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Finance-specific Factors as Drivers of Cross-border Investment: An OLI Perspective

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Finance-specific Factors as Drivers of Cross-border Investment – An OLI Perspective

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Finance-specific factors as drivers of cross-border investment – an OLI perspective

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Abstract

In this paper we empirically test the role of firm-specific financial characteristics as drivers of international investment and production. We hypothesize that financial strength generates advantages that can be exploited through cross-border investment activity. The hypothesis is tested in a series of binary-response models, using a sample of 1379 European non-financial firms' international acquisitions. Controlling for traditional firm- and target-country-specific FDI determinants within an OLI framework, we find strong evidence that financial factors play a significant role in explaining cross-border investment. We conclude that without explicit consideration of the financial dimension, firms' FDI decisions cannot be properly understood.

Key words: FDI; OLI; cross-border acquisitions; cost of capital; financial strategy; financial variables.

JEL: E22, F21, F23, L23

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Finance-specific factors as drivers of cross-border investment – an OLI perspective

1. Introduction

Several theories and research traditions have contributed to understanding the determinants behind a firm's decision to undertake foreign direct investment (FDI). One common element in these different, but often overlapping, theories is that they focus on real side factors, whereas the financial side of the firm is ignored, or allotted a menial role for the FDI decision. This in turn may reflect a relatively small role for finance within international business theory more broadly (as noted at a general level by, e.g., Agmon, 2006) – possibly due to a tradition of (implicitly) assuming that finance essentially "follows fundamentals". Indeed, Dunning (1993), for instance, discusses a "financial asset advantage" that concerns "firms' superior knowledge of, and access to foreign sources of capital", but essentially finds this advantage to be a by-product of the size, efficiency and knowledge of the multinational firms.

Contrasting this view, in a conceptual paper, Oxelheim et al. (2001) argue that a firm's financial characteristics are not merely by-products of its competitive strength but constitute a distinct set of explanatory variables. By having a superior financial strategy a firm is able to minimize its cost and maximize its availability of capital relative to its competitors, both domestic and foreign. By lowering the discount factor of any investment, such a financial advantage increases the firm's likelihood of engaging in FDI.

The present paper brings this argument to the data. As point of departure, we have chosen to focus on the OLI (Ownership-Location-Internalization) framework

(Dunning, 1977) since, in its ambition of being all-inclusive, it provides a list of "standard" FDI determinants against which we can test the added explanatory value from including financial factors. We thus construct a number of firm-level financial characteristics ranging from simple cost of capital and creditworthiness measures to outright financial strategies such as listing the firm's equity on large and competitive foreign stock exchanges. We then use binary response models to test if the included financial variables significantly influence a firm's propensity to undertake FDI, next to a set of traditional FDI determinants suggested by OLI. As far as we are aware, this is the first paper to empirically test the role of firm-level financial factors within a "full-fledged" OLI framework.

The results, based on a sample of 1379 European non-financial firms' cross-border acquisitions in a total of 44 target markets, show a strongly significant explanatory power of a number of financial characteristics and of financial strategies undertaken in a period of up to 60 months prior to the investment These results give a clear indication of the important role played by finance-specific factors and support the notion that firms can create ownership advantages by adopting strategies to improve their financial strength.

The article is organized in the following way. The next section summarizes the argument for including finance-specific factors in the OLI framework. In Section 3 the empirical models and testing methodology are explained. We then present definitions of the variables used and the dataset. In Section 5, the results are presented and discussed. In the final section we summarize our findings and provide concluding remarks.

2. Financial determinants of FDI and the OLI paradigm

The basic underlying logic for the inclusion of financial factors in any model proposing to explain FDI is that a firm's cost of and access to capital matter for its ability and propensity to undertake foreign investment. Hence, strategies aimed at lowering the cost and/or increasing the availability of funds – i.e., creating a financial advantage – will improve a firm's likelihood undertaking FDI.

However, in efficient and internationally integrated financial markets, no firm has a financial advantage over another, since all firms have equal access to finance at equal (risk-adjusted) cost. Arguing for a finance-FDI effect thus requires an assumption of imperfect capital markets that are at least partially internationally segmented. While the theories underpinning the OLI paradigm (especially internalization theory) largely build on imperfections in goods markets, the effects of financial market imperfections have received less attention. To the extent that they have been acknowledged, they have been discussed as sources of locational advantages or – in a strategic context – as potential sources of opportunistic, "reactive" managerial behaviour (Aliber, 1970; Dunning, 1993; Kogut and Kulatilaka, 1994). Oxelheim et al. (2001), by contrast, emphasize to the role of "proactive" financial strategies and the potential of such strategies to generate *ownership* advantages.

The basic tenet of an ownership advantage is that to undertake FDI, a firm must have developed firm-specific characteristics that enable it to be competitive in the home market. The assumption is that these characteristics are transferable abroad and of such magnitude that they may compensate for the extra costs and barriers that are associated with doing business abroad. Ownership advantages may include various economies of scale and scope (such as size, market power, and economies of

multi-plant structures), a superior technology, or other types of proprietary knowledge, such as managerial and marketing expertise.

