Capital Budgeting Practices:
A Survey of Central and Eastern European Firms

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Abstract

In this paper, we report the survey results from executives of companies in ten countries in Central and Eastern Europe (CEE) – Bulgaria, Croatia, Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, and Slovenia – regarding their companies' capital budgeting practices. We document interesting insights on how theoretical corporate finance concepts are applied by practitioners in CEE countries, and the significant variations in capital budgeting practices among twenty-four countries, four geographic regions, and three income groups. We also find significant variations between large and small/medium firms, and between local firms and firms dominated by multinational culture. The findings of our survey indicate that capital budgeting practices in CEE countries appear to be influenced mostly by firm size and multinational culture and to a lesser extent by insider ownership.

EFM Classification: 220

Key Words: *Capital Budgeting; Cost of Capital, Survey, Central and Eastern Europe*

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1. Introduction

Prior research examines capital budgeting practices among business firms in the U.S. and Canada (Graham and Harvey, 2001), the U.K. (Arnold and Hatzopoulos, 2000), Sweden (Sandahl and Sjögren, 2003), the U.K., the Netherlands, Germany, and France (e.g., Brounen, De Jong, and Koedijk, 2004), the Netherlands and China (Hermes, Smid, and Yao, 2007), Australia (Truong, Partington, and Peat, 2008), and the Asia-Pacific region (Kester et. al., 1999). The results of the above studies are widely cited today and have had significant impact on the theory and practice of corporate finance in the U.S., Canada, Western Europe, and the Asia-Pacific region. However, prior field studies related to the practice of corporate finance primarily focus on North American and Western European firms, and they provide little information about the capital budgeting practices in Central and Eastern European (CEE) countries.[1] In this paper, we conduct a comprehensive survey that asks business executives from a wide range of firms (small, medium, and large) in the CEE region to describe their choices related to capital budgeting analysis and decisions. In many respect, the goals of our paper are similar to the above studies.[2]

However, our study differs from previous research in several dimensions. First, we focus on capital budgeting practices among business firms in CEE countries. Second, the results of our

[1] Central and Eastern European (CEE) countries in this article are referred to as the Eastern bloc countries west of

[2] One of the well-known surveys on the practice of corporate finance was conducted by Graham and Harvey (2001). The authors received the Jensen Prize for the best corporate finance paper published in the *Journal of Financial Economics* in 2001. Other seminal survey papers include Lintner (1956) on dividend policy, Pinegar and Wilbricht (1989) on capital structure, Brounen et al. (2004) on corporate finance practice in Europe, and Graham, Harvey, and Rajgopal (2005) on corporate financial reporting.

study are likely to be different from that of previous studies because of the diversity of institutional systems, culture, and languages associated with CEE countries. Third, to the extent that the Central and Eastern European practices are less market-based than in the Western countries, they are also less observable. Thus, most of the stylized facts that have influenced corporate finance theories are possibly rooted in the U.S. and Western European empirical evidence and they do not apply entirely to the CEE region. Finally, , theories relevant for the CEE context are less developed, and there is little evidence on the theory and practice of corporate finance in CEE countries. One of the major goals of this study is to narrow the gap between theory and practice of corporate finance in the CEE region by measuring the extent to which theoretical concepts have been adopted by corporate executives. Fifth, the results of our study will be useful to both practitioners and investors as they will learn more about capital budgeting practices among business firms in CEE countries. Finally, it is our belief that survey-based research (e.g., Graham and Harvey, 2001; Graham, Harvey, and Rajgopal, 2005)[3] complements empirical research based on historical data. Therefore, we hope that the findings of our study will not only fill a gap in the corporate finance literature, but will also lead to the development of new theories and/or modification of existing ones.

Our survey focuses on capital budgeting practices among firms in CEE countries. We explore each category in depth, asking several questions. We sample a large cross-section of firms representing a wide variety of firms and industries across ten different countries in the CEE (e.g., Bulgaria, Croatia, Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia). We collected 400 responses by conducting a telephone survey, creating

[3] We recognize that empirical studies using archival data have several advantages over field studies. They offer statistical power, as well as cross-sectional and time variations. However, these studies often have weaknesses related to model specification and the inability to incorporate qualitative questions in the empirical model. While clinical studies can provide excellent detail and unique aspects of corporate behavior, they typically use small samples and thus their results are often sample-specific and can't be generalized. Survey-based studies offer a balance between large sample analyses and clinical studies. The survey approach also allows us to address issues that traditional empirical studies based on archival data sources cannot.

one of the largest survey samples in the financial literature.[4] We analyse responses conditional on three key firm characteristics: firm size, management culture, and executive ownership. We find significant variations between large and small firms within the CEE region. Survey findings suggest that corporate finance practice is influenced mostly by firm size and multinational management culture, and to a lesser extent by insider ownership. We also compare our survey results with similar field studies conducted over the last decade–e.g., Graham and Harvey (2001) for U.S. and Canada; Arnold and Hatzopoulos (2000) for the U.K.; Sandahl and Sjögren (2003) for Sweden; Brounen, De Jong, and Koedijk (2004) for the U.K., the Netherlands, Germany, and France; Hermes, Smid, and Yao (2007) for the Netherlands and China; Truong, Partington, and Peat (2008) for Australia; and Kester et al. (1999) for the Asia-Pacific region.

While the survey method allows one to ask unique questions, it is not without potential issues. Surveys measure beliefs or opinions, not necessarily actions. It is possible that some survey questions are misunderstood by respondents and thus produce noisy measurements of the variables of interest. In addition, despite making optimal decisions, corporate managers sometimes do not even understand the reason why they do what they do. Despite these weaknesses associated with survey approach, we believe that our survey provides unique information about how capital budgeting decisions are made by firms in CEE countries. We hope that researchers will use our results to develop new theories or potentially modify existing views.

This paper is organized as follows. In the next section, we describe the economic, financial, and human developments of CEE countries. In Section 3, we present the sample

[4] Following are recent field studies on corporate finance that use large-size samples. Graham, Harvey, and Puri (2010) survey more than 1000 CEOs and CFOs to understand how capital is allocated and decision-making authority is delegated within firms. Graham, Harvey, and Rajgopal (2005) survey 401 U.S. financial executives on corporate financial reporting. Brav, Graham, Harvey, and Michaely (2005) survey 384 financial executives to determine the factors that drive dividend and share repurchase decisions. Graham and Harvey (2001) survey a sample of 392 U.S. and Canadian CFOs about practice of corporate finance, the second largest published survey after the Graham, Harvey, and Rajgopal (2005) study. A survey by Brav and Lehavy (2003) on payout policy in the U.S. includes 384 respondents. Brounen, De Jong, and Koedijk (2004) survey 313 CFOs from the U.K., the Netherlands, Germany, and France about practice of corporate finance. A survey by Moore and Reichert (1983) on the use of financial management techniques includes a sample of 298 large firms from the U.S.

collection procedure and sample statistics. Section 4 offers a comprehensive overview of our survey results on capital budgeting practices in the CEE region. Section 5 presents an international comparison of capital budgeting practices among U.S., Canada, Western Europe, Australia, Asia-Pacific, and CEE countries. Finally, we offer concluding remarks in Section 6.

2. Economic, Financial, and Human Developments of CEE Countries

Emerging countries in the CEE that made the transition from communist to capitalist systems have experienced rapid changes over the last two decades. Since 1999 when these countries gradually integrated into the European Union (EU), the pace of change continues to accelerate. During the past decade, financial institutions, capital markets, and business firms in the CEE countries have undergone dramatic transformations. While finance and economic research related to CEE countries receives a great deal of attention in the literature, previous research on capital budgeting practices among CEE countries is scant. To our knowledge, this is the first field study that focuses on capital budgeting practices of business firms in CEE countries that are next to the most developed ones in terms of GDP. While we know a lot more about the theory and practice of corporate financial decision making in developed countries, we hardly know anything about it for CEE countries.

Our sample firms are drawn from ten CEE countries. Panel A in Table 1 reports selected measures of the levels of economic, financial, and human development for our sample CEE countries, and Panel B in Table 1 compares levels of economic, financial, and human development of CEE countries with that of the world, high-income countries, upper-middle income countries, China, the USA, and the European Monetary Union (EMU). The high-income countries comprise a large number of countries in the world, including 25 OECD (Organization

for Economic Co-operation and Development) member countries.[5] The upper-middle income group comprises of 46 countries after high-income ones.[6]

[INSERT TABLE 1 ABOUT HERE]

As can be seen from Panel B in Table 1, based on the gross national income (GNI) per capita[7], CEE countries immediately follow developed ones (e.g., the U.S., Canada, Japan, Australia, and Western European countries) in terms of GNI. We also observe that the GNI per capita average (weighed by populations) of the ten sample CEE countries have the following unique characteristics: (a) it is higher than the world average; (b) it is one and a half times higher than the upper middle income countries' average; (c) it is lower than half of the high-income countries' average; and (d) it is one-third of the average of European Monetary Union countries. According to the 2008 *World Bank* classification, which is based on the GNI per capita of 66 high-income countries in 2008, Slovenia was ranked 47th, Czech Republic 54th, Slovak Republic 62nd, Croatia 65th, and Hungary 66th, while Poland, Lithuania, and Latvia were the top three of upper-middle incomes. On one hand, these ten high- and middle-income countries make up the geographic region known as the Eastern European countries; on the other hand, these countries belong to Europe and the Central Asia region according to the World Bank's report. The other unique feature associated with these ten countries is that this group represents the former

[5] Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Korea Rep., Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.

