ALTERNATIVE THEORIES OF CAPITAL STRUCTURE

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Abstract

The beginning of the study of financing mix is after the Modigliani and Miller theorem and its unrealistic assumptions under which the source of finance does not impact the capital structure of the firm. Continuously after the M-M theorem new theories are developed. In this paper we are going to look at these alternative theories for sources of financing with a specific detail on the: Trade off theory and Pecking order theory. We provide evidence how this theories cope in practice of business.

Keywords: Trade off, pecking order,capital structure

Introduction

The theory has little to say on the optimal structure of financing mix of the companies generally and especially for transition countries. On one side we have the age of debt finance suggesting that companies should rely on debt finances, on the other side we have the age of equity finance suggesting for equity finance; while another group of researches is testing whether there is an optimal capital structure where companies should attain the latter with a portfolio of financing. Aaker and Jacobson (1987) demonstrated that the systematic risk can impact the profitability of the firm. Less profitable firms usually look at external financing. Accordingly we may suggest a link between systematic risk, profitability and sources of financing.

Companies are not self sufficient, and in order to grow they need financing continuously. Choosing the source of financing may look simple and may take a little time to decide it, but however it is not a straightforward answer. The management of the firm should decide whether they will use internal or external sources of financing, whether they will chose debt or equity. Alternative theories try to answer this question questioning whether this should be a random answer, based on historical preferences or is dependent on firm specific factors.

Alternative theories of capital structure

The literature highlights the importance of asymmetric information, agency problem, taxation and corporate control in determining the choice between equity and debt. There are costs and benefits of choosing a certain financing policy, choosing debt or/and equity, therefore the optimum choice will be based on the tradeoffs of these costs and benefits. The basis of the research among researches based on debt/equity ratio is whether this is targeted or flexible for companies.

The insight of the question how companies choose their financing mix originate from MM (Modilgiani-Miller) 1958 preposition and is still an area of research. Academicians and researches have concluded that MM preposition does not hold, and try to suggest new theories in figuring out the reasoning and explanations with new theories but yet the puzzle remains unsolved; the evidence is scarce and ambiguous.   Theoretically different theories based on their assumption may hold, but with no evidence they are not reliable. Choosing the best optimal capital structure is rather a difficult task considering that the goal is minimizing the overall cost of capital. By identifying optimal structure a firm could maximize its value; therefore we see the importance and interest to study the subject in some detail. As a result of the research we have a number of alternative theories trying to help to find the right answer. Some of the theories on grounds of which a further research is done are: Agency cost theory (Jensen and Meckling, 1978; Jensen, 1986; Myers, 1977); Pecking order theory (Myers and Majluf); Asymmetric information theory (Ross, 1977). In this paper we are going to look at alternative theories for sources of financing with specific details on the: Trade off theory and Pecking order theory.

Companies will have bankruptcy cost in a case of financial distress when they are not able to repay their debt. Banks ussually do not trust companies that fail to pay their debt and therefore they are limited in obtaining credit. On one hand such companies have high probability to face bankruptcy cost and costs expressed as a opportunity cost of not being able to obtain credit that they can use on attractive investments. Therefore we may conclude that expected bankruptcy cost and financial distress worsen the firms value.

Agency cost arise as a consequence of conflict of interest betwean the principle and the agent. Having different goals of maximizing their own interests wich represents a conflicting interest to the other party resullts to what is known as agency cost. Agency cost and bankruptcy costs are positively corelated with debt; the higher the debt the higher the agency cost and bankruptcy costs, a statement that describes the link betwean capital structure and these costs.

In figure1 we have shown different theories on capital structure and the tools they use to explain the theory. But can taxes or asymmetric information or agency cost independently explain the whole picture of capital structure?

