External factors affecting investment decisions of companies

Piotr Bialowolski

Institute of Statistics and Demography, Warsaw School of Economics, Warsaw, Poland
Ul. Madalinskiego 6/8, 02-513 Warsaw, Poland

Dorota Weziak-Bialowolska

Econometrics and Applied Statistics Unit, Institute for the Protection and Security of the Citizen, Joint Research Centre, European Commission
Via E. Fermi 2749, TP 361, 21027 Ispra (VA) Italy

Abstract

In this paper we attempt to investigate the importance of certain external factors on the investment decision among Polish companies. With the use of data from the tailored made *Survey on Receivables* we examine factors influencing investment decisions of companies in Poland, assess the relation between the branch and company size and importance of the factors and finally we determine the relative influence of these factors on the actual investment reductions.

The results showed that first, although the problem of payment delays is the most important single reason determining the investment decisions of Polish companies, its importance decreases when analyzed simultaneously with other reasons. Second, there are two driving forces determining the investment decisions of Polish companies, namely macroeconomic factors and law-related factors with the relative importance of the former lower than the latter. Third, there is a positive association between the importance attached to factors influencing investment decisions associated with either macroeconomic or legal environment and the investment reductions, meaning that companies facing higher investment reductions are also more prone to notice and value the factors influencing these decisions.

Keywords: investment decisions, company, survey, structural equation modelling

JEL: D92 G11 G31

1. INTRODUCTION

Investment decisions are crucial for the performance of the economy from two perspectives. From the macro perspective in regular business cycle they account for the majority of volatility in the Gross Domestic Product Dynamics but also their magnitude serves as a significant leading indicator of the economic performance (Zarnowitz 1992). From micro perspective, they are crucial for the growth of individual companies, increasing their efficiency by reducing unit costs.

The research aiming at investigating the process of investment decision at the company's level have generally shown that it is a multi-criteria process (Enoma and Mustapha 2010) taking into account numerous factors. These are economic and risk factors, but also political and social environment and government regulations (Enoma and Mustapha 2010). Naturally, the effects of these factors on decisions of individual companies vary significantly. In general all investors appreciate transparency of information and trustworthiness in a country or in a market. They are afraid of risk factors like market uncertainty, lack of market knowledge and lack of investment experience (Kahraman 2011; Trappey et al. 2007), which are likely to make firms underinvest (Liu and Pang 2009; Volker et al. 2009).

Because of the importance of the proper investment behavior for the company's performance and growth opportunities, many attempts have been made in the literature to describe and assess it. These studies have generally shown that financial factors are more important with regard to investment process for smaller firms (Carr et al. 2010; Fazzari, et al. 1998; Liu and Pang 2009). Since they have limited access to capital markets, they are forced to rely more on internal funds, like for example personal savings or funds borrowed from relatives or friends (Gill et al. 2012). Furthermore, in order to meet these needs and to assess the risk of investment they apply different kinds of financial bootstrapping methods (Ekanem 2005; Winborg and Landstrom 2000). Large companies, on the other hand, have better access to external funding (collateral, credit etc.) and for the investment appraisal use more formal methods like capital budgeting (Laux 2008; Sandahl and Sjogren 2003; Verbeeten 2006).

Having said so, we want to note that in order to make the investment process work, the investment needs to be implemented along with the needs of companies and comply with the firm's ability to absorb them (Nelson 2005). However, very often happens that companies are ready to invest (and absorb a new technology) but due to external factors their investment activity is reduced. In our opinion the most important and commonly acknowledged external

factors influencing, and thus likely to impede, the investment decisions are those that relate to macroeconomic prospects and monetary policy conducted in a country, which are manifested in expected GDP growth and interest rates (Karima and Azman-Sainib 2012). Their role is so widespread that it might be assumed that all companies are influenced by them in their investment decisions. Other important factors that strongly affect the investment possibilities are the liquidity and pattern of debt repayment observed among the companies in the economy. If companies suffer from delays in obtaining their receivables, then their costs are likely to incline and new investment projects might be to a large extent reduced (compare Bialowolski and Prochniak 2013). Then, investment actions are usually influenced by external decisions associated with the government performance. Among those, the most important are tax policy which directly influences the rate of return on investment (Alam and Stafford 1985; Hodgkinson 1989; Morgan 1987, 1992; Overesch and Wamser 2010; Santoro and Wei 2012). However, it has been shown that they are more important for large firms than for small ones (Alam and Stafford 1985) and in the case of the latter they might be not even comprised in the investment decision process (Hodgkinson 1989). Furthermore, the rate of return, though not explicitly, can be influenced by the performance of institutions in the country (Child and Yuan 1996; Nelson 2005). Finally, investment decisions can be influenced by barriers that might be due to the state of current regulations in a country (Ozorio et al. 2013) or in the European Union (Volker et al. 2009), which are very visible in the area of environmental protection (Laurikka and Koljonen 2006).

