Financial Internet Quarterly „e-Finanse" 2015, vol.11 / nr 4, s. 1- 22
DOI: 10.14636/1734-039X_11_4_001

STUDIES OF FIRM CAPITAL STRUCTURE DETERMINANTS IN POLAND: AN INTEGRATIVE REVIEW

Andrzej Cwynar[1], Wiktor Cwynar[2], Robert Dankiewicz[3]

Abstract

We investigated 34 empirical studies aimed at examining the capital structure determinants in firms operating in Poland to test to what degree the financing patterns were steady during the observed period (2001-2012). Specifically, in conducting the survey we were motivated by the following research questions which constitute the objectives of the article: (1) which factors – country- or firm-specific – are more relevant in explaining leverage in Poland, (2) which theory – trade-off or pecking order – gains greater support in Poland, and (3) what is the significance of the optimal capital structure notion in Poland. Our results show that financing patterns changed importantly during the last 20 years, which manifests itself mainly in gradual increase in debt ratios with a dominant role of short-term debt, along with the decrease in the importance of country-specific factors (especially in large-sized, listed firms). The signs of the associations between leverage and the key firm-specific factors remained relatively stable during the investigated period, with the exception concerning tangibility. These signs provide greater support for pecking order theory, with at most a moderate role of the target capital structure.

JEL classification: G32
Keywords: capital structure, equity, debt, leverage, financing

Received: 11.09.2015 Accepted: 10.12.2015

1 University of Economics and Innovation in Lublin, andrzej.cwynar@wsei.lublin.pl.
2 University of Economics and Innovation in Lublin, wiktor.cwynar@wsei.lublin.pl.
3 Rzeszow University of Technology, rdankiew@prz.edu.pl.

Introduction

Capital structure decisions in firms and factors determining them remain among the intriguing issues which deserve more empirical studies, despite almost 30 years of such investigation, mainly in the Anglo-Saxon economies. The history of exploring equity-debt choices in firms operating in Poland is shorter, as its beginning dates from the middle of the 1990s. Despite more than 30 empirical studies aimed at scrutinizing leverage determinants conducted in Poland so far, we lack an all-encompassing meta-analysis which would sum up empirical research to date and draw general conclusions from it. This kind of integrative empirical literature review seems to be needed since as Białek-Jaworska et al. (2014, p. 8) point out "capital structure determinants and the appropriateness of pecking order, trade-off and maturity matching theories in Polish conditions have not been unambiguously verified and call for deepened research". The process of the economic transformation in Poland, as in other Central and Eastern European countries, was characterized by many market imperfections highlighted by the capital structure theories questioning the leverage irrelevance of the Modigliani & Miller theorem in their perfectly competitive market setting. Thus, these countries form very attractive and exceptionally pertinent objects in studying equity-debt choices.

The article summarizes the empirical studies conducted on capital structure determinants in firms in Poland so far and draws some general conclusions as such summative analysis allows for. The body of evidence gathered in our review can be considered the initial stage of more advanced meta-analysis devoted to the factors that determine the choice between equity and debt in firms. For that reason, the goal of the article is to synthesize the research to date performed in this field in Poland revealing some general patterns concerning capital structure determinants resulting from surveying a large set of studies and thus to validate some empirical observations while questioning others. Our work contributes to the existing knowledge on capital structure selection since the analysis presented in the article attempts to answer the same questions which are typically asked in capital structure determinant works, yet in doing that it refers to a large set of studies. This creates a new perspective and fresh opportunities for future researchers.

The remainder of the paper is organized as follows. In the next section we refer to traditional capital structure theories and their predictions concerning the way some crucial firm-specific factors influence leverage. After that we provide the synthetic presentation of our review. In the background section we give the general view of the transformation of the Polish economy since the 1990s with the emphasis on financial market development, and the way it can be responsible for the potential shifts in the capital structure patterns of firms operating in Poland. The remaining sections show key findings formulated on the basis of our review and regarding country-specific and firm-specific factors determining leverage of firms operating in Poland. Conclusions summarize the most important points.

Literature review

Two dominant capital structure theories are widely recognized in the corporate finance literature: trade-off theory and pecking order theory. Trade-off theory (hereafter TOT) is based on the premise according to which the ultimate debt-equity choice is based on the comparison of the immanent benefits and costs of debt and equity. The theory grew on the groundbreaking theorem of the Nobel prize laureates, Modigliani and Miller (1958) and predicts that in their debt ratio choices firms will be driven by the marginal analysis aimed at finding the capital mix at which the marginal benefit of the additional euro of debt will equate its marginal cost. The key benefits of debt are associated with the tax shield while the costs can be divided into potential bankruptcy costs and agency costs.

Pecking order theory (henceforth POT) was built on the empirical findings of Donaldson (1961) and developed by Myers and Majluf (1984). It predicts that in their financing decisions firms, in the case of the capital needs, will begin with the internal funds as the first financing resort. When the internal funds are not available or they are insufficient, firms will turn to the financial markets, however external debt will be used before external equity. New stock issues are considered to be the last financing resort, used in the cases in which all other sources have failed. Thus, the theory assumes that firms apply an apparent order when choosing the degree of leverage and the order is explained mostly by the transaction costs and costs of the information asymmetry among a firm's stakeholders.

Even though the theories differ in key points (TOT is static while POT is dynamic; TOT assumes the existence of the optimal capital structure which should be considered the target for firms in making their financing choices while under the POT framework such an optimum is not a focal issue), the current literature on the corporate capital structure points out that these two theoretical lines of thinking should be considered more complementary than competitive strands (De Haas & Peeters, 2006). Such a reconciling approach may mean that neither does trade-off theory need to be static nor does pecking order theory need to neglect the optimal capital structure.

Both theories point to some internal factors theoretically responsible for debt-equity choices in firms. The most important are size, profitability, growth, risk (expressed in the volatility of the operating performance), asset structure (expressed in the level of the tangibility of assets) and non-debt tax shields. Hypothetically, these firm-specific attributes, along with the external (country-specific and industry-specific) factors should convincingly and to a large degree explain the capital structure patterns observed in firms. Yet, TOT and POT are not consistent as to the way some of the aforementioned firm-specific characteristics influence leverage. They are univocal in case of growth, asset structure and non-debt tax shield. The opinions concerning the way volatility influences leverage are ambiguous, especially under the POT regime. Nivorozhkin (2005) even states that the factor lacks the theoretical predictions concerning its relation to debt ratios. Finally, the theoretical predictions are opposite for profitability and size. Table 1 summarizes the expectations formulated on the basis of TOT and POT, respectively.

The literature dedicated to the way firm-specific factors can influence financing patterns in firms is vast. For that reason we limit our discussion on this issue to the most important arguments.

In the light of TOT, profitability determines the debt tax shield capabilities (with more profitable firms having greater opportunities to make savings on taxes, ceteris paribus). Hence, the theory predicts a positive relationship between profitability and leverage. As distinct from TOT, POT argues that more profitable firms – as opposed to less profitable ones – have greater opportunity to finance themselves internally, without the need of raising capital externally, including debt. Thus, a negative relationship between profitability and leverage is expected by the theory.

Larger firms are less vulnerable to the impact of negative factors emphasized in TOT such as the factors leading to financial distress and associated with potential bankruptcy. This leads to the expectation of a positive relationship between size and leverage. Conversely, POT predicts a negative link between these two. The rationale underlying the expectation is that larger firms are more transparent and experience lower information asymmetry costs. Thus, they are more inclined to issue more equity. Moreover, larger firms are – on average – older, more mature and hence they identify relatively few growth opportunities which leads to the anticipation of sizable financial surpluses and retained earnings.

