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Leasing Puzzle in Polish Small Firms Listed on the Alternative Market

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Abstract: In this article, we study the substitution between leasing and bank loans in financing the investment of small companies. The analysis is based on financial information about Polish companies listed on NewConnect, which used financial leasing in the period of 2012–2016. We argue that leasing and bank loans are the substitute in financing the investment of small companies. We estimate the probability of financial leasing and its size using the tobit and logit models. We find that financial leasing and bank loan, for Polish small companies, are complementarity. Our empirical results indicate that financial leasing and bank loans are complementary sources of financing investment in fixed assets. Also the higher the usage of financial leasing, the higher the likelihood that the enterprise is indebted because of long-term bank loan – complementarity.

Keywords: financial leasing; tobit; logit; small listed companies

JEL Codes: M21, M41, M48

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1 Introduction

Small enterprises are the important part of Polish economy. Their share in Polish GDP in 2016 was equal up to 39.6%. The development of those companies is possible mainly due to investment. Sources of finance are the important aspect while making decisions with regard to development, especially leasing and loans.

The number of companies financed with leasing is growing every year. In 2016, 17% of companies used such source of finance, which made up a 10% growth compared to 2013. During the same period, usage of leasing by small companies grew by 34%. The share of companies using investment loans grew only by 1% (year to year), to the level of 19% in 2016. In the sector of small enterprises, loans were used by 25% of companies (Boguszewski, Mirowska and Strzeliński 2016).

The aim of the article is to examine the substitution between leasing and bank loans in financing the investment of small companies. The substitution between long-term loans and financial leasing as well as the dependency of firm size (proxied by sales) and sector on usage of leasing will be verified during the analysis. The study was conducted using the panel data in the period of 2012–2016 on Polish companies listed on NewConnect, that is, the alternative stock market of Warsaw Stock Exchange (Poland). This market is mainly dedicated for young companies with low capitalisation. Tobit and logit models were used for estimation.

2 Leasing as a form of external financing

The equity is essential in every phase of enterprise's life cycle, whilst the limitations in the access to sources of finance are the substantial barrier for the investment of small companies. As a result of the limited access to external financing, companies invest less, do not use the leverage and grow slower (Rajan and Zingales 1995). External financing also has its disadvantages. Often, the possibility to obtain financing in the form of debt requires establishing security or a warranty. When the company is in a weak or deteriorating financial situation, creditors require additional security. Trade-off theory (Kraus and Litzenberger 1973), also known as the theory of substitution, envisages the optimal capital structure for every company when the marginal current value of a tax shield because of the additional debt is

equal the marginal current value of financial costs of additional debt. Viable companies paying higher taxes should use loans more often and use higher leverage than smaller companies (Białek-Jaworska and Nehrebecka 2016).

According to the pecking order theory (Myers and Majluf 1984), the optimal capital structure does not exist, which points to the problem of asymmetry of information, as the internal managers have better access to information than external providers of capital. Then, entrepreneurs prefer internal sources of finance. However, when the internal sources of finance are insufficient, firms prefer debt (Prędkiewicz and Prędkiewicz 2014).

Most often, small enterprises use two forms of external financing: loans and leasing. In 2016, 17% of Polish companies used leasing, compared to 13% in 2015 and 11% in 2013 (Boguszewski *et al.* 2016). Leasing is understood as providing lessee with specified asset for the purpose of using it in specified period (specified in leasing contract), in return for leasing payments denominated in money representing the value of an asset, paid to lessor. Pursuant to Civil Code:

'By means of leasing a Finance Company agrees, to an extent that is covered by its business activity, to acquire an asset from a selected seller in accordance with terms and conditions of the lease and to give that asset to a User to have use of the asset or to have use of and derive benefits from the asset during an agreed period; on the other hand, the User agrees to pay a finance company a money remuneration to be paid in agreed instalments that will be not less than a price or a remuneration for an acquisition of the asset by the Finance Company' (Sejm 2017).

Therefore, leasing gives the opportunity to use assets, for example, cars, appliances or machines without engaging high financial expenditures at the time of realisation of investment.

It is worth emphasising that during the whole contract period, lessor is an owner of the asset, who decides whether the asset may be used by third parties and does not take responsibility for any flows or usability. The owner may give permission for transferring ownership/property rights after the leasing contract expires. Lessee is responsible for taking care of particular item and paying instalments. However, he has the right to request the withdrawal from the contract if the flaw in the item is substantial (Ostrowska 2014).

