CORPORATE PRODUCTION AND FINANCING CHOICES IN HUNGARY

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Abstract. *The objective of this study is to investigate how Hungarian firms could finance their production in the circumstances of the Hungarian financial market, including economic policy and credit supply in the last two decades. We put the question whether the companies could effectively use the sources which owners and creditors provided for them. The growing proportion of the debt in firms' capital may have positive – not only negative – effects on companies at the same time, which forces the owners and managers to replace the shareholders' equity with credits. However, the availability of credits depends on the solvency of firms on the one hand and the development of the financial market on the other hand.*

The study analyses the capital structure of firms in Hungary by financial indicators and their productivity in a regression model. We review the effects of the Hungarian economic policy and credit supply on financing choices and the performance of the corporates.

The database of Hungarian enterprises represents nearly 90% of firms in the country. We differentiate among the companies according to their ownership and size. The period includes 18 years between 1992 and 2009. The records contain all relevant information from annual reports, e.g., balance sheets, profit and loss figures.

Key words: *financing choice, corporate production, the Hungarian banking system, financial intermediation, productivity*

Introduction

According to Schumpeter (1934), the key actor of the economic growth is an innovative entrepreneur who tries to make profit by creating a new combination of the production factors. The entrepreneur can obtain the required capital to finance innovation and production in financial market. The financial intermediary sector collects savings from households and allocates them among different investments. In this approach, there is a direct connection between financial intermediation and economic growth. The relevant literature background supports this finance-growth nexus.

King and Levine (1993) investigated the financial market in 80 countries between 1960 and 1989 and have found that the development of the financial sector forecasts the extent of economic growth. Levine and Zevros (1998) repeated this empirical research

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10 years later and confirmed the previous results. Jayaratne and Straham (1996) revealed that those states of the USA which cancelled the limitation of bank establishment could enjoy a 0.51 % higher economic growth than those ones where this limitation obstructed the financial intermediation in 1972–1991. Guiso, Sapienza and Zingales (2004) compared different regions in Italy to analyse the effect of the financial system on the entrepreneurial activity, and they found that the plausibility of launching a new enterprise increases by 5.6 per cent if the entrepreneur moved from a region with undeveloped financial system to another region where the financial intermediary sector was developed.

The concerned literature researched the channels through which the financial system can impact the growth. Beck, Levine and Loayza (2000) have showed that the accumulation of capital is not the only function of the financial sector. It has a more important and direct effect on the development of productivity and allocation of resources which contribute to the increase of the total production. Financial intermediation decreases the cost of information as well, because without it all individuals ought to pay this cost in all transactions. If somebody uses information in the market, this information will be reflected in the prices. This means that in effective capital markets it is enough to focus on the prices since they contain all information.

Another relevant function of the financial market is monitoring and valuation. It is too expensive for the stakeholders to control the management of the firms. They can delegate this task to the financial sector. Banks undertake this control ("delegated monitoring", Diamond, 1984) The long-term cooperation between banks and corporations may decrease at the costs derived from informational asymmetry. The third function of the financial intermediary sector is risk management. Levine (1997) has emphasised that risk management not only helps to accumulate the capital, but also encourages the technological development. Hermes, N. and Lensink, R. (2003) empirically investigated the financial system in 67 countries in 1970–1995 and proved the development of the financial system to contribute to the technological spillover and finally to the economic growth of the country.

The developed financial system not only accelerates the economic production but also reduces the volatility of growth. According to Aghion (2010), the financial sector can improve the liquidity of firms and facilitate the investment for them; finally, the financial intermediation can decrease the volatility of investments and the growth of corporations.

Larrain (2006) has found that the volatility of the industrial output is lower in countries with more bank credits. They found that bank credit reduces industrial output volatility.

The **structure of the paper** is as follows. We briefly examine the economic theory and literature concerning the connection between productivity and financial structure and financial choices of the firms, then we present the trends of the Hungarian economic policy

and financial market in the last 20 years with a special view of corporate loans; following it, we analyse the effect of financial structure on the production of Hungarian firms, using the database of the ECOSTAT for 1992–2009; finally, we draw the conclusion.

Financing choices and growth – from the corporate view

The precondition of any entrepreneurial activities is having the assets of adequate quantity and quality as well as setting up a combination thereof, which is the most suitable for business. The required resources induced by procurement of the assets, in other terms the costs of the assets, form the cumulative capital needs. Financing the cumulative capital needs is essentially determined by a long-term financial planning and the financing strategies chosen by the company. There are two important rules to consider when the financing strategy and business practices are developed:

- harmonisation of the term of assets and resources. This (Matches) rule means that long-term investments (fixed assets) shall be financed by equity or by long-term credits;
- the costs of maintaining liquidity and the costs of the lack of liquidity shall result in the minimum total cost.

The key financing strategies can be solid, conservative or aggressive. A company with a solid strategy adheres to a strict list of rules, i.e. fixed assets are financed only by long-term resources, equity or long-term liabilities. A company with a conservative financial strategy follows a perhaps more cautious approach than necessary in financing issues. In practice, this means that long-term resources are used not only for financing the fixed but also the current assets. This policy provides for a high liquidity for the company and independence from creditors. However, the disadvantage of the conservative strategy is that it makes the financing construction more expensive because, as a general rule, long-term credits are more expensive than short-term ones. The aggressive strategy represents an opinion contrary to the conservative one concerning the connection between liquidity and financial costs. In other words, this company also uses short-term liabilities in the financing of current and fixed assets. This results in a less expensive financing structure, but it increases the risk of the company's bankruptcy. The financing strategy determines the long-term and the short-term financial decisions as well.

Liquidity indicators provide information on the company's solvency. In other words, they answer the question whether the company can make up for its short-term liabilities by using the current assets of the company. The short-term (current) assets are turned into liquid assets sooner or later, but no later than one year, making it possible to satisfy the short-term obligations of the firm. The liquidity ratio is the most commonly calculated indicator. If its value falls below 1, then it practically shows the company's insolvency. Consequently, it is a minimum requirement for a company (especially if it wishes to receive

credit), to have the liquidity ratio greater than 1. The high liquidity indicator is optimal for the creditors, but the return of the current assets is generally less than the return of the fixed assets; consequently, the high ratio will reduce the average return on assets.

