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# DETERMINANTS OF POLISH ENTERPRISES' PROPENSITY TO LEASE

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## **Determinants of Polish Enterprises' Propensity to Lease**

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### **Abstract**

The paper identifies determinants of financing the purchase of tangible assets by Polish enterprises with use of financial and operating lease. Analysis of financial lease was based on statistical annual reports for the years 1995–2011 (about 50 thousands companies per year), while research of operating lease used half-year reports for the years 2007–2011, both with use of System GMM. The literature of the subject continuously pursues to explain the relations between choosing a lease and other sources of capital, mainly bank loans. Therefore, the main focus of the study is on the dependence between the capital lease and the long-term bank loan, as well as on the relations between the operating lease, the short-term loan and the long-term debt-based financing with no financial lease element (net). The analyses indicate that medium-sized and large companies are more inclined to finance their assets with capital leases than small business and that large companies use more capital leases than small businesses do. It was found that a higher degree of the long-term loan financing results in a lower degree of capital leasing, which indicates the long-term bank loan and capital lease substitutability, similarly as reported by Marston & Harris (1988), Beattie, Goodacre & Thomson (2000), Singh (2011), as well as Lin et al. (2013). The findings for factors affecting the propensity to finance assets with operating leases proves the substitutability of an operating lease and a short-term bank loan, similarly as reported by Beattie, Goodacre & Thomson (2000), Filareto-Deghaye & Singh (2011), as well as Singh (2011).

### **Keywords:**

lease, bank credit, financial lease, operating lease, substitutability, corporate finance, dynamic panel data, system GMM

### **JEL:**

G32, E52, G21, C23, C33

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## **Introduction**

The present study identifies determinants of financing the purchase of business tangible assets with leasing facilities in Poland. The focus of the study is on the purchase of tangible assets shown in the company balance sheet (in case of the capital (financial) leasing) or recorded off the balance sheet (as in the operating lease). The literature of the subject continuously pursues to explain the relations between choosing a lease and other sources of capital, mainly bank loans. Therefore, the main focus of the study is on the dependence between the capital lease and the long-term bank loan, as well as on the relations between the operating lease, the short-term loan and the long-term debt-based financing with no financial lease element (net).

According to the trade-off theory of capital structure, leasing substitutes debt, since the marginal cost of new debt or a new lease increases together with the fixed claim obligations in place (Yan, 2006). Ang & Peterson (1984), on the other hand, explain the complementarity of lease and debt, suggesting market inefficiency in debt and accounts payable valuation. Following the pecking order theory, the shortage of internal funding forces companies to seek external sources, such as debt or equity (through issuing stocks). Yet, due to high costs of external financing, companies experiencing financial constraints may reach for an operating lease. Slotty (2009) indicates that such entities lease a higher share of their assets to mitigate problems of asymmetric information. Firm size is the main determinant of financial constraints. Major companies are less likely to face the information asymmetry problem (Yan, 2006), owing to greater diversification, stable cash flows and benefits from the effect of scale in external financing. Smaller firms find external financing costly, therefore they are more likely to choose lease (Singh, 2011). Slotty (2009), using the price per share to earnings per share ratio as a basis and Beattie, Goodacre & Thomson (2000) – based on the sales revenue growth – proved that firms with a greater potential of growth will be more likely to lease. Singh (2011), on the other hand, measuring firms' growth opportunities by the market-to-book value ratio, found that they are negatively associated with leasing. According to the pecking order theory, firms with high profitability and low growth opportunities need less external financing, including leasing (i.a. Chigurupati & Hegde, 2009; Robicheaux, Fu, & Ligon, 2008). According to the contract cost theory, less profitable firms tend to lease more. Yet, Beattie, Goodacre, & Thomson (2000) proved a positive correlation between profitability and lease-based financing.

Tax-based optimal capital structure theories point a negative correlation between leasing and the marginal tax rate. Duke et al. (2002) found that effective tax rate has a statistically significant impact on leasing, thereby confirming that leasing is stimulated by tax benefits.

The paper will be structured as follows: the first chapter characterizes leasing with reference to legal and tax regulations, as well accounting standards used in Poland. The overview of empirical studies with theoretical framework on the subject of lease is presented in the second chapter. Thereafter, the research sample is characterized in the third part, while the methodology is described in the fourth part. The findings of the panel model analysis of operating lease are presented in the fifth chapter, while the results of panel models analysis of financial lease are discussed in the sixth chapter. The final section of the paper summarizes the discussion and outlines directions for future research.

## **1. Leasing as a Method of Financing**

Leasing is one of the commonly employed methods of financing firms' material investments, i.e. acquiring tangible assets. In an operating lease the asset being leased remains on the lessor's balance sheet and it is the lessor who is responsible for recording depreciation expenses. Lease payments together with the initial payment are lessee's tax-deductible expenses. In Poland, an operating lease is a service as defined in the Goods and Services Tax Act, therefore VAT is charged on each lease payment. A classic operating lease contract is a rental or tenancy service without a provision for the lessee to buy the leased asset out after the lease term end. The asset being leased remains the lessor's property (the financing party). After the lease term ends, the user (the lessee) may purchase the equipment at its market price (contrary to capital leases) or return it to the lessor. According to the Polish accounting standards, a situation where the lease contract provides for a possibility of transferring the title to the asset to the lessee (the user) at a price lower than the market price makes the lease a capital one. According to the IAS 17 – Leases, under a capital lease all the risks and rewards incidental to legal ownership of an asset are transferred by the lessor, regardless of whether the title is transferred or not. All other cases of leasing are classified as an operating lease. From the tax point of view, a financial lease is distinguished from an operating lease in Poland based on who is entitled to claim the depreciation expense. Under a capital lease, tax depreciation is claimed by the user, while under an operating lease – the lessor (Trybała, 2004).

Under capital leases, lessees may not record all of the lease pay as a tax-deductible expense, but only the interest. The user may become the leased asset owner upon payment of the last lease pay. Furthermore, differences between operating and financial (capital) leases regarding tax point and related expenses have a significant impact on the firm's cash flows.

Under a financial lease, a tax shield can be transferred from firms that may not benefit from a tax relief in full (lessees) to firms entitled to do so (lessors), since only interest is recorded as a revenue from financial lease. Hence, firms with marginally low tax rates can be expected to finance their operations with leasing.

