

Investment and Profits: Causality Analysis in Selected EU Countries

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The purpose of the paper is to present the theoretical and empirical analysis of the causal relationship between company's investment and profits. Following the previous research findings that are not unanimous, we examined the causal relation between profits and investment both at the aggregate and at the industry level. The theory on the field allows us to define three basic theses: profits determine investment on the aggregate level or industry sectors level in a national economy, investment determines profits, and profits determine investment and investment determine profits. We used the Granger definition of causality and the Toda-Yamamoto procedure. Based on the results of the analysis, we can claim that investment determines profits in a national economy. At the industry sectors level there is the greatest support for a cause-and-effect relation in the direction from profits to investment. The results of our empirical analysis and contextual interpretation can help in identifying potential factors and barriers that hinder the effective functioning of the economic system. It is undisputed that investment and profits is extraordinarily important for the economic system and that the investment and profits relation is undeniably strong.

Key Words: investment, profits, causality, industry

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Introduction and Theoretical Basis

Classical economists as Smith (1805) and Ricardo (1817) emphasize the importance of investment in economic growth. Keynes (1936) built a new paradigm on investment, connected with other economic categories. For Keynes investment is a prevailing factor and an important determinant of national product. For the Keynesian economists investment depends on profit expectations that, beside demand and institutional factors, are based upon 'animal spirits' (Stockhammer 2006). Asimakopulos (1971) explained the Keynes investment model. He presents his point of view, showing a two-way direction of causality between investment and profits. Profit expectations play a crucial role in firms' investment decisions and

these expectations are strongly affected by current investment level since this is an important determinant of current profits.

Jorgenson and his collaborators (Hall and Jorgenson 1967) contributed to neoclassical theory with the development of the neoclassical investment model. The neoclassical investment model starting point is the solution of dynamic problem that determines the companies' capital needs through time. Neoclassical theory somehow shows the causal link from profits to investment (Gupta 1988).

For Post-Keynesians, investment is a very important determinant of the economic system. The argument is that the exploitation of new technologies is possible only through investment. What Kalecki (1942; 1971) wanted to point out was that the most important prerequisite to become an entrepreneur is the capital. With this statement, Kalecki suggests that the investment determines profits. The focus is on companies' physical capital investment. The importance that Post-Keynesians assigned to investment raises a key question that reads as follows: what determines the investment level? Joan Robinson (1962) has developed a model starting from Kaldor's (1955) model with an investment within the model. Companies choose investments based on expected profit margins. The expected profit margins explain to a large extent the actual profit margins. Robinson set a two-way relationship between investment and profits with his formula. Her theory states that investments depend on profits and profits on investments. Post-Keynesian research in the field of investment has continued on the importance of internal financing. This was in contrast with Modigliani and Miller (1958) theorem that under certain conditions emphasized the irrelevance of financing policy and financial structure for the companies' investment and made a theoretical framework for the research of the importance of financial factors for the companies' investment (Stockhammer 2006).

Empirical Evidence

Notwithstanding the key role of companies' sustainable investment for the expected cash flows and companies' value, sectors and the whole economy, just a few important researches examined the causal link between investment and profits and showed that the investment is vital for the expected profits. The results of empirical studies are unclear; from the research results, it is difficult to unequivocally conclude the direction of a causal link between profits and investment or cash flows. Studies carried out by Baumol et al. (1970), Little (1962), Friend and Husić (1973) do not support the hypothesis that profits results from past investment. In

their studies Bar-Yosef et al. (1987) found that investment does not create profits, but profits raise investment, defined in terms of Granger causal effect relationship. They also found that the profits are a determinant of companies' business investment. Shapiro, Sims, and Hughes (1983) and McFetridge (1978) surveys support the hypothesis that cash flows result from past investment. In the analysis of Mahdavi, Sohrabian, and Kholdy (1994) about the causal effect relationship, employing the ECM (Error Correction Model), which takes into account the cointegration between real cash flows and real investment of companies, they found that there is evidence of the one-way causal effect relationship of real companies investment to real cash flows. This is in contrast to some of the previous studies that demonstrated that the profit or cash flows at the level of companies or industries determine investment. Lee and Nohel (1997) have concluded that there is a two-way link between investment and profits. Gupta (1988), who based on two different methodologies, comes to different conclusions about the direction of causality. Akyüz and Gore (1996), and Inci, Lee, and Suh (2009) have concluded that there is a link in the direction earnings to investment.