The economic literature have identified numerous approaches that have been implemented in order to assess what factors influence the investment decisions and to what extent. They were based on survey data (Bond et al. 2003; Enoma and Mustapha 2010; Gill et al. 2012; Karima and Azman-Sainib 2012; Masini and Menichetti 2013; Morgan 1987, 1992; Newell and Seabrook 2006), annual accounts data (Liu and Pang 2009), personal interviews (Ekanem 2005; Newell and Seabrook 2006) and direct observation (Ekanem 2005). The methods used comprise a dynamic neoclassical investment function based on system of generalised method of moments estimations (Karima and Azman-Sainib 2012; Liu and Pang 2009), principal component analysis (Enoma and Mustapha 2010; Gill et al. 2012; Masini and Menichetti 2013; Tsado and Gunu 2011), multi-criteria decision-making procedure of analytic hierarchy process (Newell and Seabrook 2006), econometric analysis (Hogan and Lewis 2005; Masini and Menichetti 2013), to name only a few.

The increasing interests in research aiming at investigating the importance of the external factors influencing the investment decisions of companies give rise to the question about what this process is like among Polish firms. This was especially important as in 2011 about 70% of Polish reduced their investments. To this aim a tailored made survey designed to measure the impact of overdue receivables on the functioning of Polish enterprises, namely *Survey on Receivables*, was worked out (Bialowolski 2009). With the use of the survey we (1) evaluate importance of different external factors influencing investment decisions of companies in Poland, (2) assess whether branch and company size matter for the level of importance and (3) investigate the relative influence of these factors on the actual investment reductions.

This study adds to the current literature on investment decision making among firms in four ways. First, this study is the first to present the scale of investment reductions in Poland and its relation to economic, political, institutional, legal and environment-related factors. Second, the study provides classification of factors responsible for investments in companies, showing that two driving forces can be distinguished: (1) impact of macroeconomic situation on investment decisions and (2) impact of legal environment on investment decisions. Third, this research shows the branches affected the most by the investment reduction with respect to the importance of macroeconomic situation and legal barriers. Finally, it delimits the relation between importance of macroeconomic and legal factors and actual investment reductions on the company level.

The remainder of the paper is organised as follows. In the following section the data used and the methods applied are succinctly presented. Then, in the Results section, first the importance of different external factors influencing investment decisions of companies in Poland, based on simple descriptive statistics, are shown and interpreted. Then the outcomes of exploratory approach, followed by those of confirmatory approach aiming at assessment of their importance are presented. Finally, the relative influence of these factors on the actual investment reductions is indicated. The key findings are summarized, limitations of the research are noted, and possibilities for future research are presented in the Discussion section.

2. DATA AND METHODS

Our study is based on individual survey data from a set of special questions comprised in the *Survey on Receivables* (Bialowolski 2009). The *Survey on Receivables* was launched in Poland in January 2009 to measure the impact of overdue receivables on the functioning of Polish enterprises. It has been conducted on a quarterly basis with an average of 1859 responses gathered each quarter. The sample of firms is weighted with respect to the region (NUTS1) and branch. A set of questions concerning the factors affecting investment decisions of companies was asked twice: in October 2011 and then in January 2012 (detailed wording of questions is presented in Appendix 1).

In order to determine external factors influencing the investment decisions of companies we first apply exploratory factor analysis (Brown 2006; Hurley et al. 1997) in order to investigate if the statements describing reasons influencing the investment decisions in the Polish companies are driven by common factors. Having confirmed it by means of confirmatory factor analysis (Brown 2006), we then develop a structural equation model (Bielby and Hauser 1977; Jackson et al. 2009; Kline 2011; Saris et al. 2009) oriented to establishing factors responsible for investment decisions of enterprises according to the company size and the branch and to investigating the relation between these factors and actual investment reductions on the company level.

To assess the model fit we use the set of commonly accepted measures of like Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI). With respect to RMSEA, commonly accepted values should be within the range of 0.00 – 0.08 (Browne and Cudeck 1992). With respect to CFI and TLI, it is usually assumed that these statistics should be above 0.9 or 0.95 in order to judge the model as acceptable (Hu and Bentler 1999).