Owing to the interest substitution effect and the non-debt tax shield, a firm may achieve the same value through a high financial leverage (debt-based financing, including a financial lease) or through a high non-debt tax shield (operating lease payments). Firms with lower tax reliefs will be more likely to employ debt, since the level of external capital in the company is negatively correlated with the non-debt tax shield (DeAngelo & Masulis, 1980).

## **2. Determinants of Financing Tangible Assets with Leasing – an Overview of Literature**

Lin et al. (2013) argue that for the most constrained firms tend to choose leasing over debt financing. They have proved a negative correlation between the firm size and leasing and a positive correlation between the firm size and lending. Companies with low tangible assets tend to choose leasing over debt. This correlation complies with the hypothesis presented by Rampini & Viswanathan (2011) who point out that low tangible assets translate into a high cost of lending. Rauh & Sufi (2010) suggest that what a firm produces and what the assets used in production are the most important determinants of the capital structure. Firms producing similar products have very similar assets and the structure of these assets is strongly correlated with debt ratios. Beatty, Liao & Weber (2010), on the other hand, indicate that firms with low accounting quality have a higher propensity to lease, i.e. they prefer off-balance-sheet financing.

### ***2.1. Tax Benefits Determine the Use of Leasing***

Capital (financial) leases are chosen for tax benefits, as Lasfer & Levis (1998) confirm in their analysis of a effective tax rate (taxes paid to taxable income) and deferred income tax. Lasfer & Levis (1998) prove that companies that use leasing are more likely to have tax

losses, a high debt-to-equity ratio and high level of fixed capital investment. Small but growing companies or those that are less profitable are more likely to use leasing. Medium-size firms that use leasing employ less bank loans. For major companies, leasing decisions are driven by taxation. Large firms that use leasing are more profitable. In case of large firms, leasing and debt financing are complementary. Large public companies with a high tax overpayment use leasing for minimizing the after-tax cost of capital (Lasfer & Levis, 1998). Morsfield (1998) as well as Duke, Franz, Herbert & Toy (2002) prove a negative impact of the effective tax rate on the operating lease financing and a positive effect of ownership concentration. According to Eisfeldt & Rampini (2009), tax arbitration is easier in case of operating leases. Franzen, Rodgers & Simin (2009) point out that firms with the lowest marginal tax rate are most likely to use leasing. Marginal tax rates are negatively correlated with leasing, while the impact of variables approximating the financial standing deterioration (expected cost of the financial standing deterioration, modified Z-score, negative equity) is positive. Similarly & Singh (2011) indicates a negative correlation between the marginal tax rate and leasing.

## ***2.2. Substitutability of Leases and Bank Loans***

Most theoretical models assume that leases substitute bank loans. Myers, Dill & Bautista (1976), as well as Franks & Hodges (1978) prove that both leases and bank loans decrease firms' debt capacity. Consequently, higher use of leasing should be accompanied by less borrowing. Finucane (1988) points out that such factors as: the debt ratio, the firm's debt rating, the presence of a mortgage debt and the presence of restrictions are positively related to the degree of leasing, while the share of tangible assets in the total assets value shows a negative correlation. Furthermore, he proves a negative effect of subordinated liabilities and tangible assets on the use of leasing. On the other hand, models proposed by Lewis & Schallheim (1992), as well as by Eisfeldt & Rampini (2009) allow for the complementariness of leases and loans if the cost of a loan (lease) decreases together with the lease (loan), which complies with the tax arbitration concept proposed by Lewis & Schallheim (1992). Leases and debts are complementary owing to the possibility of selling the tax shield to the lessor.

Ang & Peterson (1984) reject the hypothesis of the lease and debt substitutability. In their opinion, greater use of debt is associated with a greater use of leasing, the reason being in the market's inefficiency regarding valuation of debts and accounts receivable. According to Lewis & Schallheim (1992), the complementariness of leases and loans complies with the tax

arbitration concept, since the tax shield can be sold to the lessor through the lease contract. Branson (1995) confirms the complementariness of leases and loans, analysing not only the book value but also the market value of 600 non-finance companies over the years 1983–1988. Finucane (1988) supports the findings published by Ang & Peterson (1984) concerning the complementariness of leasing and borrowing, while rejecting the hypothesis that a greater diversity of tax thresholds translates into a higher degree of leasing. He suggests that decisions to lease may vary depending on the industry sector.

Titman & Grinblatt (1998), Deloof, Lagaert & Verschueren (2007), Slotty (2009), as well as Lin et al. (2013) confirm the substitutability of leases and debt, stressing that leases help mitigate problems with insufficient funding in firms with greater growth opportunities. Marston & Harris (1988), on the other hand, support the substitutability of leases and bank loans by means of measuring leasing as a total of balance sheet reported financial leases and the current value of minimum operating lease payments, recorded solely in explanatory notes to financial statements.

According to Yan (2006), the contradictory conclusions concerning the relation between borrowing and leasing may result from the fact that there are many different while concurrent factors influencing firms' financing. Deloof, Lagaert & Verschueren (2007) suggest that the discrepancies between theoretical predictions on the substitutability of leasing and borrowing and empirical findings supporting their complementariness (i.e. theso-called leasing puzzle) are related to the higher tax benefits achieved from leasing than from borrowing. Callimaci, Fortin & Landry (2011) prove that firms with a limited access to external funding use more leasing. Callimaci, Fortin & Landry (2011) stress that the complementariness of leasing and debt does not preclude both these forms of financing to be used by companies with a high debt capacity. This may be because of the non-financial aspects of lease contracts, such as their short-term nature. Also, entities with a high leverage might have exceeded their debt capacity and are reaching for an operating lease to satisfy their additional financial needs. Singh (2011), on the other hand, proves a negative correlation between financial leases and loans (debt rate) across the entire research sample, thereby indicating their complementariness. Yet, the findings for the group of firms using leases only suggest the substitutability of financial leases and loans.

Singh (2011) proves that the debt ratio is significant and positive for companies choosing not to use financial leases, while significant and negative for entities with high financial leasing rates. He confirms the negative correlation between debt and leasing in general. Having eliminated financial leases, he obtains a negative correlation between operating leases

and borrowing, which is another argument in support of substitutability. The findings presented by Singh conform to the results published by Beattie, Goodacre & Thomson (2000) who analyse British firms, but contradict the outcomes obtained for US companies (Mehran, Taggart & Yermack, 1999).

### ***2.3. Reducing Debt Ratios by Operating Leases***

Sometimes, keeping the share of debt in the firm's capital structure at a certain level is not an optimum solution, but may be imposed by creditors, e.g. based on the loan contract provisions. Approaching the debt covenant level, firms may be more likely to employ operating leasing, so as to avoid the debt ratio growth (Duke et al., 2002).