A low cost and high availability of capital may thus be categorized as a "traditional" ownership advantage insofar as large, research-intensive MNCs reside in countries with liquid, efficient, and integrated financial markets. But as pointed out by Oxelheim et al. (2001) this is not necessarily true for MNCs resident elsewhere or for firms in general. For such a firm, a conscious strategy aimed at improving its financial strength may materialize in an ownership advantage. Therefore, given (partial) segmentation and remaining home bias in world capital markets, there are benefits to be reaped from "proactive" financial strategies such as, e.g., cross-listing in a more liquid stock market (Sundaram and Logue, 1996; Foerster and Karolyi, 1999; Miller, 1999; Pagano et al., 2002, Tolmunen and Torstila, 2005), foreign issues of equity and/or debt (Modén and Oxelheim, 1997), and 'bonding' strategies to reduce information asymmetries (Oxelheim and Randøy, 2003)..

Following this argument, financial advantages may be important for all firms but should be particularly important to MNCs resident in small industrial or emerging market countries with relatively illiquid and/or segmented domestic capital markets. Moreover, it may matter to the understanding of the process to distinguish between situations where an ownership advantage is created or where an ownership disadvantage is eliminated. For instance, a firm resident in a small, emerging market country, making its way out of a thin and regulated domestic capital market by an innovative financial strategy, may have eliminated an ownership disadvantage vis-à-vis its competitors in developed countries. But at the same time it may also have created an ownership advantage vis-à-vis its competitors in other emerging economies, which can be exploited by FDI during a limited period.

Oxelheim et al. (2001) identify three major financial strategies, or groups of strategies, that may qualify as underpinning ownership advantages. The first of these is gaining and maintaining a global cost and availability of capital (for example by sourcing capital globally, by cross-listing on a larger and more liquid stock exchange, and by maintaining a competitive credit rating). The second strategy is negotiating financial subsidies and/or reduced taxation to increase free cash flow. The third major strategy is the launching and entertainment of a successful, value-creating risk management program.

In this paper we empirically test the hypothesis that financial ownership advantages increase the probability of undertaking a cross-border acquisition. We hypothesize that a firm is more likely to engage in FDI when it has – among other things – access to competitively priced equity, when it has cross-listed its stock in a larger, more liquid equity market, when it enjoys a strong investment grade credit rating, and when it is able to negotiate reduced taxation and/or to attract subsidies. The next section describes the empirical method in more detail.

3. Model and empirical strategy

The basic idea underlying the empirical testing in this paper is that firm-level financial characteristics, which may be – at least in part – the result of deliberate strategies to improve the financial strength of the firm, influence the probability that the firm will make a foreign acquisition. This is tested in the framework of a number of binary response regression models, where the completion of a foreign acquisition is a discrete variable, which is regressed on firm financial characteristics and a set of relevant traditional OLI factors and control variables. This gives a general specification of the following form:

$$ACQ_{ik} = \begin{cases} 1 \text{ if } ACQ_{ik}^{*} > 0 \\ 0 \text{ otherwise,} \end{cases}$$

where

$$ACQ_{ik}^{*} = \alpha + \beta' F_i + \delta' O_i + \phi' L_k + \gamma' I_k + \pi' C_{ik} + \varepsilon_{ik} . \quad (1)$$

ACQ_{ik}^{*} is the size of acquisitions undertaken by firm i in country k (where k is any country *except* the country of origin of i), F_i is a vector of finance-specific ownership variables of firm i, O_i is a vector of traditional ownership variables for firm i, L_k and I_k are location and internalization factors specific to host country k, C_{ik} are control variables which may vary over firms or across countries, and ε_{ik} is an error term. Definitions of the included finance-specific and traditional OLI variables, as well as a presentation of the dataset and its sources, are found in the next section.

Our primary interest lies in firm-specific regressors, particularly the finance-related variables. In order to keep the dataset tractable, however, we had to limit the number of firm-specific variables as well as the number of possible destination countries. This is because the non-linear specifications (logit or probit models) tend to non-convergence with an excessive number of independent variables, and because the number of observations increases exponentially for each added possible destination country. In order to handle this, the testing is conducted in four steps.

In the first step we attempt to find the most parsimonious model specification possible as regards the firm-specific ('O' and 'F') variables, without losing significant explanatory power. This is done by running the model:

$$ACQ_i = \begin{cases} 1 \text{ if } ACQ_i^* > 0 \\ 0 \text{ otherwise,} \end{cases}$$

where

$$ACQ_i^* = \alpha + \beta' F_i + \delta' O_i + \gamma' C_i + \varepsilon_i \,. \qquad (2)$$

Here, ACQ_i denotes the decision by firm i to make *any* foreign investment (regardless of destination country), and it is explained solely by firm-specific characteristics and firm-specific control dummies. These tests are to be considered as mainly designed to select the most important *firm-specific* variables, not to give a full account of the investment decision process. A stepwise procedure was applied to exclude non-significant variables.