[6] *Country classification table and data are available from the World Bank. The data for our paper were accessed online as of December 22, 2008.*

[7] The World Bank uses the gross national income (GNI) PPP as the main criterion for the development of a country. This term was earlier referred to as gross domestic product (GDP) PPP. The World Bank divides the 185 World Bank member countries (186) and all other economies with populations of more than 30,000 (210 total) into four groups based on its 2008 GNI PPP (calculated using the World Bank Atlas method): The groups are: low income, $975 or less; lower-middle income, $976 - $3,855; upper-middle income, $3,856 - $11,905; and high income, $11,906 or more. *(The World Bank Group, 2009.)* Using a PPP basis is arguably more useful when comparing generalized differences in living standards on the whole between nations because PPP takes into account the relative cost of living and the inflation rates of the countries, rather than using just exchange rates, which can distort the real differences in income.

communist countries. They are now new European Union member countries that have made the transition from communist to capitalist systems and subsequently joined the European Union.[8]

The data presented in Table 1 (Panel B) reveal that the average foreign direct investment (FDI) flows, as a percentage of GDP for CEE countries, is higher than that of developed countries and China. On average, the exports/imports ratio associated with CEE countries is quite high and is comparable to China and developed countries. However, the market capitalizations of listed companies are considerably lower compared to that of upper-middle income countries and China, indicating that equity markets in CEE countries are not yet well developed.

Finally, the data on the human development index presented in Panel B of Table 1 indicates that the human capital development in CEE countries, in general, is comparable to the upper-middle income countries. In summary, the unique group of ten small, open economies represents the countries immediately following the most developed ones of the world, while the same group provides an almost complete sample of former communist, new European Union countries.

3. Data and Methodology

3.1. Sample Design

The first and foremost goal of our sampling is to select a sample of firms to maximize representation and minimize firm-specific differences across ten CEE countries. Our second goal is to include an adequate number of firms representing small and medium companies because a large number of these companies (both privately and state owned) have been operating over the past two decades in the CEE region. Since the focus of our survey is the CEE region, we treat the group of ten countries as a large country; therefore, we select randomly an appropriate

[8] Table 1 (Panel A) reports the year when a member country joined the EU.

number of firms in proportion to a country's GDP purchasing power parity (PPP) data (see Table 1).[9]

The basis of our company database is the Amadeus data set of Bureau Van Dijk (revised version in 2008), the same used by Brounen et al. (2004). This dataset covers all firms in Europe. We select firms from ten CEE countries with at least 25 or more employees. Then, we drop the firms from the set with missing data that are important for the study. As a result, we lose about 10% of the total firms from the dataset. We sort the data by country and divide each country's data into five baskets, based on number of employees:

[INSERT TABLE 2 ABOUT HERE]

According to the EU Directives, firms with number of employees between 25 and 50 are classified as small firms (1st basket) and firms with number of employees between 51 and 250 are classified as medium firms (2nd basket). The remaining firms with more than 250 employees are classified as large firms. In order to get more realistic sample we stratify the 'large' subpopulation proportionally by the number of employees into three equal groups, and we assign the same expected response number for each group. . Thus, firms with number of employees between 251 and 375 belong to the 3rd basket, large firms with number of employees between 376 to 650 belong to the 4th, and large firms with number of employees over 650 are put into the 5th basket. According to EU Directives, while the primary criterion for the classification of a company being 'small,' 'medium,' or 'large' is based on the number of employees the firm has, the two secondary criteria are total assets and sales revenue. Therefore, we examine companies' total assets and sales revenue for all five baskets to identify outliers; we drop the firms that do not meet all three requirements. Approximately 15% of the total firms are dropped from the population due to missing data and omission of outliers. Finally, the number of firms left in each basket is at least ten times larger than the expected response numbers (see Table 2).

[9] Among GDP indexes, the PPP-adjusted GDP index seems to represent the region best. PPP GDP reflects the economic differences among CEE countries because a typical country in this region is a middle-income country as shown in Panel B of Table 1.

3.2 Delivery and Response

Similar to the survey of Graham and Harvey (2001), we prepare our questionnaire in English and then have it translated into ten languages. While translating the questionnaire, we face several challenges. First, while business managers from CEE countries could be familiar with modern corporate finance literature in their local language, they may not be familiar with the terminology of modern finance in English. Second, business managers working in CEE countries may use special words in their local language as an equivalent to a given English term. Third, there have been large gaps between the newly developed academic terminologies and everyday slang used by local managers in these countries. To overcome such challenges associated with the translation of the English questionnaire, we conduct a phone survey in the respondents' native languages instead of conducting mail surveys. Oral interviews provide opportunities to interact with respondents and help in understanding the special meaning and terminology associated with corporate finance theory and practice.

Interviews are carried out on the phone with the assistance of a multinational polling company that has a professional call center. Operators are native speakers of the languages and are trained with regard to corporate finance aspects of the survey by the authors of this study. For example, prior to phone interviews, each caller had to take part in a special professional course presented by authors of this paper. In addition, we seek assistance from faculty members of finance departments at different universities from several CEE countries. Native operators are allowed to make some changes to the translation after the first few interviews.

After the initial experience with the phone survey, the number of expected responses for each basket was determined in advance. The call center is then programmed in such a way that several companies are randomly dialed from each basket until the expected number of responses is obtained. Our goal is to collect 400 usable responses that represent small, medium, and large firms from each of the ten CEE countries. We prescribe 10% of the total responses from the first basket, 15% from the second basket, and 25% from each of the third, fourth, and fifth baskets

from each country. Consistent with our goal, we divide the whole population of firms into three subpopulations by the number of employees: 'small' (25-50), 'medium' (51-250), and 'large' (251+). We decided on the expected response proportions from all the three subpopulations in advance: 10% for 'small firms,' 15% for 'medium firms,' and 75% for 'large firms' for each country (25%-25%-25% for each group of the 'large firms' subpopulation). Table 2 reports the population and expected number of responses from each of the five baskets for each country. The last row in Table 2 shows the number of respondent firms from each of the ten countries. For example, the largest number of firms represented in our sample is drawn from Poland (143 firms), while the smallest number of firms is drawn from Latvia (9 firms).

Computing the response rate of our phone interview survey is not simple because the "total number of firms contacted" may not be well defined. If we take into account only those cases where the operator can reach the 'target person' (the CFO or a responsible manager who makes capital budgeting decisions at the firm), then 'response rate' is quite high: about 30-40% based on the report obtained from the callers. However, our overall response rate is about 10% if we account for the number of firms contacted by our operators because each call is counted as being contacted.

While our paper focuses on questions and responses related to capital budgeting practices in CEE countries, the whole survey includes questions concerning each firm's goals and the perception of their importance by stakeholders, influence of foreign management culture, executive ownership, types of financing, capital structure, and codes of ethics (see the survey questionnaire at http://www.finance.bme.hu/research/CEE_Survey_EN-HU.pdf). In addition, the Amadeus dataset of Bureau Van Dijk mentioned above contains statistical data related to firm size in terms of number of employees, sales revenue, and phone numbers we used for the telephone survey.

4. Survey Results

4.1 Firm Statistics

Figure 1 presents summary information about our sample firms (total of 400 firms), which are obtained from ten CEE countries. Figure 1A shows the distribution of sample firms by country. The highest percentage of firms (% of the sample firms) is drawn from Poland with the largest GDP, and the lowest percentage of firms (% of the sample firms) is drawn from Latvia with the smallest GDP. Our sample firms represent a wide variety of small and medium firms (25% of the sample firms have less than or equal to 250 employees) to large firms (75% of the sample firms have at least 251 employees. see Figure 1B).

We analyse how a firm's size affects corporate finance practices in CEE countries. We ask respondents whether foreign culture dominates corporate finance practices in addition to the local culture. Figure 1C shows the distribution of foreign culture that dominates corporate financial management decisions. Among all multinational cultures that influence the practice of corporate finance among CEE countries, the German culture (17% of sample firms) has been the most dominant and the Dutch culture (less than 1% of all sample firms) and other cultures outside the EU (less than 1%) have been the least dominant (see Figure 1C). Figure 1D shows the percent of respondents who say that foreign culture dominates the corporate finance practices of their firms 59 %of all sample firms), as well as the percent of respondents who do not identify any foreign culture as dominating the corporate finance practices of their firms (41% of all sample firms). Figure 1E reports the distribution of executive stock ownership. The survey responses also reveal that the top three executives own at least 5% of the common stocks of their firms in approximately 18% of the sample firms (see Figure 1E). We refer to firms with executive stock ownership greater than 10% as 'high insider ownership'. Figure 1F indicates that only 14% of sample firms have high executive stock ownership. These characteristics help us analyse whether managerial incentives affect capital budgeting practices in CEE countries.

[INSERT FIGURE 1 ABOUT HERE]

4.2 Importance of Goals for Firms

Prior studies (e.g., Chew, 1997; La Porta *et al.,* 1998) show that the power of shareholders varies significantly across countries depending on the development of capital markets, institutional settings, and legal systems.[10] Because of significant differences in capital markets and institutional settings between Western European and CEE countries (e.g., Rajan and Zingales, 2003), we include a question on the importance of goals to the firm. We also ask our respondents how important goals for their firms are on a scale of 1 to 4 (1 being "not important" and 4 being "very important"). The survey responses reported in Table 3 and the results summarized in Figure 2 show that long-term survival of the firm is by far the most important goal for a typical firm in the CEE region: 95% of respondents (381 responses) indicate that the stability of performance is very important or important for the firm. The second and third most important goals are liquidity goals (94%) and maximizing growth in sales (89%). The two least popular goals for firms operating in the CEE region are the maximization of dividends and maximization of shareholders' wealth. Results summarized in Figure 2 indicate that 71% of respondents support the goal of maximization of dividends, while 82% of respondents support the goal of maximization of market value of equity. These findings differ substantially from Brounen, De Jong, and Koedijk (2004). Their study finds that the maximization of accounting profit is the most important goal for Western European firms, followed by sustainable growth and maximization of market share.

[INSERT TABLE 3 ABOUT HERE]

[INSERT FIGURE 2 ABOUT HERE]

4.3 Importance of Sources of Long-term Funds

[10] Comparing the U.S. with Europe, La Porta *et al.* (1997, 1998) find that the difference between the two legal systems encompassing both continents is significant. Rajan and Zingales (2003) emphasize the continental differences by comparing the financial systems: the institution-heavy relationship-based financial system is more prevalent in Europe, and the market-intensive arms' length financial system is more prevalent in the United States. Chew (1997) shows how the Anglo-Saxon, marked-based corporate governance system differs significantly from the relation-based system, which is most widespread in Europe.