All analyses are run using Mplus 6.1 (Muthén and Muthén 2012). Due to the categorical character of items, in the estimation procedure, the robust weighted least squares estimator is used. This is a default estimator in the analysis using categorical indicators in Mplus (Muthén and Muthén 2012). Sampling weights are also taken into account in the analyses.

3. RESULTS

3.1 DESCRIPTIVE STATISTICS

Before the common driving forces in the investment decisions determinants can be detected, the importance of each of the statements is subject to the analysis. The results are presented in Table 1.

Table 1. Investment reductions among Polish companies

Has your company been reducing investments?	Yes, to a very high degree (reduction by over 50% with respect to the optimum state)	Yes, to a high degree (reduction 21-50% with respect to the optimum state)	Yes, to a medium degree (reduction 11-20% with respect to the optimum state)	Yes, but to a very limited degree (reduction by up to 10% with respect to the optimum state)	No, it has not been reducing investments
Overall	11.7%	11.7%	18.6%	25.1%	33.0%
Branch					
Agriculture	11,0%	9,8%	25,6%	19,5%	34,1%
Manufacturing	10,1%	9,5%	17,9%	24,8%	37,8%
Construction	14,5%	16,2%	23,1%	20,5%	25,6%
Trade	10,9%	10,1%	20,3%	27,1%	31,6%
Financial services	7,9%	2,2%	11,2%	25,8%	52,8%
Telecommunications	5,1%	15,4%	20,5%	30,8%	28,2%
Other services	13,5%	14,3%	17,5%	25,1%	29,6%
Size					
Up to 9 employees	13,9%	15,2%	21,5%	25,9%	23,4%
10-49 employees	11,4%	10,4%	18,6%	22,6%	37,0%
50-249 employees	7,0%	5,5%	11,7%	27,0%	48,8%
250+ employees	3,2%	3,2%	7,4%	29,8%	56,4%

Source: Data from Survey on Receivables. Own calculations.

In 2011 over 2/3 of Polish companies were forced to investment reductions. The largest group suffered from minor investment reductions (up to 10%), but there was a group of 11.7% of companies in the whole economy which had to reduce their investment activity by over a half. The problem was not, however, spread equally among companies regarding their size and branch. Larger firms were much less exposed to investment reductions. Within branches, the largest share of firms facing major investment reductions was present in the construction sector, while the lowest impact was reported in financial services. Having that in mind, an investigation of the reasons that either favour or hinder the investment activity, with respect to the enterprise's size and branch, was of natural interest. Therefore, with the set of seven statements referring to the importance of different factors for investment decisions an initial overview of the situation among Polish companies is presented in the Table 2.

Table 2. Average importance of different factors in investment decisions of Polish companies

Has your company been reducing investments?	Growth rate forecasts	Interest rates	Payment delays	Tax policy	Legal barriers	Trust in institutions (government)	Need to meet the environmental regulations
Overall	2.92	3.13	2.46	2.55	2.72	2.79	3.19
Branch							
Agriculture	3.10	3.40	2.49	2.55	2.11	2.71	2.49
Manufacturing	2.97	3.20	2.50	2.62	2.71	2.81	2.96
Construction	2.75	3.03	2.17	2.36	2.52	2.57	3.10
Trade	2.87	3.05	2.41	2.51	2.75	2.83	3.29
Financial services	2.90	2.62	2.70	2.56	2.82	2.85	3.94
Telecommunications	3.17	3.05	2.41	2.79	2.98	2.89	3.78
Other services	2.91	3.18	2.47	2.55	2.79	2.79	3.24
Size							
Up to 9 employees	2.95	3.25	2.42	2.51	2.73	2.70	3.35
10-49 employees	2.92	3.02	2.37	2.51	2.69	2.86	3.11
50-249 employees	2.74	3.03	2.65	2.77	2.75	2.87	2.90
250+ employees	3.04	2.97	3.02	2.75	2.77	3.05	2.83

Source: Data from Survey on Receivables. Own calculations.