Operating performance volatility reflects riskiness and belongs to the key determinants of the firm's ability to cover the obligations imposed by debt. Firms with more volatile profits are considered to be more prone to financial distress and therefore they should be more debt restrained. Such arguments lead to the presumption of a negative relationship between volatility and leverage within a TOT setting. Some authors claim that the same rationale is valid for POT. For example, Mateev et al. (2013, p. 9) point out that "For the pecking order theory, firms with more volatile cash flows are less likely to have debt in order to lower the possibility that they will have

Table 1: Main firm-specific capital structure determinants – theoretical predictions: TOT vs. POT

ATTRIBUTE	TOT	POT
Profitability	P	N
Size	P	N
Risk (volatility)	N	N/P
Growth / growth opportunities	N	N
Asset structure (tangibility)	P	P
Non-debt tax shield	N	N

Marks: P – positive association with leverage; N – negative association with leverage

Source: Own work

to issue new risky securities or forego future profitable investments when cash flows are low". The opposite opinion is expressed by De Haas and Peeters (2006). Yet, Kędzior (2012) notes that the majority of authors predict the negative dependence of leverage on volatility. Given the fact that there is apparent incongruity in formulating the theoretical expectations concerning the way volatility affects leverage, we decided to mark the attribute by "N/P" in Table 1.

From the point of view of TOT fast growth imposes the additional threat of instability which reflects business riskiness. Because riskier business ventures should be more cautious in borrowing funds, one should expect a negative relationship between growth and leverage. Additionally, in contrast to the part of the firm value which is represented by the assets in place (tangible assets), the other part – reflected in the future growth opportunities – can't be used as the collateral to pledge for the borrowing. Also POT predicts a negative association between these two financial variables, yet it is justified in a different way. The theory argues that rapid growth and high growth opportunities can exacerbate the agency problems of debt (with shareholders having greater incentives to invest sub-optimally and expropriate the wealth from lenders), thus leading to a lower inclination of banks and potential bondholders to lend capital to such firms.

According to TOT the share of tangible assets in the balance sheet determines potential bankruptcy costs since they can be used as collateral and can be easily liquidated in the case of the default. Consequently, the factor should be positively linked to leverage (more tangible assets leading to higher debt ratios, ceteris paribus). The same sign of the relationship is expected by POT, yet for somewhat different reasons. On the basis of POT one can claim that tangibility of assets can serve as the "sorting factor" (Weill, 2002) which allows lenders to distinguish good businesses from poor ones and thus mitigating the asymmetry information between firms and their creditors. This way tangibility can help to control such undesirable aspects of business activity as negative selection (difficulty of lenders to identify credible borrowers) and moral hazard (managers trying to increase their wealth at the cost of lenders).

A non-debt tax shield serves as the substitute for a debt tax shield – a prime capital structure determinant in a TOT framework – and as such it can give the same results. Accordingly, a negative relation between the non-debt tax shield and leverage is predicted by the theory because firms which are able to save funds through a non-debt tax shield don't have to engage debt to get the same result. Assuming that the adequate proxy for a non-debt tax shield is depreciation which represents self-financing, in the light of POT firms exhibiting high depreciation expenses in relation to total assets should be considered to be less inclined to borrow funds because of their ability to finance themselves internally. As a result, a negative relation between a non-debt tax shield and leverage is also expected in POT.

General view of the survey

We reviewed 34 scientific papers containing an empirical study devoted to capital structure determinants in Poland. As an aggregate, they cover financial performance of firms operating in Poland from 1991 to 2012. This way one can reasonably assume that they illustrate almost the entire history of the market economy in Poland, starting with the transformation of the political system. The survey includes only those studies which were aimed at investigating selected microeconomic (firm-specific or industry-specific) and macroeconomic (country-specific) factors theoretically affecting the equity-debt choice. We ignored other capital decisions-oriented studies (e.g. numerous articles dedicated to comparative analysis of financing in the form of bank loans and leasing, modern financing instruments etc.). The majority of the studies included in our review represent quantitative analyses, typically utilizing the regression procedure of a sort (usually panel regression models). However, some investigated the capital structure determinants in a qualitative way (e.g. Hernádi & Ormos, 2012b; Chojnacka, 2012; Prędkiewicz & Prędkiewicz, 2014). These are of special value since they ensure additional insight, unavailable in quantitative exploration. The studies collected by the authors can be divided into two sub-sets important for further integrative and summative analysis: those in which Poland was examined separately (which means that it was the only country studied or it was studied along with other countries constituting a region, yet the results were provided not only for the entire region but also independently for Poland) and those in which individual results for Poland were not available, yet they were included in the overall results for a region consisting of Poland and other countries. For obvious reasons the first sub-set was more valuable from the point

of view of the analytical goals assumed in our survey. The research we surveyed differs also in the sample of firms that were studied. Some authors relied on the companies listed on the Warsaw Stock Exchange while others used financial data for cross-section of small & medium or small, medium & large firms (listed and non-listed). The details are given in Table 2. This may imply some interpretation challenges as the theoretical predictions concerning the influence of chosen country-specific and firm-specific factors on leverage are different for smaller and larger businesses, at least according to some authors. For example, information asymmetry – having critical status in pecking order theory – is more severe in small firms than in larger ones. On the other hand, many small firms have limited debt-related tax shield opportunities – highlighted in trade-off theory – because of the selection of some simplified tax settlements (such as flat rate tax). Thus, in some size-groups of firms pecking order theory or trade-off theory may gain significantly less empirical support than in others.

Even though the results obtained by the authors of the studies included in our survey are somewhat mixed, they are consistent to a large degree. This remaining inconsistency can be explained not only by methodological diversity – different regression models, data time frames and sample of firms employed in respective studies – but also by the dependent and independent variables selected by the researchers. The detailed information concerning the variables investigated in the studies covered by our survey is given in Table 2. Generally, the studies consider a shorter or longer list of traditional factors (attributes) potentially influencing leverage which are promoted by TOT and POT although the proxies of those attributes estimated by various researchers are sometimes diverse. They also adapt wide (total liabilities) or narrow (total debt, excluding trade credit etc.) measures of leverage as the dependent variable. In many cases the analyses are also conducted for short- and long-term leverage ratios, respectively.

Survey results: background

The Polish economy has evolved remarkably since the beginning of the 1990s. The evolution must be accounted for in the integrative review in which the time factor can play an important role. The system and economic reforms introduced in 1990 were followed by significant transformation in the banking sector and the introduction of the stock exchange in 1991. It seems rational that in such a rapidly shifting system at the initial stage of its transformation towards a market economy one must expect financial patterns different from those observed in well-developed countries. Early studies of capital structure decisions carried out in Poland (Campbell & Jerzemowska, 2001; Cornelli et al., 1998; Hussain & Nivorozhkin, 1997) report low or very low debt ratios which is in line with the underdeveloped financial market and borrowing barriers resulting from it. Later studies which covered the second half of the 1990s found leverage still lower than in developed countries, yet to a much lesser degree. For example, De Haas and Peeters (2006) notice divergent results for the smallest and largest firms: the first have gradually become slightly underleveraged while the latter have become less underleveraged during the research period (1993-2001). On average, firms in the CEE region approached their optimal capital structures during the period, however severe asymmetry information between firms and banks still existed at the end of the period resulting in preferring retained earnings by firms and slow adaptation to their target capital structures. By contrast, Nivorozhkin (2005) noted that firms in Poland and other countries examined in his study have been adjusting their capital structures at a similar rate as among Western firms. Shamshur (2010) showed that the pace at which Central and Eastern European (hereafter CEE) firms adapt their capital structures to the targets depends on the financial constraints they face (less constrained firms being able to adapt their capital structures faster). Relatively low debt ratios of firms in CEE countries are also reported by Jõeveer (2006). In turn, Delcoure (2007) points out that leverage in Poland was only slightly lower than in the USA and a bit more lower than in G7 countries. Moreover, in comparison to Poland other CEE countries she investigated (Czech Republic, Slovakia and Russia) showed lower debt ratios. Similar results are reported by Nivorozhkin (2005). Basically, these relations between West and East European countries in the 1990s were confirmed by other researchers (e.g. Hall et al., 2006). What is of special importance in the findings of Delcoure (2007) is the small meaning of long-term debt, at least in comparison to developed countries. To explain the phenomenon, Delcoure (p. 11) refers to a small, weak and immature bond market as well as to the fact that "Short-term financing, with its lower default risk, enables creditors to monitor managers more effectively". Even the

most recent studies state that debt ratios in CEE countries, including Poland, are still lower than in the developed economies of Western Europe (see for example Kędzior, 2012) and explain the differences by "less financial constraints, consequently higher credit availability, less agency and bankruptcy risks" in the West (Mokhova & Zinecker, 2013b, p. 2538).