La Porta *et al.* (1997) find that sources of long-term funds needed to finance investment projects vary significantly across countries depending on the level of development of a country's capital markets, financial institutions, and legal systems. We ask our respondents how important the sources of long-term funds are in financing new investments on a scale of 1 to 4 (1 meaning "least important" and 4 meaning "very important"). The survey responses reported in Table 4 show that the most preferred source of funds used to finance a new investment is the retained earnings (internal source of funds) followed by straight debt. The least important source of funds used to finance long-term projects is the choice of convertible bonds followed by external common equity. The results summarized in Figure 3 indicate that 73% of respondents prefer retained earnings as the primary source of long-term funds to finance new investments. The second and third most important sources of long-term funds are the sale of assets (restructuring of assets) and external common equity. The least desirable source of long-term funds is the convertible bond. Only 13% of respondents indicate that they prefer convertible bonds as the most preferred source of long-term funds to finance investment projects.

[INSERT TABLE 4 ABOUT HERE]

[INSERT FIGURE 3 ABOUT HERE]

4.4 Capital Budgeting Practices

To study capital budgeting practices in CEE countries, we ask respondents whether they conduct any formal capital budgeting analysis. Next, we ask whether they use any kind of discounted cash flow (DCF) techniques such as net present value (NPV), internal rate of return (IRR), or profitability index. In addition, similar to Graham and Harvey (2001) and Brounen, De Jong, and Koedijk (2004), we ask respondents whether they use a variety of other capital budgeting techniques, like simple payback period and accounting-based index (e.g., return on assets, return on investment capital, etc.), as well as more advanced methods like sensitive analysis and real option analysis. We also ask respondents to specify the minimum amount over

which they make a written investment analysis and approximately how many projects are evaluated using quantitative analysis over a one-year period. We ask whether firms use a given value of cost of capital for all projects or if they use a different cost of capital for different projects. We then ask what kind of method (e.g., WACC, CAPM, etc.) they use to calculate the discount rate for the company or project. Finally, we ask respondents whether it is possible that a project is supported or rejected due to variety of reasons such as lack of financial resources, strategic considerations, ethical issues, or lack of trust in the data and analyses.

Figure 4 presents an overview of our survey results on capital budgeting practices in CEE countries based on a total of 400 responses. The summary of the results in Figure 4 indicates that 83% of respondents conduct formal capital budgeting analyses, and only 61% of respondents who conduct formal capital budgeting analyses frequently use DCF-based capital budgeting techniques such as NPV and IRR analyses. It is surprising to note that the other 39%
of respondents who make formal capital budgeting analyses do not (or rarely) use DCF-based analysis. The summary results reported in Figure 4 indicate that among the respondents who use DCF-based analysis, 87% of them always use a payback period technique, while 78% always use an accounting-based technique that does not utilize DCF analysis. On the other hand, of the 130 sample firms that do not use DCF-based analysis, 68% say they always use a payback period technique, while 62% say they always use an accounting-based technique. The relative popularity of the payback period in Central and Eastern Europe is surprising because financial textbooks have discussed the shortcomings of the payback criterion for many decades. As is well known, the payback ignores the time value of money and cash flows beyond the cut-off date. In a way, it is not unexpected to find that the payback measure is still so dominating in CEE firms because the payback approach is related to liquidity, which is among the most important goals for a firm as indicated in this survey.

[INSERT FIGURE 4 ABOUT HERE]

The survey results indicate that 58% of respondents conduct formal capital budgeting analyses also for small projects (project outlay less than one million euro) and only 16% say they make formal capital budgeting analyses only for large projects (project outlay of at least one million euro or more). Of the 130 sample firms that do not use DCF-based techniques, 62% of them make capital budgeting analyses also for small projects (less than one million) and only 10% of them make capital budgeting analyses only for large projects (at least one million euro or more). Of the 203 sample firms that frequently use DCF-based techniques, 76% say they analyse fewer than 50 projects per year, while 7% say they analyse at least 150 projects or more per year. Interestingly, the above results are similar to the sample firms that do not use DCF-based techniques.

This section investigates the ways in which the cost of capital is derived and applied, as well. The first question we ask on the cost of capital is whether respondents use only one given value of cost of capital for all projects for a given firm or whether they use a different value for each project.

Theoretically speaking, it makes sense because different projects have varying degrees of risk. Therefore, it is appropriate to use different values of cost of capital for different projects within the same firm. Summary results presented in Figure 4 indicate that of the 203 sample firms that frequently use DCF-based techniques, 31% say they use one given value of cost capital for all projects, while to our surprise, 69% say they use different values for each project. We then focus on firms that responded positively (167 responses) by asking them how they calculate the discount rate for the firm or project. We specifically ask whether firms use a general discount rate instead of calculating directly, use the Weighted Average Cost of Capital (WACC) or the Capital Asset Pricing Model (CAPM), or use other practices that are not consistent. Of the firms that use only one discount rate for the firm (52 responses), only 28% say they calculate the discount rate for the firm. Among the firms that calculate only one discount rate, 77% say they use the WACC method, while 23% say they use the CAPM method. In

contrast, of the firms that use different discount rates for different projects, only 44% say they calculate the discount rate. Among those that calculate different discount rates for different projects (115 responses), 92% say they use the WACC method and the rest use the CAPM method. Thus, the most preferred method to estimate the cost of capital is the WACC method. One of the explanations for the lack of use of the CAPM method is that most of our sample firms in CEE countries are private and not publicly traded; therefore, it is not easy to compute either the equity beta of the firm or the beta of the project.

In the following section, we examine whether the executives' responses related to the practice of formal capital budgeting analysis and the use of DCF-based analysis differ across firm size, management culture, and executive ownership. These results shed light on corporate finance practices among business firms in CEE countries and may have implications on various corporate finance theories.

Survey responses indicate that large firms are more likely (86%) to conduct formal capital budgeting analysis (see Panel A in Table 5) than small-medium firms (75%). Large firms are also more likely (53%) to use sophisticated capital budgeting techniques, such as NPV and IRR (see Panel B of Table 5) than small-medium firms (45%). We believe that a large company is more likely to have the necessary resources to conduct a formal capital budgeting process using sophisticated capital budgeting techniques than small-medium firms. Both Pike (1996) and Sangster (1993) find a correlation between size and the use of sophisticated methods in U.K. firms. The same seems to be the case for U.S. firms (Graham and Harvey, 2001).

The survey responses also show that firms dominated by multinational culture are more likely to make formal capital budgeting analyses (see Panel A of Table 5) and use DCF-based methods (see Panel B of Table 5) than small-medium firms, which are likely to be dominated by local culture. We also believe that companies influenced by multinational culture move towards a more international arena. Therefore, large and multinational firms endowed with managerial

talent and financial resources are more likely to use DCF methods, such as NPV and IRR techniques, to emphasize value-based management models.

Furthermore, we observe that firms with high executive ownership (see Panel A of Table 5) are less likely to conduct formal capital budgeting analyses or use DCF-based techniques (see Panel B of Table 5) compared to firms with low executive ownership. As indicated earlier, only 14% of our sample firms have high executive ownership. Thus, it is likely that firms with high executive ownership tend to be small or medium and are dominated by local culture. Therefore, those firms often lack necessary skills, training, and resources to conduct formal capital budgeting analyses or use sophisticated DCF-based techniques.

[INSERT TABLE 5 ABOUT HERE]

Next, we examine whether the use of specific capital budgeting techniques differs across firm size, management culture, and executive ownership. The use of payback period technique seems to be popular among CEE firms regardless of their size, management culture, and level of executive ownership in the firm (see Panel A of Table 6). Survey responses presented in Table 6 (Panel A) indicate that large firms with multinational culture and low executive ownership are more likely to use payback periods than those firms that are small or medium with high executive ownership and local culture. Similarly, large firms dominated by multinational culture with low executive ownership are more likely to use some kind of accounting-based index or rate than those that are small or medium with high executive ownership and are influenced by local management culture (see Panel B of Table 6). Survey results reported in Table 6 (Panel C and Panel D) also indicate that large multinational firms are more likely to use sophisticated capital budgeting techniques, such as sensitivity analysis and real option analysis, than small or medium firms that are likely to be influenced by local management culture. Again, this is not surprising because large multinational firms do have managerial talents and resources to conduct formal capital budgeting analyses using sophisticated capital budgeting techniques.

[INSERT TABLE 6 ABOUT HERE]

Survey results presented in Table 7 (Panel A) show that the responses to the minimum amount of capital outlay over which firms make written investment analysis, either using DCF-based methods or not, generally differ across firm size, management culture, and ownership. Similarly, results presented in Table 7 (Panel B) show that the responses to the minimum amount of capital outlay over which firms make written investment analysis, without using any kind of DCF method, also varies across firm size, management culture, and ownership.

[INSERT TABLE 7 ABOUT HERE]

Similarly, the results reported in Table 8 (Panels A and B) indicate that survey responses to the number of capital budgets being formally evaluated by firms differ significantly across firm size, management culture, and ownership regardless of whether firms use DCF-based analysis.

[INSERT TABLE 8 ABOUT HERE]

We continue our analysis by focusing on the firms that formally use DCF-based analyses. We examine whether the executives' responses related to the use of the given cost of capital (discount rate) vary across firm size, management culture, and executive ownership. The survey responses presented in Table 9 reveal a wide cross-sectional variation. For example, small and medium firms are more likely to use one discount rate (49%) for the firm than large firms (27%). On the other hand, survey results reported in column (4) of Table 9 suggest that large firms are more likely to use different values of cost capital for different projects (73%) than small and medium firms (51%). It is likely that large firms are more diversified and undertake different types of projects with varying degrees of risk compared to small-medium firms. Therefore, large firms are more likely to use a different cost of capital for different projects than small-medium firms. We also find that firms with low executive ownership tend to be large and are more likely to use different discount rates for different projects (70%) than small-medium firms with high ownership (53%).

