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## Introduction

One of the fastest growing areas in the economic sciences is broadly defined area of finance, with particular emphasis on the financial markets, financial institutions and risk management. Real world challenges stimulate the development of new theories and methods. A large part of the theoretical research concerns the analysis of the risk of not only economic entities, but also households.

The first Wrocław Conference in Finance WROFIN was held in Wrocław between 22nd and 24th of September 2015. The participants of the conference were the leading representatives of academia, practitioners at corporate finance, financial and insurance markets. The conference is a continuation of the two long-standing conferences: INVEST (Financial Investments and Insurance) and ZAFIN (Financial Management – Theory and Practice).

The Conference constitutes a vibrant forum for presenting scientific ideas and results of new research in the areas of investment theory, financial markets, banking, corporate finance, insurance and risk management. Much emphasis is put on practical issues within the fields of finance and insurance. The conference was organized by Finance Management Institute of the Wrocław University of Economics. Scientific Committee of the conference consisted of prof. Diarmuid Bradley, prof. dr hab. Jan Czekaj, prof. dr hab. Andrzej Gospodarowicz, prof. dr hab. Krzysztof Jajuga, prof. dr hab. Adam Kopiński, prof. dr. Hermann Locarek-Junge, prof. dr hab. Monika Marcinkowska, prof. dr hab. Paweł Miłobędzki, prof. dr hab. Jan Monkiewicz, prof. dr Lucjan T. Orłowski, prof. dr hab. Stanisław Owskiak, prof. dr hab. Wanda Ronka-Chmielowiec, prof. dr hab. Jerzy Różański, prof. dr hab. Andrzej Sławiński, dr hab. Tomasz Słoński, prof. Karsten Staehr, prof. dr hab. Jerzy Węclawski, prof. dr hab. Małgorzata Zaleska and prof. dr hab. Dariusz Zarzecki. The Committee on Financial Sciences of Polish Academy of Sciences held the patronage of content and the Rector of the University of Economics in Wrocław, Prof. Andrzej Gospodarowicz, held the honorary patronage.

The conference was attended by about 120 persons representing the academic, financial and insurance sector, including several people from abroad. During the conference 45 papers on finance and insurance, all in English, were presented. There were also 26 posters.

This publication contains 27 articles. They are listed in alphabetical order. The editors of the book on behalf of the authors and themselves express their deep gratitude to the reviewers of articles – Professors: Jacek Batóg, Joanna Bruzda, Katarzyna Byrka-Kita, Jerzy Dzieża, Teresa Famulska, Piotr Fiszeder, Jerzy Gajdka, Marek Gruszczyński, Magdalena Jerzemowska, Jarosław Kubiak, Tadeusz Kufel, Jacek Li-

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*Wanda Ronka-Chmielowiec, Krzysztof Jajuga*

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**RISK MEASUREMENT AND METHODS  
OF EVALUATING FDI EFFECTIVENESS AMONG  
POLISH COMPANIES – FOREIGN INVESTORS  
(EVIDENCE FROM A SURVEY)**

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**POMIAR RYZYKA I METODY  
OCENY EFEKTYWNOŚCI BIZ  
W PRAKTYCE POLSKICH PRZEDSIĘBIORSTW –  
INWESTORÓW ZAGRANICZNYCH  
(WYNIKI BADANIA ANKIETOWEGO)**

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**Abstract:** The paper presents some of the issues related to evaluating economic effectiveness of Polish Foreign Direct Investment (FDI) projects. The analysis focuses in particular on comparing risk measurement and methods of economic evaluation of investment effectiveness applied by Polish companies depending on the level of their internationalisation. The paper is based on the results of a survey conducted under research project No. N N112 322338 entitled “*Investment Activity of Polish Enterprises Abroad – Factors and Effects*”. Among the reasons justifying the need to carry out the research is the growing impact of Polish investment on global capital flows expressed in the rising value of Polish direct investment, as well as in the growing number of foreign projects implemented. Therefore, the paper presents – apart from the above-mentioned – selected data describing this phenomenon. As a result, the scale and structure of Polish FDI is presented in terms of value, as well as quantity.