### ***2.4. Information Asymmetry***

Filareto-Deghaye & Severin (2007) prove that younger and smaller companies are more likely to use leasing, according to the information asymmetry theory. Leasing is positively correlated with a high financial leverage, a low debt capacity and a high probability of bankruptcy. Chu, Mathieu & Zhang (2008) state that the proportion of leases is positively associated with financial leverage and the proportion of capital assets, while a negative correlation is observed between the presence of leases and the firm size. Neuberger & Rathke-Doppner (2013) report that small and young firms are likely to be constrained on the leasing market, while older and higher qualified entrepreneurs use more leasing.

Firms with greater growth opportunities experience demand for funding all the time and therefore rely more heavily on leasing (Barclay & Smith 1995), except for firm-specific assets (Smith & Wakeman 1985), where purchasing is preferred to leasing (Smith & Wakeman 1985). Service companies use more general-purpose assets and here operating leases prevail, as the residual value risk remains with the lessor in this case (Titman & Grinblatt, 1998). According to Titman & Grinblatt (1998), the debt holder – equity holder conflict may be worse for small firms, as they are more likely to increase the risk of their investment projects. The potentially higher return from accepting this risk accrues to shareholders only, while the increased risk is shared by debt-providers; this will reduce the willingness of lenders to provide debt finance. Moreover, top managers of small firms are more likely to be major shareholders and may, therefore, prefer the lower personal risk associated with low debt levels.

## ***2.5. Reducing Agency Costs by Leasing***

Leasing may mitigate agency cost, lessors having the first claim on the asset leased (Lasfer & Levis, 1998). According to the contracting costs hypothesis, the company characteristics associated with its business risks affect the contracting costs and thereby the choice of financing. Young, innovative, fast growing enterprises finance their projects from the retained profit first of all and are less likely to pay substantial dividends. Dividends may be used for mitigating agency problems (Borokhovich et al., 2005). One might expect that companies that choose not to pay dividends experience information asymmetry and are more likely to use leasing (Fazzari, Hubbard & Peterson, 1988). In addition, leasing does not require high creditworthiness, therefore it may be an alternative for companies with a limited access to this type of financing. Borokhovich et al. (2005) state that companies with a higher CEO stock ownership and option compensation are more likely to use operating leases. According to Robicheaux, Fu & Ligon (2008), the use of lease financing helps control the agency cost of debts in relations with the board members.

## ***2.6. Firm Profitability and Size as Determinants of Lease Financing***

Fazzari, Hubbard & Peterson (1988) show that EBITDA is negatively correlated with leasing, i.e. less profitable firms are more likely to lease, according to the contracting cost theory. The negative effect of profitability on the use of financial leasing is proved by Deloof, Lagaert & Verschueren (2007) too.

In case of bankruptcy, the recovery to a lessor is in general superior to recoveries of a defaulted loan. Leased equipment is considered to be operating assets and unpaid lease – operating cost. As a rule, lease payments are made before creditors claim their share of the bankruptcy estate. Upon client's declaration of bankruptcy, lessors may still take over their assets from lessees, thereby reducing their credit risk. Therefore, lessors may benefit from a deterioration of the lessees' financial standing. Hence, firms in a good financial condition may be less likely to use leasing than companies experiencing difficulties. Similarly, larger firms with an easier access to external capital markets may be uninterested in leasing (Sharpe & Nguyen, 1995). The literature of the subject stresses a negative correlation between the company size and its use of both operating leases (Graham, Lemmon & Schallheim, 1998; Lasfer & Levis, 1998) and financial leases as well (Graham, Lemmon & Schallheim, 1998;

Lasfer & Levis, 1998). Koh & Jang (2009) confirm that initially the use of operating lease decreases as the company size grows, but this correlation changes over time. Furthermore, they indicate a negative correlation between leasing and cash flows, cash levels and profit. They state that firms with less internal funds are more likely to use operating leases.

According to Chigurupati & Hegde (2009), largest firms are less likely to lease, while firms with high profitability use less operating leases, since they may buy rather than lease their fixed assets. As noted by Callimaci, Fortin & Landry (2011), the total lease share increases with the high ownership concentration and decreases with the firm size. Singh (2011) achieves a weak confirmation of the negative correlation between financial distress measured using Altman's modified Z-score and financial leasing. He proves by means of the Tobit model that larger firms are more likely to lease. On the other hand, he obtains an opposite correlation when using a linear model with the least squares estimation of parameters.

## ***2.6. Growth Opportunities***

Firms' growth opportunities measured by the market value to book value ratio are positively correlated with leasing, while the variability of profit (operating risk) has a negative impact (Fazzari, Hubbard & Peterson, 1988). Companies which lease a larger fraction of their assets are characterized by fast growth, higher interest rates, strained liquidity and lower sales margins (Slotty, 2009). Franzen, Rodgers & Simin (2009) note that firms with the highest market value to book value ratio are characterized by the highest levels of lease financing. Similarly, Chigurupati & Hegde (2009) prove that faster growing companies (a higher value of the Tobin's q) are more likely to lease. Eisfeldt and Rampini (2009), on the other hand, argue that smaller firms paying lower dividends and showing a lower cash flow in proportion to their asset levels and a higher Tobin's q lease a major part of their assets.

Companies with a considerable growth potential may seek bank loans or issue shares (Koh & Jang, 2009). Nevertheless, investors may be concerned about the future performance of the high growth firms, due to significant profitability fluctuations. In a case like this, the cost of external financing may grow due to lower stock prices or higher interest rates allowing for the risk premium. Furthermore, a new issue of debt may result in the shareholding dispersion (Smith & Wakeman, 1985). Unlike debt-based or internal financing, operating leases have a good effect on high-growth companies, since it does not change their ownership structure or creditworthiness.

Growth opportunities measured by the market value to book value ratio, are negatively correlated with financial leasing and leasing in general, which may mean that they perceive financial leases as debts and therefore are less likely to employ them (Singh, 2011).

### **3. The Use of Leasing by Firms in Poland Based on the Research Sample Structure**

Small and medium-size companies in Poland use operating leases more often, mainly for tax reasons, as well as due to the fact that lessors' requirements are not so strict in this case and the term of lease is shorter. The proportion of financial and operating leases is balanced in major enterprises only. The value of assets leased based on financial leasing contracts is much higher in large firms, which may be associated with the leasing contract type. Financial lease contracts have a longer term, close to the assets economic utility period and they provide for the ownership transfer option after the lease period end. Small partnerships or limited liability companies are definitely more inclined to use operating leases than financial leases, owing to the tax shield effect.