*(1 – very high importance, 3 – medium importance, 5 – very low importance)

Polish companies declared that in 2009 in the investment decision process the most important elements were payment delays. Less influential, but still important in the investment policy, were factors associated with governmental policy – namely, taxes, trust and legal barriers. Quite surprisingly prospects of growth ranked fifth. Two the least important factors were interest rates and environmental regulations. There were, however, again significant discrepancies between branches and companies regarding their size. Payment delays gained even more importance for construction companies, but were also the most important investment decision factors for companies from manufacturing, trade, and telecommunications sectors and from other services as well as for small and medium sized companies (up to 249 employees). Interest rates were among the key factors for financial services but concurrently they were of a very minor importance to small and medium sized companies. This observation is in a slight contrast with results of Karima and Azman-Sainib (2012), who indicate that small firms are more responsive to monetary tightening when compared to large firms. The largest differences between different kinds of companies were present with respect to the importance of environmental regulations. They seem to be one of the key investment factors for companies operating in agricultural sector, while for companies in financial or telecommunications business, they are of a very low importance.

3.2 EXPLORATORY MODELS

Although we were able to find considerable differences in perception of different factors in the investment decision process between companies, we searched for common driving forces responsible for certain patterns of responses. In order to find them exploratory factor analysis was first employed and then the structural model was proposed. It means that in the first step, under exploratory factor analytical framework, we compared the results of one, two and three factor solutions (Table 3).

Table 3. Factor loadings and fit indices in exploratory factor analysis with one, two and three factor solutions

	One factor solution	Two factor solution		Three factor solution		
	Factor1	Factor1	Factor2	Factor1	Factor2	Factor3
INV1	0.544	0.712	-0.010	0.776	-0.016	-0.039
INV2	0.569	0.723	0.009	0.669	0.018	0.040
INV3	0.478	0.342	0.198	0.302	0.141	0.117
INV4	0.752	0.247	0.555	0.001	1.158	0.000
INV5	0.719	0.004	0.748	-0.040	0.003	0.833
INV6	0.741	-0.040	0.820	0.007	0.137	0.650
INV7	0.518	0.029	0.514	0.042	-0.040	0.558
factor correlations						
(1-2)	N.A.	0.633		0.500		
(1-3)	N.A.	N.A.		0.618		
(2-3)	N.A.	N.A.		0.555		
RMSEA	0.082	0.049		0.021		
CFI	0.900	0.980		0.999		
TLI	0.850	0.947		0.990		

Source: Data from Survey on Receivables. Own calculations in Mplus.

The results depict that single factor solution is clearly not acceptable. All the fit indices are not within the accepted boundaries. Nevertheless, two factor solution seems the first acceptable one. Before it can be allowed for further analysis, it needs to be checked in a confirmatory factor analysis model where small factor loadings (i.e. in our case below 0.1) are constrained to zero (Table 4).

Table 4. Standardized factor loadings and fit indices in confirmatory factor analysis model with two factors

	Two factor solution	
	Factor1	Factor2
INV1	0.700	---
INV2	0.732	---
INV3	0.346	0.195
INV4	0.262	0.543
INV5	---	0.758
INV6	---	0.787
INV7	---	0.538
factor correlations	0.625	
RMSEA	0.039	
CFI	0.982	
TLI	0.966	

Source: Data from Survey on Receivables. Own calculations in Mplus.

The fit indices of the two factor model run under confirmatory factor analysis framework confirm that the model is well fitted. The pattern of factor loadings clearly show that the first factor is associated the most with macroeconomic environment and reflects the importance of growth prospects and interest rates in the investment decision process. Additionally, it might be said that it is more connected with the factors that might directly influence the expected rate of return. Second factor is much more associated with legal environment, which is mostly visible in importance of legal barriers and trust towards institutions. Second factor is also responsible for explaining the importance of tax policy and barriers associated with the environmental regulations. By and large it seems that although the problem of payment delays is the most important single reason determining the investment decisions of Polish companies, it has also the lowest communality with other reasons. Then it implies that analyzed simultaneously with other reasons the problem of payment delays loses its importance in favor of other reasons, both in the dimension of macroeconomic environment (Factor 1) or legal environment (Factor2).

3.3 STRUCTURAL MODEL

The next step of the analysis is oriented on presenting companies' characteristics that might influence the perception of importance of the macroeconomic environment and those associated with legal environment. In order to establish the influence the information of company's employment and branch are used as explanatory variables in the structural equation model with two previously determined factors. The significance of explanatory

variables is determined according to the backward elimination procedure and the final results are presented in Table 5.