As seen, the empirical studies do not give a single answer to the problem about the direction of the causal link between investment and profits. The reasons for the different findings may lie in a variety of used methodological approaches, information restrictions and limitations of the studies. Previous researches are based on different samples of data, both in terms of time-scale and different economic backgrounds (most us based). Different economic and regulatory environment can play a crucial influence on the decision making of managers and thus the link between investment and profits. Different economic environments may involve a variety of conditions that are necessary for efficient investment, which of course affects the ambitious problem of causality.

On the basis of previous research we can conclude that the findings of studies in which data were used at the aggregate level, for the most part support the causal effect relationship in the direction of investment to profits or two-way link. Research based on data at the firm level is largely supported by causal effect relationship in the direction of the profits to investments or two-way link.

Theses and Hypotheses for Empirical Testing

If we realize a synthesis of theoretical concepts framed in micro-and macroeconomic theory, the theory of finance and entrepreneurship, we may justify a correlation link between investment and profits. This the-

oretical framework also allows us to define the causal link between the exposed variables, which runs from profits to investment, from investment to profits or in both directions.

The three basic theses are: profits determine investment on the aggregate and industry sectors level in a national economy, investment determines profits, and profits determine investment and investment determine profits. The thesis of the causal link, running from profits to investment, has a limited explanatory power because it is only valid in the special case when the primary companies' objective in the economy is to maximize profits. This means that companies should only invest in the current and expected most profitable activities. However, if the maximization assumption is not true, then investment is induced also by other motives, which are independent of the profit motive. The doubt of the validity of assumptions about the profit motive is offered paradoxically in the economic theory. In particular the part of economic theory which refers to the business sciences, clearly explains that the company also follows other goals, such as revenue maximization, maximization of the market share, customer satisfaction, production optimization . . . (Janeš and Dolinšek 2010; Novak and Žižmond 2012; Odar, Kavcic, and Jerman 2012; Radosavljević et al. 2011). Through these objectives, managers and equity holders can achieve the purpose of the company, which is to increase the value of a company's equity and thus shareholder value. Crotty (1992; 1996) wrote that companies develop and adopt rules to help them to cope with uncertainty. Gordon (1992) argued that the primary objective of companies is a long-term survival. Many authors from the last Post-Keynesian period argue that the goal of modern corporations is not profit maximization but a long-term survival and growth (Stockhammer 2006).

This means that investment is primarily not dependent on profits. On contrary, investment determines profits. These arguments allow us to claim that profits depend on investment and not vice versa. By confirming the thesis that profits result from investment on the level of the entire economy, we may imply that profitability does not determine and allocate investment but the allocation of investment determines profitability.

Imperfections of financial markets that increase the difference between internal and external financial resources act in contrary to the theory-based interpretation, which defines the direction of causality from profits to investment. This means that the failure of financial markets affect the allocation of capital. On the one hand, the limited financial resources and the disparity between the external and internal sources of capital af-

fect the level of investment and work in favour of the profit motive of investment. Companies must achieve higher profitability, investing in more risky and profitable activities. On the other hand transaction costs, the information asymmetry problem and the risk all limits the migration of capital and go contrary to the gainful motive. Companies invest the created in-house resources in them well known available and less risky investments at the cost of lower profitability. In this way, companies pursue a goal of long-term survival. Given these implications and the results of research, it is difficult to define the impact that the incompleteness of financial markets have on the direction of causality between investment and profits.