[INSERT TABLE 9 ABOUT HERE]

We further explore whether the use and methods of estimating cost of capital (e.g., WACC and CAPM) differ across firm size, management culture, and executive ownership. The survey results reported in Table 10 (Panel A) indicate that the use and methods of cost capital estimation vary significantly across firm size, management culture, and executive ownership. The survey responses indicate that most firms do not calculate directly the cost of capital for the firm; they tend to use a general discount rate instead. For example, 80% of small-medium firms and 64% of large firms use a general discount rate instead of estimating the cost of capital for the firm. The second most popular method used to calculate the cost of capital is WACC followed by CAPM. The results based on cross-sectional analysis reported in Table 10 (Panel A) indicate that only 9% of large firms and 7% of firms dominated by multinational culture use CAPM, while none of the small-medium firms in our sample use CAPM. This result is not surprising because most of the firms in our sample are not publicly traded companies so equity betas are not available. In contrast, Brounen, De Jong, and Koedijk (2004) find that the CAPM is the most popular method used for estimating the cost of equity capital in Western Europe.

We continue our analysis by focusing on the sample firms that formally use a DCF-based analysis and different discount rates for different projects. We examine whether the executives' responses related to different discount rates for different projects differ across firm size, management culture, and executive ownership. The survey responses related to the use of different costs of capital for different projects (see Panel B of Table 10) do not seem to exhibit wide cross-sectional variations across firm size, management culture, and executive ownership.

Finally, our survey reveals that a project can be rejected by top management despite being supported by either a DCF analysis or formal written analysis. There are several reasons why a project is rejected, including lack of financial resources, strategic considerations, ethical (moral) reasons, distrust for analysts, unreliable data used by analysts, lack of availability of appropriate indices, or expected rates of return for CEE countries. Survey results reported in

Table 11 (Panel A) show that a project can be rejected despite being supported by the DCF-based analysis. However, these results don't significantly differ across firm size, management culture, and executive ownership. Figure 5 indicates that the most popular reason, why a project is not approved, is that senior management does not trust those making the capital budgeting analyses or the data used by the analysts. The second most popular reason for disapproval of a project despite being supported by data is due to ethical or moral reasons.

Survey results reported in Table 11 (Panel B) show that 58% of respondents who make investment decisions without using any kind of DCF analysis say that a project can also be rejected despite being supported by formal written analysis. The results don't seem to vary across firm size or culture. Figure 6 displays several reasons why a project may not be approved by top management. The two most popular reasons for rejecting a project are ethical (moral) reasons and a lack of trust in the data used by analysts.

5. Capital Budgeting Practices: An International Comparison

Prior studies emphasize the differences among institutional settings when comparing the capital budgeting practices among firms in the U.S. and Western Europe. These studies claim that institutional settings can lead to an international variation in practices of corporate finance. In this section, we examine capital budgeting practices of firms in CEE countries and compare them with the previous findings of Graham and Harvey (2001) for U.S. and Canadian firms; Brounen et al. (2004) and Arnold and Hatzopoulos (2000) for U.K. firms; Brounen et al. (2004) and Hermes et al. (2007) for firms in the Netherlands; Brounen et al. (2004) for firms in Germany and France; Sandahl and Sjögren (2003) for Swedish firms; Hermes et al. (2007) for Chinese firms; Truong et al. (2008) for Australian firms; and Kester et al. (1999) for firms in Asia-Pacific countries (e.g., Hong Kong, Indonesia, Malaysia, Philippines, and Singapore). We encounter two problems when comparing the previous survey results with ours. First, some of the previous studies (e.g., Sandahl and Sjögren, 2003; Hermes et al., 2007) survey the 'use' of a

given capital budgeting technique (e.g., NPV or IRR) on a 0-4 scale (e.g., never, rare, sometimes, and often), while other studies (e.g., Graham and Harvey, 2001; Brounen et al., 2004; and this survey) ask 'how frequently' firms use a given capital budgeting technique (never, sometimes, almost always, always). Following Graham and Harvey (2001) and Brounen et al. (2004), we focus on survey results where the 'frequently used' ('almost always and always') question is surveyed. For the purpose of international comparison, we adjust previous survey results that ask about the use of a particular technique on a 0-4 scale and provide mean values.[11] Our goal is to generate a consistent set of results from these studies so that we can draw an international comparison on the use of capital budgeting methods among various countries, geographic regions, and income groups. The second problem we encounter is the use of NPV, IRR, and the DCF method. It is very likely that a firm using a DCF method uses NPV, IRR, or both. Since one of the goals of our survey is to investigate whether there is any gap between the capital budgeting theory and its practice, it is logical to examine the use of DCF analysis. For example, if a study presents the use of NPV and IRR separately, we can't conclude about the overall use of DCF analysis (NPV or IRR method). Further, we are interested in learning whether firms frequently use ('almost always or always') any DCF method. Similar to Graham and Harvey (2001) and Brounen et al. (2004), we ask respondents whether they 'almost always' or 'always' use any DCF method. While we have consistent survey results for the U.S., the Netherlands, Germany, France, and the U.K., we had to adjust previous survey results that used NPV or IRR instead of the use of any DCF method.[12] Together with our 400 usable responses,

[11] Fortunately, the surveys that provide mean values and frequency of responses for "3" or "4" ('almost always and always'), we find that the means of the survey results on a 0-4 scale and the frequency of responses for "3" or " 4" are highly correlated (Corr =0.98). Accordingly, we are able to adjust responses to reflect how frequently ("almost always or always) firms use a particular technique.

[12] Fortunately, we find high correlation (0.99) and R-square (.99) between the 'frequent use of DCF' and the 'sum of the mean of NPV and the mean of IRR' from previous survey results.

we gather 1,720 usable survey responses for 24 countries and report survey evidence on capital budgeting practices.

Table 12 (Panel A) presents comprehensive survey results on capital budgeting techniques such as DCF, NPV, IRR, accounting-based (AB), and payback (PB) methods that are used by corporate managers in 10 different CEE countries and compare them with that of 14 other countries including the U.S., Canada, Australia, and Western European and Asia-Pacific countries. We also present survey evidence comparing capital budgeting practices across four geographic regions and three income groups (see Table 12, Panel B).

Survey evidence presented in Table 12 (Panel A) indicates that firms in the Netherlands, Australia, Indonesia , Philippines, U.S., Canada, China, and Malaysia use the DCF method (NPV, IRR, or both) as their most frequently used capital budgeting technique with response rates of 100%, 100%, 100%, 98%, 97%, 92%, and 89%, respectively. In contrast, when looking at firms in the U.K., Germany, and France, we find that although the DCF method is still the most frequently used tool, the response rates drop to 82%, 60%, and 55%. On the other hand, Hong Kong, Sweden, and Central and Eastern European countries indicate the use of the DCF method as their second most popular tool, next to the payback method, with response rates of 80%, 78%, and 51%, respectively. Survey results on the use of NPV method across countries reveal that the NPV method is more popular among Dutch, Australian, and U.S. and Canadian firms with response rates of 89%, 89%, and 75% than among firms in China, Germany, and France with response rates of 49%, 48%, and 35%. Similarly, survey results on the use of the IRR method across countries show that the use of the IRR technique is widely popular among firms in China, Philippines, and Australia with response rates of 89%, 87%, and 79%, while it is the least popular technique among Swedish, German, and French firms with response rates of 23%, 42%, and 44%.

Survey results on the use of the payback (PB) method reported in Table 12 (Panel A) show that the PB method is most popular among firms in China, Poland, and Hong Kong with

response rates of 84%, 81%, and 80%, respectively, and it is the least popular among German, French, Latvian, and Bulgarian firms (response rates of 50%, 51%, 33%, and 40%). While firms in CEE countries indicate an accounting-based (AB) method as the most frequently used capital budgeting technique with response rates ranging from 30% (Bulgaria) to 77% (Slovenia), firms in the Netherlands, Indonesia, and the U.S. and Canada indicate that the AB method is their most frequently used capital budgeting technique with response rates 2%, 17%, and 20%.

Survey results reported in Table 12 (Panel B) indicate that capital budgeting practices vary across geographic regions as well as income groups. The results show that DCF analysis is more popular among firms in North America and the Asia-Pacific region than among firms in Western Europe or Central Eastern Europe. The use of the NPV method is more popular among firms in North America than among firms in Western Europe or the Asia Pacific region. The use of the IRR and PB methods are most popular among firms in the Asia-Pacific region. Both the NPV and IRR methods are least popular among firms in Western Europe. While the use of the PB method is most popular among firms in Asia and the Pacific region, the use of an accounting based (AB) method is popular among firms in the CEE region.

Survey results comparing the use of capital budgeting techniques across three income groups are reported in Table 12 (Panel B). While the use of DCF analysis seems to be more popular among firms in lower-middle income countries, our results are influenced by the most frequent use of IRR methods used by firms in lower-middle income countries. The use of the NPV method is most popular among U.S. and Canadian firms, confirming the practice of value-based management by North American firms. It is surprising to note that the use of the PB method is most popular among firms in lower-middle income countries, while the use of an accounting-based capital budgeting method is least popular among firms in the same income group.

6. Conclusions

In this paper we provide survey evidence on capital budgeting practices in ten Central and Eastern European countries (e.g., Bulgaria, Croatia, Czech Republic, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, and Slovenia).