### **4. Methodology**

The empirical analysis of employing financial leases for financing corporate investments in tangible assets was conducted based on unit panel data, unbalanced, originating from balance sheets and profit and loss accounts of Polish enterprises, presented in the Central Statistical Office (GUS) reports. As far as financial leases are concerned, data annual statements of the period 1995–2011 (about 50,000 enterprises each year), while for operating leases – semi-annual statements of the period 2007–2011. Observations with a negative equity were eliminated from the sample, since they prevented a correct interpretation of financial leverage as a total debt to total financing (internal and external) ratio. Otherwise, the financial leverage would not be lower than 1, since a negative equity would diminish the total debt value (the denominator would not be greater than the numerator. If the external capital value is higher than the assets, this means that the funds that might be obtained from the liquidation of assets would be insufficient to cover accounts payable to creditors and the liabilities that have not occurred yet, but can be credibly valued.

The literature of the subject provided a basis for designing econometric models, which describe the effect of three categories of factors on the operating and financial lease financing in non-financial companies in Poland: macroeconomic, microeconomic, i.e. relative to the internal financial situation and structural (e.g. the legal status, the industry, the direction of sale).

An assumption was made based on the semi-annual statements data, that the response variable – operating lease – is a binary variable (0 – the company does not employ an operating lease, 1 – the company employs an operating lease), since the amount shown in the semi-annual statement represents the value of new tangible assets received for paid use in the reporting period based on an operating lease contract. Since the statement does not include any information about off-balance sheet liabilities due to operating leases, it was impossible to use a continuous variable. The semi-annual statement refers to the fact of contracting an operating lease and shows the leased asset value, but does not specify the lease term or the balance of payments in respect of all operating lease contracts, including those signed in previous quarters of the year.

Considering that the response variable is a binary one, the literature of the subject suggests that the analysis may focus on the following functions of correlation between the probability of success and the value of explanatory variables: a linear model of probability, a logit model or a probit model. Probabilities of states are explained using independent variables independent variables. It is worth stressing that the linear model of probability is characterized by heteroscedascity of the random component and there is no certainty that theoretical values of the response variable in individual observations belong to interval [0; 1]. These values represent evaluation of the binary variables distribution probability, therefore those negative or greater than 1 are non-interpretable. Despite these weaknesses, the linear model of probability is user fairly often (Miranda, 2007). The impact of heteroscedacity on the deduction outputs can be eliminated using a resistant variance-covariance matrix.

Parameters were estimated using the robust system GMM (Generalised Methods of Moments) estimator (see: Arellano & Bover, 1995; Blundell & Bond, 1998). In addition, a resistant variance-covariance matrix was used. The estimation method was selected correspondingly to the definition of response variables and the problem of endogeneity identified and confirmed in tests. The correctness of the instrument mix was verified by means of the Sargan test, conducted to check if the condition of orthogonality between the instruments and the random component was satisfied. This condition was verified using a test for autocorrelation in differences of remainders from the model. The model design

assumption require that there can be no correlation of the remainder component of degree 2 and higher degrees. In descriptive statistics and histograms of continuous variables, a significant percent of atypical observations can be found in all samplings. With regard to the variable probability distribution, 5% of the most extreme values were replaced with the quantile value of 0.95 or 0.05, depending on the feature distribution. This allowed the investigation of dependences between the response variable variability and the explanatory variables variability without losing relevant information. The test was preceded by an estimation of the correlation between the explanatory variables. Tables 5 and 6 (in the appendix) summarize the specific results of Spearman's rank correlation.

The propensity to use financial leases (response variable – binary variable) and the extent of this usage were analysed based on annual data of the period 1995-2011, while in case of operating leases (response variable – binary variable) – based on semi-annual data of the years 2007–2011. Separate estimations were conducted for two types of leases, similarly as in the study published by Callimaci, Fortin & Landry (2011). The results for operating leases and leases in general are very similar. Hence, due to the prevalent share of operating leases, financial leases are skipped in general analyses of leases. A similar approach was adopted by Robicheaux, Fu & Ligon (2008).

It is worth stressing that due to the incompleteness of financial data in semi-annual statements, it is not possible to include such important explanatory variables as the structure of assets (tangible assets / total assets) or future tax liabilities (deferred tax reserve / total assets).

## **5. Empirical Analysis of the Operating Lease Financing Determinants – Models and Findings**

The literature overview was a basis for defining a list of potential factors determining the use of operating leases by firms in Poland. The variables used included financial ratios, macroeconomic ratios and structural factors. Table 1 summarizes the structure of variables used in the empirical analysis. The factors determining the use of operating leases were defined with regard to the propensity to use operating leases. The model addresses the time effect (Table 2).

Table 1. Definitions of variables used in the operating lease model

| Variable                                                                 | Definition                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The extent of the long-term liabilities use with capital leases excluded | Long-term liabilities without capital leases (net) / (long-term liabilities + short-term liabilities due to loans and credits, debt securities issue as well as trade liabilities form other and affiliated entities + equity)                                                                       |
| The extent of the short-term loan use                                    | Short-term liabilities due to bank loans without the portion of long-term bank loans with a maturity term up to one year / (long-term liabilities + short-term liabilities due to loans and credits, debt securities issue as well as trade liabilities form other and affiliated entities + equity) |
| Self-financing – dynamic approach                                        | (Net profit (loss) + depreciation) / (long-term liabilities + short-term liabilities due to loans and credits, debt securities issue as well as trade liabilities form other and affiliated entities + equity)                                                                                       |
| Company size                                                             | Total assets logarithm                                                                                                                                                                                                                                                                               |
| Cash liquidity ratio                                                     | Cash / short-term liabilities                                                                                                                                                                                                                                                                        |
| Growth opportunities                                                     | (Revenue from sales ( $t$ ) – revenue from sales ( $t - 1$ )) / revenue from sales ( $t - 1$ ) <sup>1</sup>                                                                                                                                                                                          |
| Structure of assets                                                      | Share of tangible and intangible assets in total assets = (fixed assets – long-term liabilities – long-term investments) / total assets                                                                                                                                                              |
| Effective tax rate                                                       | CIT / taxable income                                                                                                                                                                                                                                                                                 |
| Bankruptcy risk                                                          | EBITDA / financial cost <sup>2</sup>                                                                                                                                                                                                                                                                 |

<sup>1</sup>A measure used in the empirical literature for non-public companies whose market value is not known (as it is not quoted on the stock exchange).