Even 10 years after the start of the reforms the Polish economy was still exhibiting substantial distance to the most developed European states. Delcoure (2007) describes the condition of the Polish economy at the turn of 21st century by pointing out such properties as inefficient corporate governance, an underdeveloped bond market and an incomplete institutional structure and legal system governing the banking industry. Ciołek and Koralun-Bereźnicka (2014) notice that despite the advanced economic harmonization in the European Union their empirical investigation (data covering years 2000-2009) suggests that the most powerful factor determining capital structures of firms in Europe is the country in which they operate. This implicitly proves some institutional differences between West and East European countries being still present. Shamshur (2010) confirms that in the middle of the first decade of the 21st c. firms in CEE were still indicating capital constraints: even though the access to funds became easier after becoming EU members, they have still been experiencing barriers in raising external capital. The subprime crisis only exacerbated those limitations. For example, Białek-Jaworska et al. (2014) report that the negative impact of crisis on the access to debt was observed in all studied classes of firms.

These descriptive statistics concerning leverage demonstrated in the empirical research carried out in Poland are in line with the international findings of other authors, including the renowned studies of Demirgüç-Kunt and Maksimovic (1996 and 1999) who showed that the leverage differences between developed and developing countries (including transition economies) can be explained by country-specific factors such as the degree of the financial market development, especially with reference to the differences in long-term indebtedness. They confirmed that in transition economies debt ratios may be low and increase in tendency, along with the progress in the financial market development.

Hence, it seems that for capital structure decisions the critical feature of the Polish economy under the system transition regime was the underdevelopment of the financial market. It was manifested both in slow growth of the bond market and more or less credit rationing conditions imposed by commercial banks being restrained in granting loans to firms, especially at the initial stage of the transition process. It is symptomatic that even today many firms – maybe the majority of them – do not have alternatives for banking credit to cover their financial needs. Weill (2002) rightfully points out that even in the most capital market-oriented European economies, such as in Great Britain, corporate bonds are utilized at most moderately. He argues that consequently the discussion on capital structure selection must reject the belief according to which managers have freedom in choosing between retained earnings, new issues of stock or bonds, and loans from commercial banks. Instead, it must take into account the fact that in many firms the freedom of choice is unavailable and in a way they are forced to borrow money from banks.

In the 1990s, and especially at the beginning of the period, Poland as a transition economy had some characteristics critically important for the corporate capital selection process and hence for the empirical verification of TOT vs. POT. They refer to some of the traditional capital structure determinants and are widely discussed in the respective literature (Cornelli et al., 1998; Campbell & Jerzemowska, 2001; Hussain & Nivorozhkin, 1997). They are as follows:

1) high potential tax savings (because transition economies exhibit relatively high tax rates),
2) low potential bankruptcy costs (because of an underdeveloped legal system and weak protection of the lenders along with limited institutional backup for those who have the claims to bad debts),
3) high costs resulting from the information asymmetry and associated with negative selection and moral hazard (because of banks being unable to assess the financial strength of the potential borrowers effectively).

Those properties justify the expectation of high leverage which is in contradiction to the empirical findings cited above. Thus, the evident discrepancy between theoretical predictions and empirical findings was evidenced for the early years of the economic transformation in Poland, at least according to the descriptive data concerning debt ratios. This led some authors to assert that the capital structure patterns in transition economies may differ significantly from those observed in the developed countries which can

decrease the explanatory power of the classic capital structure theories in expounding the equity-debt choices in countries with rapidly transforming economies (e.g. Delcoure, 2007). Generally, the divergence of the empirical results from the theoretical expectations is justified by the supply-side factors of the market for debt. For example, Cornelli et al. (1998) notice that the properties of the economic system at the initial stage of its transformation resulted in commercial banks being reluctant to finance firms to larger degree because of both high inflation and the inability of firms to exhibit a proven track record in the new system. Moreover, high rates of return on the governmental securities made banks more inclined to lend funds to the government than to firms. Campbell and Jerzemowska (2001) plausibly purport that those financial market-related factors inhibited firms from achieving the optimal capital structures.

These observations may be critical for the ultimate conclusions in the discussion concerning the relative support gained in the empirical research by trade-off theory and pecking order theory, respectively. POT is heavily based on the asymmetry of information and transaction costs which are closely related to the financial market development (i.e. country-specific factors may play a crucial role in the light of the theory). Thus, in a POT setting capital structure choices may be driven more by supply-side factors than demand-side factors. In contrast, firm-specific factors are emphasized in TOT which corresponds with the belief that the equity-debt choices are driven by the internal characteristics (demand-side factors) of the businesses. An underdeveloped capital market and credit rationing manifested by the banking sector during the transition process in Poland leave no doubt as to the fact that supply-side factors had a dominant significance in the empirical studies included in our survey.

Country-specific & industry-specific factors

The theoretical and empirical literature assert that the capital structure in firms can be determined by firm-specific, industry-specific and country-specific factors. Firm-specific factors represent internal attributes of firms being more or less under managerial control (e.g. profitability, size, growth). Industry-specific factors reflect immanent properties of the industry the firm operates in (competition profile, technological characteristics, mechanisms of agency conflicts control). Finally, country-specific factors relate to the specificity of the country in which the firm places its activity. They can be divided into macroeconomic (such as GDP growth or inflation rate) and institutional (such as legal system development and country governance structure) aspects. Since they refer to the most broad perspective, we start the analysis of the empirical findings gathered in our review with them.

The importance of the factors related to country for capital structure choices can be investigated in two ways. One possible approach is to look at the differences in the degree to which selected firm-specific factors explain leverage among countries. The research in which the capital structure choices are not fully explained by the firm-specific attributes suggests that other factors – industry- and country-specific – are at play (see for example Hall et al., 2006 in our review). Likewise, the research in which differences in the explanatory patterns of the firm-specific factors are observed between firms coming from two countries or groups of countries (developed vs. developing economies) must lead to the conclusion certifying that the industry- / country-specific factors are responsible for the perceived differences. The other way is to build the industry factor directly into the regression model.

Cross-country comparisons of factors determining leverage were initiated by Rajan and Zingales (1995), and continued by Graham and Harvey (2002), Bancel and Mitoo (2002), Brounen et al. (2004), Booth et al. (2001) and de Jong et al. (2008), just to mention a few. Generally, they show that despite the same array of factors found to be significant in explaining leverage in various countries, important differences exist. For example, de Jong et al. (2008) found that the firm-specific factors which are critical for explaining capital structure choices in developing countries are not the same as in the developed ones. Similarly, Booth et al. (2001) demonstrated that there are some differences between capital structure selection patterns between developed and developing countries which can be explained by the country-specific factors. Some authors (e.g. Kirch et al., 2012) think that such studies – employing solely listed companies data – provide limited justification for robust conclusions since publicly-held firms are often large and financed by the funds coming from the international markets which obscures the country-specificity aspect.

The empirical studies included in our survey have a similar overtone. For example, Weill (2002, p. 19) in his comparative analysis of Western (France and UK) and Eastern (Poland and Czech Republic) countries states that "determinants of leverage suggested by theory and empirical literature do not obtain clear support in transition economies", arguing that it can be resultant of the commercial banks' behavior and their situation under the conditions of the communist legacy. In turn, Nivorozhkin (2005) states that the capital structure determinants in developed and developing countries appear to be very similar. Kirch et al. (2012) note that even though country-specific factors are robust in explaining capital structures in CEE countries, their additional explanatory power is rather low. They conclude that – as the result of the obtained numbers – firm-specific characteristics are critical for capital structure selection.