The analysis shows that as regards the size of a company factors related to macroeconomic environment are more important for companies with employment of 10-49 employees than for their smaller and larger counterparts. It might suggest that smaller and larger companies are not so exposed to macroeconomic environment with their investment decisions as are the medium sized ones. Furthermore, legal environment related decision making factors are of the same importance for all companies regardless of their size. Referring to the branch we can conclude as follows. First, companies from the construction sector are more cautious and consider both macroeconomic environment and legal environment as more important than their counterparts from the sector of other services do. Second, trade companies and financial services companies are significantly more preoccupied with macroeconomic environment in their investment decision process, whereas agricultural companies tend to pay more attention to the legal barriers in their investment decision process, which confirms the findings presented in Table 2, showing that the environmental issues are very important for agricultural companies. Third, among the companies from all branches, the largest influence of macroeconomic factors on investment decision process is reflected by the financial services companies and the largest influence of legal factors on investment decision process – by the agricultural companies.

Table 5. Standardized factor loadings, influence of branch, company size and fit indices in the structural equation model

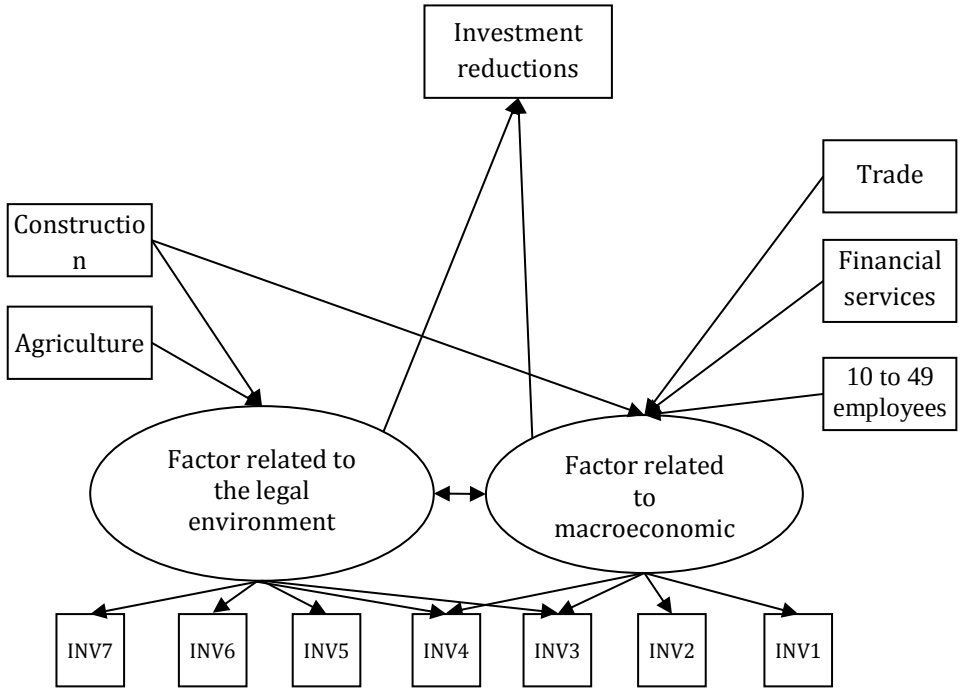
	Two factor solution	
	Factor1	Factor2
INV1	0.689	---
INV2	0.743	---
INV3	0.343	0.198
INV4	0.270	0.535
INV5	---	0.763
INV6	---	0.782
INV7	---	0.545
up to 9 employees	Ref.	
10 to 49 employees	-0.134	---
Other services	Ref.	
Agriculture	---	-0.537
Construction	-0.248	-0.261
Trade	-0.159	---
Financial services	-0.452	---
factor correlations	0.639	
RMSEA	0.037	
CFI	0.957	
TLI	0.939	

Source: Data from Survey on Receivables. Own calculations in Mplus.

* categories insignificant and excluded from the analysis:
1. size: *50 to 249 employees* and *more than 249 employees*;
2. branch: *manufacturing, telecommunications*.

The final step of our analysis is to investigate the relative influence of factors associated with macroeconomic and legal environment on investment reductions. In order to do this we extended the model by introducing the question about the magnitude of the investment reduction (Graph 1).

Graph 1 Final structural equation model for investment reductions



* error terms are omitted

In result the finally estimated model is as follows:

$$inv_red = \underset{(0.046)}{0.098} \cdot macro_env + \underset{(0.041)}{0.199} \cdot legal_env$$
$$inv_red_threshold\#1 = -1.147$$
$$inv_red_threshold\#2 = -0.688 \qquad (1)\text{ , where}$$
$$inv_red_threshold\#3 = -0.204$$
$$inv_red_threshold\#4 = 0.381$$

inv_red is the categorical variable measured on five point scale[1] (see Appendix), *macro_env* and *legal_env* represent standardized factor scores for macroeconomic and legal environment. Additionally, in order to establish the relative influence of factors associated with macroeconomic and legal environment, the standardized coefficients in the regression of investment reductions on macroeconomic and legal environment are considered.