In the second step we turn to the host-country-specific variables. The number of possible host countries has, as mentioned, been limited due to various practical considerations. First, we eliminated the countries that did not receive *any* direct investment from the firms in our sample. Second, several of the remaining countries were eliminated because of lack of adequate data. The non-randomness of this process of elimination of possible destination countries from the entire population (i.e., all countries in the world) − dictated by data availability and other factors which are potentially correlated with variables included in the model to be estimated − introduces the risk of sample selection bias as regards the country-specific variables. To take this into consideration, we adopt the relatively standard Heckman (1979) two-step approach to control for possible sample selection bias. We thus first estimate a simple probit model of the selection process. From this estimation we obtain a country-specific variable, the inverse Mills-ratio (henceforth called λ), which − by proxying for the probability of being included in the sample in the first place −

corrects the subsequent binary response models for the potential selection bias. The selection model takes the form:

$$SEL_j = \alpha + \beta' X_j + \varepsilon_j, \tag{3}$$

where SEL_j takes on unit value if country j was selected as a possible destination country for investment in the final regressions, and zero otherwise, the countries J are a random sample drawn from the population of all possible destination countries, and X_j is a vector of country characteristics believed to correlate with the decision to include the country in the final sample of possible destination countries (again, see next section for a listing and definitions of the independent variables).

The third step is to estimate the full model, including both firm-specific and destination-country-specific characteristics, as described by equation (1). The merging of firm-specific and host-country-specific variables on the right hand side of the model equation gives rise to a set of independent variables which vary in two different dimensions: O, F and C_i regressors vary across firms; L, I and C_k regressors vary across countries.[1] This means that firm-specific data are repeated across countries and destination-country data are repeated across firms in the final cross-section of observations, with possible 'clustering' effects as a result. In order to account for this, we test the full set of variables by different regression methods in a pooled cross-section setting, where we test for the presence of both firm-level and country-level effects.

[1] The only country-specific control variable used is the *lambda* variable obtained from the selection model.

The fourth and final step is to perform hypothesis tests, in order to measure the incremental contribution of finance-related variables to the explanation of cross-border investment.

4. Definitions and data set

Operationalizations of finance-specific variables that qualify as ownership advantages are as follows. As the main proxy for strategies to reduce the cost of equity we have included a dummy variable which takes on unit value if the firm has cross-listed its stock in a leading stock market during up to 60 months preceding the investment. Three leading markets were used: The New York Stock Exchange (NYSE), NASDAQ, and the London Stock Exchange (LSE). As a second proxy for the cost of equity capital we have used the price/sales ratio. This is a proxy of the relative valuation of the firm – and hence of its cost of equity – similar in interpretation to the price/earnings ratio. However, since negative price/earnings ratios have no sensible interpretation, whereas the price/sales ratio is necessarily positive, we chose to use the price/sales ratio (see, e.g., Smart and Zutter, 2003).

Firms' propensity to make foreign investments could also be influenced by the pricing of their liabilities. In order to take this into account, we included the firms' effective cost of debt (actual interest paid, as reported in financial statements, over total liabilities). The effect of the cost of debt on firms' propensity to make investments is, however, ambiguous: on the one hand, a reduction in the overall cost of capital through reduced cost of debt would, *ceteris paribus*, increase the propensity to make an acquisition through a discount-factor effect, indicating a negative relationship; on the other hand, increased leverage may be a way to finance acquisitions, but would then also in general tend to increase the credit risk premium

inherent in the cost of debt, indicating the possibility of a positive relationship between acquisition likelihood and cost of debt.

A fourth variable along the same lines captures the effect of a firm's credit rating. As a proxy, we used Altman's Z"-score (see Altman, 2002), which is a continuous variable constructed from a number of balance-sheet items to reveal the firm's credit risk. The expected sign of this variable is ambiguous with arguments similar to those of the cost of debt variable. For this reason, we have added a fifth variable which captures the interaction between the cost of debt and the firm's credit risk.

The sixth included financial variable is a dummy which indicates the receipt of government grants during up to 60 months preceding the investment, whereas a seventh variable shows actual tax payments relative to the statutory tax rate. These last two variables are intended to capture the firm's capacity to negotiate reduced taxation and/or subsidies (see Oxelheim and Ghauri, 2004). As a final finance-related variable we use free cash flow over total assets to proxy for internal financing.

Several finance-specific variables are included both in levels and in first differences, with the argument that both the cross-sectional variation in financial strength *and* a successful effort to improve financial strength over a period of time can help explain the firm's propensity to make foreign investments. First differences are calculated as the difference between the level during the year of the investment and the average level during the preceding four years (as specified in Table 1).

Variables for traditional ownership advantages were chosen on the basis of the results of earlier empirical studies, or of surveys thereof (see e.g. Cantwell and Narula, 2003; Blonigen, 2005). They include firm size, proxies for knowledge intensity (intangible assets and fixed assets, respectively, as a share of total assets, and

sales per employee). Control variables are primarily industry and source country dummies.

Variables for traditional location and internalization advantages are target market size, income level, production costs (proxied by average manufacturing wages), the rate of corporate income taxation, and indices for the level of corruption and (legal and political) accountability.