The capital structure means the ratio of equity and debts among long-term resources of the company. The financial leverage shows the ratio of debt (credit, loan, bond) in the capital of a company. Consequently, if the investments of a company are financed entirely by equity, then its financial leverage would be zero. The more indebted a company is, the higher the financial leverage will be. Choosing the right type of financing is similar to a marketing problem when the company intends to sell different securities in the capital market. The capital structure depends on the company's capital structure policy. What interests affect the shareholders and managers of the company in establishing this policy?

The Modigliani and Miller theorem (Modigliani and Miller, 1958) is regarded as the starting point of modern capital structure theories. These were based on the assumption of a perfect capital market and emphasised the irrelevancy of capital structure. The first theorem of Modigliani and Miller states that the company's market value is independent of the capital structure of financing and the company's expected return on assets. In other terms, the opportunity cost of capital is constant (assuming a perfect market without transaction costs and the costs of financial distress). The financial manager cannot change the value of a company's securities by simply distributing cash flow among shareholders in different ways. The value of the company is determined by its real assets and not by the issued securities. Subsequent empirical researches modified this principle, dissolving the assumption of a perfect market. The principles considered the most important ones are listed below:

- MM theory with taxes taken into account (Modigliani and Miller, 1963),
- the trade-off theory (Myers, 1984; Kim, 1978),
- the agent theorem (Jensen-Meckling, 1976; Jensen, 1986; Stulz, 1990),
- the information asymmetry theorem (Ross, 1977; Leland Pyle, 1977; Myers–Majluf, 1984; Myers, 1984), and the pecking order theory (Myers, 1984).

Which internal and external factors affect the self-financing?

According to general experience, companies prefer internal resources in financing decisions. International surveys show that the rate of internal or self-financing forms are around 80% of the total financing requirement. There are several possible explanations, such as:

- transaction costs related to finance will be significantly lower if it is not required to use external sources;
- if there are no new shareholders, bondholders and creditors, then the original owners need not to worry about sharing control functions over the company (or project benefits) with the new stakeholders;

- if the company gets into debt, it has the burden to repay the credit and its interest, in other words to clear the debt. This obligation may result in financial difficulties.

The business risk and the probability of financial difficulties (insolvency, bankruptcy) increase proportionally with the indebtedness and financial leverage of the company. The occurrence of financial distress is always associated with a significant increase in the financial expenses of the company and a reducing field of action.

In addition to the company's internal motivations, a serious limit in the capital structure policy can be an *underdeveloped capital market*. If the capital market is not sufficiently efficient, then it will be unable to meet the financing requirements because of the scarcity of volume and choice opportunities of financing supply. If the market is not efficient, then it is not indifferent what financing the company chooses, so there is a possibility to take positive or negative net present value financing decisions.

As a result of the above-mentioned reasons, the company would only use the outside capital when the internal resources have proved insufficient for the implementation of their investment. Then the management would prefer debts rather than capital increase. The increasing debt, in addition to the negative effects listed above, shows several positive characteristics which encourage owners to resort to credit instead of (or beyond) their own equity.

International researches provided practical and theoretical explanations for the importance of debt in the outside capital. Jensen's (1986) theory related to the asymmetry of information states that companies prefer to issue new bonds rather than new equity. Stiglitz (1973) has noted that a firm should always prefer debt to equity, since interest payments are tax-deductible and dividends are not.

The company financed by debt can increase its profit due to tax savings. The explanation for this lies in the fact that the interest of credits and bonds is accounted for financial expenses which decreases the company's profit before tax, the tax base of corporate taxes, while the shareholders receive dividends from the profits after tax. The smaller the amount payable to the state, the more return would there be to share for investors of the enterprise. Disregarding the effects of personal income tax, a company which has the D amount of debt at the r_D rate of interest, the corporate tax rate being Tc, the potential tax savings of the company (Ts) in one year would be:

$$Ts = D \times r_D \times Tc.$$

The "potential" refers to the fact that tax savings will only apply if the company has a large enough profit before tax and interest payments (Brealey, Myers, 1996).

Another important feature and benefit of the debt for the owners is the so-called leverage effect. This leverage means that if the investment generates higher profits than

the interest paid on loans financing the investment, then the difference of these profits and interest wanders into the owners' pockets. The owners' return thus increases through the outside capital. The leverage effect is shown by the following formula based on the Modigliani–Miller theorem (Brealey, Myers 1996):

$$r_E = r_A + \frac{D}{E}(r_A - r_D),$$

where r_A is the total return of the investment (company), r_D is the interest rate of credit, r_E is the expected return on stocks, D is the value of the debt, and E is the value of equity.

Overall, while the tax savings and increasing return can compensate or exceed the increasing risks and costs due to financial difficulties, it is worth getting into debt to finance investments.

The tax savings and financial difficulties, however, don't equally affect different companies. The financial management should consider four aspects when designing an optimal capital structure:

- the company's tax position: companies with high and stable incomes, so those in taxpayer position, should consider relying on the tax savings from credits. This means that they can afford a higher leverage than less profitable firms;
- the business risk of the activity: companies with a higher business risk should constantly be aware of the possibility of increased indebtedness generating financial difficulties. So it is advisable for them to have a lower operating leverage than their counterparts with lower business risks. According to Titman (1984), companies producing unique products borrow less, as it is difficult for them to find alternative activities in case of bankruptcy;
- the type of equipment: the companies having more intangible assets so as to play the key role in the company's income-generating activities, the cost and the risk of financial distress is much higher than it is with other types of businesses. The reason for this is that the intangibles loose their value faster because of the fast technological development (e.g., software), and they are more difficult to be sold than the other types of assets (intangible assets often represent value only for its owners, like foundation and restructuring costs or R&D costs). In other words, increasing the leverage is not necessarily a good solution in case of these companies. Aivaizan-Berkowitz (1998) examined the interaction between production and financing decisions, focusing on the specificity of the firm's assets and on the flexibility of its production technology. They have found that an increase in the corporate tax rate induces the firm to increase investment and financial leverage when the asset specificity is low;
- capital reserves: the accumulation of capital reserves is particularly important for companies having a number of projects with a positive net present value and being

in a dynamic phase. Thus, if a company has sufficient capital reserves whenever a good investment opportunity presents itself, they do not have to miss the potential profit just because they cannot find the appropriate outside capital for the implementation of investment plans. Consequently, developing and growing businesses are mostly characterised by a low leverage and self-financing. More profitable firms take up less credit. According to Myers and Majluf (1984), this exactly corresponds to the pecking order theory, namely, the companies prefer internal resources over external resources in the financing of their further investments.