The results of the model (see model (1)) clearly depict that companies which tend to attach more importance to factors associated with either macroeconomic environment or legal environment are more likely to face investment reductions. However, the relative importance of legal environment related reasons is much higher than the relative importance of

[1] Threshold#1 represents change between answer category 1 and category 2, i.e. change from investment reductions of over 50% regarding the optimum scale to investment reductions ranging from 21 to 50%. Threshold#2 represents change between category 2 and category 3, etc.

macroeconomic reasons. It is confirmed by the standardized coefficient being over two times higher in the latter case (0.199 vs. 0.098). The factor scores and regression coefficients of variables related to the company's size and the branch remain essentially the same as in the model without investment reduction variable.

4. DISCUSSION

In this paper we attempted to investigate the importance of certain external factors on the investment decision among Polish companies. With the use of data from the tailored made *Survey on Receivables* (Bialowolski 2009) we investigated importance of different external factors influencing investment decisions of companies in Poland, assessed the relation between the branch and company size and importance of the factors and finally we determined the relative influence of these factors on the actual investment reductions.

To the best of our knowledge it is the first attempt of such research for Polish economy. Although the research is limited to one country only, it benefits from the experience of others gathering all reasonable and applicable to Polish conditions solutions. In general, the results showed that first, although the problem of payment delays is the most important single reason determining the investment decisions of Polish companies, its importance decreases when analyzed simultaneously with other reasons. Second, there are two driving forces determining the investment decisions of Polish companies, namely macroeconomic factors and law-related factors with the relative importance of the former lower than the latter. Third, there is a positive association between the importance attached to factors influencing investment decisions associated with macroeconomic and legal environment and the investment reductions, meaning that companies facing higher investment reductions are also more prone to notice and value the factors influencing these decisions.

Though the research has by and large exploratory nature, the validity of these findings was confirmed. The analyses were repeated on an independent data set coming from the survey carried out a quarter later. The results, despite different with respect to numbers, were the same with regard to interpretation. The inter-temporal changes were not, however, investigated since the timespan between two measurement occasions were not sufficient to record any changes in the opinions.

Despite these advances, the research also has some limitations. The major one relates to ability in providing reliable data on investment decisions especially in a form of a

questionnaire (Morgan 1992). However, we are convinced that taking into regards both pros and cons, the process of data gathering by means of the survey ensured the best possible results with regard to the aim of a research.

Second, the questionnaire used to gather data was developed relying largely on the available empirical research on investment decision process. Although this research has developed in the recent years, and has applied increasingly sophisticated data and methods, it is still far from perfect. Above all, the results presented are so strongly linked to the organizational form, size and branch a company operates in that they often prevented us from obtaining more general and universal conclusions.

Acknowledgments

The contribution of Piotr Bialowolski in this project was financed by the research grant of the Polish National Centre of Science (grant no. UMO-2011/01/D/HS4/04051).

APPENDIX

Set of questions related to the investment decisions of companies.

Question number and code	Question wording	Answer categories (representing also scale points)
INV_RED	Has your company been reducing the investments?	1.0 "Yes, to a very high degree (reduction by over 50% with respect to the optimum state)" 2.0 "Yes, to a high degree (reduction 21-50% with respect to the optimum state)" 3.0 "Yes, to a medium degree (reduction 11-20% with respect to the optimum state) " 4.0 "Yes, but to a very limited degree (reduction by up to 10% with respect to the optimum state)" 5.0 "No, it has not been reducing investments"
INV1	What is the importance of growth rate forecasts for the investment decisions of your company?	1.0 "very high" 2.0 "high" 3.0 "medium" 4.0 "small" 5.0 "very small"
INV2	What is the importance of interest rates for the investment decisions of your company?	1.0 "very high" 2.0 "high" 3.0 "medium" 4.0 "small" 5.0 "very small"
INV3	What is the importance of the existence of payment delays for the investment decisions of your company?	1.0 "very high" 2.0 "high" 3.0 "medium" 4.0 "small" 5.0 "very small"
INV4	What is the importance of the tax policy for the investment decisions of your company?	1.0 "very high" 2.0 "high" 3.0 "medium" 4.0 "small" 5.0 "very small"
INV5	What is the importance of legal barriers impeding investment start for the investment decisions of your company?	1.0 "very high" 2.0 "high" 3.0 "medium" 4.0 "small" 5.0 "very small"
INV6	What is the importance of trust in institutions (government) for the investment decisions of your company?	1.0 "very high" 2.0 "high" 3.0 "medium" 4.0 "small" 5.0 "very small"
INV7	What is the importance of a need to meet the environmental regulations for the investment decisions of your company?	1.0 "very high" 2.0 "high" 3.0 "medium" 4.0 "small" 5.0 "very small"