**Keywords:** Foreign Direct Investment (FDI), internationalisation, risk measurement, international capital budgeting, evaluation of foreign investment effectiveness.

**Streszczenie:** Artykuł przedstawia wybrane zagadnienia dotyczące oceny ekonomicznej efektywności polskich bezpośrednich inwestycji zagranicznych (BIZ). Analizy koncentrują się w szczególności na porównaniu sposobów pomiaru ryzyka i metod oceny efektywności projektów inwestycyjnych według kryterium stopnia internacjonalizacji polskich przedsiębiorstw. Artykuł został oparty na wynikach badania zrealizowanego w ramach projektu nr N N112 322338, zatytułowanego „*Aktywność inwestycyjna polskich przedsiębiorstw za granicą – czynniki i skutki*”. Wśród powodów uzasadniających podjęcie badania wymienić należy rosnący wpływ polskich inwestycji na globalne przepływy kapitału, wyrażający się we



wzroście wartości polskich inwestycji, a także rosnącej liczbie podejmowanych projektów zagranicznych. Dlatego artykuł prezentuje – oprócz kwestii wspomnianych powyżej – wybrane dane opisujące to zjawisko. W efekcie skala i struktura polskich BIZ zostały przedstawione zarówno w kategoriach ilościowych, jak i jakościowych.

**Słowa kluczowe:** bezpośrednie inwestycje zagraniczne (BIZ), internacjonalizacja, pomiar ryzyka, międzynarodowe budżetowanie kapitałowe, ocena efektywności inwestycji zagranicznych.

## 1. Introduction

Unlike in the 20th century, when Foreign Direct Investments (FDI) made by companies from developing countries were not substantial, or were negligible as in the case of Poland, today we observe a dramatic increase in their investment activity abroad. The value of Polish FDI was negligible at the start of the previous decade. However, there has been a significant increase in foreign investment activity among local companies since Poland joined the European Union. The growing scale of capital investment on the part of Polish enterprises outside their country justifies the need for more intensified research of the most developed form of internationalisation, which is Foreign Direct Investment. What also needs to be studied is the evaluation of the forms of measurement of FDI effectiveness, as well as the use of a formal country risk analysis (the risk in the host country in which the investment is made).

Although a number of studies have been conducted on the evaluation of the effectiveness of foreign investment over the last few years, the vast majority of them deals with large enterprises from highly developed countries – the UK and the US. It has been nearly half a century since the presentation of the first results of the research [Stonenhill, Nathanson 1968] concerning practices applied by US multinational companies in evaluating the effectiveness of foreign projects. During this time, a number of important papers have been written presenting the results of studies on various aspects of international capital budgeting. These studies present a range of research results on such aspects as: forms of income, measurements of evaluating the effectiveness of foreign investment, discount rates used in calculating this effectiveness, ways of taking risk into account when evaluating the effectiveness of FDI [Oblak, Helm 1980; Bavishi 1981; Wicks Kelly, Philippatos 1982; Stanley, Block 1983; Kim, Farragher, Crick 1984; Backer 1987; Wilson 1990; Goddard 1990; Shao, Shao 1993; Shao, Shao 1996; Buckley et al. 1996; Drury, Tayles 1996; Graham, Harvey 2001; Holmén 2007; Róžański 2010]. There is, however, much less work presenting methodologies for evaluating the effectiveness of foreign investment applicable to companies from developing countries [Tsamenyi, Skliarova 2005, Karaszewski et al. 2009; Jaworek 2013; Karaszewski et al. 2014].

## 2. Research methodology and the course of the research process

The aim of this paper is to analyse the use of formal country risk assessment and the methods for evaluating the effectiveness of foreign projects by Polish foreign investors, based on their degree of internationalisation. In order to achieve this aim, a research hypothesis has been adopted, which states that Polish companies characterised by a greater degree of internationalisation<sup>1</sup> are more likely to use formal country risk analysis (e.g. risk adjusted discount rate, certainty equivalent method, shorter payback period, sensitivity analysis, scenario analysis, expert panels, statistical analysis – variance and standard deviation, decision tree analysis, Monte Carlo simulation, risk matrices) and to use more sophisticated (discount-based) methods when evaluating the effectiveness of Foreign Direct Investment.