We observe a remarkable pattern with respect to corporate governance. For example, while firms in the U.S. and Canada (e.g., Graham and Harvey, 2001) and in the U.K. and the Netherlands (Brounen et al., 2004) are focused on maximizing their shareholders' wealth, CEE firms emphasize the importance of liquidity and stability of cash flows. Regarding the source of long-term funds needed to finance new projects in CEE countries, we find that the most preferred source of funds is retained earnings (internal source of funds) followed by straight debt. About 17% of our sample firms do not conduct formal written capital budgeting analyses; and surprisingly, only about 61% of the firms that make formal capital budgeting analyses say they use any kind of DCF-based capital budgeting technique such as NPV and IRR methods. With respect to capital budgeting techniques, similar to the findings of Brounen et al. (2004) for Western European firms, we discover a strong preference for the payback (PB) method among our CEE sample firms.

Furthermore, our survey evidence indicates that corporate finance practice is influenced mostly by firm size and multinational management culture, and to a lesser extent by insider ownership. Large companies and multinational firms are more likely to use DCF analysis, such as NPV and IRR methods, as well as more sophisticated techniques such as sensitivity and real option analyses than small-medium firms. The same is true for estimation of the cost of capital for different projects and the use of CAPM as a method of estimating the cost of equity. Large firms as well as multinational firms are likely to have the skilled manpower and the knowledge and procedures needed to make formal capital budgeting analyses using DCF and other sophisticated techniques.

Finally, we compare capital budgeting practices across 24 countries, four geographic, regions, and three income groups and find significant variations in these practices across

countries, geographic regions, and income groups. There are several reasons why CEE corporate finance practices differ from the practices in the U.S., Canada, and Western European and Asia-Pacific countries. First, the differences in practice of corporate finance in CEE countries may be attributed to diversity of institutional systems and languages, influence of multinational companies' culture, and the level of economic, financial, and human capital developments in these countries. Second, to the extent that Central and Eastern European practices are less market-based than in the U.S., Canada, and Western European countries, they are less observable. Third, most of the stylized facts that have informed corporate finance theory are perhaps rooted in the U.S. or Western European empirical evidence. Thus, corporate finance theories relevant to Central and Eastern Europe are less developed, and in turn CEE practices of corporate finance perhaps benefit little from the existing literature. We hope our findings will fill a gap in the corporate finance literature and lead to the development of new theories or modifications of existing ones. We also believe that further research is needed to increase our understanding of the theory and practice of corporate finance in Central and Eastern European countries.

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Table 1

Panel A: Selected Measures of Levels of Economic, Financial, and Human Development for CEE Countries

Country	Bulgaria	Croatia	Czech Republic	Hungary	Latvia	Lithuania	Poland	Romania	Slovak Republic	Slovenia	Total / Average[6]
Year Joining the EU	2007	2008	2004	2004	2004	2004	2004	2007	2004	2004	
Population, 2007 (million)	7.6	4.4	10.3	10.1	2.3	3.4	38.1	21.6	5.4	2	105.2
Economic Development											
GDP, 2007 (bil. USD)[1]	40	51	168	138	27	38	420	166	75	45	1,168
GNI, 2007 (bil. USD)[1]	35	46	149	116	23	34	375	133	63	42	1,016
PPP GDP, 2007 (bil. USD)[1]	86	69	240	188	40	60	602	246	109	55	1,695
GNI Per Capita, 2007 (bil. USD)1	4,590	10,460	14,450	11,570	9,930	9,920	9,840	6,150	11,730	20,960	10,960
GNI Per Capita PPP, 2007	11,180	15,050	22,020	17,210	16,890	17,180	15,330	10,980	19,340	26,640	17,182
Financial Development											
Foreign Direct Investment,2006 (Net Inflows (% of GDP)[1, 3]	16.5	7.9	4.2	5.4	8.5	6	5.7	9.4	7.6	1.7	6.4
Exports/Imports of Goods and Services, 2006 (% of GDP)[1]	64/83	48/57	76/73	78/77	44/64	60/70	41/41	34/45	86/90	69/70	60/67
Market Capitalization of Listed Companies, 2006 (% of GDP)[1, 4]	55.8	67.6	34	37.1	13.4	34.2	44	27	10.1	40.7	34.1
Human Development											
Index 2, 5	0.82	0.85	0.89	0.87	0.86	0.86	0.87	0.81	0.86	0.92	0.86

Table 1 (Contd.)

Panel B: Selected Measures of Levels of Economic, Financial, and Human Development for Developed Countries and China and their Comparison with CEE Countries

Country	*World*	*High Income Countries*	*Upper-Middle Income Countries*	*China*	*USA*	*EMU*[7]	*Total / Average*[6]
Population, 2007 (million)	6,612	1,056	823	1,320	302	319	**105.2**
Economic Development							
GDP, 2007 (billion USD)[1]	54,347	40,197	6,450	3,280	13,811	12,179	**1,168**
GNI, 2007 (billion USD)[1]	52,621	39,682	5,750	3,120	13,886	11,578	**1,016**
PPP GDP, 2007 (billion USD)[1]	65,435	38,045	9,969	7,055	13,811	10,283	**1,695**
GNI Per Capita, 2007 (billions of USD)[1]	7,960	37,570	6,990	2,360	46,040	36,330	**10,960**
GNI Per Capita PPP, 2007	9,850	36,100	11,870	5,370	45,850	32,510	**17,182**
Financial Development							
Foreign Direct Investment, 2006 (Net Inflows (% of GDP)[1, 3]	2.9	2.7	3.5	3	1.4	3.8	**6.4**
Exports/Imports of Goods and Services, 2006 (% of GDP)[1]	27/27	26/26	33/30	40/32	16-Nov	40/39	**60/67**
Market Capitalization of Listed Companies, 2006 (5 of GDP)[1, 4]	113.9	126.1	74	91.7	147.6	81.2	**34.1**
Human Development							
Index[2, 5]	0.74	0.94	0.86	0.78	0.95	0.94	**0.86**

Table 1 (Contd.)

1. Source: “Data & Research / Key Development Data & Statistics”; World Bank, 2008. (http://web.worldbank.org).
2. Source: Human Development Report 2007/2008”, Human Development Report Office, New York, http://hdr.undp.org/en/.
3. Foreign direct investment, net inflows are investments to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor. They are the sum of inflows of equity capital, reinvestment of earnings, other long-term capital, and short-term capital in the reporting country as shown in the balance of payments.
4. Market capitalization of listed companies (% of GDP) is the share price times the number of shares outstanding. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of 2007. Listed companies do not include investment companies, mutual funds, or other collective investment vehicles.
5. The HDI – human development index – is a summary composite index that measures a country's average achievements in three basic aspects of human development: health, knowledge, and a decent standard of living. Health is measured by life expectancy at birth; knowledge is measured by a combination of the adult literacy rate and the combined primary, secondary, and tertiary gross enrolment ratio; and standard of living by GDP per capita (PPP US$). http://hdrstats.undp.org/indicators/1.html
6. Weighed by population.
7. EMU is the 12 participating member countries of the European Monetary Union (EMU): Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, and Spain.

Table 2

Design and Selection of Sample Firms from CEE Countries

Country	Bulgaria	Croatia	Czech Republic	Hungary	Latvia	Lithuania	Poland	Romania	Slovakia	Slovenia	Total
Number of Firms in the Used Dataset	4,434	3,676	13,467	2,682	2,359	3,533	16,055	18,547	3,242	1,918	
1st Population (25-50 Employees)	1,706	1,380	5,174	968	794	1,242	3,720	8,864	888	663	
Responses from the 1st Population	2	2	6	4	1	1	14	6	3	1	40
2nd Population (51-250 Employees)	1,720	1,840	6,760	1,252	1,294	1,979	9,034	8,174	1,888	949	
Responses from the 2nd Population	3	2	8	7	2	2	21	9	4	2	60
3rd Population (Employees 251 to)	334 (-375)	152 (-336)	511 (-374)	156 (-375)	91 (-370)	104 (-319)	1101 (-320)	503 (-350)	155 (-375)	102 (-335)	
4th Population (Employees from – to)	339 (376-650)	152 (337-535)	511 (375-749)	155 (376-650)	91 (371-499)	104 (320-500)	1100 (321-582)	503 (351-595)	156 (376-450)	102 (336-580)	
5th Population (Employees from -)	335 (651-)	152 (536-)	511 (750-)	151 (651-)	90 (500-)	104 (501-)	1100 (583-)	503 (596-)	155 (751-)	102 (581-)	
Responses from the 3rd, 4th, and 5th Population	38,477	38,081	15-14-14	41,225	37,289	38,050	36-36-36	14-14-14	38,874	37,714	300
Total Responses	20	16	57	46	9	14	143	57	25	13	400

