Institutional determinants of domestic and foreign subsidiaries' performance

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ABSTRACT

This article investigates the determinants of subsidiaries' profitability using a unique dataset of more than 23,000 listed and unlisted subsidiaries worldwide over the period 1994–2005. We find that profitable parent companies are able to transfer some of the intangible assets that make them profitable to their subsidiaries. Our results indicate that good institutions (measured by the Worldwide Governance Indicators) are associated with better performance for companies' subsidiaries. When we categorize countries in terms of the origins of their legal systems, we also find that this dimension of institutional quality is generally associated with better performance. Controlling for both legal origins and country governance institutions, we find that both sets of institutions are significantly related to subsidiaries' performance, and that there is an overlap in their explanatory power.

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1. Introduction

A great deal of interest has been devoted in recent years to the role of institutions in determining both company and country performance. The inspiration for this research can be traced back to the work of Douglass North (1990) illustrating the importance of institutional quality as a determinant of long-run economic growth in Western countries, and one segment of the literature focuses on the relationship between institutional factors and country growth rates.[1] Other parts examine the relationships between institutional quality and various measures of company performance. Our article adds to this strand of the literature. Because we focus on the performance of subsidiaries, our article is also related to work on the effects of decentralization within firms, the creation of domestic and foreign subsidiaries, and more generally to the literature on foreign direct investment (FDI).

Although there is considerable agreement that good institutions lead to good performance, there is disagreement over how good institutions should be defined, or put differently, authors differ as to *which* institutions are important for determining company performance. One set of studies argues that it is the quality of a country's governmental institutions that is important. Companies perform better in countries with strong property rights enforcement, independent judiciaries, strong contract enforcement, and the like.[2] Another set of studies, precipitated by the work of La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997, 1999, 2000, hereafter, LLSV), emphasizes the importance of a country's *legal* institutions – whether it has a common law or a civil law system – in protecting shareholders and thus reducing agency problems and improving company performance. These hypotheses are not mutually inconsistent, of course. Common law systems may offer both greater shareholder protection and better enforcement of property rights. Indeed, Paul Mahoney (2001) has made just such a claim. In this article, we test the relative explanatory power of both types of institutions.

The existing literature tests for the importance of institutions by relating differences in company performance across countries to differences in institutional structures. Thus, company *A* in country *X* is expected to perform worse by some criterion than company *B* in country *Y*, if *Y*'s institutions are better than *X*'s. The overwhelming conclusion of the literature is that "institutions matter," and good institutions do improve companies' performances. In this article, we examine the relationship between the institutional

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[1] See, Knack and Keefer (1995) and Knack (1996).

[2] See, for example, Besley (1995) and Johnson, McMillan, and Woodruff (2002).

environment and the performance of *subsidiaries*–companies for which some other company has an ownership stake of fifty percent or more. Our objective is to see whether institutional quality is also related to the performance of subsidiaries, and in particular, when the subsidiary is in a different country, whether it is the institutional quality in the parent firm's country that is correlated with a subsidiary's performance, the institutional quality in the subsidiary's country that is important, or both. One might hypothesize, for example, that a company located in a country with a strong institutional environment performs well not only in its own country, but also transfers this good performance to its subsidiaries, even when they are in countries with weak institutional environments. Alternatively, one might posit that a subsidiary in a country with weak institutions performs like other companies in this country, even if its parent is located in a country with strong institutions. Finally, good performance might be observed only when both a parent and its subsidiary are in countries with strong institutions. In addition to examining these relationships, we seek to identify the institutions with the highest correlations with the performance of subsidiaries.

To investigate the determinants of subsidiaries' performance, we have constructed a unique dataset of more than 23,000 listed and unlisted subsidiaries worldwide over the period 1994–2005. We identify the country of both a subsidiary and its parent, and examine the correlations of subsidiary performance to institutional quality in the countries of both the parent and its subsidiary. Because the sample includes both listed and unlisted companies, it is not possible to use performance measures, like marginal and average qs, that require stock market data. We thus are limited to accounting data, and use profits over total assets to measure subsidiary performance.