In the model of Modigliani–Miller (MM), assuming a perfect capital market and tax-free competitive economy, financing decisions are irrelevant and can be separated from the investment decisions. In practice, however, due to market imperfections, the corporate capital structure and financing decisions play a very decisive role in shaping the company's value. Consequently, the dual purpose of financial decisions, namely to maximize the market value of the company and to minimize the cost of capital, i.e. the development of an optimal capital structure, can only be realised by accounting for the tax savings and the costs of financial difficulties.

However, the conversion of corporate debt structure is not only a matter of internal decisions. There are several external factors also determining it: so, it is affected basically by the development of the capital market, the monetary and fiscal policy of the government. Next, we turn to a presentation of the financial environment in Hungary to analyse the chances of Hungarian companies in accessing credit.

Financial environment: Corporate credit supply and taxation policy in Hungary over the last 20 years

There were many twists and turns in the development of financial market in the last quarter of the century in Hungary. In an international comparison, for 1990, the Hungarian financial intermediary level was comparable to those of middle-income countries (Mérő, 2003). Following the political transition, the first years of the nineties showed an essential degradation of bank crediting; especially corporate crediting suffered most in this period.

Many explanations can be identified for the early nineties' credit shortfall:

1. The shock of the transition.
2. The lack of expertise.
3. Risky portfolios, bad corporate loans. In 1992, the corporate bad loan ratio doubled (from 5% to 10%), and by 1993 even this has tripled (!) and bad loans in the total corporate loan stock were close to one third (Csermely, Vincze, 1999).
4. The collapse of Comecon (1991) and non-competitive corporate performance.
5. A strict bankruptcy law in Hungary. Increase in corporate bankruptcies and liquidations.

TABLE 1. **Corporate credits in Hungary in 1989–1997**

	1989	1999	1991	1992	1993	1994	1995	1996	1997
Bank penetration / GDP	76.40%	79.90%	86.80%	79.30%	74.10%	70.30%	66.40%	66.90%	67.60%
Corporate credits from domestic banks / GDP	26.10%	28.20%	29.90%	23.30%	20.70%	20.20%	18.70%	18.70%	20.60%
Corporate credit (domestic and foreign) / GDP	-	-	-	28.60%	27.60%	29.80%	29.60%	28.40%	29.50%
Index of corporate credits	100	104,5	97,3	73.6	64.9	65.2	61.4	63.5	72.9

Source: Csermely Agnes – Vincze Janos (1999). Leverage and foreing ownership in Hungary (MNB Munkafuzetek 1999/1), p. 7.

All of these processes affected the functioning of the banking system, and corporate bankruptcies were followed by bank failures. The worsening situation necessitated the consolidation of financial markets, and the stages thereof showed some impact on the recovery in corporate credit supply as well.

The first step was loan consolidation, which took place in 1992. The state exchanged the bad loans for consolidation bonds. During the second phase, between 1993 and 1994, in the course of bank consolidation, the state increased capital in the banks (to 8% capital adequacy ratio level). This was followed by the debt consolidation in 1994 – the key requirement when several major corporations were released from their debts to banks. Between 1995 and 1998, Hungary practically completed the privatization of banks. The commercial banks with their increased capital have mainly been obtained by foreign owners. By the end of the nineties, the structure of domestic banks has been formed, with the key actors and owners remaining unchanged in the most important characteristics until the present day.

Along with the consolidation / privatization processes, from 1996 onwards a definite growth in corporate credits started as well. Hungary is typically an open economy, so companies have not only domestic but also foreign channels to increase their indebtedness. However, while in 1996 direct external financing also played a major role in addition to the domestic credit growth, the significance thereof decreased from 1997, so domestic banks became the key actors of financial services.

The Hungarian credit market in the first half of the ‘90s was characterised by the so-called redlining. This means that an identifiable group of companies of certain characteristics are excluded from crediting. Certain companies, such as state-owned companies not yet obtained by a foreign owner, or small business could hardly get any credit (Ábel, Öcsi, 1999, p. 899). However, by the second half of the decade, the market of large companies has been saturated. Banks have started to open toward medium and subsequently to small businesses near the end of the decade (Török, 2012).

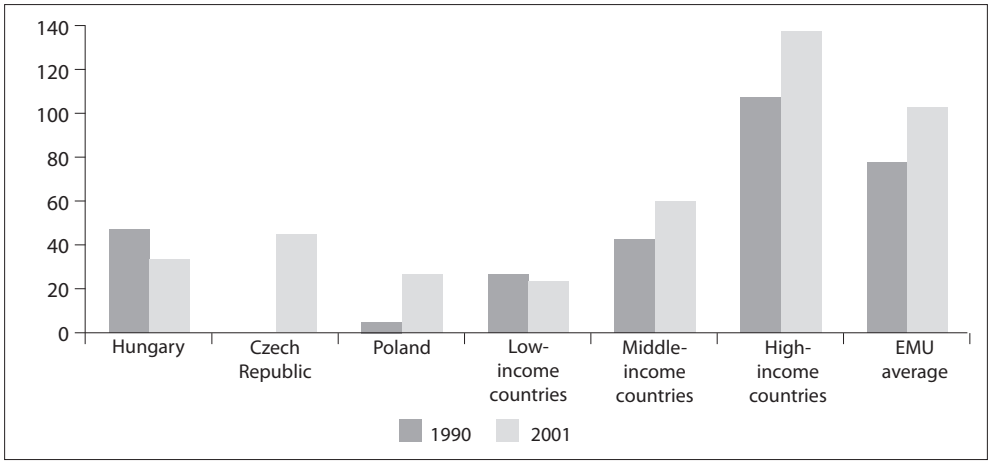

FIG.1. **Credit volume / GDP**

Source: World Bank (2002).