Figure 1. Sample Characteristics Based on Survey Responses of 400 Firms

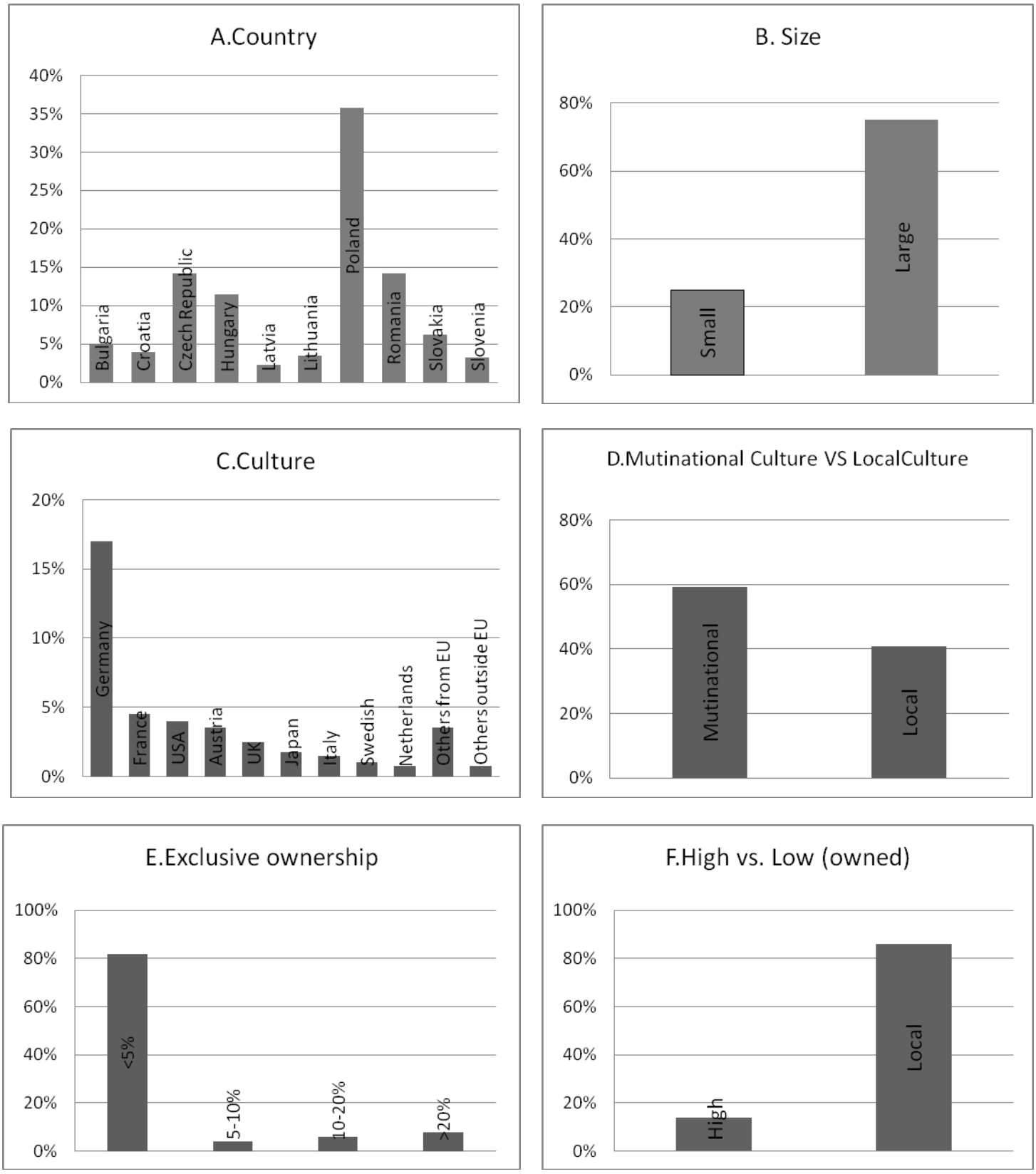

Table 3

Survey Responses: How important are the following goals for your firm?
Not important – (1), (2), (3), (4) – Very Important

Goals for Firms	1	2	3	4	Don't Know	Didn't Answer	Total
1) Maximize accounting profits	16	41	123	218	1	1	**400**
2) Maximize dividends	76	98	107	107	8	4	**400**
3) Maximize market value of equity	26	37	99	229	6	3	**400**
4) Maximize growth in sales	6	31	86	271	4	2	**400**
5) Stability of performance (production and operation)	3	12	76	305	3	1	**400**
6) Maximize growth of assets	22	76	198	96	6	2	**400**
7) Optimize solvability, liquidity	5	16	81	294	2	2	**400**

Figure 2

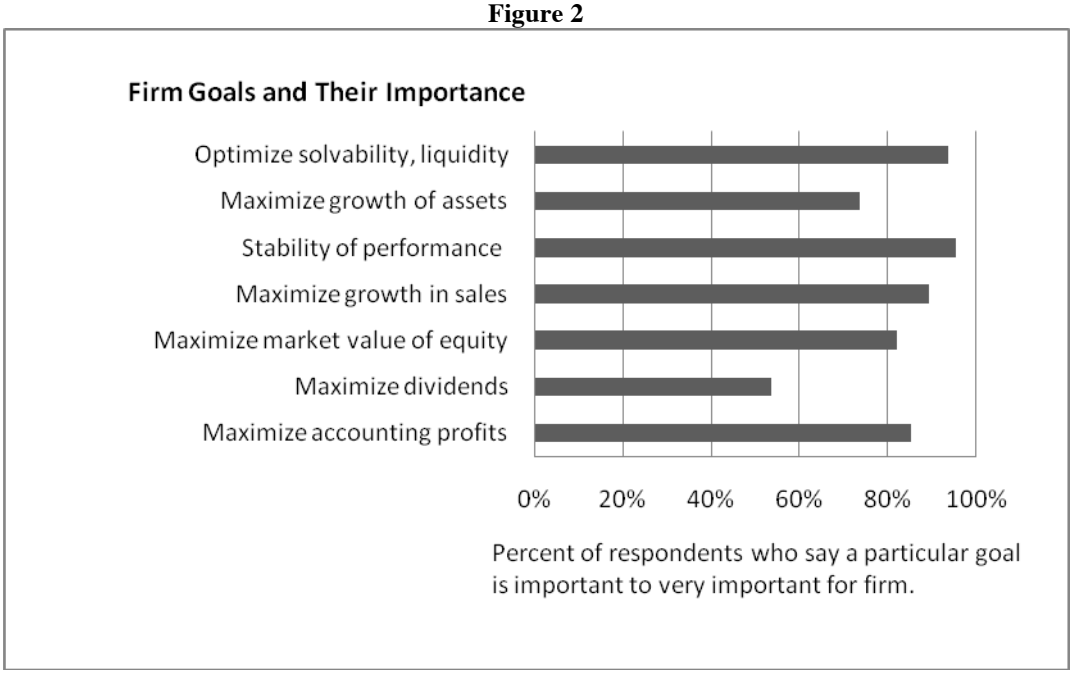

Figure 2. Survey evidence on the importance of different goals for firms. We report the percentof respondents who say a particular goal for firm is either important or very important. The results are based on survey respondents of 400 firms.

Table 4

Survey Responses: Which of the following sources of Long-Term Funds are / would be important for financing new investments? Least important – (1), (2), (3), (4) – very important

	1	2	3	4	Don't Know	Didn't Answer	Total
1) Retained earnings	43	62	152	138	3	2	**400**
2) Restructuring assets	59	102	156	68	13	2	**400**
3) Straight debt	86	108	94	101	7	4	**400**
4) Convertible bonds	248	73	36	14	12	17	**400**
5) External common equity	147	96	88	51	10	8	**400**

Figure 3

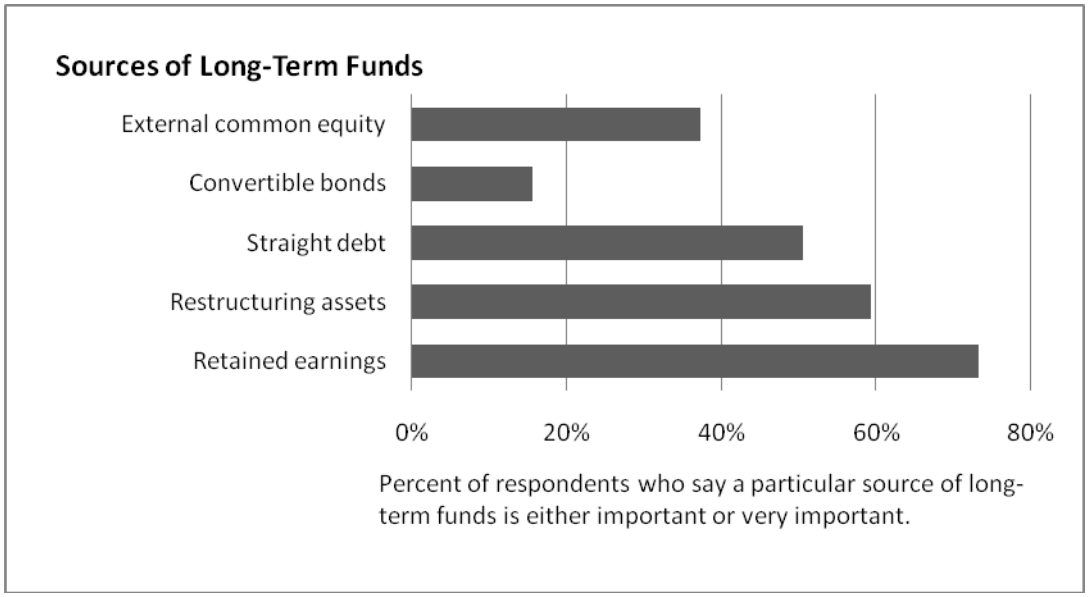

Figure 3. Survey evidence on importance of different sources of long-term funds to financing new investments. We report the percentof respondents who say a particular source of long-term funds is either important or very important. The results are based on survey respondents of 400 firms.