The FDI literature, especially for developing and transition countries, focuses on performance differences between domestically owned and foreign-owned firms, and usually treats the foreign firms as a homogeneous group.[3] The samples used in these studies typically include detailed information on the foreign subsidiaries, but not on their parents. Our study adds to this literature by examining institutional quality in *both* the parents' and subsidiaries' countries. We shall also attempt to determine *which* governmental institutions have the greatest impact on performance. While most studies use aggregate indexes of institutional quality, we separate legal institutions and various aspects of country governance.

If good institutions lead to higher profits, then one might expect all companies engaging in FDI to locate subsidiaries in countries with good institutions. But competition in these countries for customers, for natural resources, for workers, etc. might then drive down profits making a country with weaker institutions more attractive. To the extent that weak institutions lead to greater risk, subsidiaries in countries with weak institutions might actually exhibit *higher* average profitability along with greater risk. Thus, a simple generalization from *where* companies choose to locate subsidiaries and the profits they earn is not possible.

Briefly, we find that institutional quality in both the parent's and the subsidiary's countries is positively related to subsidiary profits. Significant differences in subsidiaries' performance are also found to exist across countries with different legal origins. Moreover, adding one set of institutional variables to our model, when the other set is already present, detracts from the explanatory power of the first set, suggesting that the two sets of institutional variables are partially capturing the same phenomenon.

In the next section, we turn to a more explicit statement of our hypotheses. Section 3 describes data and methodology.

Section 4 discusses basic results. The last section outlines the main conclusions.

2. Hypotheses

Companies with high profits typically have some asset or set of assets that account for these profits – a patent, brand image, organizational structure. It is reasonable to expect that a subsidiary of a company benefits from the possession of such assets as does the parent. FDI, for example, may occur to exploit in a foreign market, a competitive advantage a company has in a domestic market. Recent theoretical work predicts that more productive firms choose FDI over exports into foreign markets (Helpman, Melitz, & Yeaple, 2004). Many researchers use John Dunning's three conditions for a firm to undertake FDI: ownership, location, and internalization (also known as the OLI framework).[4] Ownership advantages of multinational enterprises (MNEs) are created by their firm-specific, proprietary or knowledge-based assets. Location advantages consist of profitable investment opportunities in foreign countries based on factors such as tariffs, quotas, transport costs, low factor prices, and access to customers. Internalization advantages arise when production in dispersed plants under common ownership generates lower costs than production organized at arm's length through markets.[5] Both the *O* and the *I* of the OLI approach imply a positive association between a parent's and a subsidiary's profits.

Hypothesis 1. A subsidiary's profits are positively related to the profits of its parent.

Numerous studies have established a relationship between the quality of a country's political and economic institutions and its growth rate or GDP per capita.[6] Institutions, which reduce corruption, can, for example, lead to greater trust and thereby faster growth.[7] As a broad proxy for country institutional quality, several studies have used indicators computed by Kaufmann, Kraay, and Mastruzzi (2008) as part of the Worldwide Governance Indicators (WGIs) project.[8] The authors compute six different dimensions of institutional quality: voice and accountability, government effectiveness, rule of law, regulatory quality, absence of corruption and political stability.[9] Our investigation of these institutions, reported below, reveals that subsidiary performance is only weakly related to the WGI measure of political stability. We thus construct an aggregate index of institutional quality by averaging the remaining five WGI indicators. The results are nearly identical, however, if we use all six indexes. High quality governance institutions in a country should increase company profitability by reducing the transaction costs of writing and enforcing contracts, of obtaining licenses and permits, and more generally of conforming to the laws and regulations of the country. We thus expect:

Hypothesis 2. A subsidiary's profits are higher in a country with high quality governance indicators.

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[3] See, for example, a survey of privatization studies on developed, developing and transition countries (Meggison & Netter, 2001) and a survey of enterprise restructuring in transition countries (Djankov & Murrel, 2002).