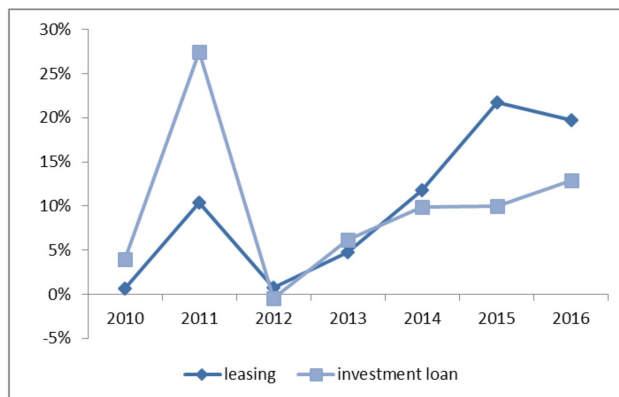
More than 75% of services provided by leasing institutions is currently (2017) directed to small enterprises. Up to 53% of customers of leasing services are micro companies. Leasing industry finances large enter-

Tab. 1. Leasing industry entities belonging to Polish Leasing Association

Entities Related to Banks (Financial Institutions)	Independent Entities
Europejski Fundusz Leasingowy S.A.	Afk Leasing Polska S.A.,
mLeasing Sp. z o.o.	BMW Financial Services Sp. z o.o.,
BZ WBK Leasing S.A.	Caterpillar Financial Services Poland Sp. z o.o.
Getin Leasing S.A.	De Lage Landen Leasing Polska S.A.
Pekao Leasing Sp. z o.o.	Fraikin Polska Sp. z o.o.,
Deutsche Leasing Polska S.A.	IKB Leasing Polska Sp. Z o.o.,
BNP Paribas Lease Group Sp. z o.o.	Impuls-Leasing Polska Sp. Z o.o.,
Millennium Leasing Sp. z o.o.	Leasing Polski Sp. Z o.o.,
Raiffeisen- Leasing Polska S.A.	Mercedes-Benz Leasing Polska Sp. z o.o.,
Alior Leasing Sp. z o.o.	Noma 2 Sp. z o.o.,
Idea Leasing S.A.	Orix Polska S.A.
ING Lease Sp. z o.o.	Polski Związek Wynajmu i Leasingu Pojazdów
Santander Consumer Multirent Sp.zo.o.	Scania Finance Polska Sp. z o.o.,
PKO Leasing Sp. Z o.o.	SG Equipment Leasing Polska Sp. z o.o.
	SGB Leasing Sp. z o.o.
	Siemens Finance Sp. Z o.o.
	VFS Usługi Finansowe Polska Sp. z o.o. VolkswagenLeasing GmbH Sp. z o.o. Oddział w Polsce

Source: Own elaboration based on the data of Polish Leasing Association as for the end of 2016.

Fig 1. Share of leasing and investment bank loan in financing sources of tangible assets



Source: Own elaboration based on www.leasing.org.pl/statystyki/ [11.03.2017]

prises or public enterprises (listed on the Warsaw Stock Exchange) to lesser extent (ZPL 2017).

Since 2010, leasing market providing services to small enterprises has developed noticeably. During the period of 2010–2015 the number of leasing companies grew by about 30%. The highest number of leasing institutions existed in 2012 (125), whilst 25% of them belonged to Polish Leasing Association. After this period, the number of such companies has been decreasing – in 2015, there were only 110 leasing companies in Poland

As for 2016, 32 leasing companies belong to Polish Leasing Association (ZPL n.d.). Considering the ownership structure, 56% of the leasing entities are independent, whilst 44% are related with banks. Leasing companies owned in 100% by bank are European Leasing Fund (Credit Agricole Societe Anonyme – French rights-based bank), mLeasing Sp. zo.o. (mBank S.A.), Getin Leasing S.A. (Getin Noble Bank S.A.), Millennium Leasing Sp. z o.o. (Bank Millennium S.A.), PKO Leasing S.A. (Powszechna Kasa Oszczędności Bank Polski S.A.), Idea Leasing S.A. (Idea Bank SA), Raiffeisen-Leasing Polska SA (Raiffeisen BANK Polska S.A.), ING Lease Sp. z o.o. (ING Bank Śląski S.A.) and BZ WBK Leasing S.A. (Bank Zachodni WBK S.A.). It is worth noting that these entities have the highest share in leasing market and are even placed in European rankings. This indicates the strong relationship between banking and leasing industries (Leaseurope 2015) (Tab. 1).

Leasing market and loan market in Poland are under ongoing development. The institutions are racing in terms of services offered to smaller companies. It is worth examining how large was the value of provided services and leased assets over the years and which institutions have developed the most. Fig. 1 presents the dynamics in financing of Polish companies with leasing and loans, according to data accessed from the website of Polish Leasing Association. Between 2010 and 2011 the uptake of investment loans grew substan-

tially – up to 27.5 % – which makes up for more than two times higher growth than that in the case of uptake of leasing (11%). Since 2014, leasing market developed much faster than investment loans market. However, the interest in leasing decreased in 2016, whilst the interest in investment loans increased. In 2016, banks granted loans to enterprises worth EUR 28.6 bn, whilst the value of active leasing portfolio was PLN 26.3 bn.