<sup>2</sup> Measures the coverage of financial cost by pre-interest profit, depreciation and CIT.

The model estimation revealed a negative impact of the propensity to use operating leases lagged one period on the propensity to use operating leases. This indicates that the operating lease financing is incidental. The use of operating leases depends on the extent to which the demand for fixed assets is satisfied, with the main focus on means of transport. The propensity to use operating leases is negatively correlated with the short-term bank loans level, which confirms the substitutability of operating leases and short-term loans. Similar findings are reported by Beattie, Goodacre & Thomson (2000), Filareto-Deghaye & Singh (2011), as well as Singh (2011).

Operating leases are mainly used by small businesses. In case of a financial lease, the whole VAT has to be paid in advance upon the leased asset handover, which may be a serious barrier for a small firm, especially at the beginning of its activity. Presumably, this circumstance makes small business prefer operating leases.

Table 2. Determinants of propensity to finance operating leases with the year effect taken into account

| Explanatory variable              |                                                                          | MODEL I<br>willingness to finance operating leases<br>b (se) |
|-----------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------|
| Y <sub>it-1</sub>                 |                                                                          | -0,0282#<br>(0,0173)                                         |
|                                   |                                                                          | 0,0190<br>(0,0409)                                           |
| Effect of the year                | the first half of the year 2008                                          | 0,0190<br>(0,0409)                                           |
|                                   | the second half of the year 2008                                         | -1,4346***<br>(0,1978)                                       |
|                                   | the first half of the year 2009                                          | 0,1272***<br>(0,0366)                                        |
|                                   | the second half of the year 2009                                         | -1,4405***<br>(0,1897)                                       |
|                                   | the first half of the year 2010                                          | 0,1069***<br>(0,0227)                                        |
|                                   | the second half of the year 2010                                         | -1,5725***<br>(0,2106)                                       |
|                                   | the second half of the year 2011                                         | -1,5427***<br>(0,2103)                                       |
|                                   |                                                                          | 0,9740***<br>(0,3564)                                        |
| Direction of sale                 | Exporter unspecialised                                                   | 0,6158#<br>(0,3991)                                          |
|                                   | Exporter specialized                                                     |                                                              |
| Firm size                         | The share of foreign ownership                                           | -0,9323**<br>(0,4650)                                        |
|                                   | Medium-sized firms                                                       | -0,6687*<br>(0,3606)                                         |
|                                   | Large firms                                                              | 0,2681<br>(0,6839)                                           |
| Sector                            | Construction                                                             | -0,5562<br>(0,4210)                                          |
|                                   | Trade                                                                    | 0,6322#<br>(0,4143)                                          |
|                                   | Transport                                                                | 1,0397<br>(0,7313)                                           |
|                                   | Other services                                                           | 0,0548<br>(0,4324)                                           |
|                                   | Limited partnerships                                                     | 3,0565*<br>(1,6584)                                          |
| Legal form                        | Limited liability companies                                              | 1,0518***<br>(0,3533)                                        |
|                                   | Joint-stock companies                                                    | -0,7462<br>(0,7736)                                          |
|                                   | Foreign companies                                                        | 1,5786<br>(5,8017)                                           |
|                                   | State-owned enterprises                                                  | -6,2464<br>(4,6428)                                          |
|                                   | Cooperatives                                                             | 0,4230<br>(0,6415)                                           |
|                                   | Others                                                                   | 0,5886<br>(0,7073)                                           |
|                                   | The extent of the long-term liabilities use with capital leases excluded | 0,5016*<br>(0,2709)                                          |
|                                   | The extent of the short-term loan use                                    | -0,6157*<br>(0,3169)                                         |
| Self-financing – dynamic approach |                                                                          | 1,8847***<br>(0,5633)                                        |

| Self-financing – dynamic approach one period lagged                                                      | -0,2482<br>(0,4577)      |
|----------------------------------------------------------------------------------------------------------|--------------------------|
| Self-financing – dynamic approach two periods lagged                                                     | -0,1787<br>(0,4193)      |
| Cash liquidity ratio                                                                                     | -0,1525#<br>(0,0971)     |
| Cash liquidity ratio one period lagged                                                                   | 0,1090***<br>(0,0190)    |
| Growth opportunities                                                                                     | 1,7558***<br>(0,2022)    |
| Growth opportunities one period lagged                                                                   | 0,8623***<br>(0,0991)    |
| Structure of assets ( <i>Share of tangible and intangible assets in total assets</i> )                   | 2,2493*<br>(1,1550)      |
| Structure of assets ( <i>Share of tangible and intangible assets in total assets</i> ) one period lagged | -1,2960<br>(1,1838)      |
| Effective tax rate                                                                                       | 1,8687**<br>(0,7885)     |
| Bankruptcy risk                                                                                          | -0,0019***<br>(0,0005)   |
| Constant                                                                                                 | -1,4478**<br>(0,6378)    |
| Test                                                                                                     | Test statistic [p-value] |
| Arellano-Bond Test for the first-order autocorrelation                                                   | -7,445<br>[0,0000]       |
| Arellano-Bond Test for the second-order autocorrelation                                                  | 1,084<br>[0,278]         |
| Sargan Test                                                                                              | 46,445<br>[0,0575]       |

# Significant at 15%, \* Significant at 10%, \*\* Significant at 5%, \*\*\* Significant at 1%. Mean error values are enclosed in round brackets, *p* values – in square brackets.

Source: Author's analysis based on data published by the Central Statistical Office of Poland.

In the second halves of the years 2008–2011 companies were less inclined to use operating leases than in the second half of 2007. Non-specialized exporters (and specialized exporters, on the 15% significance level) are more inclined to use operating leases than non-exporters. Companies with a higher share of foreign ownership are less inclined to use operating leases than domestic firms, owing to an easier access to alternative sources of financing. Trade companies are more likely to use operating leases than industrial enterprises, owing to a greater demand for means of transport. Limited partnerships and limited liability companies are more interested in operating leases than partnerships, since they may reduce their tax liabilities through recording all of the lease payments as tax-deductible expenses. Leasing provides creditors with a higher security level. On the other hand, board members holding a high percentage of the company shares may choose leasing in order to reduce their personal risk involved in the ageing of fixed assets or the risk relative to company-specific assets (Adams & Hardwick, 1998).