The Hungarian financial intermediary sectors were not keeping up with the strongly deepening trend characterising middle-income countries, so by 2001, lagging far behind, it took a size more typical of lower income countries. The role of domestic bank credits in financing the economy has remained very low in an international comparison. Data on the depth of intermediation reflect the "neither banks, nor market" type of the intermediary system. Both the banking and capital market intermediation is significantly lower than those values for the reference EMU countries or the developed countries (Mérő, 2003).

The period from 2000 to 2007 all over the world meant the years of a rapid credit expansion, and this prosperity characterised the Hungarian banking system as well. The ratio concerning bank credits in terms of GDP, showed in the above figure, increased in the middle of the decade.

The limitation of the scope doesn't make it possible to present a complex macroeconomic analysis on this period, but we have to mention an important change in the background of this credit expansion: the inflation rate decreased essentially by the end of '90s, and in parallel with it the Central Bank reduced the prime rate which influenced the general level of credit interest in Hungary.

The real economy development followed basically the dynamics of corporate lending. The real increase of the corporate credit portfolio, except for one or two quarters, has reached the annual level over 10%. The real increase rate of long-term credits exceeded 20% already in 1998, and it was well above the growth rate of total credits. This trend continued in 2003–2004. The period was characterised by an upward trend in corporate investment as well. While the credit dynamics of the period of large corporations was a

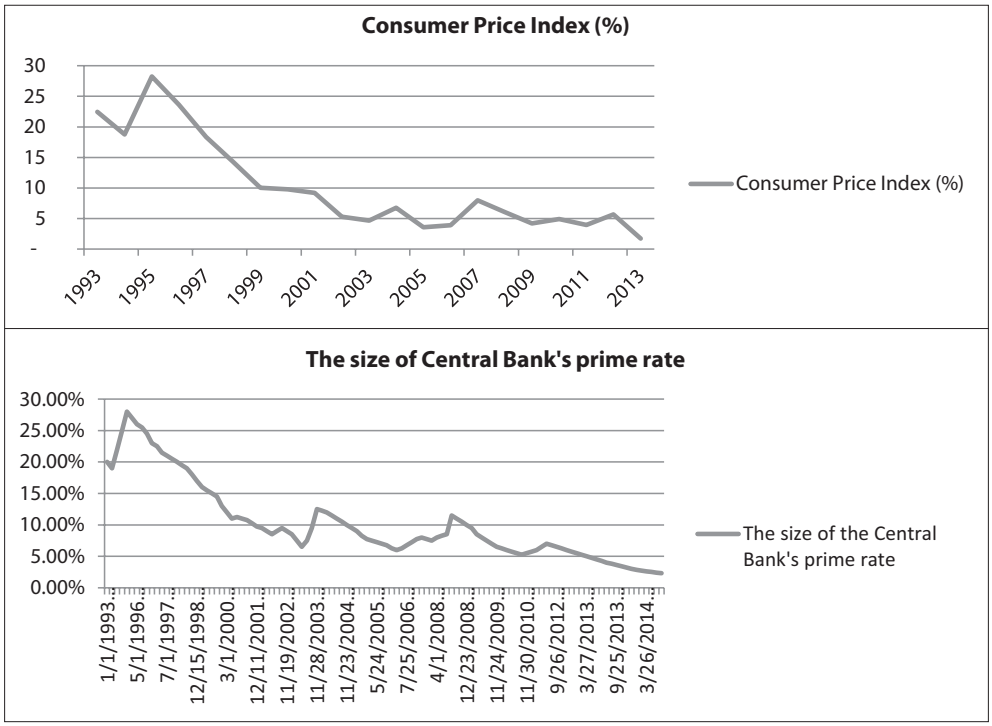

FIG.2. **Consumer Price Index / Central Bank's Prime Rate**

Source: www.mnb.hu

balanced one, a real credit boost happened in relation of micro and small enterprises, and in the middle of the decade also in relation to middle enterprises (Török, 2012).

The growth of foreign currency crediting can be also dated to this period. The companies in Hungary started to take credits in foreign currencies in the 1990s. According to the original practice, large companies with a significant export sale started to apply credits in foreign currencies as some natural cover. This has changed when domestic banks started to provide foreign currency loans in ever increasing amounts to SMEs having no or hardly any sale in the foreign trading of products. The interest rate of credits in foreign currency was essentially lower than that of credits in HUF (the difference could be 10% in 2003–2004). Thus, the share of foreign currencies in the corporate sector credits started to gradually move from the previous 10–20% to 40% by the end of 2003, exceeded 50% by 2006, and increased further until the advent of the crisis (http://www.mnb.hu/Kiadvanyok/abrakeszlet).

In the last quarter of 2008, the global financial crisis reached the Hungarian banking system as well. From 2007, the increasing transaction costs of financing showed the impacts of the global financial crisis, and these were also visible in the difficulties of obtaining long term credits. The liquidity crisis hit gravely in October 2008, and the next phase was characterised by the deepening of the credit risk problems.

From the last quarter of 2008, the quarterly change of the domestic credit portfolio of companies was constantly negative. This is particularly true for the long-term credits, but it is true for short term credits as well. The decrease of long-term credits is mainly explained by the missing investments of the companies.

In the corporate value creation, as we mentioned above, the potential tax saving plays an essential role as well. The taxation policy is another external condition which may influence the financing choices of enterprises.

Among the different types of taxes, the corporate tax has an outstanding importance for the investors, because it is a real cost for them.

Hungary set a corporate tax rate that was extraordinarily low not only in comparison with the EU average (30–35%), but also as compared to the tax rates of other Central and Eastern European countries. After the initial 40% in the beginning of '90s, Hungary's corporate tax rate was reduced dramatically from 36% to 18% in 1995. This rate was the lowest in the region in the late nineties. From 2004, business only paid a 16% tax on their profits. In 2006, this tax rate became progressive; at a 5 million HUF (50 million HUF from 2008) revenue it decreased to 10%, but 5 million HUF plus it makes 16%. This system remained until 2010 when the upper rate increased to 19%.

As shown in Table 2, Hungary retained its competitive advantage in respect of corporate tax in the 21st century as well, since Slovakia and Poland (and later Czech Republic) were the only rival countries which introduced a similarly low tax rate. (Just to compare, the corporate tax rate was 35 % in the USA, 30% in the UK, and 26 % in Germany in 2007).