3 The comparison between bank loans and leasing

Small companies who are just starting their business activity often consider leasing as their only alternative to financing with equity infusion. An interest and a non-interest tax shields speak in favour of leasing. When making a decision whether to uptake the loan or leasing,

it is worth comparing the viability of both options from a tax point of view. A leasing contract basically gives better tax benefits, as there is a possibility to model costs in time and have a higher flexibility compared to the loan contract (Wysocka 2008).

One of the main advantages of leasing is the ease of its obtaining, compared to obtaining investment loan from a bank. In the case of leasing, procedures are simpler, shorter and less strict, which makes companies, especially small ones, apply for such a form of financing without problems. Leasing requires company to be less mature, whilst in the case of bank loans, company must have operated for at least 6–12 months.

The disadvantages of obtaining bank loan mentioned in Tab. 2 are often the reason for company's passiveness. Cavalluzzo and Wolken (2005) described enterprises discouraged from loans (passive) as small firms who need financing to a high degree, although they do not apply for loans because of concerns about little chances

Tab. 2. Comparison between leasing and investment bank loan

Criteria	Leasing	Bank Loan
Subject of the agreement	Asset permitted for conduct of civil law transaction	Funds for a specific purpose
Creditworthiness	Does not reduce creditworthiness	Reduces creditworthiness
Award procedure for a contract	Simplified and shorter than in the case of loan	More demanding and strict (business plan, financial statement, certification for not being in arrears with liabilities towards Tax Office and Social Security Office (ZUS))
Tax shield	Higher benefits	Lower benefits
VAT settlement	Paid within the maturity on every leasing payment at 23% rate	Paid at the time of purchase of specific fixed asset; VAT has to be financed until the moment of settling its quota with taxable VAT on sales
Security	Leased asset	Borrower submits credit risk analysis, has to show the business plan and agree upon design provision compatible with law
Company's maturity	Minimum 3 months	Minimum 6 months
Own contribution	To be negotiated (typically minimum 10% of asset's value)	To be negotiated, typically 20%
Insurance of an asset	Typically required, which makes up for additional cost	Always additional cost (a loss for lessor limited to value of contribution)
Total financing costs	Typically higher than in the case of bank loan	Slightly lower, sometimes net costs after inclusion of a tax shield may be higher than in the case of leasing

Source: Own elaboration.

of obtaining financing. Passive entities tend to have low self-esteem, because of their low maturity and not sufficient financial condition. The authors refer to a study that implies that almost half of small firms do not even apply for bank loan because of the mentioned reasons.

Using leasing does not block enterprises from using loans, as it does not lower their creditworthiness. All payments related with leasing may be deducted from taxable profits, thus reducing the tax income.

The argument in favour of choosing leasing as a financing form are higher tax benefits than in the case of bank loans, especially considering the possibility to recognise a part of capital instalment of operational leasing in tax deductible costs (Infor.pl n.d.). Loan's interest rate may also be changed if the inflation rate changes. In the case of leasing, payments are stable and solvency or liquidity ratios do not deteriorate (Wysocka 2008).

4 Leasing – legal aspects under accounting and tax law

According to the accounting law, it is necessary that the substance of a contract is recognised, so the event may be qualified in accounting books (Spencer and Webb 2015). This is also the case, as a rule, for recognising leasing contract pursuant to art. 3 sec. 4 of the Polish Accounting Act dated 29 September 1994 (Sejm 2018) and elaboration of National Accounting Standard No. 5 Leasing, rental and hire-purchase (Official Journal of Ministry of Finance 2011).

These regulations are similar in construction to International Accounting Standard No. 17 Leasing (Elliott and Elliott 2011); however, they envisage the possibility for using simplifications of fiscal nature, in the case of small entities that are not, amongst others, issuers of securities under the requirement that they do not cause distortion of entity's image in financial statement. It needs to be mentioned that because of planned increases of thresholds in balance sheet law for small entities, starting from 2019, the number of entities not disclosing the usage of financial leasing in financial reports will increase (Morales-Diaz and Zamora-Ramirez 2018). Indeed, the possibility of using simplifications was the reason for changes that are introduced in 2019 in international regulations (Banthia 2017). So far, IAS 17 allowed for qualifying leasing contract based on risk transfer (Taylor 2011), which in practice lead to subjective

qualifying of contracts as operating leasing (Barone, Birt and Moya 2014). Firms, knowingly, shaped their leasing contracts in more favourable manner, in order to improve their financial ratios (return on assets ROA, return on equity ROE, earnings before interests, tax, depreciation and amortisation EBITDA, interest coverage ratio). As a result, comparability of financial statements decreased (PwC 2018). As a consequence, International Financial Reporting Standard IFRS 16 has been developed and adopted in cooperation between International Accounting Standards Board IASB and Financial Accounting Standards Board FASB (Deloitte 2016). IFRS 16 will be binding to entities that use IFRS for annual periods, beginning on or after 1 January 2019 (European Commission 2017).