Trade off theory

Trade off theory suggests that companies are partly financed by debt and partly by equity whereas the choice is made based on cost benefit analysis. If a company chooses financing by debt is has to compare the tax benefit i.e. a benefit from financing with debt on one hand with bankruptcy costs and financial distress with on the other hand are costs of financing with debt. So if tax relief offsets the bankruptcy and financial distress costs than the company should be financed by debt until that point. We should point out that by bankruptcy costs we mean both direct and indirect ones. Agency costs are also included and that may affect the capital structure of companies.
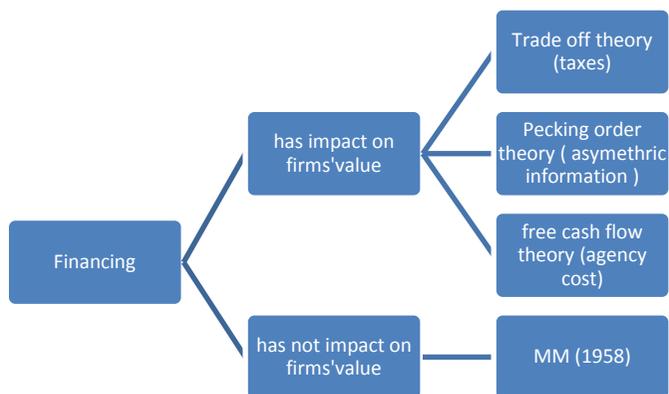
Figure 1 Theories of capital structure

In the illustration we have shown different theoris on capital structure and the tools they use to explain the theory.

A large body of literature tests whether companies use target debt equity ratios. One group does test this target ratio at a time- the static trade off model; and the other group finds that there may be flexible target ratio introducing the dynamic trade off model (Hovakimian, Opler, and Titman (2001), Strebulaev (2004), Flannery and Rangan (2006), and Kayhan and Titman (2007)). This means that through time there is no rigid target ratio but the ratio adjusts over time. It is empirically not possible to estimate the target ratio therefore most of papers estimate it with the parameter speed of adjustment.

Companies' borrowing is incentivized by tax advantages, but can they borrow indefinitely? This is the question that trade off theory answer. What the static trade off theory suggests is that companies chose a target

debt/equity ratio and then move towards it. Changing the mix of financing will make a change in stock prices therefore it is important to study this area. We may conclude that tax rates and banckurptcy costs are factors that more likely influence the structure of capital.

Modigliani and Miller (1958) introduced the model that in the world of no taxes and transaction cost the capital structure is irrelevant to the firm value and the same authors in 1963 employed taxes and suggested that in order to take tax advantages firms should rely on debt financing. MM in their preposition introduced the tax benefit. Nowadays their preposition is often called irrelevance preposition which states that under some assumptions it does not matter whether the firm chooses to be financed either by debt or equity. What Modigliani –Miller (1958) suggest is that capital structure is irrelevant but researches note they do not add that this is true under perfect market assumptions. Contaraily their prepositions may suggest that market imperfections make capital structure relevant. Such imperfections may be the taxes which are one of the elements incorporated in the trade off theory. In practice and reality capital structure does matter. As a matter of fact is that the use of debt for financing is increasing. As long as the capital structure choice impacts the tax it means it impacts the firms' value. Debt has the tax advantage. Whenever equity is issued this is bad signaling for the outsiders of the company- they may perceive as an inability to finance with debt whereas debt does not impact the firm value directly.

The assumptions which they introduced are as follows:
- No taxes
- No transaction costs
- No bankruptcy costs
- Equivalence in borrowing costs for both companies and investors
- Symmetry of market information, meaning companies and investors have the same information
- No effect of debt on a company's EBIT

In the MM paper of 1966 they give an insight that taxes are important. Than if tax advantages are important for firms to be financed with debt than we can ask why firms do not rely on debt financing. Answering this question may lead us to the conclusion that trade-off theory cannot fully explain the differences of capital structure between different firms. When incorporating taxes we should also bear in mind that tax regulation are county varying and tax advantages are firm varying. What we are suggesting is that any empirical evidence for testing trade off theory should control for tax regulation and firm differences such as size and industry. So debt and taxes on their own do not explain the capital structure. According to the trade off theory risky firms and firms that have tangible assets should borrow less compared to safe firms and firms that have intangible assets which should borrow more. Whereas

according to Miller model the optimum debt asset ratio is the point where marginal taxes benefit and marginal bankruptcy costs are equal.