The dataset was compiled from a number of different sources. The dependent variable (on foreign acquisitions) comes from the Thomson Mergers and Acquisitions Database, which contains data on acquisitions worldwide. Firm-specific independent variables are financial statement variables from the COMPUSTAT Global Industrial Database, which contains annual report data from a large number of non-financial firms. The COMPUSTAT data were filtered so that they contained *all* the firms from the 12 original eurozone countries with annual statement data available for the years 1996–2000. These were matched with the Thomson data, which, in turn, had been filtered to contain only *cross-border* deals completed in 2000, where the acquirer was a firm with eurozone-country origin. The dependent variable assumes unit value for COMPUSTAT firms that appeared also in the filtered Thomson data.

In addition, data from the NYSE, NASDAQ, and the London Stock Exchange (fact books and reports) were used to construct the cross-listing dummy. Macroeconomic variables for the host countries were taken from EcoWin and IMF's *International Financial Statistics* (GDP, population, and wage level). Corporate income tax rates were taken from PricewaterhouseCoopers (2000), and the internalization proxies (indices of transparency, political risk, and legal system integrity) are from Transparency International and from Kaufmann et al. (2003). The exact definitions of the variables used appear in Table 1.

INSERT TABLE 1

The total number of firms was 1459, distributed across the EMU countries according to Table 2. All firm-specific variables were available for 1379 of these firms. The total number of host countries for the European firms' cross-border acquisitions was 65, but the number was reduced to 44 in the final regressions due to missing values in firm- or country-specific variables. Descriptive statistics for the firm- and country-specific variables appear in Tables 3a-c.

INSERT TABLE 2

INSERT TABLE 3a

INSERT TABLE 3b

INSERT TABLE 3c

Tables 4a-c show that correlations between finance-specific and other ownership variables are often statistically significant but typically very low. For the host country variables, the correlation is (predictably) high and significant between GDP and population size. Both variables can proxy for target market size, presumably an important factor for market-seeking FDI, so in order to avoid multicollinearity problems we use only GDP as proxy for target market size in the final regressions. Similarly high and significant correlations occur between the income and wage level variables, between the different indices of transparency and political risk, as well as between, particularly, the income variable and these indices. We therefore concentrate

on the wage level (as proxy for production cost) and the *Accountability* and *Stability* variables (as proxies for institutional quality) in the final regressions.

INSERT TABLE 4a

INSERT TABLE 4b

INSERT TABLE 4c

Since the selection mechanism to the final 44-country sample of host countries largely parallels FDI location determinants, the "possible" list of variables for the selection model is essentially the same as for the list of host-country-specific variables (only wage level and corporate income tax level have been deleted from the list), but the sample is larger (176 countries). In terms of pair-wise correlations between the variables included in this larger sample (see Table 4c), they follow the pattern of the actual host country sample: GDP and population size correlate, as do the various indices of institutional quality, and as do, finally, these indices on the one hand and income on the other. In order to avoid duplicating variables between the acquisition-likelihood regressions and the sample-selection regression, thus making the sample-selection correction term simply a function of the variables in the acquisition-likelihood model (see Wooldridge, 2002), we use population size and income as the main variables in the selection model, alternating *Accountability* or *Transparency* with income, and adding geographical dummies.

5. Results

Table 5 reports results from regressions on firm-level variables only. Model 1 incorporates all collected firm-specific variables, including the full set of source-

country and industry dummies. Insignificant variables were successively eliminated to come up with the leaner specification used in regressions 2-4. The results from all the models confirm that several finance-specific factors affect the propensity to make foreign investments. Though the coefficient estimates from the linear probability (LPM) logit and probit regressions are not directly comparable, it is apparent that they are largely in accordance with each other in terms of coefficient signs and in terms of which variables are significant and which are not.

The most relevant finance/ownership factors are those related to access to competitively priced equity (as indicated both by the cross-listing variable and the price/sales ratio). The coefficient of the price/sales ratio is positive and strongly significant. The "proactive" decision to undertake an international cross-listing is positively related to the probability of making a foreign acquisition, and the coefficient is highly significant both statistically and economically. Moreover, reduced taxation is found (marginally) significant with the expected positive sign when all variables are included, but not when other insignificant variables have been eliminated. The reverse is true for internal financing (free cash flow): the variable is initially insignificant but marginally significant (although with very low coefficient value) after the stepwise elimination procedure.

The effects of the other finance-specific variables (cost of debt, creditworthiness, and the interaction variable between cost of debt and Z''-score) are found insignificant.

As regards traditional ownership variables, firm size and high knowledge intensity (as proxied by the share of intangible assets) are the only significant FDI determinants, and both increase the probability to invest abroad, as expected. Coefficients for industry dummies, finally, indicate something of a pattern that firms

in sectors with high knowledge intensity are more likely to invest abroad. This is fully consistent with the general predictions of the OLI framework. (Coefficient signs for significant control dummies only are reported in the table.)

INSERT TABLE 5

Table 6 reports a number of alternative specifications of the target country selection probit model. The results are relatively insensitive to alternative specifications. The corrections finally used in the Table 7 regressions are based on model (2) in Table 6, motivated both by its middle-of-the-road coefficient estimates, the belief that target market size and income level are the key variables, and the log-likelihood statistics.