The comparison of the importance of the country-specific and firm-specific factors in explaining debt ratios seems to be one of the most intriguing issues in our review. Various researchers obtained mixed results in respect of this question. As opposed to Kirch et al. (2012), Kędzior (2012) found non-firm-specific factors to be the most relevant in determining debt ratios within the entire sample of investigated firms from CEE countries. Interestingly, the industry factor occurred to be the most significant one (it was followed by GDP growth, inflation and profitability). Jõeveer (2006), who applied not only regression procedure but also the analysis of variance (ANNOVA), showed that the relative significance of country-specific and firm-specific factors in CEE countries (including Poland) depends on the firm profile. Therefore, she evidenced the key role of country-specific factors in explaining leverage variance in small unlisted firms as opposed to large listed firms for which she proved firm-specific factors to be critical. Also Ciołek and Koralun-Bereźnicka (2014) show that country-specific factors have greater impact on leverage in small firms in comparison to larger ones. These observations are in accordance with the claims of Kirch et al. (2012) suggesting that the firm profile (large vs. SME / listed vs. unlisted) may play a pivotal role in the degree to which country-specific factors affect leverage. This is also in line with the theoretical predictions which assume that privately, non-listed firms and especially small firms experience relatively high asymmetry of information and credit rationing problems, thus being more subject to country effects, such as those associated with the development of the financial market. Interestingly, the same results were obtained by Jõeveer (2006) for developed countries. Shamshur (2010) examined the relative significance of country- and firm-specific factors in a different setting. She studied them separately for financially constrained and unconstrained firms operating in Poland and other CEE countries. Her study showed that the restrictions in the access to funds can importantly affect the financing patterns and result in different key factors determining them in constrained (tangibility and size) and unconstrained (GDP and inflation) firms.

Firm-specific factors

The detailed analysis of the results obtained in the research covered by our survey led us to some general and interesting findings concerning the firm-specific characteristics determining capital structures of the investigated firms. They were grouped into three points: (1) the importance of the time factor, (2) the empirical support for trade-off and pecking order theory, and (3) the existence of the optimal capital structure.

The importance of the time factor

Many observations concerning the firm-specific factors theoretically affecting leverage – made by the authors of the studies included in our review – seem to be long-lasting despite the huge differences between the economic environment today and twenty years ago. The general finding is that little has changed in the way traditional firm-specific attributes influence the equity-debt choice in Poland since the early years of the 1990s, at least as to the signs of the essential relationships. In almost all studies scrutinized by us – both, early and late – size belongs to the most significant firm-specific capital structure determinants and is positively related to leverage. The sign of the relationship supports trade-off theory. On the other hand, leverage turned out to be a negative function of profitability – another critically significant factor in Poland – in almost all studies, which supports pecking order theory. Growth, which was reported to be less often statistically significant than size and profitability, was also found to be positively tied to leverage in almost all studies. Volatility (risk) belongs to the factors tested in smaller number of studies than size, profitability and growth. Moreover, many times in those studies in which it was included, it showed insignificance or gave mixed results. This is consistent with the findings

achieved in the studies conducted in Western countries (see Nivorozhkin, 2005, p. 155 for a brief discussion). Inconclusive results are also typical for non-debt tax shield. The only one firm-specific attribute for which we were able to find the evidence that the sign of its relationship with leverage has switched since the early studies is the asset structure expressed in the ratio of tangible assets (more or less broadly defined) to total assets. The authors of the early studies (Cornelli et al., 1998; Hussain & Nivorozhkin, 1997; Weill, 2004) reported that this factor had negative impact on leverage. Nevertheless, later studies bring more mixed results, while the most current ones (e.g. Kędzior, 2012) report that debt ratios are positively dependent on tangibility. This can be interpreted as the manifestation of the maturation process which leads the Polish economy to become more conforming to the economies of developed countries for which the aforementioned positive of tangibility has on leverage is typical, which was confirmed in many empirical studies. In the economies being at the initial stages of the transition process – as in Poland at the beginning of the 1990s – a negative link between tangibility and leverage can be a part of the natural order. Cornelli et al. (1998) point out that in the post-Soviet bloc states fixed assets were perceived as having relatively low prospects (in terms of the future cash flow implied by them) due to their low quality, thus offering low collateral value. Nivorozhkin (2005), who found tangibility to be statistically insignificant in Poland, states that "although tangible assets remain a poor source of collateral in less advanced transition economies, the effect on tangibility on target leverage is moving towards the positive relationship observed in Germany, France, Italy and the UK" (p. 155). The importance of the time factor was observed by Hernádi and Ormos (2012a and 2012b), however for aggregated CEE data. They noticed that traditional firm-specific variables gain in their significance with the passage of time, while country-specific factors become less important. This may imply that CEE countries, including Poland, converge to more developed countries. This is also in line with the empirical findings of Mokhova and Zinecker (2013b) who found evident differences between the old and new EU members in the strength of the associations concerning leverage and traditional firm-specific attributes such as size, profitability, growth etc. Closing the gap, as evidenced by Hernádi and Ormos, can be interpreted a manifestation of the convergence regarding the East and West of Europe.

Interestingly, the explanation of the aforementioned way profitability affects debt ratios in almost all empirical studies conducted in Poland may not be the same in relation to early and late (more current) studies. During the last twenty years Poland has experienced substantial progress in reducing information asymmetry, among many other essential transformations. The time series investigated in the early studies represent the initial stage of development not only in the financial markets, but also in such fields as the legal system and the general institutional environment surrounding businesses. The resultant was – apart from other issues – severe information asymmetry, critical in explaining the pecking order while raising capital. Cornelli et al. (1998) point out that the particular economic terms eventuated in credit rationing, i.e. commercial banks' reluctance to grant loans because of difficulties with distinguishing good enterprises from poor. Funds were available in banks only for those who were prepared to pay high interest rates reflecting increased risk, inflated by the informational asymmetry. Thus, profitable firms with retained earnings had strong incentives to finance their capital needs internally without tapping the capital from the market. Such financial behavior is in line with pecking order theory. Subsequent years brought improvements in the field of information asymmetry in Poland which was driven by the proceeding, yet gradual maturation of the Polish economy. As mentioned above, the information asymmetry – still noticeable at the turn of the 21st c. (De Haas & Peeters, 2006) – can shed additional light on the negative relationship between profitability and leverage. In the middle of the first decade of 21st c. – i.e. in an importantly different economic setting – Harmol and Sieczko (2006) argued that the negative relationship between profitability and leverage results from the fact that in the transition economies managers intend to ensure their firm's stability in the first place, hence refraining from the utilization of debt and financing themselves internally if they can afford it. Mazur (2007) adds that the sign of the relationship can also be explained – at least partly – by the relatively high cost of external capital in the early years of the 21st c. Financing constraints, still existing in the business environment in Poland, can be considered an additional factor justifying the relationship. It should be noted that the negative dependency of leverage on profitability, observed in Poland and contrary to the theoretical predictions of trade-off theory, was empirically confirmed by the majority of foreign studies, including those in the most developed countries.

The empirical support for trade-off and pecking

order theory

Our review indicates that the empirical results gathered in Poland are generally similar to those obtained in other countries, including Western Europe and the USA. Relationships evidenced by our survey are basically convergent with the conclusions made by Harris and Raviv (1991) in their renowned review. They summarized it by stating that "leverage increases with fixed assets, non-debt tax shields, investment opportunities, and firm size and decreases with volatility, advertising expenditures, research and development expenditures, bankruptcy probability, profitability and uniqueness of the product" (p. 334). Our review suggests that the empirical status of profitability, size and growth is the same as in the review of Harris and Raviv. Non-debt tax shield was generally found to be insignificant in the majority of studies we surveyed. Even though such empirical results do not allow for decisive statements concerning the acceptance or rejection of pecking order or trade-off theory, they show stronger support for the first which is in line with the results collected not only in other CEE countries, but also in older members of the European Union (Mokhova & Zinecker, 2013b). Hamrol and Sieczko (2006) point out that although pecking order theory explains the behavior of investigated firms better than other theories, it doesn't explain it fully. In the study focused on the early stage of Polish financial market development Delcoure (2007) noted a kind of a "modified pecking order" (retained earnings were followed by external equity; the last resort was debt). Also qualitative research gives stronger support for pecking order theory. For example Hernádi and Ormos (2012b) argue that trade-off theory is more powerful in those firms which strive for holding fixed target leverage. Interestingly, they also notice that the empirical body of evidence doesn't prove that these two theories should be considered to be mutually exclusive. This is in line with the arguments of De Haas and Peeters (2006) who assert that they can effectively coexist on the theoretical ground and complement themselves in explaining the empirical findings. In their opinion trade-off motives seem to be more important for long-term financial decisions while short-term choices gain priority in a pecking order setting.