In order to confirm the theses we set the following hypotheses at the aggregate and industry sector level in a national economy:

H1 *Profits determine investment.*

H2 *Investment determines profits.*

H3 *Investment determines profits and profits determine investment.*

Data and Methodology

We gathered the data for investment and profits from the European Commission, Eurostat statistic database. For the representation of investment (*I*) we use the Gross fixed capital formation (ESA 95, 3.102) which according to Eurostat definition consists of resident producers' acquisitions, less disposals, of fixed assets during a given period plus certain additions to the value of non-produced assets realized by the productive activity of producer or institutional units. For the representation of profits (*P*), we use Net operating surplus and net mixed income. Net operating surplus is interpreted as the return to capital or the effect of time passing on the net present value. For unincorporated enterprises, owned by households, this component is called 'mixed income.'

We were able to obtain the data on the national economy level for Austria, Denmark, Italy, Finland and Netherlands. We gathered the industry level data for Austria, Italy, Finland and Netherlands. For these countries, it is possible to get a long time series of data from 1977 to 2007 to perform the tests of causality. We used the NACE31 industry classification. We end up with 88 time series (22 industries for each country) for each of both variables. Data for some industries was not available and we left out of our analysis aggregates of industry groups. To obtain data in real terms we deflated the variable net operating surplus and net mixed income. All

the data are in value levels in Millions of euro, chain-linked volumes, reference year 2000 (at 2000 exchange rates).

We can define the causal relationship between two variables, investment and profits in our case, with the Granger definition of causality. It should be noted that the assertion that X causes Y in Granger sense does not imply that the variable Y is the result of the variable X. Granger causality means anteriority of data fluctuations and does not imply causality in the general sense of the word and in terms of content.

The implementation of Granger causality tests is connected with the problems of stationarity and cointegration properties of the considered time series of data. Granger causality tests are sensitive to non-stationary time series. The first step in the analysis of causality is the check for stationarity and the integration degree of variables. The second step is identifying the possible cointegration of variables (Bekó 2003).

Only in the third step, we apply the analysis of causality. Standard Granger tests of causal effect relationship are valid only if the original time series are not cointegrated and must be applied on stationary variables. When this is not the case, we must differentiate the variables to reach stationarity and, in case of cointegration, we must perform the test with error correction models.

We can apply the test developed by Toda and Yamamoto (1995) and avoid the procedure of testing for cointegration. Testing for cointegration and a possible need for differentiation to reach stationarity could be problematic, as we lose some information with the differentiation. The inference of cointegration could be unreliable. Both problems may affect the conclusions of the causality tests. The Toda and Yamamoto procedure consists in testing the vector auto regression – VAR system equations:

$$P_t = \sum_{i=1}^m a_i P_{t-i} + \sum_{j=m+1}^{m+el} b_j P_{t-j} + \sum_{i=1}^m c_i I_{t-i} + \sum_{j=m+1}^{m+el} d_j I_{t-j} + \varepsilon_t \quad (1)$$

$$I_t = \sum_{i=1}^m e_i I_{t-i} + \sum_{j=m+1}^{m+el} f_j I_{t-j} + \sum_{i=1}^m g_i P_{t-i} + \sum_{j=m+1}^{m+el} h_j P_{t-j} + \eta_t, \quad (2)$$

where I_t is investment for period t represented with Gross fixed capital formation, P_t is profits for period t , represented with net operating surplus and net mixed income, letters from a to h are independent variables coefficients, m is period lags, ε_t and η_t are regression errors, el are extra period lags. To apply the test we must define the number of lags and

TABLE 1 The Results of the Causality Analysis at the National Level for Austria, Denmark, Finland, Italy and Netherlands