INSERT TABLE 6

Results from regressions on both acquirer and target-country characteristics, finally, reinforce previous results (see Table 7). Qualitatively, they are almost identical to the results in Table 5 as regards firm-specific regressors. In addition, several target-country regressors turn out to be important explanatory factors, particularly market size, as measured by GDP, and political accountability (both consistently positive and highly significant). Also the wage level and the corporate tax rate are usually significant (and negative as expected). Overall, this suggests that both market seeking in other politically and economically mature countries *and* restructuring/production planning are viable motives for European firms' international acquisitions. As for the country selection control variable, the different specifications yield partially disparate conclusions as to the relevance of the selection bias problem.

However, exclusion of the "lambda" does not alter the results to any significant extent.[2]

Making use of the pooled cross-sectional character of the dataset, we detect significant firm-level *and* country-level contributions to the variance of the errors. The inclusion of the 2-way random effects specification (Model 2 in Table 7) can be seen as one way of controlling for this (fixed-effect models, on the other hand, are not possible to run on this type of data). The qualitative similitude of the results across different specifications and estimation methods seems to indicate the robustness of the results.

Finally, we test whether the inclusion of finance-specific variables makes a significant contribution to the explanatory value of the OLI model. The hypothesis tests indicate a very strong incremental explanatory power of the included financial variables. Financial factors clearly do matter for the understanding of the decision to undertake a cross-border acquisition.

INSERT TABLE 7

6. Summary and concluding remarks

In this paper we have empirically tested the hypothesis that firm-level financial characteristics influence the probability of undertaking foreign direct investment, and that they make a significant contribution to explaining foreign investment behaviour beside more traditional FDI determinants, such as those suggested by the OLI paradigm. We thus argued that a firm is more likely to engage in FDI when it has access to competitively priced equity and debt, when it has cross-listed its stock in a

[2] These results are not reported but can be received upon request.

larger, more liquid equity market, when it enjoys a strong investment grade credit rating, and when it is able to negotiate reduced taxation and/or to attract subsidies. As far as we are aware, this is the first paper to empirically test firm-level financial characteristics next to a full set of other ownership, location, and internalization determinants of FDI.

Based on binary-response regressions on foreign acquisitions undertaken by European non-financial firms in 2000, we found strong evidence in favour of this hypothesis. We looked at financial characteristics and measures to improve financial strength undertaken during up to 60 months prior to the investment. We tested both models with only firm-level explanatory variables and models with a combination of firm-specific and target-country-specific regressors, and corrected for potential selection bias in the sample of target countries. Our results suggest that key financial variables turned out to be equally important as, or more important than, several more traditional determinants of foreign investment. Specifically, our results show that firms with a lower cost of equity, and firms which have recently cross-listed their equity on a large and liquid stock exchange, are significantly more likely to make foreign acquisitions. These results are qualitatively robust to alternative model specifications and regression methods.

Our conclusion is that financial characteristics and "proactive financial strategies" make a significant contribution towards understanding the decision to make a foreign direct investment. As an implication for the OLI framework, our results provide strong support for not treating a firm's financial characteristics merely as a by-product of its competitive strength but, as argued by Oxelheim et al (2001) in their conceptual paper, as a distinct set of explanatory variables. We have based our

tests on the OLI framework, but since we argue that the role of financial strengths is underplayed in all FDI theory our findings should be general in scope.

However, some issues remain for further research. These include testing for alternative definitions of firm financial characteristics, possibly with the *size* of the investment (rather than a dummy variable) as dependent variable. In addition, it is conceivable that a firm's financial strength is more important for some investment destinations, and less so for others, suggesting possible interaction between firm-level financial variables and target-country variables. Finally, our results hold for cross-border acquisitions. Since the financing-FDI effect may be different for different types of investment, the influence of financial factors on entry modes (e.g. greenfield investments) should also be tested.

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Table 1. Variable definitions

Variable	*Description*	*Expected sign*
Dependent variable		
Acquisition	Dummy variable; equals one if a foreign acquisition was undertaken in 2000, zero otherwise	
Finance-specific variables		
Price/sales	Average price/sales ratio: market value divided by total sales in natural logarithm form, averaged over 1996-2000	+
ΔPrice/sales	Average 1996-99 p/s ratio subtracted from p/s ratio 2000	+
Cross-listing	Dummy variable; equals one if the firm listed on NYSE, NASDAQ, or LSE in any of the years 1996–2000, zero otherwise	+
Debt-cost	Average cost of debt: natural logarithm of (1 + interest expenditure over total liabilities), averaged over 1996-2000	–
ΔDebt-cost	Average 1996-99 cost of debt subtracted from cost of debt 2000	–
Z-score	Z”-score[a] averaged over 1996-2000	+
ΔZ-score	Average 1996-99 Z”-score subtracted from Z”-score 2000	+
Debt cost × Z-score	Interaction variable with included variables defined as above	+/-
Grant	Dummy variable; equals one if the firm received a government grant in any of the years 1996–2000, zero otherwise	+
Tax reduction	Reduced taxation: 1 – total income taxes/EBIT/statutory tax rate, averaged over 1996-2000	+
Free cash flow	Internal financing: free cash flow over total assets, averaged over 1996-2000	+
Ownership variables		
Firm size	Total sales in natural logarithm form, averaged over 1996-2000	+
Intangibles	Intangible assets over total assets, averaged over 1996-2000	+
Inventories	Inventories and stocks over total assets, averaged over 1996-2000	+
Sales/employee	Total sales over number of employees, averaged over 1996-2000	+