Those findings are consistent with the conclusions we have formulated in the background section. Assuming that during the period covered by the studies included in our review the Polish economy was characterized by its still developing capital market, higher or lower financing constraints and information asymmetry terms – especially in the part of the research projects which were focused on small & medium-sized private firms – one should not expect strong support for trade-off theory. The costs of the capital structure adaptation to the assumed target are exceptionally high under such conditions.

The existence of the optimal capital structure

The relevance of the optimal capital structure can be empirically inferred directly or indirectly. Revealing the empirical support for trade-off or pecking order theory allows for further, indirect conclusions as to the optimal capital structure. From the theoretical point of view it seems to be irrelevant within a pecking order setting while it plays a focal role in a trade-off approach. Hence, the results obtained in studies included in our survey can be considered an indirect evidence showing the limited role of the optimal capital structure. This kind of inference led some researchers to look for the rationale behind the observed patterns. For example Campbell and Jerzemowska (2001) argued that the investigated firms refrain from reaching the capital targets at the beginning of the 1990s because of the properties of the Polish economy and especially its financial sector. This resulted in a kind of a paradox: despite characteristics allowing them beneficial higher indebtedness, they withheld themselves from borrowing. Instead of behaving as predicted by trade-off theory, they were rather following the pecking order. Other studies (e.g. Szudejko, 2013) provide support for the thesis according to which capital structure choices are driven primarily by the managerial inclination to mimic capital structures of other firms from the same industry. Little was done in the field of testing the capital structure drivers in Poland in a qualitative way. Hernádi and Ormos (2012b), who received a valuable insight due to the opinions gathered through a questionnaire, reported that ¾ of the firm-respondents did not have the optimal capital structure. However, they also point out that the scale of the optimal capital structure adoption in Polish firms was larger than in other investigated countries (38% in Poland and only 14% in Czech Republic which exhibited the lowest level of the optimal capital structure acceptance).

Conclusions

Financing patterns of firms operating in Poland changed substantially since the early years of the 1990s along with the development of the Polish financial market.

The evolution, accompanied by other positive shifts in the economy (e.g. improvements in the governance structure and legal system), resulted in reducing the costs of information asymmetry and ultimately in higher leverage of firms. The empirical findings we reviewed confirm that they approached their target capital structures, increased debt ratios to the levels close to West European standards, and proved to be the subject of generally the same – or at least similar – patterns concerning the way various factors determine the debt-equity choice. However, some differences between Poland and more developed countries are still visible with reference to capital structure decisions. Firms operating in Poland rely on long-term debt to a lesser extent than firms in more developed countries which can be explained by a still-existing development gap concerning the financial market. As the result of that one must expect – on average – somewhat greater barriers in access to capital and the information asymmetry costs experienced by Polish firms in comparison to their Western counterparts. This can explain some differences in capital structure decisions between Poland and more developed states.

The aforementioned development in the institutional sphere, primarily the evolution of the financial market, resulted in the perceived decreasing role of the country-specific factors and increasing significance of the firm-specific factors which proves the progressive convergence between Poland and more developed countries. Yet, the country-specific factors are still key in explaining the leverage of small, privately-held businesses. Such firms are more heavily affected by information asymmetry and credit rationing problems and consequently more prone to the supply-side factors of the market for debt.

The observed relationships between leverage and the most important firm-specific factors promoted by the traditional capital structure theories are very similar to those noticed in the research conducted in more developed countries, both for the early and late years of the investigated period. Accordingly, POT gained greater support in comparison to TOT. However, in Poland the specificity of the institutional environment implied by the transition process may play the dominant role in justifying the prevalence of POT. As in the Western studies, size and profitability belong to the most important internal attributes influencing leverage in Poland. Also the signs of the relationships are the same as in the majority of the foreign studies (with leverage being a positive function of size and negative function of profitability). Moreover, the way growth, volatility and tangibility relate to debt ratios was also found to be similar as in the Western studies. Among the factors asset structure (tangibility) deserves special attention as it reflects the shifting nature of the business environment in Poland. Even though the results concerning tangibility are mixed (which is also typical for studies carried out in other countries), a regularity – though weak – can be noticed. In the early studies leverage was negatively dependent on tangibility while in part of the late studies it became positive and dominant in the majority of investigations conducted in the USA and West Europe.

Finally, the superiority of POT in explaining the capital structure choices in Poland suggests at most moderate significance of the target (optimum) capital structure in making the financing choices in firms operating in Poland. However, some studies suggest that the optimal capital structure is more important in Poland than in other CEE countries. Eventually, the investigation of the target capital mix relevance under a more holistic approach in which POT and TOT are considered to be complementary lines of thinking is needed.

References

Bancel, F., Mittoo, U.R. (2002). The Determinants of Capital Structure Choice: A Survey of European Firms. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=299172.

Bauer, P. (2004). Capital Structure of Listed Companies in Visegrad Countries. *Prague Economic Papers*, 13(2), 159-175.

Białek-Jaworska, A., Dzik, A., Nehrebecka, N. (2014). Wpływ polityki monetarnej na źródła finansowania przedsiębiorstw w Polsce w latach 1995-2012 (Materiały i Studia nr 304). Warszawa: Narodowy Bank Polski

Booth, L., Aivazian, V., Demirgüç-Kunt, A., Maksimovic, V. (2001). Capital Structures in Developing Countries. *The Journal of Finance*, 56(1), 87-130.

Brounen, D., de Jong, A., Koedijk, K. (2004). Corporate Finance in Europe. Confronting Theory with Practice. *Financial Management*, 33(4), 71-101.

Campbell, K., Jerzemowska, M. (2001). *Capital Structure Decisions Made by Companies in a Transitional Economy: the Case of Poland.* In D. Zarzecki (Ed.), Financial Management. Objectives – Organization – Tools (pp. 51-76). Warszawa: Fundacja Rozwoju Rachunkowości w Polsce.

Chojnacka, E. (2012). *Struktura kapitału spółek akcyjnych w Polsce w świetle teorii hierarchii źródeł finansowania*. Warszawa: Cedewu

Ciołek, D., Koralun-Bereźnicka, J. (2014). Czy wielkość przedsiębiorstwa różnicuje siłę oddziaływania czynników krajowych i branżowych na strukturę kapitału? *Bank i Kredyt, 45(3)*, 291-310.

Cornelli, F., Portes, R., Schaffer, M. (1998). Financial Structure of Firms in the CEECs. In O. Bouin, F. Coricell, F. Lemoine (Ed.), *Different Paths to a Market Economy. China and European Economies in Transition* (pp. 171-197). OECD. Retrieved from http://www.keepeek.com/Digital-Asset-Management/oecd/development/different-paths-to-a-market-economy-china-and-european-economies-in-transition_9789264163010-en#page183.

De Haas, R., Peeters, M. (2006). The Dynamic Adjustment Towards Target Capital Structures of Firms in Transition Economies. *Economics in Transition 14(1)*, 133-169.

De Jong, A., Kabir, R., Nguyen, T.T. (2008). Capital Structure Around the World: The Roles of Firm- and Country-Specific Determinants. *Journal of Banking and Finance*, 32(9), 1957-1969.

Delcoure, N. (2007). The Determinants of Capital Structure in Transitional Economies. *International Review of Economics and Finance*, 16(3), 400-415.

Demirgüç-Kunt, A., Maksimovic, V. (1999). Institutions, Financial Markets, and Firm Debt Maturity. *Journal of Financial Economics*, 54(3), 295-336.