Myers calls the trade off between tax savings and cost of financial distress which managers face when financing with debt as "static trade off theory". Myers claims that financing by debt or equity is not a question for finance theory. Riskier debt is equal to equity in the finance theory. Myers "The most telling evidence against the static trade-off theory is the strong inverse correlation between profitability and financial leverage" p. 83 Another fact that is discussed in the paper is that security issuing that increases leverage is considered as good news in corporate financing. "To repeat: high profits mean low debt. Yet the static trade-off story would predict just the opposite relationship. Higher profits mean more dollars for debt service and more taxable income to shield. They should mean higher target debt ratios."p 84. Myers concludes that the static trade off theory fails to explain the inverse relationship between profitability and financial leverage as well as the fact that increasing leverage is good news whereas the opposite is bad news. Also he adds that pecking order theory has a comparative advantage in explaining these facts compared to trade off theory.Myers has contributed to the capital structure theories and reviewing the same with the most recent trends and has helped developing the trade off theory with his paper "Determinants of Corporate borrowing" and afterwards proposed the alternative pecking order theory on his paper "The capital structure puzzle".

According to the trade off theory countries with soft bankruptcy regimes will have higher market debt compared to the countries with rigid regimes and vice versa." Within the trade-off theory, there is a debt ''pecking-order' with bank debt being preferred to market debt because of the lower implied bankruptcy costs." Hackbarth et al p. 4. This raises another question of finding the optimal mixture of marked debt and bank debt. The model that they employ assumes that firms will prefer bank loans and that bank loans are preferred to small firms. Their conclusion is that weak firms extensively use bank debt whereas strong firms are more prone to use market debt as their debt financing.

Zhao et al (2008) use Kalman filter to directly estimate the speed of adjustment and they overcome two problems the identification problem, and the firm heterogeneity of the sample problem; for the dynamic trade-off model. They test the dynamic trade off theory using quarterly data for a sample of 578 firms. Under the assumption that the target debt /equity ratio is constant they conclude that for 52% of the firms the model of trade off theory holds; and the same holds for 32% of the firm when the target debt-ratio is not constant.

The evidence testing trade off theory is usually with cross section-such they do test the static trade of theory; whereas little evidence is on the dynamic trade of theory. Some of studies that empirically test the dynamic trade of theory are: Lev and Pekelman (1975), Ang (1976), Taggart (1977), Marsh (1982), Jalilvand and Harris (1984), Auerbach (1985), Opler and Titman (1993) and Allen and Clissold (1998); Shyam-Sunder and Myers (1999), Banerjee et al. (2000), Ozkan (2000), Hovakimian et al. (2001), Miguel and Pindado (2001), Nuri and Archer (2001), Omet(2001), Ozkan (2001), Antoniou et al. (2002) and Fama and French (2002). The dynamic trade off models estimates the speed of adjustment for the firm to go to the target debt ratio which is the objective of the capital structure.

Pecking order theory

The pecking order theory is all about financing the companies by an order from safer to riskier, it means it gives advantage to internal financing compared to external financing; prefer debt to convertible bonds; prefer hybrid securities compared to equity. Compared to the trade off theory the POT[29] does not impose a target debt equity ratio; for more debt is incorporated in the external financing. According to the theory the first source of the company should be internal finance and the last source equity securities. The asymmetry of information between managers and investors is what leads to a pecking order. Managers (insiders) have information advances compared to investors (outsiders). Managers would like to issue equity when its overvalued; while investors knowing this would not buy shares unless they know that the debt capacity is reached and that have forced issuing equity. The end result of this contradicts will be a hierarchical financing as suggested by the pecking order. The hierarchy of financing firms according to POT suggests that this theory suggests "a portfolio of financing", it does not eliminate any kind of financing but simply it provides a "menu" order to be followed.