[4] See Dunning (2000) and Dunning and Lundan (2008). See, also, the survey by Caves (1996).

[5] Markusen (1995) presents six arguments why foreign direct investment occurs instead of licensing.

[6] For economic growth see Knack and Keefer (1995), Knack (1996), De Haan and Siermann (1998), Wu and Davis (1999), and the survey by De Haan, Susanna, and Sturm (2006). Acemoglu and Johnson (2005) find institutional quality associated with higher GDP per capita in developing countries.

[7] See, Knack and Keefer (1997).

[8] Other measures of institutional quality have been constructed by Freedom House, the Heritage Foundation, the Business Environment Risk Intelligence (BERI), Gallup International, and the International Country Risk Guide (ICRG) compiled by the Political Risk Services group. There is considerable overlap across these various indexes.

[9] By using the WGI measures researchers avoid having to choose among the different, but highly correlated, variables provided by various institutions.

By the same logic, we expect a parent's profits to be higher if it operates in a country with high quality governance indicators. It may also be the case, however, that some of the benefits a parent company obtains from operating in a country with high quality institutions are passed on to its subsidiaries raising their profits. For example, good institutions in a parent's country may lower the transaction costs of writing and enforcing contracts with its subsidiaries. The internal capital markets that characterize multi-plant companies may function better, if the parent operates in a country with a good institutional environment. Cash constraints are then lower and more profitable investment projects can be financed by the subsidiary using the internal capital market.[10] Good institutions in a parent's country may also raise its subsidiary's profits by facilitating the transfer of technology and know how. Finally, good institutions in a parent's country may lead to better management practices, which can be transferred to subsidiaries. We thus put forward:

Hypothesis 3. A subsidiary's profits are higher if its parent is located in a country with high quality governance indicators.

The WGI governance indicators measure the quality of a country's institutional environment as it impacts the *external* environment of a firm – its transactions with other firms, with the state, and so on. The corporate governance literature focuses on institutions that affect the *internal* environment of a firm, most importantly the extent of agency problems.[11] This literature has demonstrated that there are significant differences in performance across firms related to (1) the legal institutions of the country in which a company is located, (2) the identity of the controllers of a firm, and (3) the degree of entrenchment of those in control.[12] In particular, companies operating in countries with legal environments, which provide weak shareholder protection, have significantly worse investment performance and pay out less in dividends than companies in countries with legal environments offering strong shareholder protection. The greater agency problems are, the larger the share of potential profits that gets transformed into managerial rents of one form or another. We thus predict higher profits in countries which offer owners strong legal protection against managers. Hypothesis 4 postulates the same hierarchy in the quality of legal institutions as put forward by LLSV. To their four categories of legal institutions we have added a fifth-transition countries. We expect the weakest legal protection for owners in the former communist countries.

Hypothesis 4. The highest subsidiary profits are reported in countries of Anglo-Saxon origin with successively lower profits observed in countries with legal systems of Scandinavian, German and French origin. The lowest subsidiary profits are expected in the transition countries.

It seems reasonable to assume that if agency problems are not serious in a parent firm that they will not be serious in its subsidiaries.

Hypothesis 5. The highest profits are reported for subsidiaries of parent companies located in countries of Anglo-Saxon origin

with successively lower profits observed for subsidiaries with parents in countries with legal systems of Scandinavian, German and French origin. The lowest subsidiary profits are expected when a subsidiary's parent is in a transition country.

3. Data and methodology

We construct a unique data set of parent firms as well as their listed and unlisted subsidiaries. The data come from the Amadeus and Osiris databases.[13] Each database assigns a unique identification number to each company. Using these identification keys, it was possible to interlink the two databases. Amadeus contains ownership and financial data for mainly unlisted companies in 38 European countries. The second database, Osiris, contains ownership and financial data for publicly listed companies in around 120 countries.