## 6. Empirical analysis of the financial lease financing determinants – models and findings

The analysis of financial leasing was performed based on data from annual statements of the years 1995–2011 presenting long-term liabilities due to financial leases presented in balance sheets (under long-term financial liabilities, including also guarantee deposits used mainly in the construction industry). Similarly as in the previous case, the response variable – financial leasing – is a binary variable (0 – the company does not employ a financial lease, 1 – the company employs a financial lease). Furthermore, we analysed the use of financial leases measured as:

$$\frac{\text{positive increment of long-term liabilities due to financial leases recorded in the balance sheet}}{(\text{total debt} + (\text{equity} - \text{revaluation reserve}))} \quad (1)$$

The financial lease use ratio distribution shows a right-sided asymmetry with a decreasing median over the years 1995–1999, from the level of some 0.007 to 0.03 and thereafter decreasing much more slowly: to the value of 0.01 in 2011. The variables used for analysing the factors determining the use of financial leases included financial ratios, macroeconomic ratios and structural factors. Table 3 summarizes the structure of variables used in the empirical analysis. Companies were analysed in terms of their propensity to use financial leases and the extent to which such leases were used.

Table 3. Definitions of variables used in the capital lease model

| Variable                             | Definition                                                                                                                                                                                                                                                                                                      |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The extent of the capital lease use  | Increment (year $t$ to year $t - 1$ ) of long-term liabilities due to capital leases presented in the balance sheet (the long-term liabilities item, which also includes guarantee deposits used in the construction sector mainly) / (total debt + equity – revaluation reserve))                              |
| The extent of the long-term loan use | Increment (year $t$ to year $t - 1$ ) of long-term liabilities due to bank loan according to the balance sheet presentation principles (the portion of these liabilities with the maturity date up to one year is recorded as a short-term liability (year $t$ ) / (total debt + equity – revaluation reserve)) |
| Self-financing – dynamic approach    | Cash flow from operations measured by indirect method (net profit (loss) + total adjustments) (total debt + equity - revaluation reserve))                                                                                                                                                                      |
| Return on Sales (ROS)                | ROS for positive values – profit from sales to total sales (determined for profit only)                                                                                                                                                                                                                         |
| Cash liquidity ratio                 | Cash / short-term liabilities                                                                                                                                                                                                                                                                                   |
| Non-debt tax shield                  | Depreciation / (total debt + equity – revaluation reserve))                                                                                                                                                                                                                                                     |
| Interest tax shield                  | Interest / total assets                                                                                                                                                                                                                                                                                         |
| Growth opportunities                 | (Revenue from sales ( $t$ ) – revenue from sales ( $t - 1$ )) / revenue from sales ( $t - 1$ ) <sup>1</sup>                                                                                                                                                                                                     |
| Structure of assets                  | Tangible assets / total assets                                                                                                                                                                                                                                                                                  |

|                                                          |                                                                                                          |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Effective tax rate                                       | CIT / taxable income                                                                                     |
| Future tax obligations                                   | Deferred CIT reserve / total assets                                                                      |
| Bankruptcy prediction ratio<br>(Nehrebecka & Dzik, 2012) | Reverse bankruptcy prediction ratio = 1 / (bankruptcy risk ratio within interval<br>0–1000) <sup>2</sup> |
| WIBOR 3M                                                 | 3-month WIBOR interest rate                                                                              |

<sup>1</sup>A measure used in the empirical literature for non-public companies whose market value is not known (as it is not quoted on the stock exchange).

<sup>2</sup> The greater the probability of bankruptcy, the lower the denominator value and the higher the reverse bankruptcy risk ratio value.

Models I and III provided a basis for seeking characteristics of firms that contracted financial leases, while model II was used to identify determinants of the financial leases share in internal and external sources of financing. Models I, II and III address the effect of the year (Table 4).

Table 4. Capital lease financing determinants with the year effect taken into account

| Explanatory variable      |           | Model with the year effect                                 |                                               | Model with influence of<br>the monetary policy               |
|---------------------------|-----------|------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------|
|                           |           | MODEL I<br>Propensity to use<br>financial leases<br>b (se) | MODEL II<br>Financial leases<br>use<br>b (se) | MODEL III<br>Propensity to use<br>financial leases<br>b (se) |
| Y <sub>it-1</sub>         |           | 0,3505<br>(0,4906)                                         | -0,0919**<br>(0,0367)                         | -0,1153<br>(0,4300)                                          |
| WIBOR3M                   |           |                                                            |                                               | -0,3000**<br>(0,1300)                                        |
| WIBOR3M one period lagged |           |                                                            |                                               | 0,1000*<br>(0,0600)                                          |
| Effect of the year        | Year 1997 | -0,0522*<br>(0,0312)                                       | 0,0566***<br>(0,0190)                         |                                                              |
|                           | Year 1998 | 0,0290*<br>(0,0176)                                        | 0,0571***<br>(0,0186)                         |                                                              |
|                           | Year 1999 | 0,0181<br>(0,0170)                                         | 0,0573***<br>(0,0159)                         | 0,0266**<br>(0,0122)                                         |
|                           | Year 2000 | 0,0297**<br>(0,0135)                                       | 0,0543***<br>(0,0159)                         | 0,0329***<br>(0,0120)                                        |
|                           | Year 2001 | 0,0346***<br>(0,0115)                                      | 0,0421***<br>(0,0160)                         | 0,0164**<br>(0,0064)                                         |
|                           | Year 2002 |                                                            |                                               | 0,0070<br>(0,0067)                                           |
|                           | Year 2003 | 0,0198**<br>(0,0088)                                       | 0,0040<br>(0,0124)                            | -0,0008<br>(0,0045)                                          |
|                           | Year 2004 | 0,0110<br>(0,0113)                                         | -0,0063<br>(0,0175)                           | 0,0008<br>(0,0042)                                           |
|                           | Year 2005 | 0,0200#<br>(0,0127)                                        | -0,0261#<br>(0,0174)                          | -0,0070#<br>(0,0045)                                         |
|                           | Year 2006 | 0,0445**<br>(0,0182)                                       | -0,0126<br>(0,0176)                           |                                                              |
|                           | Year 2007 | 0,0357**<br>(0,0165)                                       | -0,0006<br>(0,0167)                           | -0,0037<br>(0,0028)                                          |
|                           | Year 2008 | 0,0739***<br>(0,0148)                                      | -0,0040<br>(0,0153)                           | 0,0376***<br>(0,0051)                                        |
|                           | Year 2009 | 0,0328*<br>(0,0183)                                        | -0,0259#<br>(0,0159)                          | 0,0357***<br>(0,0084)                                        |