Country-specific variables (Location and Internalization variables + additional variables used in selection model)		
GDP	Target market size: GDP in natural logarithm form, averaged over 1996-2000	+
Population	Target country population in log form, averaged over 1996-2000	+
Income	The log of GDP per capita in the target country, averaged over 1996-2000	+/-
Wage	Target country production costs: the log of the average monthly manufacturing wages, averaged over 1996-2000	-
Tax rate	The target country's statutory corporate income tax rate, in log form, observed in 1999	-
Transparency	The target country's score in Transparency International's Corruption's Perception Index (CPI), observed in 2003; higher index value indicates less corruption	+
Accountability	The target country's score in an index of 'Voice and accountability' (see Kaufmann et al., 2003), observed in 2000[b]; higher index value indicates more democracy	+
Stability	The target country's score in an index of 'Political stability' (see Kaufmann et al., 2003), observed in 2000[b]; higher index value indicates lower political risk	+
Law	The target country's score in an index of 'Rule of law' (see Kaufmann et al., 2003), observed in 2000[b]; higher index value indicates higher judicial integrity	+

Notes: a) Z" = 6.56 × (Working Capital/Total Assets) + 3.26 × (Retained Earnings/Total Assets) + 6.72 × (EBIT/Total Assets) + 1.05 × (Market Value of Equity/Book Value of Total Liabilities). b) In a small number of cases, where data were unavailable for 2000, observations are from 2002.

Table 2. Geographical distribution of firms and acquisitions

Country of origin	*No of firms*	*No of firms making foreign acquisitions*	*No of foreign acquisitions*	*Target region*						
				Intra-EMU	*Non-EMU W. Europe*	*Europe, other*	*US*	*Americas excl. US*	*Asia + Oceania*	*Africa + Middle East*
Austria	69	11	23	5	3	13	2	0	0	0
Belgium	70	12	27	12	3	0	6	5	0	1
Germany	395	64	123	24	32	15	25	7	15	5
Spain	98	14	40	7	1	1	3	27	0	1
Finland	62	15	27	4	9	4	6	2	1	1
France	381	68	145	48	21	8	26	17	21	4
Greece	28	4	5	1	0	3	1	0	0	0
Ireland	50	15	23	1	14	0	5	2	1	0
Italy	122	23	36	15	4	3	1	10	0	3
Luxemburg	9	2	4	3	0	0	0	1	0	0
Netherlands	140	35	85	25	13	11	19	4	9	4
Portugal	35	5	7	3	0	0	0	3	0	1
Total	1459	268	545	148	100	58	94	78	47	20

Table 3a. Descriptive statistics, firm-specific variables

	Obs	*Mean*	*Std dev*	*Min*	*Max*
Intangibles	1445	.0752	.1085	-.0026	.7974
Inventories	1447	.1617	.1275	-.0867	.8682
Price/sales	1369	-.4369	1.262	-5.306	9.131
ΔPrice/sales	1369	-.0674	.8493	-4.897	5.865
Debt-cost	1447	.0265	.0156	-.0300	.1260
ΔDebt-cost	1447	-.0020	.0233	-.1130	.5420
Z-score	1383	4.056	4.877	-8.005	75.22
ΔZ-score	1383	-.3066	4.994	-63.05	70.31
Tax reduction	1447	.1291	3.703	-70.99	91.99
Firm size	1444	5.776	1.992	-4.361	11.74
Free cash flow	1447	15.31	288.0	-4480	2967
Sales/employee	1447	5.131	1.079	0	8.082
Acquisition	270 [a]				
Cross-listing	38 [a]				
Grant	305[a]				

Note: a) Variables are dummies. The figure indicates the no. of positive observations, i.e. for the *Acquisition* variable, the number of firms in total sample that made at least one international acquisition in 2000; for the *Cross-listing* variable, the number of cross-listings in 1996-2000 among firms in the total sample; and for the *Grant* variable, the number of firms in the total sample that received a government grant in any of the years 1996-2000.

Table 3b. Descriptive statistics, host-country-specific variables

	Obs	*Mean*	*Std dev*	*Min*	*Max*
GDP	44	12.497	1.390	9.460	15.980
Population	44	9.915	1.397	7.250	14.030
Income	44	9.491	0.653	8.030	10.380
Wage	44	6.721	1.044	4.520	9.480
Tax rate	44	3.349	0.306	2.140	3.689
Transparency	44	6.091	2.355	2.500	9.700
Accountability	44	0.838	0.682	-1.370	1.640
Stability	44	0.81	0.63	-0.99	1.73
Law	44	1.04	0.91	-0.86	2.22

Note: Only observations included in the model described by equation (1) is included.

Table 3c. Descriptive statistics, variables included in selection model

	Obs	*Mean*	*Std dev*	*Min*	*Max*
GDP	176	9.29	2.43	3.77	15.99
Population	176	8.62	2	3.69	14.04
Income	176	0.66	1.6	-2.38	3.84
Transparency	176	4.28	1.96	1.3	9.7
Accountability	174	0.03	0.95	-2.12	1.64
Stability	167	0.08	0.97	-2.83	1.73
Law	174	0.06	0.99	-1.79	2.22
Selection dummy	44[a]				
European Union	15[a]				
Europe, other	29[a]				
North America	15[a]				
Latin America	20[a]				
Asia/Oceania	34[a]				
Africa/Middle East	63[a]				
OECD	30[a]				

Note: a) Variables are dummies. The figure indicates the no. of positive observations.