This paper is divided into two parts. The first part presents the scale of Polish Foreign Direct Investment, including FDI outward stocks (between 2000-2014) and the number of Polish companies operating abroad (between 2008-2013). This section uses a number of periodically published papers by organisations such as: the United Nations Conference on Trade and Development (UNCTAD), the National Bank of Poland (NBP) and the Polish Central Statistical Office (GUS). The second part presents selected results of the authors' own research conducted as part of Research Project No. NN112 322338 entitled “*Investment Activity of Polish Enterprises Abroad – Factors and Effects*”<sup>2</sup>, financed by the Ministry of Science and Higher Education under the decision No. 3223/B/H03/2010/38.

64 Polish companies (out of 622 originally identified by the research team as foreign investors), which implemented a total of 279 foreign investment projects, participated in the main part of this research. 63 companies were legal entities. Among these, 44.4% were public companies and the remaining 55.6% were limited liability companies. The majority of these investors (57%) decided to invest their capital abroad in the form of *greenfield* investments, nearly 21% only made *brownfield* investments, and the remaining 22% had done both *greenfield* and *brownfield* projects. Europe was the primary destination for international expansion among the surveyed companies and 97% of all the companies located their direct investment there.

To collect valuable information about their foreign activity, in respect to the risk measurement and investment effectiveness evaluating, the CAPI (*Computer Assisted Personal Interviewing*) method was adopted. In most cases, the information was received from finance managers within the companies surveyed.

The methods of comparative analysis, diachronic analysis and the method of induction were used in this study.

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<sup>1</sup> To evaluate the degree of internationalisation, Transnationality Index (TNI) has been adopted, which is calculated as an average of the following three ratios: foreign assets to total assets, foreign sales to total sales and foreign employment to total employment.

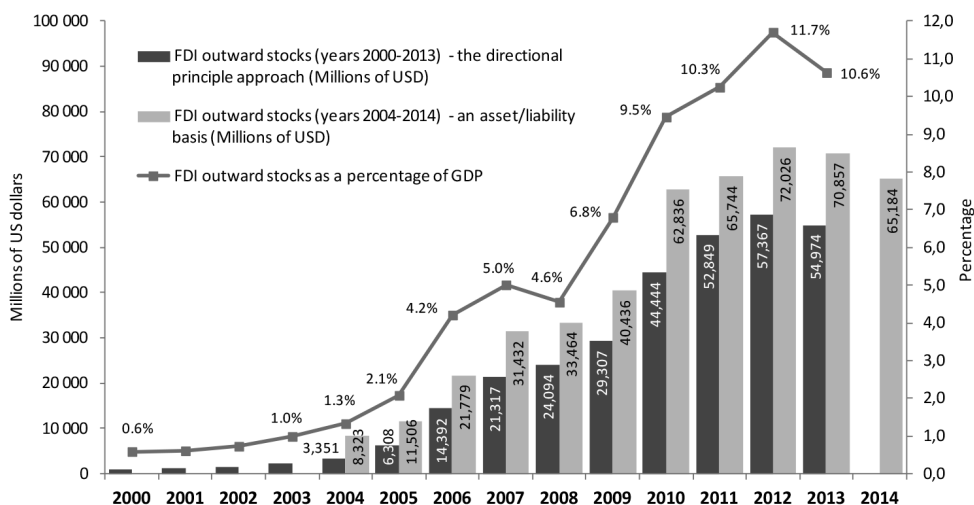
<sup>2</sup> The scope of the project covered a much broader research programme carried out by the following team: W. Karaszewski (head), M. Jaworek, M. Kuzel, M. Szalucka, A. Szóstek and M. Kuczmarzka.