Figure 4

Survey Results on Capital Budgeting Practices by Firms in CEE Countries

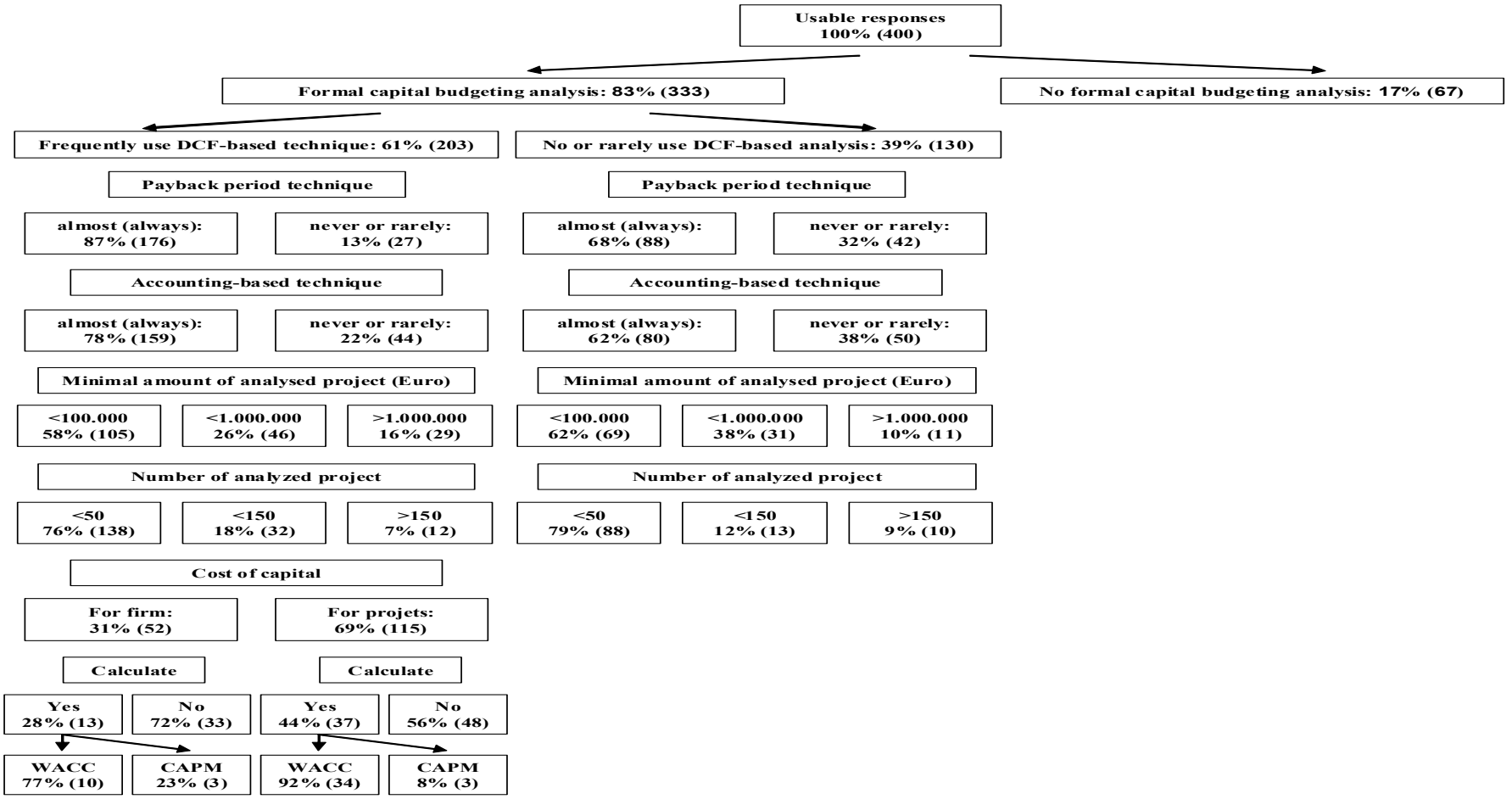

Table 5

Survey Responses: Do you make any formal (written, based on quantitative data) capital budgeting analyses?

Panel A:

	Number of Firms	Survey Responses	
		Yes	No
Total	**400**	**83%**	**17%**
Small/Medium Firms	101	75%	25%
Large Firms	299	86%	14%
Management Dominated by Local Culture	237	79%	21%
Management Dominated by Multinational Culture	163	89%	11%
Low Ownership by Top Officers	345	84%	16%
High Ownership by Top Officers	55	78%	22%

Panel B:

Survey Responses: Do you always or almost always use some kind of DCF-based (discounted cash flow-based) analysis technique (e.g., NPV, IRR, etc.)?

	Number of Firms	Survey Responses	
		Yes	No
Total	**400**	**51%**	**49%**
Small/Medium Firms	101	45%	55%
Large Firms	299	53%	47%
Management Dominated by Local Culture	237	46%	54%
Management Dominated by Multinational Culture	163	58%	42%
Low Ownership by Top Officers	345	52%	48%
High Ownership by Top Officers	55	40%	60%

Table 6

Panel A:
Survey Responses: Do you always or almost always calculate payback period? (simple, not discounted)?

	Number of Firms	Survey Responses	
		Yes	No
Total	**400**	**66%**	**34%**
Small/Medium Firms	101	58%	42%
Large Firms	299	69%	31%
Management Dominated by Local Culture	237	60%	40%
Management Dominated by Multinational Culture	163	75%	25%
Low Ownership by Top Officers	345	68%	32%
High Ownership by Top Officers	55	56%	44%

Panel B:
Survey Responses: Do you always or almost always calculate some kind of accounting-based index or rate?

	Number of Firms	Survey Responses	
		Yes	No
Total	**400**	**60%**	**40%**
Small/Medium Firms	101	50%	50%
Large Firms	299	63%	37%
Management Dominated by Local Culture	237	55%	45%
Management Dominated by Multinational Culture	163	67%	33%
Low Ownership by Top Officers	345	61%	39%
High Ownership by Top Officers	55	55%	45%

Panel C:
Survey Responses: Do you (sometimes) make sensitivity analyses?

	Number of Firms	Survey Responses	
		Yes	No
Total	**400**	**34%**	**67%**
Small/Medium Firms	101	27%	73%
Large Firms	299	36%	64%
Management Dominated by Local Culture	237	31%	69%
Management Dominated by Multinational Culture	163	37%	63%
Low Ownership by Top Officers	345	35%	65%
High Ownership by Top Officers	55	22%	78%

Panel D:
Survey Responses: Do you (sometimes) make real option analyses?

	Number of Firms	Survey Responses	
		Yes	No
Total	**400**	**18%**	**82%**
Small/Medium Firms	101	17%	83%
Large Firms	299	18%	82%
Management Dominated by Local Culture	237	17%	83%
Management Dominated by Multinational Culture	163	20%	80%
Low Ownership by Top Officers	345	17%	83%
High Ownership by Top Officers	55	22%	78%

Table 7

Panel A: From 'DCF Yes'

Survey Responses: Specify the minimal amount over which you make written investment analyses.

	Number of Firms	Survey Responses		
		<100,000	<1 million	>1 million
Total	**203**	**105**	**46**	**29**
		58%	**26%**	**16%**
Small/Medium Firms	45	61%	21%	18%
Large Firms	158	58%	27%	15%
Management Dominated by Local Culture	108	50%	30%	20%
Management Dominated by Multinational Culture	95	68%	20%	12%
Low Ownership by Top Officers	181	58%	27%	15%
High Ownership by Top Officers	22	61%	17%	22%

Panel B: From 'DCF No'

	Number of Firms	Survey Responses		
		<1 million	<10 million	>10 million
Total	**130**	**69**	**31**	**11**
		62%	**28%**	**10%**
Small/Medium Firms	31	75%	25%	0%
Large Firms	99	58%	29%	13%
Management Dominated by Local Culture	80	60%	26%	13%
Management Dominated by Multinational Culture	50	65%	30%	5%
Low Ownership by Top Officers	109	60%	28%	12%
High Ownership by Top Officers	21	74%	26%	0%

Table 8

Survey Responses: Approximately how many projects are evaluated with a quantitative analysis in your company a year?

Panel A: From 'DCF Yes'

	Number of Firms	Survey Responses		
		<50	<150	>150
Total	**203**	**138**	**32**	**12**
		76%	**18%**	**7%**
Small/Medium Firms	45	82%	13%	5%
Large Firms	158	74%	19%	7%
Management Dominated by Local Culture	108	76%	18%	6%
Management Dominated by Multinational Culture	95	75%	18%	7%
Low Ownership by Top Officers	181	75%	19%	6%
High Ownership by Top Officers	22	80%	10%	10%

Panel B: From 'DCF No'

	Number of Firms	Survey Responses		
		<50	<150	>150
Total	**130**	**88**	**13**	**10**
		79%	**12%**	**9%**
Small/Medium Firms	101	79%	11%	11%
Large Firms	299	80%	12%	8%
Management Dominated by Local Culture	237	76%	12%	12%
Management Dominated by Multinational Culture	163	84%	11%	5%
Low Ownership by Top Officers	345	78%	12%	10%
High Ownership by Top Officers	55	83%	11%	6%

Table 9

From 'DCF Yes'

Survey Responses: Do you use only one given value of cost of capital in the company, or do you use different values for the different projects?

	Number of Firms	Survey Responses	
		Firm	Project
Total	**203**	**52**	**115**
		31%	**69%**
Small/Medium Firms	45	49%	51%
Large Firms	158	27%	73%
Management Dominated by Local Culture	108	24%	76%
Management Dominated by Multinational Culture	95	41%	59%
Low Ownership by Top Officers	181	30%	70%
High Ownership by Top Officers	22	47%	53%

Table 10

Survey Responses: What kind of method do you use to calculate this discount rate for the project (or for all projects of the company)?

(a) We don't calculate it directly; we use general discount rate(s).
(b) We use the Weighted Average Cost of Capital (WACC).
(c) We use the Capital Asset Pricing Model (CAPM) to calculate the whole discount rate.
(d) Our practice is not consistent.

Panel A: From 'DCF Yes' and 'Firm'

	Companies	**Responses**	**(a)**	**(b)**	**(c)**	**(d)**
Total	**52**	**46**	**33**	**10**	**3**	*2*
Small/Medium Firms	17	15	80%	20%	0%	*0%*
Large Firms	35	33	64%	21%	9%	*6%*
Management Dominated by Local Culture	22	19	63%	26%	5%	*5%*
Management Dominated by Multinational Culture	30	29	72%	17%	7%	*3%*
Low Ownership by Top Officers	45	43	70%	19%	7%	*5%*
High Ownership by Top Officers	7	5	60%	40%	0%	*0%*

Panel B: From 'DCF Yes' and 'Project'

	Companies	**Responses**	**(a)**	**(b)**	**(c)**	**(d)**
Total	**115**	**85**	**48**	**34**	**3**	*16*
Small/Medium Firms	18	16	50%	38%	0%	*13%*
Large Firms	97	85	47%	33%	4%	*16%*
Management Dominate by Local Culture	71	62	48%	31%	3%	*18%*
Management Dominated by Multinational Culture	44	39	46%	38%	3%	*13%*
Low Ownership by Top Officers	107	94	48%	33%	3%	*16%*
High Ownership by Top Officers	8	7	43%	43%	0%	*14%*

Table 11

Panel A: From 'DCF Yes'

Survey Responses: Does it happen that a project is rejected while supported by DCF analysis?

