_{6t} were considered stimulants, the others were regarded as destimulants. Regarding the necessity for the properties to meet the condition of completeness of statistical data, the determination of the synthetic measure was possible no earlier than 2005 (before that, not all the countries discharged their statistical duties, having published incomplete data or not having published any at all).

Tab. 1. The results of taxonomic study of the structure of international investment position of European Union member states in 2005, 2009 and 2013

2005			2009				2013			
Country	TMR*	Place	Country	TMR*	Place	Change vs 2005	Country	TMR*	Place	Change vs 2009
Hungary	0,608276	1	Hungary	0,680894	1	0	Hungary	0,703434	1	0
Estonia	0,570971	2	Poland	0,67178	2	4	Poland	0,658482	2	0
Slovakia	0,568337	3	Croatia	0,59916	3	2	Czech Republic	0,564663	3	2
Czech Republic	0,535228	4	Bulgaria	0,584754	4	5	Bulgaria	0,558767	4	0
Croatia	0,532015	5	Czech Republic	0,573922	5	-1	Croatia	0,554238	5	-2
Poland	0,529739	6	Estonia	0,555784	6	-4	Belgium	0,510761	6	2
Lithuania	0,522817	7	Romania	0,5113	7	1	Romania	0,502614	7	0
Romania	0,52251	8	Belgium	0,477772	8	3	Lithuania	0,497446	8	1
Bulgaria	0,494774	9	Lithuania	0,457821	9	-2	Estonia	0,446494	9	-3

Denmark	0,376488	10	Sweden	0,387588	10	3	Luxembourg	0,388014	10	3
Belgium	0,371907	11	Denmark	0,37038	11	-1	Spain	0,373391	11	3
Slovenia	0,34024	12	Austria	0,357994	12	3	Austria	0,352215	12	0
Sweden	0,339522	13	Luxembourg	0,34656	13	4	Sweden	0,324269	13	-3
Spain	0,317176	14	Spain	0,346074	14	0	Denmark	0,308469	14	-3
Austria	0,316717	15	Netherlands	0,324405	15	1	Portugal	0,293448	15	5
Netherlands	0,311012	16	Slovenia	0,286062	16	-4	Latvia	0,288392	16	7
Luxembourg	0,310668	17	Slovakia	0,281797	17	-14	Slovakia	0,286622	17	0
France	0,271189	18	France	0,272762	18	0	Netherlands	0,283237	18	-3
Germany	0,247847	19	Germany	0,257358	19	0	Slovenia	0,258171	19	-3
Portugal	0,240416	20	Portugal	0,248754	20	0	Italy	0,2563	20	1
Finland	0,191072	21	Italy	0,23626	21	1	Germany	0,225879	21	-2
Italy	0,184308	22	Finland	0,212603	22	-1	Finland	0,219361	22	0
Latvia	0,181277	23	Latvia	0,204963	23	0	France	0,211014	23	-5
Greece	0,136201	24	Greece	0,152797	24	0	United Kingdom	0,117772	24	3
Cyprus	0,111466	25	Ireland	0,119624	25	2	Cyprus	0,111626	25	1
Malta	0,108837	26	Cyprus	0,108951	26	-1	Malta	0,104331	26	2
Ireland	0,096787	27	United Kingdom	0,098752	27	1	Ireland	0,098758	27	-2
United Kingdom	0,02627	28	Malta	0,070386	28	-2	Greece	0,089836	28	-4

* TMR – taxonomical measure of structure of IIP

The taxonomic study of the structure of the international investment position by dint of Hellwig's synthetic measure brought relatively surprising results. In comparison to the commonly used in the professional literature indicator, which is usually the international investment position net-gross domestic product ratio, the position occupied by particular countries in both ratings differ considerably.

The superficial analysis of the data presented in table 1 shows that financial crisis has a considerable impact on the positions of just a few countries in the rating. When analysing the changes in synthetic measure of the growth for the international investment position structure in 2009 in relation to 2005, it transpires that Slovakia shows the most conspicuous shift. That country dropped in the rating by 14 positions- from 3 to 17. Between the scrutinized periods, in Slovakia the changes in the structure of the international investment position net occurred. They mainly concerned the external assets. From the point of view of financial dependency of the economy, these changes should be construed as definitely negative. Between 2005 and 2009, in the structure of Slovakian international assets, there occurred a drastic decrease of the share of official reserve assets in them (dropping from more than 61% to less than 4%). Simultaneously, equally drastically, what increased was the ratio of the assets of direct foreign investments to external assets in general- from slightly more than 14% to almost 61%.

The leader of positive changes between 2005 and 2009 was Bulgaria. Its position improved by 5. In this case, the change was the function of many factors. First of all, Bulgaria is a country characterized by one of the biggest shares of reserve assets in external assets in general in the whole Union. Between the years under research, the said share increased. What also increased but slightly is a share of foreign direct investments in the assets in general. Simultaneously, one did not record any negative changes as far as external liabilities go. What is more, what increased was the share of direct foreign investments in them.

The negative changes were inflicted also upon the structure of the international investment position net in Czech Republic, Estonia, Lithuania, Slovenia, Finland and Malta. The positions of these countries deteriorated across 2005-2009 period.

The financial crisis had a long-term impact on the international investment position of EU member states. Between 2009 and 2013, such spectacular changes as in the case of Slovakia were not recorded. Still, it is worth noting the causes of the most dynamic shifts in rating positions. The leader of declines was at that time France- dropped by 5 positions. What was considered the main reason for that was the increased share of financial derivatives in the external assets in general. That very share grew in the studied period from less than 6% to more than 16,5% and was on the biggest in the entire Union. Further declines in rating positions were recorded in Estonia, Denmark and Slovenia. The group characterized by declines also subsumed Croatia, Sweden, Holland, Germany, Ireland and Greece, the last of which occupied the last position in the rating of the quality of international investment position net (the decline by 4 positions relative to 2009)

The leader of positive changes in 2013 was Latvia, which advanced by 7 position. That advance was caused by a couple of factors, none of which was spectacular. Both in the structure of its external assets and liabilities, what went slightly bigger was the share of financial derivatives in external assets. What should be underlined that the position of that country in the rating depends on the change in the structure of international investment positions of other countries.

In the ultimate rating for 2013, the leading economies are the ones of Central Europe. The leader of the rating of quality international investment position was Hungary, achieving the highest level of Hellwig's synthetic measure- above 0,70. The next positions were distributed among Poland, Czech Republic and Bulgaria. The first top country of the rating in terms of IIP-GDP ratio occupied only 6th position and that was Belgium. Next came Luxemburg, which occupied 10th position. It is worthwhile to emphasize the relatively low

positions of British, French and German or Italian economies. What is also interesting is the shift of a few countries at the bottom of the previous rating into the middle of the present rating.

Conclusions

The changes in the rating of the international investment position structure are – among other things- a result of the financial crisis 2007+. The growth of dynamism of the flow of capital, which unrestrainedly change its owners become one of the causes of such a rapid outburst of global economic crisis. The big share of a country in the global financial flows implies the considerable financial dependency from external financing sources. Leaving the global capital market without additional regulations will cause the forthcoming crises to be even more dynamic.

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