Country	$P \rightarrow I$	Significance	$I \rightarrow P$	Significance
Austria	No	0.5549	No	0.9319
Denmark	No	0.2348	Yes	0.0229
Finland	Yes	0.0107	Yes	0.0000
Italy	Yes	0.0071	Yes	0.0001
Netherlands	No	0.6741	Yes	0.0002

the number of extra lags. I Granger cause P if any of the c_i coefficients is statistically different from 0. P Granger causes I if any of the g_i coefficients is statistically different from 0. For the test of the null hypothesis that every $c_i = 0$ or every $g_i = 0$ we perform a Wald statistic test. To avoid the problem of arbitrary decided lags we define the optimal number of lags with the following tests for VAR: sequential modified LR test statistic, final prediction error, Akaike information criterion, Schwarz information criterion, Hannan-Quinn information criterion. The problem of such tests is that we must determine the number of maximum lags for testing which influence the results. We select the optimum lags in base of the most frequent optimal lag, resulting from all the tests performed from 1 up to 6 lags. We use the Augmented Dickey-Fuller unit root test equation to define the order of integration of the variables. The extra lags equal to the order of integration.

Results and Discussion

We present the results of the analysis of causality in tables 1, 2 and 3. We examined the hypotheses at the aggregate level. Based on the results, we cannot confirm the first hypothesis with the criterion of more than 50%. We found the causal link from profits to investment just in two of five countries. The causal link from investment to profits is stronger as we found it in four of five analyzed countries. We can confirm the second hypothesis that investment determines profits at the aggregate level in a national economy. We cannot confirm the third hypothesis that investment determines profits and profits determine investment at the aggregate level in a national economy. Based on the results of the analysis on the aggregate level of a national economy, we can say that investment determines profits in a national economy.

The results at the aggregate level are in line with the empirical findings

in the researches carried out by Gupta (1988) and Mahdavi, Sohrabian, and Kholdy (1994). The results are also in line with the findings of the researches done by Akyüz and Gore (1996), Lee and Nohel (1997) and Heshmati and Lööf (2006) where authors found out the causal link between investment and profits in both directions in a part which shows the causal link from investment to profits.

Based on the results, we examined the hypotheses at the industry sector level. In 28% of industries, we found a causal link from profits to investment. Based on the criterion of more than 50% industries, in which causality runs from profits to investment, we cannot confirm the first hypothesis, saying that profits in industry sectors determine investment in industry sectors. In 14% of industries, we found the causal link from investment to profits. Based on the criterion of more than 50% industries, in which causality runs from investment to profits, we cannot confirm the second hypothesis, saying that investments in industry sectors determine profits in industry sectors. In 19% of industries, we found a causal link, running in both directions. Based on the criterion of more than 50% industries, in which causality runs in both directions, we cannot confirm the third hypothesis, saying that investment in industry sectors determine profits in industry sectors and profits in industry sectors determine investment in industry sectors.

However, the results give stronger support to a causal relation from profits to investment. This is consistent with the findings of the research carried out by Bar-Yosef et al. (1987) and Inci et al. (2009), in which the authors found that profits cause investment in Granger sense, or that the causal link in the direction from investment to profits is weak. Our research findings are in line with empirical research, carried out by Akyüz and Gore (1996), Lee and Nohel (1997) and Heshmati and Lööf (2006), in which the authors found a two-way causal link between the resulting investments and profits in the part for the causal relationship, resulting in the direction from profits to investment.

The results of our empirical analysis gave us just the causal link between the resulting investment and profit in a Granger sense. This did not mean that investments lead to profits, profits lead to investment, or both in a common sense or in a sense of content. Granger sense causality does not imply that the investment or profits result from profits or investment, or both. Granger causality simply measures the anteriority of data fluctuations. It is an unstructured model of evidence that has no substantive interpretation. The alternative is a structured model that explains the

TABLE 2 The Results of the Analysis of Causality in Industries for Austria, Finland, Italy and Netherlands