Despite different alternative theories trying to explain the differences in the capital structure of firms the empirical evidence is ambiguous and it mostly look at big companies; whereas there is a lack of evidence for testing specific theories on SME. Their attitude may reflect characteristics of both most relevant theories on capital structure: trade-off theory and pecking order; but still we need empirical evidence to find which one fits best. Theoretically the capital structure is explained by the theories but finding the empirical evidence for testing these theories is scarce.

Theoretical expectation is that small companies will rely heavily on debt and big companies will rely on equity. The evidence that pecking order

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[29] Abbreviation often used for pecking order theory

theory fits less for small companies compared to big ones is contra intuitive to the pecking order theory. Evidence that size does matter is provided in Frank and Goyal and Fama and French, 2002) Small companies are more prone to asymmetric information(Brennan and Hughes, 1991), and if the latter is the basic for explaining the pecking order theory it may be expected that pecking order theory should hold for small companies. Evidence does not say so. So why pecking order does not hold for small companies? If there is no empirical and theoretical explanation we may question the validation of the pecking order theory. One more argument works against the theory and is the time. Evidence on the 90s is that firms have issued more equity compared to debt. This is again not the intuition of pecking order theory.

Myers on his paper *The capital structure puzzle* (1984) introduced the Pecking order theory wheras he suggests the order of financing that companies will aim is internal capital, debt capital and the last source equty capital. In short word companies prefer internal financing compared to external financing. He introduces the POT as an alternative to the trade off theory. In the trade off theory there are cost of adjusting the target debt which are not explained in the theory- adds Myers.

Shyam-Sunder and Myers (1999) "Firms whose investment opportunities outrun internally generated funds borrow more and more."p 221.In the paper they differ managers into optimistic and pessimistic; thus optimistic ones would like or repurchase shares while pessimistic ones not. They suggest that pecking order explains better the capital structure than the trade off. They question the empirical evidence suggesting that trade off model explain the capital structure of the firms. The start point is that Myers and Majlufs (1984) propose that firms follow a hierarchy of financing because of asymmetrical problems and signaling problems. They test the pecking order hypothesis with a model of estimating the change of debt explained by the deficit. If the coefficient of deficit is one than the company is financed by debt and we have evidence in favor of pecking order. They admit that with high debt ratio is difficult to distinguish trade off theory and pecking order. Estimating the simple pecking order model they get estimate of 0.85 for the coefficient of deficit and a very high R^2. These results favor the pecking order theory hypothesis. They use lagged deficit and deficit of lagged funds and the pecking order coefficient falls relatively a little so they get the corresponding values of 0.64 with *R*2=0.64 and 0.78 with R2=0.78. According to their estimates they suggest that both static trade off and pecking order describe the variability of debt but pecking order theory has higher explanatory power when compared to the first. They also estimate Monte Carlo simulation on hypothesized data and therefore firmly suggest that we should test the power of explanation before drawing conclusions. They address this to the cross section evidence on trade off theory because

their evidence is that target adjustment models are not rejected even when false and this is not the case with pecking order. $\Delta Dit = \alpha + \beta po*DEFit + \varepsilon it$, is the formulation of the pecking order coefficient β as suggest by Shyham and Mayers (1999).

Myers (2001) reasoning the capital structure again starting with MM implies that capital structure matters indeed; if the opposite was true than there will be no innovation of financing strategies. Reviewing the theory on capital structure he concludes that you can find evidence in accordance with three theories trade off, pecking order and cash flow theory; but still none of them is the general one. Developing a general model derived from efficient co investment of human and financial capital is what they conclude that the capital theory should do.

Frank and Goyal (2003) test the pecking order theory using the conventional model and adding the financial deficit. Empirically they find "The correlation between net equity and the financing deficit is 0.80, while the correlation between the financing deficit and net long-term debt is only 0.48." which is contrarily to what is predicted by the pecking order. Empirically the financing is based on equity- according to their sample data. Looking at different time period they conclude that testing pecking order depends on the time period we choose. They also find that the theory is related to the size of the firm; it fits better for big companies compared to small ones in the periods 1971-1989; whereas this support declines even for big companies in the 90s. Their general conclusions are not at all in favor of the pecking order theory. Their evidence suggests that companies internal financing do not satisfy their needs for financing so they rely on external financing out of which more on equity compared to debt.