We link the Osiris ownership data to the Amadeus financial data for unlisted subsidiaries to construct a panel covering the period 1994–2005 consisting of 4135 parent firms and 23,241 subsidiaries, both foreign- and domestically-owned. On average there are six subsidiaries per parent firm.

As noted above, we measure the quality of a country's governance institutions using the mean of five of the World Bank's WGI: voice and accountability, government effectiveness, regulatory effectiveness, rule of law, and control of corruption. Each index is briefly defined in Appendix A.

Country legal systems are classified into LLSV's four legal-origins categories: Anglo-Saxon, Scandinavian, German, and French, and a fifth category, Transition, for post-communist transition economies. Although it would be possible to try and trace the origins of transition countries' legal systems back to one of the other four categories, we think that each transition country's long experience with communism has sufficiently altered its legal institutions to warrant separate treatment. Table 1 gives the number of subsidiaries in each category. Columns identify the origin of a parent country, rows of a subsidiary. Thus, there are 318 subsidiaries in a German-origin country with a parent in an Anglo-Saxon country. The upper entries in the diagonal are the number of domestic subsidiaries in the legal system identified by the column or row, the entry below the line is the number of foreign subsidiaries in the same legal system. Thus, in our sample, 4882 subsidiaries in an Anglo-Saxon country had a parent from the same Anglo-Saxon country (US parent and US subsidiary, Canadian parent and subsidiary). Such companies are labelled domestic subsidiaries throughout the article. At the same time, 2029 subsidiaries in the Anglo-Saxon countries had parents from a different Anglo-Saxon country (US parent with a Canadian subsidiary). The Anglo-Saxon countries constitute the largest fraction of subsidiaries, while transition countries had the smallest fractions in each category. Nevertheless, over 13,000 subsidiaries come from non-Anglo-Saxon countries.

We measure company performance as after tax profits divided by total assets. Profitability is the most relevant measure of performance for a company's owners, but is also often manipulated by accountants and subject to different country accounting conventions. Nevertheless, we think that profitability is the best measure of performance that we can construct with the data available.

Table 2 presents the means and standard deviations for each variable used in the study. There is considerable variation in subsidiary profit rates with their standard deviation being roughly double the mean.

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[10] See, Gugler, Peev and Segalla (2013).

[11] See, La Porta, Lopez-de-Silanes, and Shleifer (1997), La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1999), La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2000), Mueller and Yurtoglu (2000), Gugler, Mueller, and Yurtoglu (2004a), Gugler, Mueller, and Yurtoglu (2004b), Gugler, Mueller, and Yurtoglu (2008), Demirgüç-Kunt and Maksimovic (1998), and Gedajlovic and Shapiro (1998). See for developing and developed countries, Gugler, Mueller, and Yurtoglu (2003), see for transition countries, Mueller and Peev (2007).

[12] See, La Porta et al. (2000), Morck, Shleifer, and Vishny (1998), and Faccio, Lang, and Young (2001).

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[13] Data are provided by Bureau van Dijk electronic publishing.

Table 1
Number of domestic/foreign subsidiaries according to legal origin.

Legal Origin of Subsidiaries	Legal Origin of Parent					Total Subsidiaries per Subsidiary legal origin
	Anglo-Saxon Parent	Scandinavian Parent	German Parent	French Parent	Transition Parent	
Anglo-Saxon Subsidiaries	*4,882* / 2,029	163	609	764	2	8,449
Scandinavian Subsidiaries	401	*1,499* / 398	184	212	5	2,699
German Subsidiaries	318	67	*977* / 267	250	2	1,881
French Subsidiaries	1,837	259	1,141	*4,154* / 1,399	2	8,792
Transition Subsidiaries	284	132	313	353	*308* / 30	1,420
Total Subsidiaries per Parent's legal origin	9,751	2,518	3,491	7,132	349	23,241