Table 4a. Pearson Correlations, firm-specific variables

	Intangibles	Inventories	Price/sales	ΔPrice/sales	Debt-cost	ΔDebt-cost	Z-score	ΔZ-score	Tax reduction	Firm size	Free cash flow
Inventories	-0.219**										
Price/sales	0.151**	-0.382**									
ΔPrice/sales	-0.064*	0.025	-0.232**								
Debt-cost	0.012	0.091**	-0.070**	-0.020							
ΔDebt-cost	0.017	-0.001	0.012	-0.164**	-0.255**						
Z-score	-0.024	-0.067*	0.532**	-0.131**	-0.160**	-0.005					
ΔZ-score	-0.057*	0.004	-0.105**	0.379**	0.029	-0.038	-0.349**				
Tax reduction	0.022	-0.017	-0.015	0.106**	0.087**	-0.060*	-0.008	0.012			
Firm size	0.147**	-0.035	-0.275**	-0.009	-0.112**	0.023	-0.168**	0.008	-0.022		
Free cash flow	0.031	-0.022	0.053*	0.021	-0.003	-0.028	0.075**	0.034	0.004	0.084**	
Sales/employee	-0.033	0.099**	-0.155**	0.060*	-0.056*	0.062*	-0.133**	-0.009	-0.014	0.206**	0.028

Note: The total number of observations (firms) was 1459, distributed across the EMU countries according to Table 2. All variables were available for 1369 of these firms.

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 4b. Pearson Correlations, host-country-specific variables

	GDP	*Population*	*Income*	*Wage*	*Tax rate*	*Transparency*	*Accountability*	*Stability*
Population	0.890**							
Income	0.225	-0.244						
Wage	0.252	-0.091	0.731**					
Tax rate	0.338*	0.300*	0.078	0.078				
Transparency	0.025	-0.361*	0.826**	0.714**	-0.021			
Accountability	-0.142	-0.419**	0.595**	0.391**	0.027	0.604**		
Stability	-0.032	-0.415**	0.820**	0.581**	-0.068	0.852**	0.709**	
Law	0.074	-0.340*	0.884**	0.720**	0.007	0.944**	0.679**	0.901**

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 4c. Pearson correlations, variables included in selection model

	GDP	*Population*	*Income*	*Transparency*	*Accountability*	*Stability*
Population	0.753**					
Income	0.573**	-0.107				
Transparency	0.331**	-0.152*	0.690**			
Accountability	0.212**	-0.215**	0.589**	0.596**		
Stability	0.234**	-0.282**	0.659**	0.691**	0.700**	
Law	0.486**	-0.064	0.819**	0.844**	0.723**	0.784**

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table 5. Estimation results with only firm-level regressors. Dependent variable is the acquisition dummy. Table shows coefficients with standard errors in parentheses (White heteroscedasticity-robust errors for linear models). For variable definitions, see Table 1.

	1. Linear estimation, all firm-specific variables	*2. Linear estimation after stepwise elimination*	*3. Probit estimation*	*4. Logit estimation*
Finance-specific variables				
Price/sales	0.071 (0.012)***	0.056 (0.009)***	0.219 (0.042)***	0.433 (0.078)***
ΔPrice/sales	0.020 (0.014)			
Cross-listing	0.242 (0.079)***	0.216 (0.078)***	0.478 (0.244)*	0.702 (0.416)*
Debt-cost	0.700 (0.882)			
ΔDebt-cost	-0.600 (0.395)			
Z-score	-0.004 (0.005)			
ΔZ-score	-0.003 (0.002)			
Debt-cost × Z-score	0.107 (0.140)			
Grant	0.010 (0.029)			
Tax reduction	0.003 (0.002)*			
Free cash flow	0.000 (0.000)	0.000 (0.000)*	0.000 (0.000)	0.000 (0.000)
Ownership variables				
Firm size	0.078 (0.007)***	0.075 (0.006)***	0.330 (0.027)***	0.604 (0.050)***
Intangibles	0.354 (0.118)***	0.394 (0.107)***	1.574 (0.401)***	2.596 (0.706)***
Inventories	0.019 (0.089)			
Sales/employee	-0.004 (0.010)			
Source country dummies	All	Germany (-) France (-) Ireland (+) Spain (-)	Germany (insign.) France (-) Ireland (+) Spain (-)	Germany (insign.) France (-) Ireland (+) Spain (-)
Industry Dummies	All	Durables (+) Electronics (+) Nondurables (-) Service (+)	Durables (+) Electronics (+) Nondurables (-) Service (+)	Durables (+) Electronics (+) Nondurables (-) Service (+)
Intercept	-0.204 (0.136)	-0.246 (0.032)***	-2.958 (0.184)***	-5.308 (0.352)***
Obs.	1306	1367	1367	1367
Adj. R^2	0.208	0.206		
McFadden pseudo- R^2			0.259	0.263
Cases correct			1164	1166
Log likelihood			-515.70	-513.24
Test of exclusion restrictions[a]	84.38***	55.51***	37.59***	38.63***

***) t-test indicates significance at the 0.01 level.
**) t-test indicates significance at the 0.05 level.
*) t-test indicates significance at the 0.10 level.
Note:
a) χ^2 statistic from Wald test for joint significance of the included finance-related variables. Significance indicates rejection of the null hypothesis that coefficients for the included finance-related variables are jointly zero.