Source: Survey on Receivables conducted by Conference of Financial Enterprises in Poland and National Debt Register – author of the questionnaire: Piotr Białowolski

REFERENCES

Alam, K. F., and L. W. T. Stafford, (1985). Incentives and investment policy: A survey report on the United Kingdom manufacturing industry. *Managerial and Decision Economics*, *6*(1), 27–32. doi:10.1002/mde.4090060106

Bialowolski, P. (2009). *Portfel naleznosci polskich przedsiebiorstw*.

Bialowolski, P., and M. Prochniak. (2013). Payment Delays Among Polish Companies and their Impact on Economic Growth: Implications from the Survey Data. *under review*.

Bielby, W. T., and R. M. Hauser. (1977). Structural Equation Models. *Annual Review of Sociology*, *3*, 137–161.

Bond, S. R., Elston, J. A., Mairesse, J., and B. Mulkay. (2003). Financial Factors and Investment in Belgium, France, Germany and the UK:A Comparison Using Company Panel Data. *The Review of Economics and Statistics*, *85*, 153–165.

Brown, T. A. (2006). *Confirmatory Factor Analysis for Applied Research*. New York, NY: The Guilford Press.

Browne, M. W., and R. Cudeck. (1992). Alternative ways of assessing model fit. *Sociological Methods and Research*, *21*, 230–258.

Carr, C., Kolehmainen, K., and F. Mitchell. (2010). Strategic investment decision making practices: A contextual approach. *Management Accounting Research*, *21*(3), 167–184. doi:10.1016/j.mar.2010.03.004

Child, J., and L. Yuan. (1996). Institutional Reform: The Case of Investment Decisions in China. *Organization Science*, *7*(1), 60–77.

Ekanem, I. (2005). "Bootstrapping": the investment decision-making process in small firms. *The British Accounting Review*, *37*(3), 299–318. doi:10.1016/j.bar.2005.04.004

Enoma, A., and I. Mustapha. (2010). Factor analysis of investment decision in Nigerian insurance companies. *Interdisciplinary Journal of Contemporary Research in Business*, *2*(8), 108–120.

Fazzari, S. M., Hubbard, R. G., and B. C. Peterson. (1998). Financing Constraints and Corporate Investemtn. *Brookings Papers on Economic Activity*, *1*, 141–195.

Gill, A. S., Sharma, S. P., and N. Mathur. (2012). The Impact of Debt Policy on the Investment Decision of Small Business Owners in India. *International Research Journal of Finance and Economics*, *September*(97), 6–13.

Hodgkinson, L. (1989). Taxation and Corporate Investment. *CIMA Research Studies*.

Hogan, C. E., and C. M. Lewis. (2005). Long-Run Investment Decisions, Operating Performance, and Shareholder Value Creation of Firms Adopting Compensation Plans Based on Economic Profits. *Journal of Financial and Quantitative Analysis*, *40*(4).

Hu, L., and P. M. Bentler. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*.

Hurley, A. E., Scandura, T. A., Schriesheim, C. A., Brannick, M. T., Seers, A., Vandenberg, R. J. and L. J. Williams. (1997). Exploratory and confirmatory factor analysis: guidelines, issues, and alternatives. *Journal of Organizational Behavior*, *18*, 667–683.

Jackson, D. L., Gillaspy, J. A., and R. Purc-Stephenson. (2009). Reporting Practices in Confirmatory Factor Analysis: An Overview and Some Recommendations. *Psychological Methods*, *14*(1), 6 – 23. doi:10.1037/a0014694

Kahraman, C. (2011). Investment decision making under fuzziness. *Journal of Enterprise Information Management*, *24*(2), 126–129. doi:10.1108/17410391111106266

Karima, Z. A., and W. N. W. Azman-Sainib. (2012). Firm-level investment and monetary policy in Malaysia: do the interest rate and broad credit channels matter? *Journal of the Asia Pacific Economy*. doi:10.1080/13547860.2012.742686

Kline, R. B. (2011). *Principles and Practice of Structural Equation Modeling* (Third., pp. 1–427). New York, London: The Guilfor Press.