TABLE 2. **Corporate tax rates in CEE (%)**

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Czech Republic	31	31	31	31	28	26	24	24	21	20	19	19	19
Estonia	26	26	26	26	26	24	23	22	22	21	21	21	…
Hungary	18	18	18	18	16	16	10 16	10 16	10 16	10 16	10 19	10 19	10 19
Poland	30	28	28	27	19	19	19	19	19	19	19	19	19
Slovak Republic	29	29	25	25	19	19	19	19	19	19	19	20	23
Slovenia	25	25	25	25	25	25	25	23	23	21	20	20	18

Source: www.oecd.hu.

In Hungary, the legal environment and the corporate law are harmonised with the EU norms, i.e. foreign investors are entitled to have the same rights as domestic investors. However, at the beginning of the '90s, foreign companies were entitled to special advantages. Companies with at least 30% of foreign contribution (the volume of the investment had to be over 50,000,000 HUF, about 500,000 USD) could reduce their tax liability by

60% in the first 5 years of their operations and by 40% in the next 5 years. This system was repealed in 1993. However the next year the government introduced for ten years an exemption from the corporate tax for reinvestments exceeding 500 million HUF in Hungary. Since 1998, the investors who invest at least 10 billion HUF in less developed areas are eligible for a 10-year-long tax holiday if the investor creates 500 new jobs and the turnover grows annually by at least 5%. These incentives were available until 2011.

The Hungarian government also established a few special economic zones in regions with a high unemployment, which grant 5-year-long tax holidays. These regions were attractive because of the low threshold of the investment to qualify for the advantages.

Capital structure and performance in Hungarian corporations

The performance of the firm has a strong connection with the financial policy, as we have presented in the theoretical summary. The profit depends on the capital structure, and at the same time the availability of credits, the credit standing of a firm depend on its profitability and growth perspectives.

In the following, we analyse the effect of financing choices on the production and growth of the corporations in Hungary from the ’90s to 2009.

Database and method

The study analyses the capital structure of the firms in Hungary by financial indicators between 1995 and 2009 and the correlation of the firms’ productivity with their debt and taxation position in a regression model during the period 1992–2009.

The database of Hungarian enterprises was made by ECOSTAT (Hungarian statistical office), which represents close to 90% of the firms in the country. The average number of firms in this database is close to 2000–3000 each year, but it includes entries onto and exits from the market. The records contain all relevant information from annual reports, e.g., balance sheets, profit and loss figures, etc.

We differentiated the enterprises according to size and ownership. Large enterprises were distinguished from small and medium ones (SMEs) by the number of employees (above and below 300). We limited the analyses by financial indicators to the period 1995–2009 because of the lack of data. In 2009, the number of employees missed from the database; consequently, concerning this year we couldn’t make difference according to size. We considered a firm as a domestic enterprise when the foreign capital in the total capital was less than 51%, and considered a firm as a foreign enterprise if the foreign capital in the total capital was equal to or more than 51%.

We made analyses on the database which was filtered according to the above-mentioned aspects from three points of view: liquidity of the firms (compliances between

assets and liabilities), financing policy (capital structure), the structure of incomes and expenses of the firms.

In the regression model, the proxy for productivity was the total factor productivity (TFP) which was calculated on the basis of a modified version of the standard Cobb–Douglas production function.

The following regression equation was estimated:

$$Yijt = b0 + b1Cijt + b2Lijt + b3LCijt + b4ICijt + b5CITijt + b6ALLOWijt + b7SSCijt + eijt$$

The definitions are as follows:

Yijt: the real output of firm *i* operating in sector *j* at time *t*, calculated by net sales

Cijt: the capital of firm *i* operating in sector *j* at time *t* defined by the value of tangible fixed assets

Lijt: the labour of firm *i* operating in sector *j* at time *t*, expressed by the number of employees

LCijt: the long-term credits of firm *i* operating in sector *j* at time *t*

ICijt: credit for investments of firm *i* operating in sector *j* at time t

CITijt: the paid corporate income tax of firm *i* operating in sector *j* at time *t* determined as the difference between profit before tax and profit after tax (this difference reflects the effect of possible modifications of tax base as well)

ALLOWijt: the resorted tax allowances of firm *i* operating in sector *j* at time *t*

SSCijt: the paid social security contribution of firm *i* operating in sector *j* at time *t*.

Beyond the corporate tax, the social security contribution as a special type of tax burden can be considered as the real cost for corporations. In the region, Hungary has the highest percentage of the marginal tax rate (personal income tax and social security contributions) of employees charged on average wages. That is why the model also contains social security contribution as the explanatory variable.

In order to examine the effects of the ownership, we estimated also the regression model on the base of domestic and foreign firms separately.

Analyses by financial indicators

Liquidity and financing policy

The ratio between **long liabilities and equity** shows the availability of credits for the firms i.e. the credit standing of a firm. It also represents the self-financing potential of the enterprises.

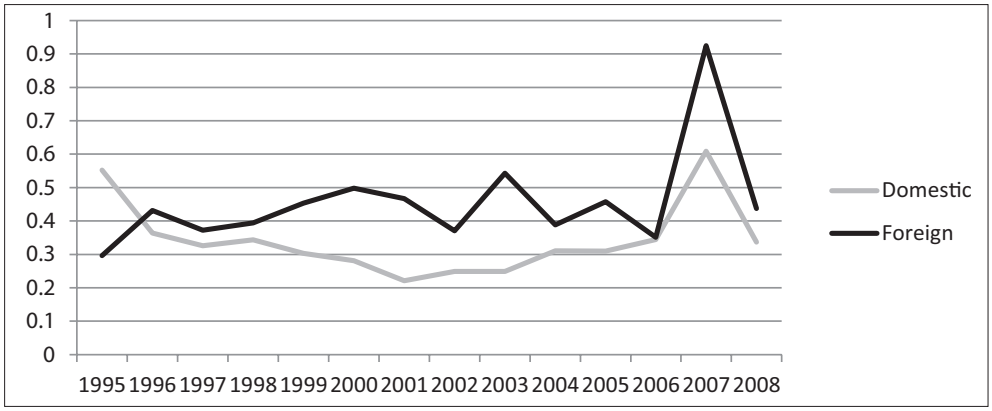

FIG. 3. **Long-term liabilities / Equity between 1995–2008 in Hungary**

Source: compiled by the author.