Demirgüç-Kunt, A., Maksimovic, V. (1996). Stock Market Development and Firm Financing Choices. *World Bank Economic Review*, 10(2), 341-369.

Dević, A., Krstić, B. (2001). Comparatible Analysis of the Capital Structure Determinants in Polish and Hungarian Enterprises – Empirical Study. *Facta Universitatis (Series: Economics and Organization)*, 1(9), 85-100.

Donaldson, G. (1961). *Corporate Debt Capacity: A Study of Corporate Debt Policy and the Determination of Corporate Debt Capacity*. Boston: Harvard School of Business Administration.

Frąckowiak, W., Gryglewicz, S., Stobiecki, P., Stradomski, M., Szyszka, A. (2005). Polityka kształtowania struktury kapitału w polskich przedsiębiorstwach na tle wybranych krajów Unii Europejskiej. In J. Ostaszewski (Ed.), *Finanse przedsiębiorstwa* (pp. 153-172). Warszawa: Oficyna Wydawnicza SGH.

Gajdka, J. (2002). *Teorie struktury kapitału i ich aplikacja w warunkach polskich*. Łódź: Wydawnictwo Uniwersytetu Łódzkiego.

Graham, J.R., Harvey, C.R. (2002). How Do CFOs Make Capital Budgeting and Capital Structure Decisions? *Journal of Applied Corporate Finance*, 15(1), 8-23.

Hall, G., Hutchinson, P., Michaelas, N. (2006). East and West: Differences in SME Capital Structure Between Former Soviet-Bloc and Non Soviet-Bloc European Countries. Retrieved from http://www.gregoriae.com/dmdocuments/m56.pdf.

Hamrol, M., Sieczko, J. (2006). Czynniki kształtujące strukturę kapitału polskich spółek giełdowych. *Prace i Materiały Wydziału Zarządzania Uniwersytetu Gdańskiego*, 1, 127-141.

Harris, M., Raviv, A. (1991). The Theory of Capital Structure. *The Journal of Finance,* 46(1), 297-355.

Hernádi, P., Ormos, M. (2012a). Capital Structure and Its Choice in Central and Eastern Europe. *Acta Oeconomica*, 62(2), 229-263.

Hernádi, P., Ormos, M. (2012b). What Managers Think of Capital Structure and How They Act: Evidence from Central and Eastern Europe. *Baltic Journal of Economics*, 12(2), 47-71.

Hussain, Q, Nivorozhkin, E. (1997). The Capital Structure of Listed Companies in Poland (IMF Working Paper No WP/97/1975). Retrieved from http://www.imf.org/external/pubs/ft/wp/wp97175.pdf.

Jędrzejczak-Gas, J. (2014). Influence of the Selected Factors on the Capital Structure of Enterprises in the Construction Industry. *Management*, 18(1), 241-254.

Jędrzejczak-Gas, J. (2013). Struktura kapitału w małych i średnich przedsiębiorstwach. *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Finanse, Rynki Finansowe, Ubezpieczenia*, 766(62), 583-593.

Jõeveer, K. (2006). Sources of Capital Structure: Evidence from Transition Countries (Bank of Estonia Working Paper No 2/2006). Retrieved from https://www.eestipank.ee/sites/.../files/.../_wp_206.pdf.

Kędzior, M. (2012). Capital Structure in EU Selected Countries – Micro and Macro Determinants. *Argumenta Oeconomica*, 1(28), 69-117.

Kirch, G., Mateus, C., Soares Terra, P. (2012). Country Governance Structure and financial Development as Determinants of Firms' Capital Structure. *Journal of Money, Investment and Banking*, 26, 6-24. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2353663&download=yes.

Klapper, L., Sarria-Allende, V., Sulla, V. (2001). Small- and Medium-Size Enterprise Financing in Eastern Europe (World Bank Policy Research Working Paper No 2933). Retrieved from http://www1.worldbank.org/finance/assets/images/2933.pdf.

Mateev, M., Poutziouris, P., Ivanov, K. (2013). On the Determinants of SME Capital Structure in Central and Eastern Europe: A Dynamic Panel Analysis. *Research in International Business and Finance*, 27(1), 28-51.

Mateus, C., Terra, P. (2013). Leverage and Maturity Structure of Debt in Emerging Markets. Journal of Mathematical Finance, 3(3A), 46-59. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2353638.

Modigliani, F., Miller, M.H. (1958). The Cost of Capital, Corporation Finance, and the Theory of Investment. *American Economic Review*, 48(3), 261-297.

Mokhova, N., Zinecker, M. (2013a). Capital Structure and the Country Default Risk: The Evidence from Visegrad Group. *The Macrotheme Review*, 2(1), 155-180.

Mokhova, N., Zinecker, M. (2013b). The Determinants of Capital Structure: The Evidence from the European Union. *Acta Universitatis Agriculturae Et Silviculturae Mendelianae Brunensis*, 282(7), 2533-2546.

Mazur, K. (2007). Determinanty struktury kapitału polskich spółek. *Ekonomika i Organizacja Przedsiębiorstwa*, 8, 21-27.

Myers, S., Majluf, N. (1984). Corporate Financing and Investment Decisions When Firms Have Information Investors Do Not Have. *Journal of Financial Economics*, 13(2), 187-221.

Nivorozhkin, E. (2005). Financing Choices of Firms In EU Accession Countries. *Emerging Markets Review*, 6(2), 138-169.

Prędkiewicz, K., Prędkiewicz, P. (2014). Wybrane determinanty struktury kapitału mikro, małych i średnich przedsiębiorstw w Polsce. *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Finanse, Rynki Finansowe, Ubezpieczenia,* 802(65), 829-842.

Rajan, R.G., Zingales, L. (1995). What Do We Know about Capital Structure? Some Evidence from International Data. *The Journal of Finance*, 50(5), 1421-1460.

Shamshur, A. (2010). Access to Capital and Capital Structure of the Firm (CERGE-EI Working Paper No 429). Retrieved from https://www.cerge-ei.cz/pdf/wp/Wp429.pdf.

Skowroński, A. (2002). Czynniki kształtujące strukturę kapitału polskich przedsiębiorstw w świetle badań empirycznych. In J. Sobiech (Ed.), *Kapitałowa strategia przedsiębiorstwa* (pp. 59-73). Poznań: Wydawnictwo Akademii Ekonomicznej w Poznaniu.

Szudejko, M. (2013). Analiza zależności pomiędzy branżą a strukturą kapitału przedsiębiorstwa na podstawie wyników finansowych polskich spółek giełdowych. *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Finanse, Rynki Finansowe, Ubezpieczenia*, 766(62), 701-711.

Weill, L. (2002). Determinants of Leverage and Access to Credit: Evidence on Western and Eastern Europe Countries. Retrieved from http://www.researchgate.net/publication/253293146_Determinants_of_Leverage_and_Access_to_Credit_Evidence_on_Western_and_Eastern_Europe_countries.

Weill, L. (2004). What Determines Leverage in Transition Countries? *Czech Journal of Economics and Finance*, 54(5-6), 234-242.

Wilimowska, Z., Wilimowski, M. (2010). Wpływ czynników mikroekonomicznych na zarządzanie strukturą kapitałową polskich przedsiębiorstw. In R. Knosala (Ed.), *Komputerowo zintegrowane zarządzanie*. Vol 2 (pp. 627-641). Opole: Oficyna Wydawnicza Polskiego Towarzystwa Zarządzania Produkcją.