Industry	A	FI	IT	NL
Agriculture, hunting and forestry	$P \leftrightarrow I$	$P \leftrightarrow I$	$I \neq P$	$I \rightarrow P$
Mining and quarrying	$P \leftrightarrow I$	$I \neq P$	$I \neq P$	$I \rightarrow P$
Manufacture of food products; beverages and tobacco	$I \neq P$	$P \rightarrow I$	$I \neq P$	$I \rightarrow P$
Manufacture of textiles and textile products	$I \neq P$	$P \rightarrow I$	$I \neq P$	$I \neq P$
Manufacture of pulp, paper and paper products; publishing and printing	$P \rightarrow I$	$P \leftrightarrow I$	$I \rightarrow P$	$P \rightarrow I$
Manufacture of coke, refined petroleum products and nuclear fuel	$P \rightarrow I$	$P \rightarrow I$	$I \neq P$	$I \neq P$
Manufacture of chemicals, chemical products and man-made fibres	$P \leftrightarrow I$	$P \rightarrow I$	$P \rightarrow I$	$I \neq P$
Manufacture of rubber and plastic products	$I \neq P$	$P \leftrightarrow I$	$P \leftrightarrow I$	$I \neq P$
Manufacture of basic metals and fabricated metal products	$I \neq P$	$P \rightarrow I$	$I \neq P$	$I \rightarrow P$
Manufacture of machinery and equipment	$P \rightarrow I$	$P \leftrightarrow I$	$I \neq P$	$P \rightarrow I$
Manufacture of electrical and optical equipment	$P \leftrightarrow I$	$P \leftrightarrow I$	$I \rightarrow P$	$I \neq P$
Manufacture of transport equipment	$I \neq P$	$I \neq P$	$I \rightarrow P$	$I \rightarrow P$
Manufacturing	$I \neq P$	$P \leftrightarrow I$	$I \neq P$	$P \rightarrow I$
Electricity, gas and water supply	$P \rightarrow I$	$I \neq P$	$P \rightarrow I$	$I \rightarrow P$
Construction	$I \neq P$	$I \rightarrow P$	$I \neq P$	$I \neq P$
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	$I \neq P$	$P \leftrightarrow I$	$I \neq P$	$P \rightarrow I$
Hotels and restaurants	$I \neq P$	$P \leftrightarrow I$	$P \leftrightarrow I$	$I \neq P$
Transport, storage and communication	$P \leftrightarrow I$	$P \rightarrow I$	$P \rightarrow I$	$P \leftrightarrow I$
Financial intermediation	$P \rightarrow I$	$P \rightarrow I$	$P \rightarrow I$	$I \neq P$
Real estate, renting and business activities	$P \rightarrow I$	$I \neq P$	$I \neq P$	$P \rightarrow I$
Health and social work	$I \neq P$	$P \rightarrow I$	$I \rightarrow P$	$P \rightarrow I$
Other community, social, personal service activities	$I \neq P$	$P \leftrightarrow I$	$P \rightarrow I$	$I \rightarrow P$

NOTES A – Austria, FI – Finland, IT – Italy, NL – Netherlands. $P \leftrightarrow I$ – two sided causality between investment and profits, $P \rightarrow I$ – causality running from profits to investment, $I \rightarrow P$ – causality running from investment to profits, $I \neq P$ – no causality.

mechanisms and factors through which one variable influences another. The advantage of the structured model is that we make a conceptual explanation of a phenomenon. There is a risk that the model is not correctly

TABLE 3 Assembled Results of Causality between Investment and Profits for Industries in the Analyzed Countries

Country	$P \leftrightarrow I$	$P \rightarrow I$	$I \rightarrow P$	$I \neq P$
Austria	5	6	0	11
Finland	9	8	1	4
Italy	2	5	4	11
Netherlands	1	6	7	8
Share	0.19	0.28	0.14	0.39

specified and leaves out important relevant factors. The methodology allows us to analyze Granger causality through the unstructured model. The advantage of unstructured model is that it does not place restrictions on how and why one variable affects another. The disadvantage is that the relationship between variables does not have any content value. Thus, it remains a challenging task to rightly interpret the analysis results of the causal link in Granger sense. We linked the results of the unstructured model with the theoretical basis and the results of previous empirical research on this field. We describe the logic behind the analyzed results and the implications of the results for the investment policy.