Notes: Subsidiaries with an ownership percentage of $\geq 50\%$ are included.
The diagonal elements on the upper right indicates the nb. of domestic subsidiaries in the legal system. The diagonal elements on the lower left indicates the nb. of foreign subsidiaries in the legal system. Anglo-Saxon includes: Australia, Barbados, Bermuda, Canada, Hong Kong, Ireland, India, Jamaica, Malaysia, M&V Isl., New Zealand, Pakistan, Singapore, United Kingdom, and United States. Scandinavian includes: Denmark, Finland, Island, Norway, and Sweden. German includes: Antilles, Austria, Germany, Japan, Korea, Liechtenstein, Luxembourg, Switzerland, and Taiwan. French includes: Argentina, Belgium, Brazil, Chile, Colombia, Ecuador, Egypt, France, Greece, Italy, Lebanon, Jordan, Indonesia, Mexico, Netherlands, Peru, Philippines, Portugal, Spain, Turkey, and Venezuela. Transition includes: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Serbia/Montenegro, Slovenia, and Slovakia.

4. Results

4.1. Aggregate results for Hypotheses 1–3

We first measure institutional quality as the average of the five WGI measures. Later we look at the results for each index. The WGI is published by country and year, so we can run our regressions with panel data for 1994–2005. The dependent variable is the profit to assets ratio of subsidiary s in year t, π_{st}. For Hypothesis 1 we use the profits of the parent of subsidiary s as an explanatory variable, π_{pt}, for Hypotheses 2 and 3 we use the institutional quality indexes for the country of the parent, GI_{cpt}, and of the subsidiary, GI_{sct}, as explanatory variables. To these we add as control variables the sizes of the parent and subsidiary measured as the logs of their total assets, $\ln K_{pt}$ and $\ln K_{st}$, and the age of the parent, A_{pt}. This gives the following equation.

$$\pi_{st} = a + b\pi_{pt} + cGI_{pct} + dGI_{sct} + e\ln K_{pt} + f\ln K_{st} + gA_{pt} + \mu t \quad (1)$$

For domestic subsidiaries GI_{pct} and GI_{sct} are, of course the same. Thus, we estimate two versions of (1), one for domestic subsidiaries with only GI_{sct} included, and one for foreign subsidiaries with separate governance indexes for both parent and subsidiary.

Table 3 presents the results for the two regressions. Hypothesis 1 receives resounding support for both domestic and foreign subsidiaries. The link between subsidiaries' and parents' profits is stronger for domestic subsidiaries, Each percentage point increase in a parent's profit rate is associated with an increase in a domestic subsidiary's profit rate by 0.308 of a percentage point. The relationship between a parent's and a foreign subsidiary's profits is not as strong, but nevertheless is also highly significant. The stronger link between parent and subsidiary profits for domestic subsidiaries suggests greater difficulty in transferring knowledge and other assets possessed by parent companies to subsidiaries in other countries.

Table 2
Descriptive statistics.

	Subsidiaries				Parents	
	Domestic		Foreign		Mean	Std
	Mean	Std	Mean	Std		
Profit/loss over total assets	0.040	0.08	0.037	0.08	0.044	0.05
Log of total assets	10.901	2.090	10.915	1.78	14.746	2.05
Age					62.4	57.1
Worldwide Governance Indicator (GI)	1.530	0.37	1.467	0.44	1.547	0.34
Voice and accountability	1.233	0.24	1.247	0.25	1.260	0.23
Rule of law	1.562	0.37	1.480	0.45	1.587	0.33
Regulatory quality	1.327	0.37	1.304	0.39	1.334	0.34
Control of corruption	1.796	0.52	1.674	0.63	1.794	0.47
Governmental efficiency	1.768	0.39	1.695	0.50	1.777	0.37
Political stability	0.890	0.28	0.898	0.32	0.930	0.29

Note: Subsidiaries with an ownership percentage of $\geq 50\%$ are included. The 6 dimensions of the Worldwide Governance Indicator by Kaufmann et al. (2008). Voice and accountability: citizens' participation in governmental processes. Political stability: likelihood of governmental destabilization by unconstitutional means. Government effectiveness: quality of public services, policy implementation and commitments. Regulatory quality: formulation of governmental regulations. Rule of law: law and contract enforcement, likelihood of crime and violence. Control of corruption: extent to which public power is exercised for private gain.