Table 6. Estimation result of sample selection probit model. Dependent variable is the selection dummy. Table shows coefficients with standard errors in parentheses.

	Probit (1)	*Probit (2)*	*Probit (3)*	*Probit (4)*
Population	0.519 (0.104)***	0.994 (0.239)***	1.037 (0.219)***	0.674 (0.108)***
Income	0.922 (0.148)***	1.542 (0.357)***		
Transparency			0.935 (0.201)***	
Accountability				1.059 (0.249)***
Geographical dummies	NO	YES	YES	YES
Intercept	-6.455 (1.104)***	-13.631 (2.889)***	-16.068 (2.988)***	-8.558 (1.270)***
Obs	176	176	176	176
McFadden pseudo- R^2	0.545	0.751	0.742	0.621
Cases correct	155	164	164	162
Log likelihood	-45.056	-24.622	-25.532	-37.495

***) t-test indicates significance at the 0.01 level.
**) t-test indicates significance at the 0.05 level.
*) t-test indicates significance at the 0.10 level.

Table 7. Estimation results with both firm- and country-level regressors. Dependent variable is the acquisition dummy. Table shows coefficients with standard errors in parentheses. For variable definitions, see Table 1.

	1. Pooled least squares estimation [a]	*2. 2-way random effects estimation (least squares)* [a]	*3. Pooled probit estimation*	*4. Pooled logit estimation*
Finance-specific variables				
Price/sales	0.003 (0.000)***	0.003 (0.001)***	0.142 (0.019)***	0.372 (0.049)***
Cross-listing	0.019 (0.002)***	0.019 (0.008)**	0.224 (0.074)***	0.509 (0.162)***
Free cash flow	0.000 (0.000)***	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
Ownership variables				
Firm size	0.003 (0.000)***	0.003 (0.001)***	0.201 (0.012)***	0.526 (0.030)***
Intangibles	0.023 (0.003)***	0.024 (0.008)***	0.946 (0.160)***	2.336 (0.366)***
Source country dummies	Germany (-) France (insign.) Ireland (insign.) Spain (-)	Germany (insign.) France (insign.) Ireland (insign.) Spain (insign.)	Germany (-) France (-) Ireland (insign.) Spain (insign.)	Germany (-) France (-) Ireland (insign.) Spain (insign.)
Industry Dummies	Durables (+) Electronics (+) Nondurables (-) Service (insign.)	Durables (+) Electronics (+) Nondurables (-) Service (insign.)	Durables (+) Electronics (+) Nondurables (-) Service (+)	Durables (+) Electronics (+) Nondurables (-) Service (+)
Location and internalization variables				
GDP	0.005 (0.000)***	0.005 (0.001)***	0.242 (0.018)***	0.629 (0.044)***
Wage	-0.001 (0.000)	-0.001 (0.001)	-0.076 (0.036)**	-0.212 (0.096)**
Tax rate	-0.003 (0.001)***	-0.003 (0.002)**	-0.116 (0.066)*	-0.306 (0.169)*
Accountability	0.006 (0.001)***	0.006 (0.001)***	0.452 (0.072)***	1.208 (0.208)***
Stability	0.000 (0.001)	0.001 (0.001)	-0.048 (0.081)	-0.183 (0.225)
Country selection correction (lambda)	0.006 (0.003)*	0.003 (0.007)	-0.336 (0.279)	-1.210 (0.783)
Intercept	-0.067 (0.006)***	-0.062 (0.021)***	-6.334 (0.367)***	-14.903 (0.935)***
Obs.	57104	59796	57104	57104
Adj. R^2	0.018	0.018		
McFadden pseudo-R^2			0.228	0.232
Cases correct			56705	56705
Log likelihood			-1925.59	-1916.16
Test for firm-level effects (F statistic)	1.95***		4.63***	4.68***
Test for country-level effects (F statistic)	199.01***		194.53***	193.80***
Test of exclusion restrictions[b]	67.24***	13.21***	75.38***	82.30***

***) t-test indicates significance at the 0.01 level.
**) t-test indicates significance at the 0.05 level.
*) t-test indicates significance at the 0.10 level.
Notes:

a) Standard errors for the linear specifications are as follows: Newey-West standard errors are reported in Model 1, since these produce only a very small bias in the presence of intra-group correlation for clustered data (see Petersen, 2006). In Model 2, intra-group correlations are controlled for by the unobserved-variable specification, and coefficients are reported with regular White cross-section heteroscedasticity-consistent standard errors.
b) χ^2 statistic from Wald test for joint significance of the included finance-related variables. Significance indicates rejection of the null hypothesis that coefficients for the included finance-related variables are jointly zero.