We can declare that **domestic corporations** in Hungary preferred internal financing in the major part of the examined period, which confirms the validity of the peaking order theory in Hungary. Concerning the first part of the investigated period, we can find other explanation for the low debt–equity ratio. The financial market was underdeveloped, the whole market transformed, the operation and reporting of the enterprises was not transparent, the redlining technique distinguished enterprises, the transaction costs and interest rates were high. These reasons resulted in a low supply and low demand of bank credits in the ’90s. The trend line does not reflect the changes which took place in the credit market after 2000. Although corporate credits increased dynamically, the depth of financial intermediation still lagged behind the level expected in case of a country as developed as Hungary, and financial intermediation did not become dominant as a corporate financing source, either. The soar in the credits, granted to enterprises in 2008, is attributable to the exchange rate increase of foreign currency credits rather than to taking out new development credits.

The **debt ratio in foreign enterprises** was higher than in domestic ones in the whole period, especially in the case of foreign small enterprises. The priority of dept was higher and reflected the politically and economically risky periods of Hungary. According to general principles, (foreign) investor reduces the proportion of equity in the capital structure when the economic risk of the (host) country is increasing. Investors finance the investment by local bank credits. In this way they can maximise the financial leverage and reduce the proportion of the owners’ capital in financing sources.

The proportion of **investment credit in the total long-term liabilities** was not dominant; it was less than 45–40% after 1996 concerning all types of the firms and especially foreign ones. The following items should be presented as long-term liabilities:

investment and development credit, other long-term credit, debts on issue of bonds, liabilities due to founders, other long-term liabilities. The database does not make possible to analyse the whole structure, but the ratio of investment credits points to the fact that not only local bank credits but founders' loans also played an important role in the financial choices of foreign enterprises (bonds were negligible in Hungary). At the same time, we have to mention that foreign firms couldn't enjoy the advantages stemming from tax savings, because most of them didn't pay corporate taxes at all. At the beginning of the '90s, foreign companies were entitled to special tax advantages as we have discussed above. Domestic firms could have exploited tax savings, but the debt ratio – because of the above-mentioned reasons – was low in their case. The possible explanation of the low rate of investment credits among long-term liabilities is that domestic enterprises didn't use all long-term credits to finance investments and development; they used them for financing operations and surviving.

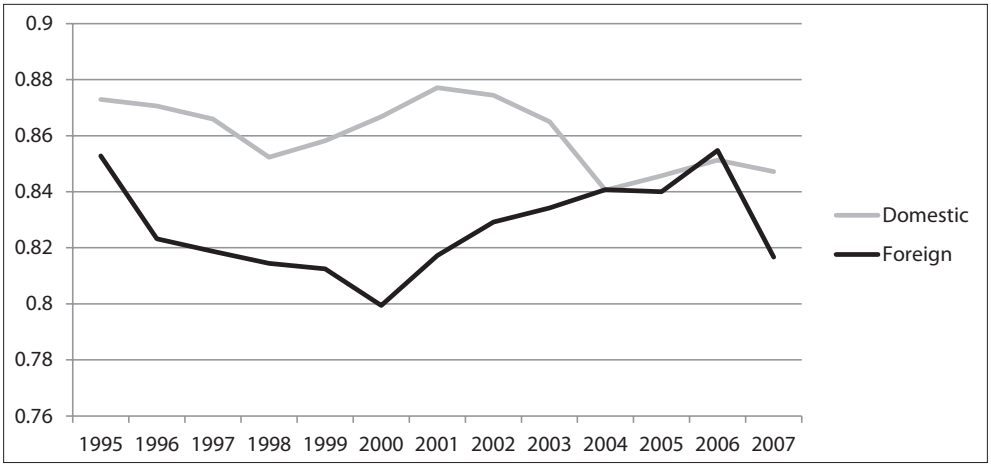

FIG.4. Short term liabilities / total liabilities between 1995–2007 in Hungary

Source: compiled by the author.

The ratio between **long-term and short-term liabilities** reflects 15–85% and 20–80% proportions concerning domestic and foreign enterprises. There is not a relevant difference among firms considering their size. According to ownership, we can find a deviation in the structure of liabilities. The proportion of long-term liabilities is higher in foreign firms, than in domestic ones. Domestic firms in the whole period replaced the long-term credits with short-term credits. This replacement was advantageous for enterprises for several reasons: the availability of short-term credits is simpler, the debtor examination procedure is shorter, the interest rate is lower, and the conditions of credit are not so rigorous. Domestic owners preferred the so-called revolving short-term credit,

which is automatically available again for the debtor after redemption. This unending short-term credit construction can be considered a quasi-long-term credit. Balla (2011) drew the same conclusion.

Surprisingly, the **compliance between assets and liabilities** concerning all enterprises reflect the conservative financial strategy: the corporations financed not only fixed but also current assets by long-term sources. The equity was dominant in long-term sources, as we have presented above; the proportion of long-term liabilities was lower than 20% in the whole period. There is not a relevant diversity among enterprises on the basis of ownership or size in the financial strategy. The indicator of liquidity was higher than 1 concerning all types of the firms in the investigated period.

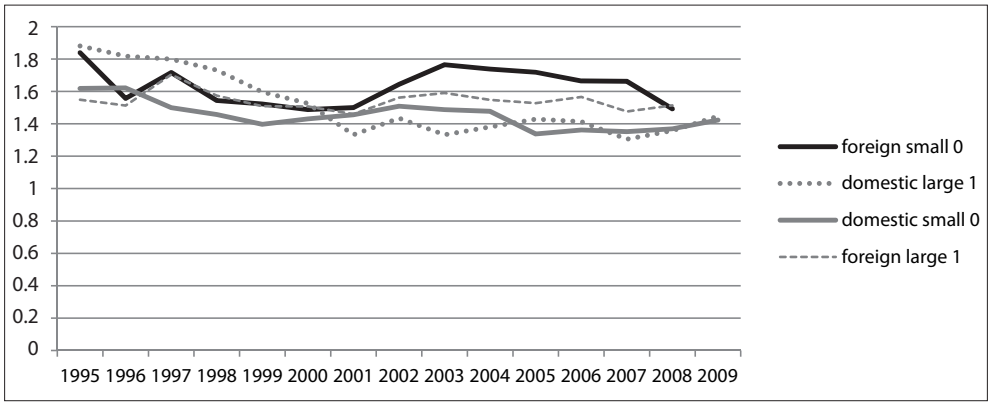

FIG.5. **Indicator of the liquidity between 1995 and 2009 in Hungary**

Source: compiled by the author.