### 3. Foreign Direct Investment by Polish companies – the scale

The last decade or so brought about further dynamic growth in international capital flows in the form of Foreign Direct Investment. Particularly significant is the growing role of developing countries (including economies in transition) in which an unprecedented increase in foreign investment activity has been recorded among their enterprises. In the years 2000-2013, the value of outward FDI stocks globally grew at an average rate of 10.4% per year (according to data from 2013, this meant a 3.4-fold increase compared to the year 2000), while the growth rate of investment made by companies in developing countries reached 13.3% (and was up by 4.8 times), and for economies in transition the rate was even higher – 26.9% (16-fold growth). This impressive growth rate of FDI generated by developing countries (including economies in transition) does not change the fact that it is the developed countries that are still the major providers of capital around the world, even though their importance is gradually decreasing. In 2000, the share of developed countries in the development of outward FDI stocks was estimated at 75.6%, in 2005 – at 73.7%, in 2010 – at 64% and in 2013 – at a mere 63% [UNCTADstat 2015]. It is believed that this trend will gradually intensify in the future, due to certain Asian countries that have been particularly active in the recent years developing very rapidly [Karaszewski, Kuzel, Szałucka 2011], as well as some countries in South America and Central and Eastern Europe. These regions are now attracting most attention among analysts, academics, and policymakers.

Poland, like other developing countries, is increasingly getting involved in the process of internationalisation. This phenomenon results not only in increased trade (particularly exports) or attracting foreign investors, but also in an increasing capital expansion among domestic enterprises. A significant increase of Polish foreign investments has been observed since 2004 (Figure 1), in which outward FDI stocks amounted to USD 3.351 million (USD 8.323 million according to an asset/liability basis – see the notes in Figure 1), then rose 17-fold reaching USD 57.367 million (USD 72.026 million) in 2012 and USD 54.974 million (USD 70.857 million) in 2013. Although these values, when compared with global FDI, accounted for only 0.25% in 2012 and 0.22% in 2013, from the point of view of the Polish economy they should be considered as significant – they corresponded to 11.7% and 10.6% of Polish GDP in 2012 and 2013 respectively. In 2014 the value of outward FDI for Polish stocks was slightly lower and dropped to USD 65.184 million on an asset/liability basis.

Investment projects abroad are undertaken by an increasing number of businesses. According to the Central Statistical Office of Poland, at the end of 2013 the number of businesses with overseas shares, branches or plants amounted to 1,588, and the number of their subsidiaries (or co-subsidiaries) was 3,366. For comparison, in 2008, since the records began, the number of companies carrying out foreign investment projects amounted to 1,106, while the number of foreign companies was 2,541



Notes: data for 2000-2013 is based on the directional principle; data for 2004-2014 is presented on an asset/liability basis adopted by the National Bank of Poland according to the new guidelines for the compilation of FDI data as part of balance of payments and international investment position; statistics based on the sixth edition of IMF's Balance of Payments and International Investment Position Manual [IMF 2009] and the fourth edition of OECD's Benchmark Definition of Foreign Direct Investment [OECD 2008].

**Figure 1.** Outward foreign direct investment stocks of Poland, 2000-2014

Source: Authors' own study, on the basis of UNCTADstat [2015], NBP [2015].

**Table 1.** Companies established in Poland with shares, branches or plants overseas

Details	2008	2009	2010	2011	2012	2013
The number of companies with foreign operations	1.106	1.313	1.443	1.501	1.437	1.588
The number of foreign companies	2.541	2.747	2.988	3.178	3.194	3.366

Source: Authors' own study on the basis of GUS [2008-2013].

(Table 1). According to GUS, Polish capital has been involved in 103 countries around the world with Germany, Ukraine, the Czech Republic, Russia and Romania being the main destinations of investment. Most companies with foreign operations engaged in activities in the field of manufacturing, trade, motor vehicle repair and construction. It should also be emphasized that these companies did not always engage in the same activities abroad as in Poland. Most of them operated in the following areas: trade, motor vehicle repair, manufacturing, construction and professional, scientific and technical activities [GUS 2013].