|                                                     |                                |                          |                          |                           |
|-----------------------------------------------------|--------------------------------|--------------------------|--------------------------|---------------------------|
|                                                     | Year 2010                      | 0,0752***<br>(0,0145)    | -0,0297*<br>(0,0154)     | 0,0463***<br>(0,0047)     |
|                                                     | Year 2011                      | 0,0782***<br>(0,0176)    | -0,0024<br>(0,0160)      |                           |
| Firm size                                           | Medium-sized firms             | 0,1174**<br>(0,0469)     | -0,0077<br>(0,0306)      | 0,1132**<br>(0,0453)      |
|                                                     | Large firms                    | 0,3071***<br>(0,0740)    | -0,0866***<br>(0,0321)   | 0,1688***<br>(0,0603)     |
| Direction of sale                                   | Exporter unspecialised         | 0,0575<br>(0,0560)       |                          | 0,0477<br>(0,0518)        |
|                                                     | Exporter specialized           | 0,0343<br>(0,0609)       |                          | 0,0470<br>(0,0546)        |
|                                                     | The share of foreign ownership | -0,1090*<br>(0,0620)     |                          | -0,1368**<br>(0,0610)     |
|                                                     | Construction                   | 0,0920#<br>(0,0617)      | -0,0124<br>(0,0384)      | 0,0178<br>(0,0510)        |
| Sector                                              | Trade                          | 0,0595#<br>(0,0395)      | 0,0962***<br>(0,0349)    | 0,0459<br>(0,0375)        |
|                                                     | Transport                      | 0,0093<br>(0,0737)       | 0,0988*<br>(0,0578)      | -0,0141<br>(0,0720)       |
|                                                     | Other services                 | 0,0378<br>(0,0438)       | 0,0020<br>(0,0301)       | 0,0063<br>(0,0401)        |
|                                                     | Limited partnerships           | 0,7851*<br>(0,4156)      |                          | 1,2291***<br>(0,3776)     |
| Legal form                                          | Limited liability companies    | 0,0140<br>(0,0819)       |                          | 0,0847<br>(0,0764)        |
|                                                     | Joint-stock companies          | -0,0898<br>(0,1021)      |                          | 0,0305<br>(0,0937)        |
|                                                     | Foreign companies              | -0,7552<br>(0,6368)      |                          | -0,4460<br>(0,5949)       |
|                                                     | State-owned enterprises        | -0,2452*<br>(0,1464)     |                          | 0,0078<br>(0,1285)        |
|                                                     | Cooperatives                   | -0,0305<br>(0,0882)      |                          | 0,0244<br>(0,0819)        |
|                                                     | Others                         | 0,0298<br>(0,1278)       |                          | 0,1045<br>(0,1205)        |
| The extent of the long-term loan use                |                                | -0,4153<br>(0,4673)      | -0,4501**<br>(0,1747)    | 0,3549<br>(0,4252)        |
| Self-financing – dynamic approach                   |                                | 0,1803*<br>(0,0937)      | -0,3089***<br>(0,0597)   | 0,1578*<br>(0,0894)       |
| Self-financing – dynamic approach one period lagged |                                | -0,0137*<br>(0,0081)     |                          | -0,0576<br>(0,0465)       |
| Return on Sales (ROS)                               |                                | -1,0053**<br>(0,4839)    | 0,5107*<br>(0,2726)      | -0,7408*<br>(0,4017)      |
| Return on Sales (ROS) one period lagged             |                                | 0,4641#<br>(0,2838)      | 0,0906<br>(0,1195)       | 0,4720*<br>(0,2563)       |
| Cash liquidity ratio                                |                                | 0,0254***<br>(0,0082)    | -0,0150#<br>(0,0098)     | 0,0267***<br>(0,0082)     |
| Non-debt tax shield                                 |                                | -549,6602#<br>(364,8064) | 579,6793**<br>(295,6880) | -855,6000**<br>(338,0635) |
| Interest tax shield                                 |                                | 0,6102*<br>(0,3397)      | 0,5813*<br>(0,3460)      | 0,6453**<br>(0,3159)      |
| Growth opportunities                                |                                | 0,0818<br>(0,0742)       | -0,0368<br>(0,0368)      | 0,1131*<br>(0,0610)       |
| Growth opportunities one period lagged              |                                | 0,0716**<br>(0,0317)     | -0,0107*<br>(0,0057)     | 0,1229***<br>(0,0281)     |
| Structure of assets                                 |                                | 0,1683**<br>(0,0743)     | 0,0433<br>(0,0512)       | 0,1238*<br>(0,0647)       |
| Effective tax rate                                  |                                | 0,0877<br>(0,1190)       | -0,2325***<br>(0,0798)   | 0,0204<br>(0,1100)        |

|                                                         |                                 |                      |                       |
|---------------------------------------------------------|---------------------------------|----------------------|-----------------------|
| Future tax obligations                                  | 0,0031<br>(0,0043)              | -0,0007<br>(0,0020)  | -0,0069<br>(0,0065)   |
| Future tax obligations one period lagged                |                                 |                      | 0,0135**<br>(0,0061)  |
| Bankruptcy prediction ratio (Nehrebecka & Dzik, 2012)   | 26,7528*<br>(15,0698)           | -5,4596<br>(11,9770) | 24,6489*<br>(13,8474) |
| Constant                                                | -0,2063**<br>(0,0925)           | 0,0500<br>(0,0543)   | -0,1848**<br>(0,0897) |
| <b>Test</b>                                             | <b>Test statistic [p-value]</b> |                      |                       |
| Arellano-Bond Test for the first-order autocorrelation  | -16,349<br>[0,0000]             | -7,582<br>[0,0000]   | -17,668<br>[0,0000]   |
| Arellano-Bond Test for the second-order autocorrelation | -1,615<br>[0,1061]              | 1,872<br>[0,0611]    | -1,178<br>[0,0523]    |
| Sargan Test                                             | 100,72<br>[0,0586]              | 101,548<br>[0,3560]  | 126,400<br>[0,0500]   |

# Significant at 15%, \* Significant at 10%, \*\* Significant at 5%, \*\*\* Significant at 1%. Mean error values are enclosed in round brackets, *p* values – in square brackets.

Source: Author's analysis based on data published by the Central Statistical Office of Poland.

The model estimation proves that the negative impact of the financial lease use ratio lagged one period on the degree of capital lease financing indicates the incidental nature of this type of financing. Capital leases do not have any stable position in companies' financial strategies.