Abe de Jong et al(2007) evidence adds to the literature by differentiating firms with surpluses, firms with "normal" deficits, and firms with large deficits. Their differentiation of firms gives different estimates for pecking order coefficient 0.74 for normal deficits and coefficient of 0.09 for large deficits. This suggests that the results depend on the sample of firms and the deficits. For the whole sample they find a 0.255 coefficient of pecking order coefficient which is smaller than Shyam and Mayers (1999) and comparable to Frank and Goyal (2003); and is against the pecking order. It suggests that around 25% is financed by debt and 75% by equity. Including the size of the firms and dividing the sample before 1989 and after 1989 they get relatively high pecking order coefficient for both periods (before 1989 is higher) for big firms while they get small pecking order coefficients for small firms for both periods. Thus they imply that the differentiation between positive and negative deficit should be done before testing pecking order.

Zhang and Kanazaki follow Shyam-Sunder and Myers (1999) pecking order test and suggest that size and financial deficits and surpluses

do matter when testing pecking order theory. They conclude that the simple Shyham Mayers model does not describe the capital structure of Japanese firms. Leary and Roberts (2007), Chirinko and Singha (2000) and De Medeiros and Daher (2004) criticize Shyam and Myers (1999) empirical test on pecking order.

Benito (2003) examines empirically the two competing theories on capital structure the trade off theory and the pecking order theory. He give evidence in favor of the pecking order theory and contrary to trade off theory suggesting negative relationship between debt and cash flow and profitability and positive relationship between debt and investment for Spanish firms and UK firms. Sogorb-Mira and López-Gracia (2003) come with the evidence that Spanish firms have target leverage ratio with a high speed of adjustment (0.86). Based on the trade off theory getting a coefficient of 1 means that the company has attained the target debt ratio; as we can notice the coefficient they estimated is close to one therefore me may conclude that the Spanish same for this sample have a high speed of adjusting their target debt ratio. Accordingly to the trade off theory they find positive relationship between effective tax rate and debt i.e. the higher the tax advantages the higher will be the use of debt.

De Medeiros and Daher also follow Shyham and Mayers model of testing the coefficient of pecking order theory.   Their estimate of pecking order coefficient is 0.86 with R2=0.791 which is an evidence in favor of the pecking order. Concluding they provide evidence that Brazilian firms do follow the pecking order theory. Still they do not provide any timing evidence that the pecking order is valid even through time, the evidence is for their sample and for the particular year.

Ghosh and Cai employ the nnoparametric fischer probability testand Gudman-Kruskan Gamma measures to tes the optimal capital structure theory and POT. The result of their sample provides empirical evidence for the optimal capital stucture and POT. Their study suggests that both theorie coexist and they are not mutually exclusive.

Ursel (2007) use time series data which is not that common in testing pecking order theory and their explanation is that cross section or panel data may result with biased data because they take the data from the financial statements of companies while they use only publicly issued debt and equity. Testing pecking order for Canadian firms she finds evidence against pecking order theory for her sample of companies.

Kovacs and Tech (2004) suggest time variation in adverse selection costs in order to get the evidence on pecking order theory. Their estimates suggest that adverse selection cost is statistically and economically significant. They find negative relation between the proxy of adverse selection cost and external financing. This suggests that firms will rely on

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external financing when adverse selection costs are low and is according to the pecking order theory. Their estimates are a support for a multiperiod pecking order theory. However they admit that pecking order theory is not "universal" theory of capital structure. We can add is that their work is evidence that adverse selection costs do matter.

Cole (2008) estimates form the univariate model suggest that firm size, age, profitability, liquidity are inversely related to leverage while tangibility, creditworthiness, number of banks and non-banks that provide financial service, S corporations and C corporations (compared to propertiorship) has positive relationship with leverage. Thus his evidence suggests that private firms financing choice in US do work as pecking order theory. Their estimates are supportive to pecking order and contradictory to the trade off theory.