## **4. Evaluation of the effectiveness of Foreign Direct Investment**

FDI is a special type of investment activity, owing to the fact that, among other things, the evaluation of its effectiveness is much more complex than it is in the case of the evaluation of investment made in the investor's home market. This applies to each stage of the evaluation – from the forecast of incremental cash flow (which may be different from an investor's perspective and from the point of view of the subsidiary), through the risk assessment of a project that is adequate to the risk of doing business in a country less recognised than the home country, an estimate of the appropriate discount rate, to the estimate of the measurement of the effectiveness of the analysed project.

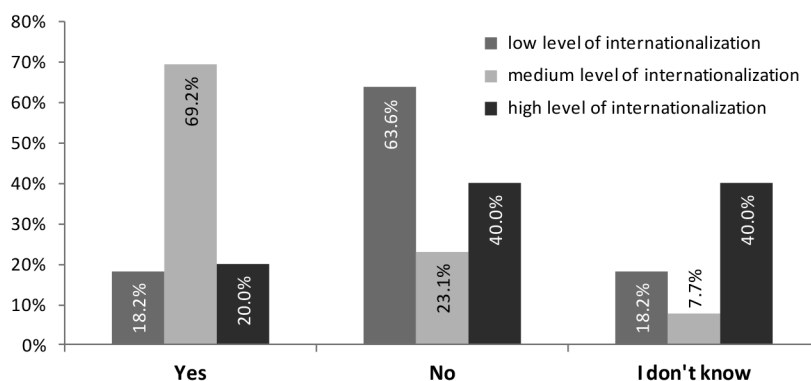
Risk analysis seems particularly important in this context. Undertaking Foreign Direct Investment, which involves broadening business activity to other countries, affects the intensification of the range and the combination of uncertainty and risk factors [White, Fan 2006]. Companies operating in many countries must be able to evaluate a wide range of factors, both general and specific, and take them into account in the decision-making processes. Country risk is a result of placing the investment outside the investor's home country and of having incomplete knowledge of the business environment in the host country and the advantages the local entrepreneurs have over the investors. That is why it seems obvious that investors undertaking investment abroad expect a higher premium for the risk incurred [Meldrum 2000]. Risk assessment and a choice of appropriate measurements, when evaluating the effectiveness of the foreign investment decision making process, are therefore a necessary requirement for every sensible investor.

### **4.1. Risk measurement during the evaluation of the effectiveness of Foreign Direct Investment – the results of the survey**

Looking at the opinions of the companies studied relating to the use of a formal country risk analysis, one will notice that a group of investors characterised by a medium level of internationalisation to a large extent applied the methods of foreign investment risk assessment recommended by science (69.2%, Figure 2). The most commonly used techniques are: the risk adjusted discount rate, the certainty equivalent method and the shorter payback period.

Companies with a low degree of internationalisation are characterised by the lack of commitment to country risk assessment for the undertaken foreign investment (63.6%). This is usually justified by the small scale of the investment itself or simply the feeling that such an assessment is unnecessary in their case. The latter reason was also most frequently given by Polish investors with a medium level of internationalisation.

A significant proportion of companies characterised by a high degree of internationalisation did not use a formal country risk assessment either (40.0%).



**Figure 2.** The use of a formal country risk assessment for the foreign investment undertaken according to the degree of internationalisation of Polish enterprises (%)

Source: Authors' own study, on the basis of survey results.

Another interesting explanation was that an investor signs a contract first and then assesses the risk. If we assume that this indication describes a company which follows a traditional path of internationalisation [Johanson, Wiedersheim-Paul 1975; Johanson, Vahlne 1977], such an approach appears to be justified. In making their decision, investors are familiar with the conditions in which the investment is made; however, they undertake an in-depth risk analysis after having signed the contract for a project in order to be able to manage it effectively.