The new standard presents completely different approach to classifying leasing contract and, as a consequence, new model of presenting such transactions in accounting books. Lessors are required to recognise almost all leasing contracts, which represent their right to use an asset and related obligations for payment, in their balance sheet. The exception will be only contracts until 12 months and contracts concerning the so-called low-value assets (e.g. with the value below 5000 USD). IFRS 16 will impact current business model and leasing products, because of changes in needs and manners of user behaviour (PwC 2016b). As a consequence, it will lead to reporting leasing in both assets and liabilities of an enterprise. Not only used fixed assets but also debts resulting from their purchase will need to be reported in balance sheet. IFRS 16 contains exhaustive instructions that will help firms to evaluate whether the contract includes leasing, service or both. It also presents exceptions that exceed the scope of particular standard and overlap the competence of other standards. Lessor will recognise the contract as a financial leasing, always when he or she has rights to control through the right to use leased asset during specified period, in exchange for payment. In the case of contracts with unlimited duration, it will be necessary to autonomously determine that period. Users will analyse contracts considering the following aspects (PwC 2016a):

1. Whether there is a right to reap major economic benefits from defined asset.
2. Whether there is a right to make autonomous decisions on using particular good.

In the case when the contract combines elements of leasing and service contract, it is necessary to separate

them and use new IFRS 16 regulations only for leasing (PwC 2016a). According to IFRS 16, every leasing contract has to be recognised in accounting books of lessee. It will generate the right to use the asset and liabilities because of leasing (Sabauri 2018). The initial value of the right to use particular asset should take into account:

- Initial amount of estimated debt because of leasing
- Leasing instalments for the benefit of lessor regulated before the start of contract period, less the leasing incentives
- Initial direct costs of lessee
- Estimated costs of user of bending the asset to original shape, mainly because of dismantling and removing the asset under leasing contract, except for costs referring to generation/creation of inventories.

During next periods, the right to use the asset is evaluated based on one of the following models:

- Cost model consisting in reduction of the initial value by depreciation and impairment loss decreases
- Revaluation model – resulting in recognising depreciation and impairment loss in financial results, whilst revaluation in other comprehensive income
- Fair value model – it is used in the case of investment properties, in this case in order to evaluate the right to use the assets (in this case investment property), model in accordance with IFRS 40 is used.

On the other hand, evaluation of liabilities because of leasing is done through discounting the current leasing instalment with the use of interest rate specified in the contract. Leasing instalments should consist of

- fixed payments made during the lease term, less any incentives paid or payable to the lessee
- variable payments determined by the interest rate or index
- guaranteed residual value, that is, payment envisaged by user to be paid in future
- value of exercising the option of purchase when lessee has a high confidence in its realisation
- sanction for cancelling the contract if such a possibility is envisaged for the user.

Owing to the adoption of IFRS, changes in the structure of assets, liabilities, income and costs recognised by the user are expected. It will be required to adjust information system for the purpose of reporting such data. IFRS 16 envisages that changes may be adopted in fully

retrospective manner, that is, with the conversion of all contracts. It is also possible to recognise the so-called limited, that is, recognised in accordance with new regulations, contracts existing as of 1 January 2009 or concluded afterwards (IFRS n.d.).

5 Hypothesis development

The analysis of determinants of financing with loan and leasing is the subject of research of many studies. Many indices that are considered by entrepreneurs whilst making a decision between applying for a loan or leasing or using both of those sources may be found in the literature. Verification of complementarity or substitutability of those two forms of financing is the most frequently encountered research topic in this area. The higher usage of leasing should be connected with lower financing with bank loan. Empirical studies considering this aspect as a research problem give, however, mixed results. Theoretical explanation of the so-called ‘leasing puzzle’ is based on predominance of liabilities (debt). Especially in Belgium, tax differences between lessor and lessee do not have impact on the decision whether to apply for leasing or loan, as lessee is considered as a fiscal owner of an asset. Lessee may recognise these assets as amortised for taxing purposes, so the interest part of leasing payments shall be off-set against the taxable income. Therefore, whilst studying relation between leasing and bank loan, it may be expected that those two forms are substitutes to each other. This hypothesis has been tested by Deloof *et al.* (2007) on a sample of 5595 enterprises based on yearly data. The regression has been conducted with censored tobit model. The analysis indicates that firms with higher growth in assets and higher share of current and financial assets in total assets tend to be financed with leasing more often. A higher debt ratio and leasing-usage ratio are negatively correlated, which strongly supports the substitution hypothesis: the higher the debt is, the lower is the share of leasing.