The results that investment determines profits at the national level have several implications. From the financial theory point of view we could assume that the analyzed countries have a well-developed financial system and the innovations of financial instruments diminish the problem of obtaining external financial resources. Financing problems, described in works of Keynes (1936), Kalecki (1971), and Minsky (1975), do not play a crucial role. Even in the case of financial constraints of companies, other companies that are not financially limited can take on interesting investment, and thus generate profits that support the causal relationship in the direction of investment to profits. For the support of such thinking see Furlong and Weiss (1990). Transaction costs are not an important limitation to capital reallocation.

Mukherjee and Henderson (1987) have considered whether, in practice, the expected and required returns are true key factors of investment decision of companies, or some other factors are more important. They found that in practice many projects are rejected for reasons other than economic ones. Guidelines and decision rules should lead to investment decisions that enable to fulfil the primary objective of the company, that is, to increase the value of a company's equity. Despite this, in practice

many projects are rejected for reasons other than economic ones. Our findings support the fact that managers choose projects that are in line with the primary objective of the company. Projects that add value increase profits and the equity value of companies.

The finding that a cause and effect association takes place in the direction of investment to profits is in accordance with the theory of corporate investment in the part, referring to the entrepreneurs' motivation to invest. Given the personal characteristics and influence on the entrepreneur's motivation to entrepreneurial activity and investment, we cannot define entrepreneurs' motivation just with the profit motive.

From the perspective of economic theory the findings that investment cause profits are in accordance with the Kalecki Post-Keynesian theory in the case of the bi-directional link interpretation between investment and profits, given by Asimakopulos (1971). The findings are also in accordance with Gupta (1988) interpretation of the Keynesian investment view, which explained the causal link from investment to profits.

The findings are also in line with the implications of researches by Ball and Watts (1972), Watts and Leftish (1977), Albrecht et al. (1969) which showed that the previous reduction in investment activities of the US non-financial corporations caused a drop in cash flows.

At industry sectors level results give stronger support to a causal relation from profits to investment. On the basis of the empirical evidence on the importance of internal financial sources and on non interchangeability between internal and external financial sources we can interpret why profits cause investment and determine it. The interpretation also arises from the financial theory on financial markets imperfection. Imperfect financial markets limit company's acquisition of external funding sources that can influence companies' investment policy and limit their investment. In such case, information on past profits is a good predictor of investment.

Past profits may also be information to investors to judge the ability of management. Stable and high profits in the past may represent a signal to investors that companies' management rationally use capital resources which lowers the perceived risk and consequently required return of investors. This increases the range of investments with expected return higher than required one. On this basis, companies can obtain financial resources needed for investment and may invest more. In financial terms the causality from profits to investment may also mean that companies in certain sectors have major problems in obtaining external

funding sources for investment. Transaction costs and tax effects raise the cost of relocation of capital resources and the threshold-required rate of return. In this case it is more rational to reinvest the capital in the same company. This may mean that the management of company retains profits and holds capital resources in the company, even in cases where interesting investment is not available. They invest these capital resources in low profitability investment, or use the capital for purposes not in accordance with business objectives. This lowers the support to investment to profits causality because such investments do not give a positive contribution to the expected level of profits.

Minsky (1975; 1986) highlighted the important role that financing has on the investment activity and instability of the economic system. The increase in debt financing of investment increases the risk for lenders. The volatility of investment activity and variations in the economic system depend on the method of financing that companies use to finance investments. On the other hand, Modigliani and Miller (1958) in their important work of neoclassical school, based on strong assumptions, argue that the investment and financial decisions are independent. Keynes (1936) highlighted the financial aspect of investment. Higher proportion of debt in investment financing increases the risk of lending which increases the required return on debt. This increases the average cost of capital and required return on investment that reduces the range of potential investment with added value and thus reduces the investment activity of companies.

Kalecki (1971) introduced the following aspects through which financial decisions affect the investment of companies. If a company wants to implement a relatively big investment compared to the size of their business, potential volatility of cash flows from investment increases the risk of failure to fulfil the financial obligations of external financial sources. This increases the required rate of return and lowers the investment. In this case, the amount of internal resources is of decisive importance for the reduction of risk. The availability of internal resources also increases the borrowing capacity of companies and reduces the problem of obtaining the necessary resources to implement the investment.