Financing choices theories vs. practice

While theories have the economic rationale the evidence form practice does not support them, supports them partly, gives contradictory results and with no general model employed yet it leaves room for research. Practice shows the variety of financing alternative practices; but does not show much how we come to that result. What we suggest is that may be is useful to additionally look at the legislation regarded to companies, taxes, bankruptcy, financing, financial markets, banking system and so on. Financial slack is used to finance companies when there is no external financing or is expensive. According to pecking order firms with more financial slack should use less leverage.

After looking the theory now let see some facts from the practice. Below we will represent charts that are based on BEEPS data on SME for 2005 that includes 28 countries. On this part we will focus on the question on sources of financing that companies use to finance working capital and new investment.

In figure 2 we represent the percentages of different sources for the whole sample of countries. The numbers suggest that SME are primarily financed by internal funds, than by bank borrowings in general (private banks, foreign banks and state owned banks), than by equity and different other sources. This order of financing sources is in line with the pecking order.
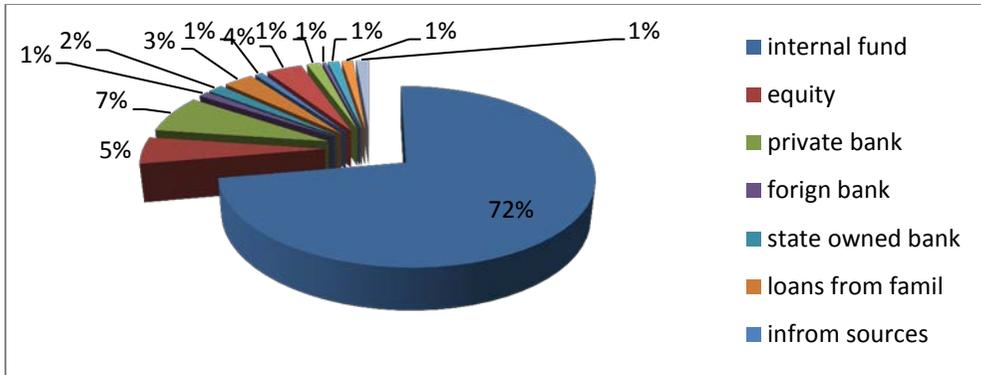
Figure 2 Source: BEEPS, all countries– SME financing sources for working capital

Now on the following charts we want to see more detailed pictures for sources of financing working capital by country for Macedonia and Albania.
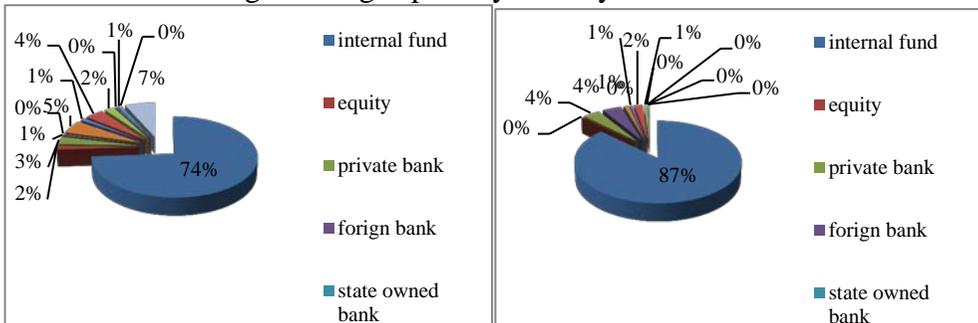

Figure 3 BEEPS 2005, Macedonia–
SME financing sources for working capital

Figure 4 BEEPS, 2005- Albania –SME
financing sources for working capital

When looking at data for Macedonia (figure 3) only we can see that the primary source remain internal funds, followed by informal sources, family loans, trade credit from suppliers, bank loan in general , equity and other sources in a small parts. Not surprisingly we see the relatively high percentage from informal sources and family loans; it's just an evidence for the informal economy in the country. However it shows as pecking order theory suggests the preference of debt over equity; internal funds to external funds.