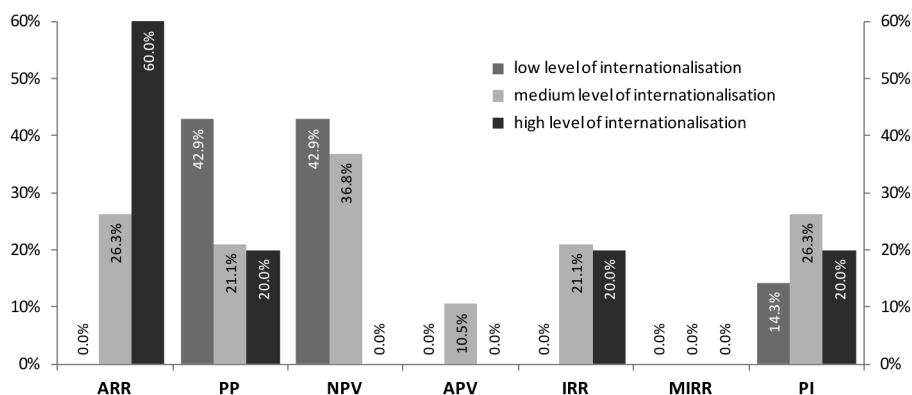
#### **4.2. Measurements of the evaluation of effectiveness of Foreign Direct Investment used by Polish companies – the results of the survey**

The research shows that Polish investors characterised by a low degree of internationalisation usually applied the NPV and PP measurements when evaluating foreign projects (42.9%). They did not, however, use such complex measurements as: IRR, APV, or a simple measurement of ARR (Figure 3). These companies used only one method of evaluating effectiveness to analyse their investment.

Companies with a medium degree of internationalisation also used the NPV measurement most frequently (36.8%). Two measurements of assessment, the ARR and the PI, ranked second (26.3%). Over 20% of companies in this group also used the PP and the IRR measurements. Within this group, 63.2% companies used only one method of evaluating the effectiveness, 26.3% – used two and 10.5% – three methods.

The research also suggests that companies with a high degree of internationalisation are not guided by the NPV measurement, recommended in the literature on the subject,

when evaluating international projects. The majority of respondents from this group used the ARR accounting method in their assessment of foreign projects (60.0%). Companies in this group also used the PP, IRR and PI methods (20.0%). As many as 80% investors used only one method in assessing the effectiveness.



Notes: The respondents were able to indicate more than one answer.

**Figure 3.** The methods used in evaluating the effectiveness of Polish Foreign Direct Investment according to the degree of enterprise internationalisation (%)

Source: Author's own study, on the basis of survey results.

It can be concluded that, when compared to the other two groups, companies with an average degree of internationalisation used the discount methods more often and used more than one method for assessing the effectiveness more frequently.

## 5. Conclusion

A high degree of internationalisation is a significant and unique attribute of the biggest and most established transnational corporations' activity. It demonstrates a significant degree of internationalisation of their business activity, which translates into their experience and the effectiveness of their operations abroad. Such effectiveness is made possible thanks to, among other things, choosing effective investment projects in different parts of the world. In order for those aims to be achieved, it is necessary to measure the risk and to use discount measurements of evaluating the profitability of an investment, which can determine more precisely (compared to simple methods) the value of the project for the entire corporation. In addition to this, foreign investors, who usually invest substantial financial resources, should not limit themselves to only one method. It should be common practice to use several methods of evaluating effectiveness, in particular the net present value as well as other discount measures. It seems appropriate to use relative methods such as MIRR, which allow comparing



a project evaluated with other alternative investments. At the same time using such measures as the payback period may also be justifiable, especially when the PP is not the only one method adopted to assessing an investment project (the PP is rather recommended as an auxiliary measure). The recommendation obtained in this way (as a result of the complex approach) forms a complete and objective basis for making investment decisions. From this point of view, it should be emphasized that the application of the methods of assessing investment recommended by science (including risk assessment) is far too seldom used among businesses.

In the literature on the subject it is also argued that the real options analysis should be considered in the evaluation of FDI effectiveness. It is emphasised that such an approach is relevant as using only traditional methods when valuating FDI may become insufficient for certain projects. Moreover, the traditional methods may occur even faulty in some exceptional cases. Unfortunately, the research results show that the vast majority of Polish investors did not use the real options valuation. It was applied by only 18.0% of the investors surveyed, which made the further analysis based on the degree of their internationalisation impossible.