Finucane (1988) has obtained opposite results using dependent variable formulated in the same manner. He stressed complementarity of leasing and non-leasing debt using the same dependent variable and several types of debt. The results of the study confirmed that industries such as food, air transport and retail sales have higher tendency to finance with leasing. The tobit model of the degree of leasing usage in asset financing

Tab. 3. Explanatory variables used in studies and the direction of the linear relationship between them and the dependent variable

Author	Positive	Negative
Deloof (2007)	Percentage of change in total assets	Long-term debt without leasing/total assets
	Current assets/total assets*	Gross profit, after exclusion of extraordinary result and interest/total assets
	Financial assets/ total assets	
Finucane (1988)	Total debt/assets	Subordinated debt/total assets
	Number of issued bonds	Leasing restrictions (binary variable)
	Mortgage loan (binary variable)	
	Rating of issued bonds	
Ang and Peterson (1984)	Current financial liquidity = current assets/short-term debt	Return on assets
	Change in sales	Operating leverage
	Current assets/total assets*	
Yan (2006)		Dividend payment (binary variable)
		Book value of total debt including market value of equity/book value of assets
		Book value of total debt without financial leasing/sum of book value of assets and operating leasing
		Book value of long-term debt without financial leasing/sum of book value of assets and operating leasing
Cosci et al. (2015)	Income tax/operating profit	Book value of total debt/total assets
	Net trade loan	Current assets/current debt
		Firm's age
		Exporting firm (binary variables)

Source: Own elaboration based on the literature review.

confirms that liabilities, debt with mortgage security, share of subordinated debt, limitations in leasing and share of debt in company's capital structure indicate significant relationship with the usage of leasing.

Ang and Peterson (1984) suggested the lack of common views about the true nature of the relationship between debt and leasing: are they substitutes or complements. They demonstrated a positive correlation between leasing and debt, concluding that debt and leases appear to be complements. The obtained results

have also been confirmed in the theoretical models of Lewis and Schallheim (1992), Yan (2006), Eisfeldt and Rampini (2009). Nevertheless, there is some empirical evidence (Myers, Dill and Bautista, 1976; Beattie, Goodacre and Thomson, 2000; Singh, 2013; Lin *et al.*, 2013; Li, Karim and Munir, 2016) that leasing is substitute for debt in the sense that more leasing should result in less debt, as leases use up debt capacity. Using lease and debt can reduce company's funding capacity, and as a result, greater use of lease financing should be associ-

ated with less non-debt financing. Hence, we formulate the following hypotheses.

H1: The lower the share of long-term credit and loans in financing the investment of small company, the higher is the probability that firm uses financial leasing.

H2: Financial leasing and bank loans are substitutable sources of financing investment in fixed assets.

H3: Financial leasing and **long-term** bank loans are substitutable sources of financing investment in fixed assets.

On the basis of the previous researches (Ezzell and Vora, 2001; Yan, 2006; Chu, Mathieu and Zhang, 2008; Robicheaux, Fu and Ligon, 2008; Landry, Fortin and Callimaci, 2013; Li *et al.*, 2016), it should be concluded that non-dividend, growth, tangibility, leverage, tax position and firm size can explain leasing propensity. Non-dividend paying firms will most likely have asymmetric information problems suggesting that they will have a greater propensity to use lease financing and are likely to be amongst those most burdened by high asymmetric information costs. Non-dividend variable is measured as a dummy variable that equals one if firm did not pay a dividend and zero otherwise (Yan, 2006; Robicheaux *et al.*, 2008; Beatty, Liao and Weber, 2010). Growth, measured as a ratio of the market to book value of equity (Yan, 2006; Robicheaux *et al.*, 2008; Callimaci, Fortin and Landry, 2011; Singh, 2013), captures the firm's future investment opportunities and, hence, are expected to acquire more assets. Tangibility reflects the availability of collateral affect of a firm's financing policy because fixed assets are more valuable in liquidations and can support a higher external obligation capacity. Tangibility is measured as a ratio of net property, plant and equipment to total assets (Chigurupati and Hegde, 2010; Mehtap, 2011; Nuryani, Heng and Julieta, 2015). Leverage reflects a firm's use of its debt capacity at the moment of time and is usually measured as a ratio of total debt to fixed assets, total assets or equity (Ezzell and Vora, 2001; Deghaye-Filareto and Severin, 2007; Perez, Inchausti and Ortega, 2014). Traditional financing may become prohibitively expensive, making leasing more attractive, which has been shown in models, where positive relation between leverage and leasing has been observed. Leasing is often perceived as a tax shield, a lot of studies use tax position to capture a firm's tax burden (Beatty *et al.*, 2010; Cosci, Guida and Melicani, 2015; Munir *et al.*, 2017). Tax position can be calculated in a number of ways. The firm size variable, measured as a natural logarithm of total assets (Chu *et al.*, 2008; Devos and Rahman, 2008; Nuryani *et al.*, 2015) or natural

logarithm of sales (Beatty *et al.*, 2010; Chigurupati and Hegde 2010; Landry, Fortin and Callimaci, 2013), may clearly be relevant to compensation structure, leverage and debt structure. The number of studies have found a negative relation between firm size and leasing (Luo, 2011; Lin *et al.*, 2013), because large firms are more likely to finance with debt, are more diversified, have more stable cash flows and can easily exploit economies of scale in external financing.