The last chart on financing sources of working capital is the case of Albania. The numbers are interesting; SME in Albania (figure 4) are financed by internal funds mostly; than by bank borrowing and only 5% of the total of financing is financed by alternative funds. Interesting companies declared that they are not at all financed by equity. The numbers may suggest that this may be the perfect case of pecking order theory; but the numbers may be as a result of not functioning of capital markets. More detailed analysis should be

done before drawing any conclusion. Informal sources are used relatively little as a source of financing working capital.

Even for new investments the same order of financing is generated for the whole sample of countries: internal funds, bank borrowing at general, equity and then smaller percentages of other sources. Thus differentiating between financing working capital and new investments does not change the conclusion for the whole sample- numbers suggest that SME follow a pecking order financing. Now let's see how the numbers for country cases are. The general conclusion does not change for the order of financing even for new investments. What we can notice is the increasing percentage of bank borrowing and other sources compared to financing working capital. The use of informal sources decreases when financing new investment compared to working capital.
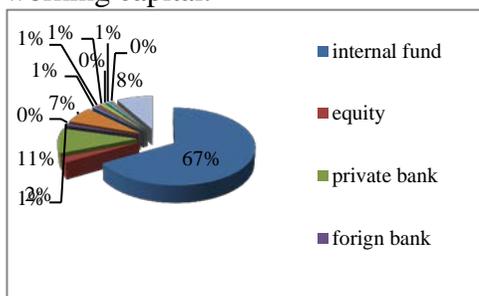

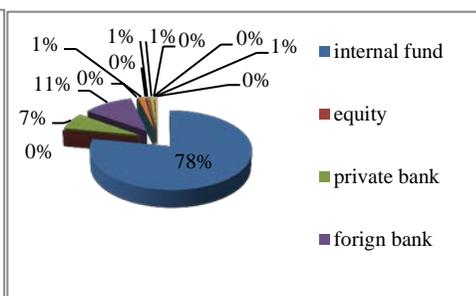Figure 5 BEEPs 2005- Macedonia, SME financing sources for new investment

Figure 6 BEEPS 2005- Albania, SME SME financing sources for new investment

In Albania case the percentage of internal funds remains high even as a source for financing new investments. What changes is the relative magnitude of foreign bank borrowings (increases) and private bank borrowing (increases less than the previous) for financing new investment compared to financing working capital. Equity is not used as a source of financing nor for new investments.

When collecting data is difficult to obtain absolute values, therefore even in the charts presented the data gains are as % of the total of financing.

Conclusion

The highlights that literature gives on the choice debt or equity are on the importance of asymmetric information (Ross 1977), agency cost (Jensen and Meckling 1978, Jensen 1986; Myers 1977). A high productivity firm would prefer to issue debt rather than equity while bankruptcy costs may lead to equity finance. Jensen and Meckling 1978 introduced the optimum combination of debt and equity to minimize agency costs. The greater the debt the greater are the agency costs. Few studies have used cross country comparisons to test the capital structure theory. Marsh and Taggart find

evidence that firms adjust target debt ratio; also Bowen et al (1982) suggest that debt converges to industry mean, Myers (1982) also concluded that companies have target debt rate. Myers 1984 introduces POT, while the preferences of firms for internal funds are described in Donaldson (1961) and Ross, Westerfield and Juffe(2005). The POT hypothesis are tested and proved valid by Taggart (1986). The theoretical model of POT is in Mayers and Majluf (1984); firms behavior is as in pecking order (Claget 1992); the theory test is in Shyam and Myers (1999); Fama and French (2002), Frank and Goyal (2003).

Asset tangibility and profitability may be used to compare which theory fits best for a sample of data. Companies with more tangible assets may have less asymmetric information. Growth opportunities are positively related to the market to book ratio; thus the higher the latter the more growth opportunities.

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