The main explanation of the conservative financial strategy is the dominance of internal financing, but mostly it was due to the underdeveloped financial market and doesn't reflect a conscious concept for maximizing the corporate value. At the same time, enterprises had to face the growing volume of bad debts and receivables, the spool, which increased the numerator of the fraction (short-term liabilities / inventories, receivables, cash and cash equivalents)

The structure of the performance and productivity of the firms

In accordance with the previously mentioned facts, there is a strong connection between capital structure and performance structure, in other words, the financing policy has an effect on profitability. The financial income and expenses draw attention to the differences in the financial position of the firms. Does the company succeed in producing a higher profit than the paid interest? Couldn't the interest rate as financial expenses eliminate the operating profit?

The rate of **paid interest and liabilities** shows the interest conditions and financial position of the enterprises. There were relevant differences concerning this position among corporations in Hungary. The average interest payments for SMEs were higher with 0.5-1% as compared with the payments of large enterprises, with rare exemptions. This fact confirm the so-called redlining technique of the Hungarian banking system whose credit policy excluded those enterprises from credit supply which were considered too risky. The trend of interest payment followed the dynamism of the availability of long-term credit, especially in the foreign SMEs sector. When credit supply was low, the paid interest was small; when the credit supply increased, the interest payment grew.

Foreign ownership did not entail lower interest costs than Hungarian-owned ones. The interest of intercompany loans granted by foreign owners is one of the alternatives of profit repatriation. If the assumption that intercompany loans were dominant among liabilities is correct, then relatively high interests can be interpreted accordingly.

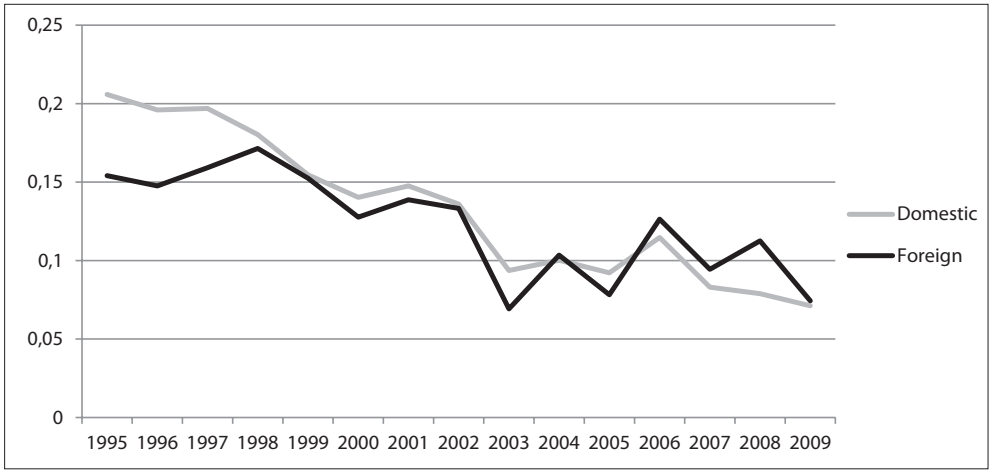

FIG.6. **Interests paid / total liabilities in Hungary in 1995–2009**
Source: compiled by the author.

The proportion of profit after and before taxes shows the firms' ability to pay tax burdens. This rate also reflects the different availability of tax preferences or allowances. The tax saving increases not only the volume of the dividend, but it also contributes to the growing potential of the enterprises. The volume of the retained earning as compared to the earnings after tax produces the base of internal financing sources and shows the ability of the firms to finance their own investments. This rate is especially important for foreign companies, because their dividend policy has an effect on the competitiveness of the host country in the international capital market

The rate of **earnings after and before taxes,** according to the anticipations, was close to 0.9 concerning foreign firms and higher than the domestic firms' rate. In the case

of domestic large firms, this proportion was about 75–85% until 2004. After it – the date of EU integration – the difference (with special tax advantages) between foreign and domestic firms disappeared.

The **proportion of retained earnings and registered capital within equity** reflects how much a company is self-financing and also reflects its ability for internal growth. The proportion of registered capital shows a linear decline as compared to equity in all corporate categories, which is very promising as it shows that companies grew continuously during the given period. However, the trend of the proportion of retained earnings is not so even. The initially low, often negative, profitability level of large industrial enterprises grew to 10–15% of the equity by the middle of the decade. Then the profitability level showed a downward trend, which was due to the volume growth of equity (attributable to the accumulated profit reserve). During a considerable part of the period, within equity the retained earnings of companies with a foreign majority ownership exceeded the average of Hungarian-owned companies. Throughout the whole period, in the SME sector, the proportion of annual profit exceeded the value of the profit of large industrial enterprises compared to equity, which, on the one hand, could partly be connected with the lower registered capital; on the other hand, Modigliani–Miller (1996) also pointed out that, as a riskier form of investment, a small company had to generate a higher profit than more stable large industrial enterprises.

The volume of dividend, which is a complement of the volume of **retained earnings as compared to earnings after taxes** was a bit higher in foreign firms than in domestic ones in the ’90s. This means that foreign owners repatriate 20–25% of their profit on the average, while domestic owners divided less than 10–15% of their profits providing internal resources for later investments. After 2000, the dividend policy or, in the other words, the internal financing policy became similar in all types of enterprises in Hungary. This means that firms retained approximately 20–30% of their profits to finance their later investments, and the difference between domestic and foreign firms disappeared. In 2007, there was an essential decline in this proportion, which reflects the effect of the economic crises.