In terms of economic theories the causality from profits to investment implicate that pricing mechanisms are well functioning and the capital is allocated into the most profitable industries. The findings are in accordance with the Keynesian economic paradigm. Keynes (1936) argued that the profit rate and interest rate are the main determinants of investment.

Results may also support the neoclassical model of investment. In equilibrium where investment equals savings at full employment technological conditions determine the distribution of income between wages and profits. Given the technical conditions at full employment and the propensity to save of the owners of capital, profits determine investment.

From the view of investment policy on the enterprise level and entrepreneurial perspective, the findings support the profit motive of investment. This means that the profit motive is stronger than other personal entrepreneurs' motives, defined by psychological factors, among which the most frequently identified are a desire for independence, need for achievement, a sense of control and risk based on which entrepreneurs invest and develop their business.

Based on the results of the empirical analysis on industry sectors level, we also cannot say that capital allocates in business that offers the best conditions for growth. Of course, this factor cannot be excluded, but other factors, including the profit motive, have greater impact.

Nevertheless, the founded prevailing causality from profits to investment at the industry sectors level could mean that the change of current profits, the fall in profits, in an industry sector for example, will cause lower investment activity in the next period in that industry sector. This is a serious signal for the providers of economic policies in EU that might interfere in the factors that affect the investment policy and thus encourage investment activity. The reduction in investment activity may have serious negative consequences on overall economic activity and economic growth.

The results of the analysis of causality in individual industry sectors vary. We cannot find certain parallels between same industry sectors in different countries. This may imply that the conditions, affecting the investment policy of the analyzed countries, differ. Factors, affecting the investment policy in different countries and industry sectors, have different weight. The very nature of the business may have smaller effect, since the results in the same sectors in different countries did not show any links.

Based on the results of the empirical analysis, we cannot exclude any of the factors that influence the direction of cause-and-effect relationship between investment and profits. The results can only indicate which factors have a greater impact. The results of the empirical analysis are not sufficient in order to give a definitive judgment about the direction of cause-and-effect relationships and clearly explain the implications for in-

vestment policy. We cannot give a uniform answer to the providers of economic and financial policy. In line with previous researches, which are not unanimous, we can assume that the problem is not uniquely solvable, but is multidimensional. When implementing economic and financial policy in order to influence the investment policy we need to consider all given aspects.

Post-Keynesians emphasize the importance of the so-called investment funds for the interpretation of price movements in oligopolistic economies. Oligopolistic firms finance investment with retained earnings, which are obtained by adding the necessary margin to the normal cost required for manufacturing products. According to them, the price trends depend on the companies' requirements for the creation of the so-called investment funds and the movement of normal production costs. Due to the expected but uncertain demand growth, in the future companies want to increase their capacity and thus their market shares. Companies do this with investment planning. Based on the plans, companies determine a premium to costs that will bring enough profit needed for investment. We assume that companies operate in oligopolistic economies. Companies set prices based on mark-up on costs in order to achieve the expected profit for the implementation of expected investments. In this case, the current profits are the effect of planned investments and investment determines profit.

With the empirical analysis of cause-and-effect relationship, based on Granger causality, we cannot prove this. On the contrary, it can lead us to false conclusions, based on the founded direction of cause-and-effect relationships in Granger sense. In such case the Granger analysis will reveal the causal relationship from profits to investment. This represents a limitation on conclusions about the direction of cause-and-effect relationship between investment and profits with an empirical analysis based on the Granger causality.

Conclusion

In this study we made a theoretical and empirical analysis of the cause-and-effect relationship between companies' investment and profits. We explored the causal link between profits and investment at the aggregate national level in five EU countries and at the industry sectors level in four EU countries. The theory on the field allowed us to define three basic theses: profits determine investment at the level of industry sectors in a national economy, investment determines profits, and profits determine in-

vestment and investment determines profits. In the empirical analysis we used the Granger (1986) definition of causality and the Toda-Yamamoto (1995) procedure.