Leasing is one of the most important financing instruments, in particular for small and medium enterprises (SME), because it often does not require any additional collateral, involve the disclosure of private company information or control diversion and capital requirements for the provision of the asset are spread over the agreed time period (Mehran, Taggart and Yermack, 1999; Eisenhardt and Graebner, 2007; Deloof, Lagaert and Verschuere, 2007; Li *et al.*, 2016).

Tab. 3 indicates a substantial diversity of significant independent variables used in studies on substitutability between leasing and loan. It became a motive for studying dependencies between particular variables in the case of small companies in Poland.

6 Definitions of variables

The study is based on the data obtained from Notoria database on annual financial statements of small companies listed on the alternative stock exchange New-Connect. Variables are based on records reported in balance sheet, profit and loss statement, cash flow statement and additional notes. Definitions of variables used in the study are presented in Tab. 4. The study is based on four definitions of dependent variables. Four tobit models have been estimated for ratios of payments because of financial leasing in relation to total assets and equity as well as a ratio of long-term credit and loans (excluding payments due to leasing) in relation to total assets and equity. Moreover, one logit model that indicates the influence of particular factors on financing a company with leasing has been estimated (binary variable).

Models have been estimated using Stata software (version 14). In order to verify the main hypothesis, dependent variables related with leasing (**lfina**, **lfink**) and independent variable directly related with loans (**cred** – financial liabilities [credit and loans]) have been used. This enables to verify hypotheses related with sub-

Tab. 4. Variables used in logit and tobit models

Type of variable	Variable definition
Dependent variables	$l\text{fina} = \frac{\text{payments due to financial leasing} *}{\text{total assets}}$
	$l\text{fink} = \frac{\text{payments due to financial leasing} *}{\text{equity}}$
	lfin = binary variable indicating usage of financial leasing, assuming the value of 1 if the company uses leasing for financing; and 0 otherwise
Main independent variables	$l\text{cred} = \frac{\text{financial liabilities (credit and loans)} - \text{payments due to leasing}}{\text{total assets}}$
	$l\text{credlong} = \frac{\text{long-term credit and loans} - \text{payments due to leasing} *}{\text{total assets}}$
	trade, service, manufacturing, construction – binary variables representing particular industries;
	firm size – size of the company defined with natural logarithm of revenue
Other independent variables	$liab = \frac{\text{total liabilities (without leasing)}}{\text{total assets}}$
	$ltl = \frac{\text{long-term liabilities (without leasing)}}{\text{total assets}}$
	roa – return on fixed assets
	$curass = \frac{\text{current assets}}{\text{total assets}}$
	$finass = \frac{\text{financial assets}}{\text{total assets}}$
	liq – liquidity ratio = $\ln(1 + \frac{\text{current assets}}{\text{short-term liabilities}})$
	$fixass = \frac{\text{fixed assets}}{\text{current assets}}$
	div – binary variable representing the dividend payment, assuming the value of 1 if there was no dividend payment and 0 if the company paid a dividend
em – financial leverage ratio	

*Variables used as both dependent and independent variables in different tobit panel models.

stitutability between two of the most frequently used sources of financing by small companies, namely, loans and leasing.

7 Data sources and research sample

The data set has been constructed based on the components of financial statements of Polish companies listed on NewConnect market, as it is the alternative stock exchange dedicated to companies that are newly created or with low capitalisation, which implies the substantial

share of small companies. The analysis covers annual data for 2012–2016 years, as from January to December, which makes up for past 5 years of available data. The number of companies listed on NewConnect, as for the beginning of 2017, is 410. The research sample does not include four companies that operate in leasing industry (namely, Akcept Finance SA, Indos SA, Property Lease Fund SA and, Centuria Group SA). The research sample covers 400 companies, because of the lack of data for all analysed years for other companies. Every financial statement of 400 companies containing data for at least 1 year has been included in the study, which indicates that the model has been estimated for unbalanced data.