In the case of Polish companies (foreign investors) one cannot conclude that along with a greater degree of internationalisation comes an increase in the use of discount methods or a formal country risk analysis. The results show that the greatest scope and intensity in using the methods of evaluating foreign investment is seen among enterprises with an average degree of internationalisation by TNI. An explanation for this can be found in the size of the parent company and the scale of its foreign operations. A small domestic company undertaking foreign direct investment in only one country, but having activities of a similar magnitude as the carried out in its home market, may have a high degree of trans-nationalisation, which does not necessarily indicate extensive experience in doing business on an international scale. On the other hand, companies with an average degree of internationalisation by TNI may have more experience internationally than a company with the highest TNI, as well as greater awareness of the fact that a broad evaluation of the effectiveness affects the success of, not only one specific investment project, but translates into an increase in the value of the whole corporation.

In summary, our scientific hypothesis cannot be verified adequately on the basis of only one of the parameters of internationalisation, namely TNI<sup>3</sup>. The considerations presented in this paper, however, show the diversity of experience of Polish companies (foreign investors) depending on the criterion used. In this sense, they are justified and may prompt further in-depth studies and analysis in

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<sup>3</sup> The degree of internationalisation among companies can be measured on the basis of both quantitative and qualitative indicators. The first group of indicators includes the transnationality index used in this paper. Within this group, there are also the following indicators: the share of revenues abroad to total revenues, the number of supported overseas markets, the share of profits made abroad to total profits. An example of a qualitative indicator may be the type of a company's foreign involvement [Sullivan 1994].



this area. There is a need for further research as the experience and the practices of companies can, and probably will, change over time, together with a growing degree of internationalisation of the entire Polish economy. Another area that may also require attention is the behavioural aspects related to making investment decisions, as well as the potential expansion or modification of currently used instruments, including recommendations relating to the creation of advanced comprehensive reference models for evaluating international investment projects.

## References

- Backer J.C., 1987, *The Cost of Capital of Multinational Companies. Fact and Fallacies*, Managerial Finance, Vol. 13, No. 1, pp. 12-17.
- Bavishi V.B., 1981, *Capital Budgeting Practices at Multinationals*, Management Accounting, Vol. 59, August, pp. 32-35.
- Buckley A., Buckley P.J.S., Langevin P., Tse K.L., 1996, *The Financial Analysis of Foreign Investment Decision by Large UK-Based Companies*, The European Journal of Finance, Vol. 2, No. 2, pp. 181-206.
- Drury C., Tayles M., 1996, *UK Capital Budgeting Practices: Some Additional Survey Evidence*, European Journal of Finance, No. 2, pp. 371-388.
- Goddard S., 1990, *Political Risk in International Capital Budgeting*, Managerial Finance, Vol. 16, No. 2, pp. 7-12.
- Graham J.R., Harvey C.R., 2001, *The Theory and Practice of Corporate Finance: Evidence from the Field*, Journal of Financial Economics, pp. 187-243.
- GUS, 2008-2013, (subsequent years), *Działalność podmiotów posiadających udziały w podmiotach z siedzibą za granicą*, Warszawa, <http://stat.gov.pl> (01.08.2015).
- Holmén M., 2007, *Capital Budgeting and Political Risk: Empirical Evidence*, Uppsala University, Bengt Pramborg, Swedish National Debt Office.
- IMF, 2009, *Balance of Payments and International Investment Position Manual*, Sixth Edition (BPM6).
- Jaworek M., 2013, *Ocena ekonomicznej efektywności bezpośrednich inwestycji zagranicznych w praktyce polskich przedsiębiorstw*, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, Toruń.
- Johanson J., Vahlne J.E., 1977, *The Internationalization Process of the Firm: A Model of Knowledge Development and Increasing Foreign Market Commitments*, Journal of International Business Studies, Vol. 8, No. 1, pp. 23-32.
- Johanson J., Wiedersheim-Paul F., 1975, *The Internationalization of the Firm: Four Swedish Cases*, Journal of Management Studies, Vol. 12, no. 3, pp. 305-323.
- Karaszewski W., Jaworek M., Kuzel M., Szałucka M., Szóstek A., 2014, *Foreign Direct Investment by Polish Companies*, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, Toruń.
- Karaszewski W., Jaworek M., Kuzel M., Szałucka M., Szóstek A., Długołęcka K., 2009, *Foreign Direct Investment of Polish Companies: Its Scale, Structure, Determinants, Influence on the Competitiveness*, Wydawnictwo Naukowe Uniwersytetu Mikołaja Kopernika, Toruń.
- Karaszewski W., Kuzel M., Szałucka M., 2011, *Bezpośrednie inwestycje zagraniczne krajów rozwijających się*, p. 17-38, [in:] Nalepka A. (ed.), *Inwestycje i nieruchomości. Wyzwania XXI wieku*, Fundacja Uniwersytetu Ekonomicznego w Krakowie, Kraków.
- Kim S.H., Farragher E.J., Crick T., 1984, *Foreign Capital Budgeting Practices Used by the US and non-US Multinational Companies*, The Engineering Economist, Vol. 28, No. 3, pp. 207-215.
- Meldrum D.H., 2000, *Country Risk and Foreign Direct Investment*, Business Economics, January, pp. 33-40.