Table 2: Studies of the firm-specific factors determining capital structure in firms operating in Poland included in our survey

AUTHORS	YEAR OF PUBLICATION	SAMPLE (OR NUMBER OF OBSERVATIONS WHEN SAMPLE IS NOT INDICATED)	GEOGRAPHICAL SCOPE	PERIOD	DEPENDENT VARIABLES (ALL PARAMETERS ARE BASED ON BOOK VALUES EXCEPT WHERE INDICATED)	INDEPENDENT VARIABLES (FIRM-SPECIFIC ONLY)	OBJECTIVE
Q. Hussain, E. Nivorozhkin	1997	17 listed companies	Poland	1991-1994	1) Liabilities / assets 2) Liabilities / equity 3) Liabilities / paid-up capital	1) Age 2) Retained earnings 3) Total assets 4) Profit before tax 5) Profit after tax 6) Tangible assets 7) Intangible assets 8)Tax = profit before tax – profit after tax	To study the determinants of leverage in order to reveal the way firms choose among retained earnings, debt and stock issuances.
F. Cornelli, R. Portes, M. Schaffer	1998	Small, medium and large-sized firms for Poland and medium and large-sized firms for Hungary	Poland and Hungary	1992	1) Total debt / total assets 2) Change in total debt / total assets	1) Tangibility 2) Size 3) Profitability	To formulate a theory as to the optimal capital structure in CEE economies and to analyze actual capital structure in this region in comparison with Western economies.
A. Dević, B. Krstić	2001	38 listed companies (Poland – 18, Hungary – 20)	Poland and Hungary	1996-1997 (independent variables' averages) 1998 (dependent variables' values)	1) Non-equity liabilities / total assets* 2) Long-term liabilities / (long-term liabilities + equity) 3) (Short-term liabilities + long-term liabilities) / (short-term liabilities + long-term liabilities + equity) 4) Total debt** / capital All of them in two versions: based on book and market values *Non-equity liabilities = provisions + deferred income + liabilities due within one year (short-term liabilities) + liabilities due after one year (long-term liabilities) **Total debt = bank loans + debt securities (both short- and long-term)	1) Size 2) Profitability 3) Growth opportunities 4) Tangibility	To explore the determinants of leverage.

M. Jerzemowska, K. Campbell	2001	65 listed companies	Poland	1991-1994 and 1994-1995	Long-term debt / total assets	1) Size 2) Profitability 3) Liquidity 4) Growth opportunities 5) Non-debt tax shield 6) Asset structure	To study the factors influencing the capital structure decisions.
J. Gajdka	2002	Two samples: 106 and 48 listed companies, respectively	Poland	1995-1997	1) Total debt / (total debt + market value of equity) 2) Total liabilities / (total liabilities + equity)	1) Size 2) Product uniqueness 3) Profitability 4) Non-debt tax shield 5) Asset structure	To study the factors influencing the capital structure decisions.
L. Klapper, V. Sarria-Allende, V. Sulla	2002	97 107 SME	CEE, 15 countries, including Poland and Croatia. They were not studied separately in regressions.	1999	1) Total liabilities / equity 2) Total debt / equity 3) Short-term debt / equity 4) Long-term debt / equity	1) Size 2) Age 3) Profitability 4) Growth 5) Tangibility 6) Non-debt tax shield	To analyze general financing patterns in CEE states and to test the way selected firm-specific quantitative factors influence leverage.
A. Skowroński	2002	78 listed companies	Poland	1991-1997	1) Total liabilities / total balance sheet 2) Long-term debt / total balance sheet	1) Profitability 2) Product uniqueness 3) Asset structure 4) Several measures of agency costs	To verify empirically three theories: agency costs, pecking order, and liquidation value.
L. Weill	2002	1820 manufacturing firms	Poland, Czech Republic, France and UK	1996-1997	1) (Short-term bank loans + long-term debt) / total assets 2) (Short-term bank loans + long-term debt) / (total assets – accounts payable)	1) Profitability 2) Growth 3) Tangibility 4) Innovation 5) Size 6) Age	To study the factors determining leverage by comparing Western European patters with Eastern European ones, with the emphasis on the determinants of access to credit.
P. Bauer	2004	305 listed companies	Poland, Czech Republic, Slovakia, Hungary. Poland was not studied separately in regressions	2000-2001	1) Total liabilities / (total liabilities + book value of equity)	1) Size	To investigate the influence of selected firm-specific quantitative factors on leverage.

					2) Total liabilities / (total liabilities + market value of equity)	2) Profitability 3) Tangibility 4) Growth opportunities 5) Non-debt tax shields 6) Volatility	
L. Weill	2004	4496 manufacturing firms	CEE, 6 countries, including Poland	1996-1998	Total liabilities / total assets	1) Profitability 2) Tangibility 3) Growth 4) Size	To examine the influence of selected firm-specific quantitative factors on leverage in order to compare capital structure determinants in CEE states and in Western European countries.
W. Frąckowiak et al.	2005	1955 (pooling model) and 1921 (fixed effects model) listed companies	Poland, France, Germany, Great Britain	1992-2002 for Poland and 1988-2002 for other studied states	1) Long-term debt / total debt 2) Long-term debt / (total debt + equity) 3) (Market capitalization + long-term debt) / (total assets – equity + market capitalization) 4) (Long-term debt + equity) / (total debt + equity)	1) Total debt / (total debt + equity) 2) Corporate income tax / profit before tax 3) Market capitalization / equity 4) Natural log of sales revenue 5) Current ratio = current assets / short-term liabilities 6) Fixed assets / depreciation 7) Fixed assets / total assets 8) Annual change in EBIT / average change in EBIT	To test if the quantitative firm-specific factors demonstrated in the theoretical literature influence capital structure choices in the investigated states.
E. Nivorozhkin	2005	5712 firms (including 1219 firms operating in Poland)	5 transition economies, including Poland	1997-2001	Total debt / (total debt + shareholders' equity)	1) Tangibility 2) Size 3) Age 4) Net trade credit 5) Profitability 6) Riskiness (variability)	To study the determinants of firms' target capital structure and the speed of leverage adjustments.
R. De Haas, M. Peeters	2006	The number is not indicated. Not only large listed companies but also SME.	CEE, 10 countries, including Poland	1993-2001	(Non-current liabilities + current liabilities – creditors) / (non-current liabilities + current liabilities – creditors + shareholders' equity)	1) Size	To study the capital structure determinants and shifts in order to get a better understanding of the development of the financial systems in CEE countries.

						2) Growth opportunities 3) Tangibility 4) Profitability 5) Non-debt tax shield 6) Income variability 7) Trade credit 8) Age 9) Firm-specific interest rate	
G. Hall, P. Hutchinson, N. Michaelas	2006	93 266 SME	13 European countries (6 post-Soviet-bloc states, including Poland); Poland was not studied separately in regressions	1995-1998	1) Short-term debt / total assets 2) Long-term debt / total assets.	1) Profitability 2) Growth rate 3) Future growth potential 4) Asset structure (collateral) 5) Size 6) Age 7) Non-debt tax shield 8) Stock (inventory) level 9) Risk	To study the differences in capital structures between post-Soviet-bloc states and non-Soviet-bloc European countries in order to reveal if they can be explained by firm-specific or country-specific factors.
M. Hamrol, J. Sieczko	2006	134 listed companies	Poland	2002-2004	1) Total liabilities 2) Long-term debt 3) Total debt	1) Size 2) Product uniqueness 3) Profitability 4) Growth opportunities 5) Non-debt tax shield 6) Asset structure 7) Cost of capital	To examine the way selected quantitative firm-specific factors influence leverage.
K. Jõeveer	2006	The number is not indicated. Not only large listed companies but also SME.	CEE, 9 countries, including Poland. However, Poland was not investigated separately in regressions	1995-2002	1) Total liabilities / total assets 2) Total debt / (total debt + shareholders' funds)	1) Profitability 2) Tangibility 3) Size 4) Median industry average 5) Age	To explore the significance of firm-specific, institutional, and macroeconomic factors in explaining variation in leverage.
N. Delcoure	2007	The largest listed companies	CEE, 4 countries: Poland, Russia, Czech Republic and Slovakia	1996-2002	1) Total debt / total assets 2) Long-term debt / total assets 3) Short-term debt / total assets	1) Tangibility 2) Size 3) Risk (volatility) 4) Growth opportunities 5) Profitability 6) Non-debt tax shield 7) The impact of taxes	To test whether capital structure patters in CEE countries fit the traditional theories developed to explain financing behavior in Western economies.