	Responses	% of the Answers	
		Yes	No
Total	**196**	**132**	**64**
		67%	**33%**
Small/Medium Firms	42	67%	33%
Large Firms	154	68%	32%
Management Dominated by Local Culture	106	65%	35%
Management Dominated by Multinational Culture	90	70%	30%
Low Ownership by Top Officers	176	68%	32%
High Ownership by Top Officers	20	60%	40%

Figure 5

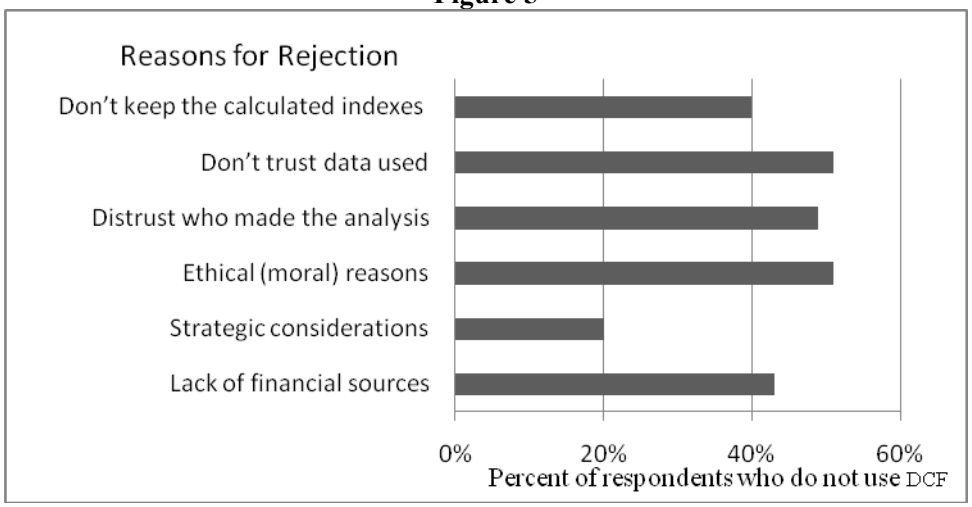

Figure 5. Survey evidence on the rejection of a capital investment project despite being supported based on DCF analysis. The survey is based on 196 responses.

Table 11 (Contd.)
Panel B: From 'DCF No'

Survey Responses: Do you ever reject a project even if it's supported by formal written analysis?

	Responses	% of the Answers	
		Yes	No
Total	**124**	**72**	**52**
		58%	**42%**
Small/Medium Firms	31	55%	45%
Large Firms	93	59%	41%
Management Dominated by Local Culture	75	56%	44%
Management Dominated by Multinational Culture	49	61%	39%
Low Ownership by Top Officers	103	60%	40%
High Ownership by Top Officers	21	48%	52%

Figure 6

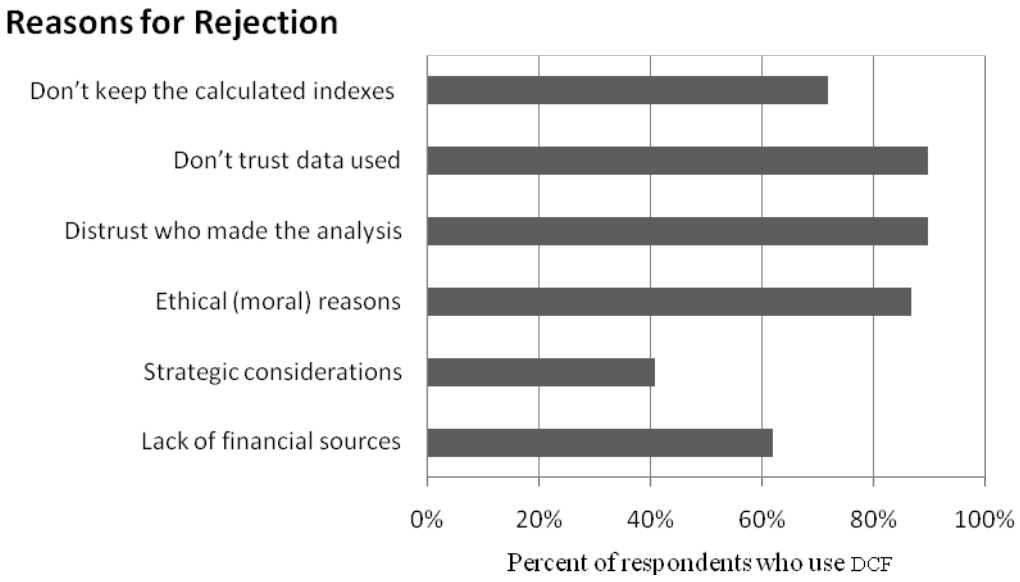

Figure 6. Survey evidence on the rejection of a capital investment project despite being supported by formal written capital budgeting analysis. The survey is based on 124 responses.

Table 12

Panel A: Comparison of Capital Budgeting Practices among U.S., Canada, and Western European, Asia-Pacific, and CEE Countries

Countries	GDP (PPP) 2007 (billions of USDs)	Region	Development	Authors	Year of Publication	Usable Responses	DCF %	NPV %	IRR %	PB %	AB %
USA & Canada	14,932	Northern America	High income	Graham & Harvey	2001	392	97%	75%	76%	57%	20%
United Kingdom I.	2,143	Europe (Western)	High income	Brounen et al.	2004	68	68%	47%	53%	69%	38%
United Kingdom II.		Europe (Western)	High income	Arnold & Hatzopoulos	2000	96	*82%*	62%	68%	46%	41%
The Netherlands I.	634	Europe (Western)	High income	Brounen et al.	2004	52	78%	70%	56%	65%	35%
The Netherlands II.		Europe (Western)	High income	Hermes et al.	2007	42	*100%*	89%	74%	79%	2%
Germany	2,830	Europe (Western)	High income	Brounen et al.	2004	132	60%	48%	42%	50%	32%
France	2,078	Europe (Western)	High income	Brounen et al.	2004	61	55%	35%	44%	51%	16%
Sweden	336	Europe (Western)	High income	Sandahl & Sjögren	2003	129	69%	52%	23%	78%	21%
China	7,097	Asia and Pacific	Lower middle income	Hermes et al.	2007	45	*92%*	49%	89%	84%	9%
Australia I.	734	Asia and Pacific	High income	Truong et al.	2008	77	*92%*	86%	64%	59%	19%
Australia II.		Asia and Pacific	High income	Kester et al.	1999	57	*100%*	*79%*	*79%*	*51%*	*27%*
Hong Kong	293	Asia and Pacific	High income	Kester et al.	1999	29	*68%*	*49%*	*58%*	*80%*	*40%*
Indonesia	838	Asia and Pacific	Upper middle income	Kester et al.	1999	16	*100%*	*83%*	*77%*	*48%*	*17%*
Malaysia	359	Asia and Pacific	Upper middle income	Kester et al.	1999	35	*89%*	*71%*	*68%*	*70%*	*35%*
Philippines	299	Asia and Pacific	Upper middle income	Kester et al.	1999	35	*98%*	*66%*	*87%*	*71%*	*39%*

Singapore	228	Asia and Pacific	High income	Kester et al.	1999	54	*82%*	*59%*	*70%*	*70%*	*44%*
Bulgaria	86	Europe (Central & Eastern)	Upper middle income	Andor et al.	2010	20	35%			40%	30%
Croatia	69	Europe (Central & Eastern)	High income	Andor et al.	2010	16	56%			69%	63%
Czech	240	Europe (Central & Eastern)	High income	Andor et al.	2010	57	37%			53%	40%
Hungary	188	Europe (Central & Eastern)	High income	Andor et al.	2010	46	43%			63%	76%
Latvia	40	Europe (Central & Eastern)	Upper middle income	Andor et al.	2010	9	44%			33%	67%
Lithuania	60	Europe (Central & Eastern)	Upper middle income	Andor et al.	2010	14	43%			57%	50%
Poland	602	Europe (Central & Eastern)	Upper middle income	Andor et al.	2010	143	58%			81%	59%
Romania	246	Europe (Central & Eastern)	Upper middle income	Andor et al.	2010	57	58%			61%	68%
Slovakia	109	Europe (Central & Eastern)	High income	Andor et al.	2010	25	56%			64%	72%
Slovenia	55	Europe (Central & Eastern)	High income	Andor et al.	2010	13	46%			62%	77%

Note: DCF%, NPV%, IRR% , PB%, and AB% are response rates provided by sample firms that use discounted cash flow (DCF), net present value (NPV), internal rate of return (IRR), payback (PB), or accounting-based (AB) method.

Table 12 (Contd.)

Panel B: Comparison of Capital Budgeting Practices among Geographic Regions and Income Groups

Geographic Region/Income Group	**GDP (PPP) 2007 (bil. of USD)**	***DCF%***	***NPV%***	***IRR%***	***PB%***	***AB%***
North America	*14,932*	*97%*	*75%*	*76%*	*57%*	*20%*
Europe	*9,716*	*63%*			*57%*	*34%*
Europe (Western)	8,021	*65%*	*49%*	*49%*	*55%*	*28%*
Europe (Central & Eastern)	1,695	*51%*			*66%*	*60%*
Asia and Pacific	*9,848*	*92%*	*56%*	*84%*	*77%*	*14%*
High income	*24,869*	*85%*	*64%*	*64%*	*57%*	*25%*
Upper middle income	*2,530*	*80%*	*45%*	*45%*	*63%*	*39%*
Lower middle income	*7,097*	*92%*	*49%*	*89%*	*84%*	*9%*

Note: DCF%, NPV%, IRR%, PB%, and AB% are response rates provided by sample firms that use discounted cash flow (DCF), net present value (NPV), internal rate of return (IRR), payback (PB), or accounting-based (AB) method.