- NBP, 2015, *International Investment Positions of Poland*, <http://www.nbp.pl> (01.08.2015).
- Oblak D.J., Helm R.J., 1980, *Survey and Analysis of Capital Budgeting Methods Used by Multinationals*, *Financial Management*, Vol. 9, No. 4, pp. 37-41.
- OECD, 2008, *OECD Benchmark Definition of Foreign Direct Investment*, Fourth Edition, Paris(BD4).
- Róžański J., 2010, *Przedsiębiorstwa zagraniczne w Polsce. Rozwój. Finansowanie. Ocena*, Polskie Wydawnictwo Ekonomiczne, Warszawa.
- Shao L.P., Shao A.T., 1993, *Capital Budgeting Practices Employed by European Affiliates of US Transnational Companies*, *Journal of Multinational Financial Management*, Vol. 3, No. 1-2, pp. 95-109.
- Shao L.P., Shao A.T., 1996, *Risk Analysis and Capital Budgeting Techniques of U.S. Multinational Enterprises*, *Managerial Finance*, Vol. 22, No. 1, pp. 48-57.
- Stanley M.T., Block S.B., 1983, *An Empirical Study of Management and Financial Variables Influencing Capital Budgeting Decision for Multinational Companies in the 1980s*, *Management International Review*, Vol. 23, No. 3, pp. 61-72.
- Stonenhill A., Nathanson L., 1968, *Capital Budgeting and the Multinational Corporation*, *California Management Review* 1968, Vol. 10, No. 4, pp. 39-54.
- Sullivan D., 1994, *Measuring the Degree of Internationalization of a Firm*, *Journal of International Business Studies*, Vol. 25, No. 2, pp. 325-342.
- Tsamenyi M., Skliarova D., 2005, *International Cash Management Practices in a Russian Multinational*, *Managerial Finance*, Vol. 31, No. 10, pp. 48-64.
- UNCTADstat, 2015, <http://unctadstat.unctad.org> (01.08.2015).
- White C., Fan M., 2006, *Risk and Foreign Direct Investment*, Palgrave MacMillan, New York, pp. 125-175.
- Wicks Kelly M.E., Philippatos G.C., 1982, *Comparative Analysis of the Foreign Investment Evaluation Practices by U.S.-Based Manufacturing Multinational Companies*, *Journal of International Business Studies*, Vol. 13, No. 3, pp. 19-42.
- Wilson M., 1990, *Empirical Evidence of the Use of a Framework of Risk and Return in Capital Budgeting for Foreign Direct Investment*, *Managerial Finance*, Vol. 16, No. 2, pp. 25-34.