In the years 1998, 2000–2003 and 2009–2010 companies were more inclined to use capital leasing; in the years 1997–2001 this source was used more than in 1996, while in 2005 and 2009–2010 – less (with a greater propensity to use capital leases), due to the growing costs of leases.

In 2005, banks began offering lease services and in order to reduce their risk and cost, lessors securitized lease liabilities. In the period 2009–2010, problems with financing lease services emerged. Seeking sources of funding, lessors employed the European Investment Bank and the Council of Europe Development Bank credit lines, issued debt securities and reached for their internal funds (this was particularly the case in bank-dependent companies and production firms).

Companies with a higher share of foreign ownership in equity were less inclined to use capital leases than domestic firms. Construction enterprises and trading companies were more inclined to finance their assets with capital leases, but trading and transport companies used capital leases more than industrial enterprises.

Owing to the financial surplus they generate, firms with a greater self-financing capacity are more inclined to use capital leases, but they use it to a lesser extent than companies incapable of generating a financial surplus, which follows the pecking order theory. Profitable firms (with a higher ROS) are less inclined to use capital leases, but the use it to a greater extent than unprofitable companies. Capital leases accelerate investments in tangible assets

and make it easier for profitable businesses to acquire the title to more expensive assets after the lease contract term expires. Firms with a greater non-debt tax shield are less inclined to use capital leases, since operating leases offer more opportunities to reduce tax liabilities. A greater non-debt tax shield is positively correlated with the use of capital leases.

Companies with a greater interest tax shield are more inclined to use capital leasing and use it to a greater extent, due to the possibility of reducing their tax obligations through the payment of the capital lease interest.

Firms showing greater growth opportunities in the previous period are more inclined to use capital leases, due to the limited access to bank loans resulting from the strong information asymmetry. Similar findings are reported by Chu, Mathieu & Zhang (2008), but in Poland such companies do not use capital leases that much, due to the uncertain stability of revenue and capability to serve long-term liabilities.

A higher share of tangible assets in total assets is positively correlated with the propensity to use capital leases, due to the necessity to replace the assets subject to physical or moral wear. Capital-intensive companies are interested in alternative sources of financing their capital expenditures, especially if their creditworthiness is low due to a high debt level. Similar findings are reported by Lasfer & Levis (1998), as well as by Chu, Mathieu & Zhang (2008).

Firms with a higher cash liquidity are more inclined to use capital leases, since they do not fear losing the capability to pay their liabilities in due time. With a 15% significance level, firms with a higher cash liquidity use capital leases less. This is also reported by Slotty (2009), who analysed German companies.

Companies paying higher taxes (with a higher effective tax rate) use less capital leases, since they may achieve greater tax savings through operating leases and recording lease payments as tax-deductible expenses. Profitable companies have a higher effective tax rate, therefore the negative effect of effective tax rate on the use of leases indicates that Polish firms follow the pecking order theory when choosing sources of financing.

Firms with a low probability of bankruptcy seek debt level reduction, therefore they are less inclined to use capital leases. Firms with a higher probability of bankruptcy are more inclined to use capital leases due to the limited access to alternative external sources of financing, including bank loans, as a result of their low creditworthiness. A similar finding is reported by Filareto-Deghaye & Severin (2007), who indicate that leasing is positively correlated with the low creditworthiness, higher probability of bankruptcy and high financial leverage.

The analyses corroborated the long-term bank loan and capital lease substitutability through the negative rate of the long-term bank loan use obtained in the capital lease model. Similar findings are reported by Marston & Harris (1988), Beattie, Goodacre & Thomson (2000), Yan (2006), Singh (2011) and Lin et al. (2013). The monetary policy is correlated – through the interest rate channel – with the reduced inclination to employ contract long-term debts in the form of capital leases. However, its impact is weakened by the positive effect of the interest rate lagged one period. With the interest rate addressed in the model, it was possible to observe an increased propensity to lease in firms with higher tax liabilities – this was owing to the opportunity of reducing tax obligations through the leased assets depreciation and tax-deductible lease interest.

## **7. Conclusions and future research**

Our analyses indicate that medium-sized and large companies are more inclined to finance their assets with capital leases than small business and that large companies use more capital leases than small businesses do. A higher degree of the long-term loan financing results in a lower degree of capital leasing, which indicates the long-term bank loan and capital lease substitutability, similarly as reported by Marston & Harris (1988), Beattie, Goodacre & Thomson (2000), Singh (2011), as well as Lin et al. (2013).

Firms with a greater self-financing capacity use less capital leases. Firms with a higher profitability are less inclined to finance their assets with capital leases, which follows the pecking order theory. Yet, these firms use capital leases more often, since capital leases accelerate investments in tangible assets and make it easier for profitable businesses to acquire the title to more expensive assets after the lease contract term expires.

Firms' leasing is driven by tax savings in Poland. Firms paying higher taxes are more inclined to finance their assets with operating leases, owing to the opportunity to reduce taxation through recording the initial payment and all of the lease payments as tax-deductible expenses. Profitable companies have a higher effective tax rate, therefore the negative effect of effective tax rate on the use of capital leases indicates that Polish firms follow the pecking order theory when choosing sources of financing. With the interest rate addressed in the model, it was possible to observe an increased propensity to lease in firms with higher tax liabilities – this was owing to the opportunity of reducing tax obligations through the leased assets depreciation and tax-deductible lease interest. The model reflecting the propensity to

finance assets with operating leases proves the substitutability of an operating lease and a short-term bank loan, similarly as reported by Beattie, Goodacre & Thomson (2000), Filareto-Deghaye & Singh (2011), as well as Singh (2011).

Future research might focus on the substitutability of operating and capital leases analysed using taxation data instead of accounting statements though. With this end in view, a survey is required, so as to analyse the reasons behind choosing leases in the light of tax regulations, as well as specific provisions of lease contracts used in the business practice, addressing the accounting standards requirements. Companies in Poland choose sources of financing based on potential tax economies achievable through recording operating lease payments as tax-deductible expenses. At the same time, leases classified as operating according to the income tax act, may be regarded as either capital or operating, if analysed from the accounting standards point of view (including the accounting act or the international accounting standards). Based on data presented in semi-annual statements, we identified types of leases as classified according to accounting standards, but we are incapable of categorizing leases in terms of tax regulations requirements. Leases are classified for the purpose of financial statements according to accounting standards based on specific terms of the lease contract, retroactively as a rule.

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