K. Mazur	2007	238 companies listed on Warsaw Stock Exchange	Poland	1997-2004 (and sub--periods: 1997-2001 & 2002-2004)	Total liabilities / total assets	1) Asset structure 2) Profitability 3)Development prospects 4) Liquidity 5) Size 6) Product uniqueness 7) Operating risk 8) Non-debt tax shield 9) Effective tax rate 10) Dividend policy	To identify the set of factors which determine capital structure in the most significant way and to stipulate the sign of the relationship.
A. Shamshur	2010	51 621 observations over the period 1996-2006	CEE, 7 countries, including Poland. Poland was not studied separately in regressions	1996-2006	Total debt / (total debt + equity)	1) Size 2) Tangibility 3) Profitability 4) Maturity of 5) Age 6) Median industry leverage	To examine the importance of financial constraints for capital structure decisions and factors determining them.
Z. Wilimowska, M. Wilimowski	2010	8 firms representing automotive industry	Poland	2003-2007	1) Total debt / total assets 2) Equity / total debt	1) Size 2) Non-debt tax 3) Profitability 4) Product type 5) Asset structure 6) Industry type 7) Liquidity 8) Cost of equity 9) WACC	To study the impact of selected quantitative firm-specific factors on leverage and firm value.
E. Chojnacka	2012	90 listed companies	Poland	2002-2008	Change in total debt in relation to total assets	1) Capital deficit 2) Size 3) Profitability 4) Product uniqueness 5) Growth opportunities 6) Asset structure 7) Non-debt tax shield 8) Liquidity	To identify the factors determining leverage, especially those which support the pecking order theory.
P. Hernádi, M. Ormos	2012	498 firms	CEE, 10 countries, including Poland, however Poland was not studies separately in regressions	2005-2008	(Long-term liabilities + current loans) / (equity + long term liabilities + current loans)	1) Tax	To verify empirically the prime capital structure theories through testing the association of selected firm-specific quantitative factors and leverage.

						2) Size 3) Profitability (ROA) 4) Risk 5) Availability of internal funds 6) Tangibility 7) Intangibility 8) Non-debt tax shield 9) Growth opportunities	
M. Kędzior	2012	1063 listed manufacturing companies	13 EU countries, including Poland	Not indicated	1) Total liabilities/(equity + total liabilities) 2) Total long-term liabilities / (total long-term liabilities + equity)	1) Risk 2) Size 3) Growth opportunities 4) ROA (profitability) 5) Tangible fixed	To compare capital structure and its determinants in new and old EU member states.
G. Kirch, C. Mateus, P. Soares Terra	2012	13 070 SME	CEE, 9 countries, including Poland. Poland was not studied separately in regressions	1994-2004	1) Total liabilities / total assets 2) Total debt / total assets 3) Long-term debt / total assets	1) Size 2) Growth opportunities 3) Profitability 4) Business risk 5) Tangibility 6) Effective tax rate 7) Age (as a proxy for reputation)	To test the explanatory power of firm-specific and country--specific factors in determining leverage.
J. Jędrzejczak-Gas	2013	Not indicated (the analyses were not based on firm-level data; SME aggregated data sets were used)	Poland	2002-2011	Equity / total debt	1) Asset structure 2) Return on sales 3) Return on assets 4) Liquidity 5) Size 6) Growth opportunities 7) Product 8) Effective tax rate	To test the impact of selected quantitative firm-specific and macroeconomic factors on leverage.
M. Mateev, P. Poutziouris, K. Ivanov	2013	3175 SME	CEE, 7 countries, including Poland; Poland was not studied separately in regressions	2001-2005	1) Total debt / total assets 2) Long-term debt / total assets 3) Short-term debt / total assets	1) Cash flow ratio 2) Profitability 3) Future growth opportunities 4) Current ratio 5) Asset structure 6) Size	To study how firm-specific factors influence capital structure.

C. Mateus, P. Terra	2013	686 firms	CEE vs. Latin America, 7 CEE countries, including Poland. However, Poland was not studied separately in regressions	1990-2003	1) Long-term debt / equity 2) Long-term financial debt / (long-term financial debt + short-term loans)	1) Size 2) Growth opportunities 3) Profitability = ROA 4) Business risk = DOL 5) Liquidity = CR 6) Tangibility 7) Tax effects	To study the joint decisions concerning leverage and maturity of debt (long-term vs. short-term).
N. Mokhova, M. Zinecker	2013	369 listed companies	Poland, Czech Republic, Slovakia, Hungary	2006-2010	1) Total debt / total assets 2) Long-term debt / total assets 3) Short-term debt / total assets	1) Profitability 2) Growth opportunities 3) Tangibility = fixed assets / total assets 4) Size	To study the relation between capital structure and sovereign credit ratings.
N. Mokhova, M. Zinecker	2013	Manufacturing firms	32 European countries, including Poland and Croatia	2006-2011	1) Total debt / total assets 2) Long-term liabilities/ total assets 3) Short-term liabilities / total assets	1) Profitability 2) Growth opportunities 3) Tangibility 4) Size 5) Non-debt tax shield	To examine the influence selected firm-specific quantitative factors have on leverage and to study the shifts in capital structure resulting from the membership in the EU.
M. Szudejko	2013	126 listed companies	Poland	2004-2011	Total liabilities / assets	1) Asset structure 2) Profitability 3) Liquidity = CR 4) Size 5) Growth opportunities 6) Product uniqueness 7) Non-debt tax shield 8) Effective tax rate 9) Volatility 10) Industry average leverage 11) Debt change	To determine if firms tend to modify their leverage ratios towards industry averages.
A. Białek-Jaworska, A. Dzik, N. Nehrebecka	2014	The number is not indicated; large sample of small, medium and large firms	Poland	1995-2011	Total debt / (total debt + equity – revaluation reserve)	1) Collateral 2) Cumulated return on equity 3) Dynamic self-financing 4) Quick ratio 5) Non-debt tax shield 6) Debt tax shield 7) Growth opportunities 8) Effective tax rate	To study the way selected macroeconomic, microeconomic (firm-specific) and structural factors influence leverage.

						9) Payment delays ratio 10) The authors' bankruptcy prediction ratio	
D. Ciołek, J. Koralun-Bereźnicka	2014	Not indicated (the analyses were not based on firm-level data; aggregated data sets were used)	9 EU countries, including Poland as the only representative of CEE	2000-2009	1) Total debt / assets 2) Long-term debt / assets	1) Size 2) Profitability 3) Asset structure	To determine if the firm size determines the strength of the relationship between leverage and country-specific / industry-specific factors, respectively.
P. Hernádi, M. Ormos	2014	26 868 SME	CEE, 11 countries, including Poland and Croatia. However, they were not investigated separately.	2002-2007	1) (Long-term liabilities + current loans) / (long-term liabilities + current loans + equity) 2) Long-term liabilities / (long--term liabilities + equity)	1) Corporate 2) Size 3) Profitability 4) Liquidity 5) Risk (volatility of earnings) 6) Composition of assets (tangibility) 8) Composition of assets (intangibility) 9) Non-debt tax 10) Position in life cycle 11) Improvement in cost effectiveness 12) Current growth 12) Operating income (extra accounting revenues) 13) Variability of tangible assets 14) Variability of intangible 15) Variability of cash 16) Variability of depreciation	To test the relevance of three theories: static trade-off theory, pecking order theory and agency theory and to check whether the capital structure decisions in CEE states are similar to those made in the most developed countries.
J. Jędrzejczak-Gas	2014	15 companies listed on the alternative market (New Connect) and representing construction industry	Poland	2009-2012	1) Equity / total liabilities 2) Total liabilities / total assets 3) Equity / foreign capital	1) Structure of assets 2) Return on sale 3) Return on assets 4) Financial liquidity 5)Size of the enterprise 6) Development prospects 7) Effective tax rate	To study the way selected firm-specific quantitative factors influence leverage.

K. Prędkiewicz, P. Prędkiewicz	2014	181 SMEs representing four industries	Poland	2004	1) Total liabilities / (total liabilities + equity) 2) Total debt / (total liabilities + equity)	1) Size 2) Age	To study the impact of selected firm-specific quantitative and qualitative factors on leverage.