Tab. 5. Basic descriptive statistics of variables used in the study

Variables	Number of observations	Average value of variable	Standard deviation	Minimum value of variable	Maximum value of variable
<i>lfin</i>	1,907	0.3335	0.4716	0	1
<i>lcredlong</i>	1,907	0.0596	0.1203	0	1
<i>lcred</i>	1,907	0.0787	0.1473	0	0.9
<i>liab</i>	1,907	0.3777	0.4326	0	1.3086
<i>lfina</i>	1,897	0.0147	0.3895	0	16.9083
<i>lfink</i>	1,897	0.0607	1.7142	0	73.3148
<i>div</i>	1,907	0.9082	0.2888	0	1
<i>ltl</i>	1,907	0.1113	0.2234	0	2
<i>roa</i>	1,907	0.0597	0.1326	0	1
<i>curras</i>	1,897	0.5178	0.3087	0.0002	1
<i>finass</i>	1,897	0.0785	0.1845	0	0.9968
<i>liq</i>	1,907	1.1361	0.8609	0.0007	4.4999
<i>fixass</i>	1,897	7.9183	28.7171	0	209
firm size	1,789	8.1756	2.1453	0	14.9479
<i>em</i>	1,907	2.3115	2.5307	0	18.5000
<i>trade</i>	1,907	0.2045	0.4034	0	1
<i>service</i>	1,907	0.6130	0.4872	0	1
<i>manufacturing</i>	1,907	0.1012	0.3017	0	1
<i>construction</i>	1,907	0.0818	0.2741	0	1

During the analysed period, one-third of companies listed on NewConnect used financial leasing. First, descriptive statistics of variables used in the study have been generated and presented in Tab. 5.

According to descriptive statistics, companies from the service industry (**service**) have the highest share (61.5%) in the research sample and companies from construction industry (**construction**) have the lowest share (only 8%). The correlation between *lfina* and *lfink* is up to 98%. The values of both indicators differed slightly, which is implied by the average for both indicators (*lfina* – ca. 1.5%, *lfink* – ca. 6%). This results from the slight difference between firms' value of assets and equity. Looking at the same base (denominator with assets), the average for indicators of financing with bank loans is five times higher than **lfina** indicator. Most of the examined companies did not pay dividends (on an average, **div** equals 91%).

8 Results

Specification of dependent variables, limited within particular interval $[0, \infty)$ enabled choosing tobit model, whilst *lfin* being a binary variable determining the usage of leasing enabled choosing logit model. In tobit model, dependent variable is limited because of two mechanism of data generation: truncated and censored. The estimated model is of censored type. In the case when the value of a variable is lower than 0, the value of 0 has been assumed. Negative values have been included in newly defined variables (of the same name with 'los' prefix), which are of value 1, whilst 0 otherwise, that is, **losltl**.

The first estimated model is a logit model with dependent variable **lfin**, which is a binary variable. The results show which factors determine whether the firm is financing with leasing and which factors do not. In order to estimate the model with such dependent variable, it is necessary to eliminate few independent variables. Two logit regressions based on panel data

Tab. 6. Determinants of probability of financing investment in fixed assets with leasing –logit model

Variables	logit l _{fin}
lcred	5.1214*** (0.7542)
lcredlong	–0.5170 (0.9051)
finass	–3.2233*** (0.8272)
manufacturing	–0.9696* (0.5648)
firm size	0.6956*** (0.0825)
losltl	1.0230*** (0.3525)
div	–1.3006*** (0.3369)
cons	–6.1004 (0.8170)
Wald test	135.76***
LR test	319.18***
Number of observations	1,779
Number of groups	400

Standard errors are given in parentheses below coefficients.

*** p<0.01, ** p<0.05, * p<0.1

with the use of random effects and three tobit models have been estimated (Tab. 6).

Leasing is more frequently used by companies that are relatively more indebted. An increase in debt because of credit and loan by 1 percentage point p.p. causes an increase in the probability of using financial lease for by 5.12 p.p. Similar result has been obtained by Finucane (1988) and Angand Peterson (1984), who studied determinants of using lease as well. A variable representing financing with long-term loans turned out not to be significant, which implies that the probability of using lease increases along with higher total debt, especially short-term debt, because of low financial flexibility and probable liquidity problems. This finding is also confirmed by negative relationship between the share of financial assets in total assets and probability of using lease. Leasing is more frequently used by larger companies, contrary to results presented in the literature. Higher income of small firm implies a larger scale of company's activity and high growth opportunities, which may

require higher investment in fixed assets. Positive relationship between firm size and usage of leasing is also confirmed by tobit models. Moreover, companies operating in manufacturing industry use financial leasing with lower probability.

The estimation of tobit models provided similar results for both types of dependent variable. This indicates the robustness of results to the construction of dependent variable (robust check). The increase in debt because of credit and loans by 1 p.p. causes the increase in usage of leasing by 0.15 p.p. This finding justifies the rejections of **H1 hypothesis** on substitutability between financial leasing and bank loan, indicating their complementarity. It may result from the diversity in classifying leasing for balancing and fiscal purposes. Small enterprises may report leasing payments in cash flow statement, without reporting them in balance sheet as liabilities because of financial leasing, because the Accounting Act allows for classifying leasing pursuant to tax regulations. The usage of simplification in accounting envisaged for small companies enables them to improve their debt ratios.