The conclusions of previous empirical research on the causal effect relationship between investment and profits are different and do not give a clear answer to the problem. Relevant older researches mostly support the belief that profits determine investment. Unresolved and unclear problem of the cause-and-effect relationship between profits and investment can be a serious problem for providers of economic policies that rely on these theories.

The contribution of this study is the research of the cause-and-effect relationship between investment and profits and the direction of this relationship. In our study we identified the causal effect relationship and tried to explain it with the theory of finance, economics and entrepreneurship and to include all factors that can explain the founded causal link and are relevant to the investment policy. Most of the already existing small number of studies in the field addresses the problem only in terms of economic or financial theories. From a methodological point of view, to our knowledge to date there has not been a research to address the causal link between profits and investment on data from EU countries at the industry sectors level. Due to limited availability of long time series data, the study is limited to some EU countries. This limits the conclusions to the surveyed countries.

Considering the results of causality analysis in view of the country and industry sectors of the economy it can be stated that some results vary but some are aligned. Taking into account the two-way links, a cause-and-effect connection in the direction of investment to profits is mostly supported at the national level. At the industry sectors level has the greatest support a cause-and-effect connection in the direction from profits to investment. The results are not sufficiently unanimous to give a definitive answer on the direction of cause-and-effect relationship between investment and profits and clearly explain the implications for investment policy. We cannot give a uniform answer to the providers of economic policy that need to consider all discussed aspects.

What should be the economic policy that influences the effective investment allocation? In any case, it is necessary to consider all factors that may affect the allocation of investment. The question is whether to influence the allocation of investment or to let the allocation of investment to market factors. In any case, it is necessary to work towards enabling the

efficient allocation by removing all possible barriers. The base is a well-developed financial system that reduces the difference between external and internal sources of finance, information asymmetries and transaction costs and allows companies to finance potentially successful projects.

Accumulation of capital by allowing the creation of above-average gains in the rapidly growing East Asian economies shows a positive effect on the activation and promotion of the link between investments and profits and thus on economic activity and above-average economic growth. This effect was demonstrated by Akyüz and Gore (1996). In their study they found that in the fast-growing East Asian economies economic policy played a crucial role that allowed the accumulation of capital, rapid development of production and increased revenues. It also increased the ability of companies in emerging East Asian economies to successfully compete in the more and more demanding global market.

It is natural to assume that investment causes profits, as there is no basis to make profits without investment. If on the other hand profits cause investment, we could assume the following. Logical reasoning results from the definition of Granger causality that measures anteriority of data fluctuations (higher profits mean higher expected investment and increased investment higher expected profits). At the level of the national economy this means that capital determines the allocation of investment. Higher profits will be followed by higher investment. At the enterprise level this could mean that companies are limited in obtaining funds and market incompleteness is an obstacle to capital allocation. This confirms the implications of Kalecki who wrote, 'Ownership of capital is a prerequisite for becoming an entrepreneur' which supports the thesis that investments determine profits. Profits would be a determinant of investment only if the current profits are a good predictor of expected profits. This is not true, but in some cases it actually led to investment.

There is also the question about the relevance of the level of data analysis. Previous studies are based on data at the national level and on data at the enterprise level. Based on previous relevant research we can see that the results of studies in which data were used at the national level for the most part support the causal relationship in the direction resulting from investment to profits or two-way causality. Studies based on data at the enterprise level mostly support the causal relationship in the direction from profits to investment or a two-way causality. Assuming the relevance of previous studies, we may ask why there is this difference. We can find the answer in the fact that the aggregate level may not be the

most suitable for the analysis of this problem. Investment decisions relate to the problems on the micro-level of companies that also depend on factors at the macro level. The difference between our study and previous studies is also in the economic environment. Our study was based on a sample from EU countries; most previous researches were based on samples from US.

The results of our empirical analysis and contextual interpretation can help in identifying potential factors and barriers that hinder the effective functioning of the economic system. It is undisputed that investment and profits is extraordinarily important for the economic system and that the investment and profits relation is undeniably strong.

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