Regression model

The **corporate productivity** answers the question how efficiently the enterprise uses the capital which it gets from different investors, owners, and creditors.

The aim of the regression model was to reveal the potential effect of credits and tax burden on the productivity and performance of Hungarian enterprises during the period 1992–2009. In the framework of a microeconomic analysis, the model sought to verify or reject the following research hypotheses:

H1: The productivity of firms did not increase linearly with the increase of credits.

H2: The productivity of firms did not increase linearly with the decrease of tax burdens.

H3: Tax allowances had more positive effect on foreign firms than on domestic companies.

The adjusted R square of the model is 0.530, which means a good explanatory power. The robustness of the explanatory variables and the whole model in the sampled period was appropriate, and the correlation of all factors with the dependent variable was significant. According to their robustness, the priority order of the variables is as follows: social security contribution (positive effect!), tax allowances, capital, labour (negative effect!), corporate income tax (positive effect!), long-term credits (negative effect!), and investment credit.

TABLE 3. **Coefficients (all firms)**

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. error	Beta		
(Constant)	6066.013	268,888		22.560	.000
L	-5.603	.148	-.240	-37.846	.000
ALLOW	34.062	.406	.377	83.923	.000
IC	.196	.072	.014	2.711	.007
LC	-.643	.024	-.163	-26.444	.000
CIT	3.274	.061	.232	53.571	.000
SSC	23.764	.508	.435	46.790	.000
C	.601	.019	.260	31.945	.000

The capital and labour input did not play a determining role in the performance of the enterprises in the total database. In all examined data, the robustness of these explanatory variables was low ($beta_c$= 0.26, $beta_l$ = -0.24), and in the case of labour the effect was negative. The cause of this unexpected correlation is that the panel contains all sectors, and the different sector characteristics (industry is capital-intensive, service is labour-intensive) extinguish each other. This means that in using more capital and employing more workers, enterprises did not stand a better chance of increasing the volume of their sales; it depends on the sector characteristic.

From the point of view of the research, these traditional factors and their effects are not essential. The research focuses on the impact of debt and taxation position on the total factor productivity in Hungary.

H1. The productivity of firms did not increase linearly with the increase of credits.

The effect of long-term credits was negative and not relevant for productivity concerning all firms (beta = -0.26), and the explanatory power of investment credits was

TABLE 4. **Coefficients (domestic firms)** **Coefficients (foreign firms)**

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.	Unstandardized coefficients		Standardized coefficients	t
	B	Std. error	Beta			B	Std. error	Beta	
(Constant)	5578.115	157.444		35.429	.000	1476.204	649.541		2.273
L	-2.402	.079	-.297	-30.265	.000	-8.068	.599	-.123	-13.473
ALLOW	13.351	1.268	.067	10.533	.000	24.486	.613	.285	39.938
IC	.502	.085	.043	5.911	.000	-1.865	.125	-.125	-14.975
LC	-.410	.014	-.264	-28.305	.000	.250	.065	.038	3.865
CIT	1.733	.096	.122	18.090	.000	2.364	.096	.169	24.693
SSC	9.594	.311	.445	30.869	.000	51.113	1.163	.560	43.944
C	.495	.013	.493	39.495	.000	.474	.038	.144	12.629

negligible. In case of foreign firms, the correlation between net sales and long-term credits is positive but not strong. This result confirms the consequences of the analyses by financial indicators and confirms the hypotheses as well. The role of credits, especially investment credits. in the productivity of Hungarian companies was insignificant in the 1990s and did not become dominant even after the credit expansion after 2000. The rate of indebtedness of foreign companies was higher than that of Hungarian companies, but this trend was mainly attributable to loans granted by mother companies and not to credits from banks.

H2. The productivity of firms did not increase linearly with the decrease of tax burdens.

The robustness of the corporate income tax was low, and it had a positive effect on the productivity of firms. This fact shows that the corporate income tax was so low in the whole periodas compared to other countries that it had no essential impact on the productivity of the companies. In case of social security contribution, the correlation between net sales and this tax burden also shows a positive number, but its explanatory power is the strongest among the variables. This means that, contrary to the general point of view, the comparatively high social security contribution in Hungary doesn't reduce the productivity of firms. A higher social security contribution reflects higher wages and assumes a higher qualification of the labour force. Consequently, we can suppose that the qualified human capital is much more important concerning productivity than its cost. The investigation confirmed the hypothesis concerning domestic and foreign firms as well.

H3. Tax allowances had a more positive effect on foreign firms than on domestic companies.

As was predictable, the tax allowances had a stronger correlation with net sales in the case of foreign firms than of domestic corporations. The tax policy, as mentioned above, preferred foreign investors to domestic ones. The results verified this hypothesis.

Conclusions

In this study, we aimed to reveal the effect of financial choices on the production of the firms in Hungary in the last two decades. We analysed the capital structure of the firms in Hungary by financial indicators and in the regression model, reviewed the effects of the Hungarian credit supply and economic policy on financing the choices and performance of the corporates.

We found that the Hungarian financial intermediary sector was not keeping up with the strongly deepening trend characterising middle-income countries until 2001. In spite of the growing corporate credit volume after 2000, bank credits didn't became generally dominant in the financial capital structure of the enterprises. We can declare that domestic corporations in Hungary preferred internal financing in the major part of the examined period, which confirms the validity of the peaking order theory in Hungary, but it is partly attributable to the low level of financial intermediation.

At the same time, we have to draw attention to the fact that domestic firms replaced long-term credits with short-term ones. This replacement was advantageous for enterprises for several reasons. The debt ratio in foreign enterprises was higher than in domestic ones in the whole period, but this trend was mainly attributable to loans granted by parent companies. The rate of investment credit in total long-term liabilities was not too high; it was less than 45–40% after 1996 concerning all types of firms and especially foreign ones.

We have found that all enterprises chose the conservative financial strategy: the corporations financed not only fixed but also currents assets by long-term sources. However, the equity and not long-term credit was dominant in long-term sources. After 2000, the internal financing policy became similar in all types of enterprises in Hungary.

The regression model verified our hypotheses: the productivity of enterprises did not depend on credit supply, did not increase linearly with the decrease of tax burdens, but tax allowances had a more positive effect on foreign firms than on domestic companies.

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