An increase in **firm size** by 1 p.p. causes an increase in financing with leasing by 0.0001 p.p. Cosci *et al.* (2015) obtained opposite results. This discrepancy may result from using different dependent variable with regard to the numerator (containing the value of financial and operating leasing). The limitations of Notoria database preventing the extension of study with off-balance-sheet liabilities because of operating leasing, because of the lack of data in the structure of the database that is based on financial statement without explanatory notes.

Construction enterprises use financial leasing to higher extent, which enables them to use machinery and equipment without the necessity to engage funds equivalent to their value or increase debt because of bank loan. Usage of financial leasing neither requires complex procedure for leasing contract conclusion nor establishes a lot of security, whilst providing higher fiscal benefits.

The analysis of control variables indicates that dividend payment is related with lower usage of financial leasing. Moreover, the results indicate positive relationship between liquidity and usage of leasing, whilst a higher share of financial assets in total assets has negative impact on lease usage. Liquidity implies an ability of a firm to pay leasing instalments, in short term in the case of **liq** variable. Maintaining liquidity is one of the conditions necessary for functioning of small company. Dividend payment has stronger influence on the probability of not using financial leasing, whilst in

Tab. 7. Determinants of financing investment in fixed assets with leasing – tobit model

Variable	Leasing		Bank loan	
	lfina	lfink	Lcred	lcred
div	−0.0004*** (0.0000)	−0.0005*** (0.0001)	0.0062* (0.0038)	0.0062* (0.0038)
lcredlong	−0.0003 (0.0002)	−0.0001 (0.0002)		
lcred	0.0016*** (0.0002)	0.0011*** (0.0002)		
lfina			0.0089** (0.0046)	
lfink				0.0020** (0.0009)
finass	−0.0008*** (0.0002)	−0.0008*** (0.0002)		
liq	0.0001* (0.0000)	0.0001* (0.0000)	0.0021 (0.0015)	0.0021 (0.0015)
firm size	0.0001*** (0.0000)	0.0001*** (0.0000)	0.0035*** (0.0007)	0.0035*** (0.0007)
construction	0.0004*** (0.0002)	0.0004** (0.0002)		
cons	−0.00003 (0.0002)	0.0001 (0.0002)	−0.0014 (0.0077)	−0.0013 (0.0077)
Wald test	181.79***	148.60***	29.78***	30.53***
LR test	404.49***	402.52***	597.54***	598.46***
Number of observations	1,779	1,779	1,779	1,779
Number of groups	400	400	400	400

Standard errors are given in parentheses below coefficients.

*** p<0.01, ** p<0.05, * p<0.1

the case of the amount of leasing instalment, the influence is not as strong. The results of model estimation are presented in Tab. 7.

No evidence to confirm **H2 hypothesis** on substitutability of leasing and **long-term** bank loan serves a starting point for the estimation of model based on dependent variable concerning long-term bank loans **lcredlong**. According to the results, an increase in the usage of financial leasing (**lfina**) by 1 p.p. causes an increase in debt because of long-term bank loan by 0.009 p.p. This finding justifies the rejections of **hypothesis H3**, indicating that the lower the share of long-term credit and loan in financing firm's investment is, the higher is the probability that firm uses a financial leasing. The results deny the substitutability of those two sources of finance and imply their complementarity. Therefore, the higher the usage of financial leasing is, the higher is the likelihood that the enterprise is indebted because of long-

term bank loan – complementarity. Small companies, whilst implementing investment projects, make a decision on using two sources of financing, both long-term bank loan and financial leasing, instead of just one of them. It may result from their limited creditworthiness and low financial flexibility. This also indicates a marginal role that differences in costs of external financing play in choosing the appropriate source of financing their fixed assets.

The analysis of control variable **firm size** implies that the larger the company is (according to the proxy as logarithm of income level), the higher is the probability that this firm uses a long-term loan. Higher engagement of external sources of finance in small firms facilitates expansion of the scale of their operations and further growth. Then, small companies decide to start new investments, whilst financing with long-term bank loan helps in realisation of implemented projects.

9 Conclusion

To summarise, the decision of small company regarding the choice of an appropriate source of financing their investment is dependent on many factors and requires taking into consideration firm's financial situation and analysing its debt and liquidity ratios. Most frequently amongst small companies, financing with financial leasing does not rule out the usage of bank loan as well. Companies concerned in the study, listed on the alternative stock exchange NewConnect, are generally in good financial situation, which enables them to use bank loans because of their creditworthiness and financial flexibility (approximated with financial assets in relation to total assets).

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