Laurikka, H., and T. Koljonen. (2006). Emissions trading and investment decisions in the power sector—a case study in Finland. *Energy Policy*, *34*(9), 1063–1074. doi:10.1016/j.enpol.2004.09.004

Laux, V. (2008). On the value of influence activities for capital budgeting. *Journal of Economic Behavior & Organization*, *65*(3-4), 625–635. doi:10.1016/j.jebo.2006.01.004

Liu, J., and D. Pang. (2009). Financial Factors and Company Investment Decisions in Transitional China. *Managerial and Decision Economics*, *30*, 91–108. doi:10.1002/mde

Masini, A., and E. Menichetti. (2013). Investment decisions in the renewable energy sector: An analysis of non-financial drivers. *Technological Forecasting and Social Change*, *80*(3), 510–524. doi:10.1016/j.techfore.2012.08.003

Morgan, E. J. (1987). Investment Behaviour and the 1984 Tax Reform: A Managerial Perspective. *Business Economist*, *Winter*.

Morgan, E. J. (1992). Investement behaviour and government tax policy: a survey of the largest UK firms. *Journal of Business Finance & Accounting*, *19*(6), 789–815.

Muthén, L. K., and B. O. Muthén. (2012). *Mplus User's Guide* (Seventh., pp. 1–856). Los Angeles, CA: Muthen&Muthen.

Nelson, R. R. (2005). *Technology, Institutions, and Economic Growth*. Cambridge, Massachusetts: Harvard University Press.

Newell, G., and R. Seabrook. (2006). Factors influencing hotel investment decision making. *Journal of Property Investment & Finance*, *24*(4), 279–294. doi:10.1108/14635780610674499

Overesch, M., and G. Wamser. (2010). The effects of company taxation in EU accession countries on German FDI. *Economics of Transition*, *18*(3), 429–457. doi:10.1111/j.1468-0351.2009.00385.x

Ozorio, L. D. M., Bastian-Pinto, C. D. L., Baidya, T. K. N., and L. E. T. Brandão. (2013). Investment decision in integrated steel plants under uncertainty. *International Review of Financial Analysis*, *27*, 55–64. doi:10.1016/j.irfa.2012.06.003

Sandahl, G., and S. Sjogren. (2003). Capital budgeting methods among Sweden' s largest groups of companies. The state of the art and a comparison with earlier studies. *International Journal of Production Economics*, *84*, 51–69.

Santoro, M., and C. Wei. (2012). A Note on the Impact of Progressive Dividend Taxation on Investment Decisions. *Macroeconomic Dynamics*, *16*, 309–319. doi:10.1017/S1365100509990964

Saris, W. E., Satorra, A., and W. M. Van Der Veld. (2009). Testing Structural Equation Models or Detection of Misspecifications? *Structural Equation Modeling*, *16*(4), 561–582. doi:10.1080/10705510903203433

Trappey, C. V., Shih, T.-Y., and A. J. C. Trappey. (2007). Modeling international investment decisions for financial holding companies. *European Journal of Operational Research*, *180*(2), 800–814. doi:10.1016/j.ejor.2006.02.038

Tsado, E., and U. Gunu. (2011). Analysis of Investment Decision by Nigerian Pension Fund Administrators (PFAs). *International Business and Management*, *3*(2), 133–140. doi:10.3968/j.ibm.l

Verbeeten, F. H. M. (2006). Do organizations adopt sophisticated capital budgeting practices to deal with uncertainty in the investment decision? *Management Accounting Research*, *17*(1), 106–120. doi:10.1016/j.mar.2005.07.002

Volker, H. H., Trautmann, T. T., and J. Hamprecht. (2009). Regulatory Uncertainty: A Reason to Postpone Investments? Not Necessarily. *Journal of Management Studies*, *46*(7).

Winborg, J., and H. Landstrom. (2000). Financial bootstrapping in small businesses: examining small business managers' resource acquisition behaviors. *Journal of Business Venturing*, *16*, 235–254.

Zarnowitz, V. (1992). Rational Expectations and Macroeconomic Forecasts. In V. Zarnowitz (Ed.), *Business Cycles: Theory, History, Indicators, and Forecasting* (pp. 462–491). Chicago: University of Chicago Press.