Table 3
Results for Hypotheses 1–3.

%	Domestic subsidiaries (1) OLS	Foreign subsidiaries (2) OLS
G_{pct}		0.012***
		2.80
GI_{sct}	0.026***	0.007**
	6.56	2.41
(Log total assets)$_{pt}$	−0.002*	0.002**
	−1.75	2.46
(Log total assets)$_{st}$	−0.001	−0.003***
	−0.49	−5.22
Age$_{pt}$	0.000	0.000
	0.07	0.91
(Profit/total assets)$_{pt-1}$	0.308***	0.165***
	10.64	11.04
Constant	0.048***	−0.002
	7.37	−0.14
R-square adj.	0.07	0.03
Observations	31,652	33,331

Note: Subsidiaries with an ownership percentage of ≥50% are included. Subindex p refers to parent firm, subindex s to subsidiary firm. Subindex pc refers to country of parent firm, subindex sc to country of subsidiary firm. Domestic: subsidiary country is the same as the parent country. Foreign: subsidiary country is not the same as the parent country. Below the regression coefficient the t-value is reported. All specifications control for industry and year effects. All specifications are clustered by the country of the subsidiary and the parent firm.

* Significance is reported at 10%.
** Significance is reported at 5%.
*** Significance is reported at 1%.

The coefficient on institutional quality for domestic subsidiaries is positive and also highly significant. GI has a range of five. Its coefficient of 0.026 for domestic subsidiaries implies that an increase of only one point in the index is associated with an increase in the return on assets by about 60% of their mean value. The two GI coefficients in the foreign subsidiary equation sum to a bit less than the size of the coefficient in the domestic subsidiary equation. The estimated impact of governance institutions in the parent's country is somewhat greater than for the subsidiary's country, however. All in all, the results in Table 3 offer considerable support for Hypotheses 2 and 3 – a country's institutional quality is positively related to the performance of subsidiaries. Here it should also be noted that the effects on subsidiary profits from strong institutional quality are understated, if institutional quality also raises a parent's profits, since parents' profits are included in the equation.

The size of the parent in the estimation for foreign subsidiaries is positively related to subsidiaries' profits, while the size of the subsidiaries has a negative coefficient. Thus, large firms seem more successful at setting up subsidiaries, but they also do better if they establish small subsidiaries. Both size variables are insignificant for domestic subsidiaries. The third control variable, the age of the parent company, is insignificant in both equations.

The results in Table 3 offer considerable support for Hypothesis 1 – profitable companies are able to transfer some of the assets that make them profitable to their subsidiaries. These assets might take the form of good organizational structures, corporate governance institutions, and other advantages, which could be transferred to any subsidiary controlled by a company. Alternatively, the assets might be specific to the line of business in which the parent operates, like a patent for a production process, and only result in higher profits for the subsidiary, if it is in the same industry as the parent. To determine whether one or both of these conjectures is operative, we classified a parent/subsidiary relationship as *related*, if parent and subsidiary are in the same, 2-digit ISIC industry, and non-related otherwise. We then estimated separate regressions for the two sets of relationships. The results appear in Table 4. The largest coefficient on parents' profits is observed for domestic subsidiaries

in the same 2-digit industry as the parent, 0.358. The coefficient on parents' profits for domestic subsidiaries in a different industry from the parent is nevertheless a highly significant 0.261. Thus, much of the advantage a profitable parent has is not specific to its line of business, and would seem to reflect organizational and governance advantages. The larger coefficient on parents' profits for domestic subsidiaries in the same industry implies that *some* of the assets that make a parent profitable are industry specific, however.

The coefficients on parents' profits are much lower for foreign subsidiaries, and of the same size for related and non-related subsidiaries. Thus, parents find it more difficult to transfer their assets across borders, and the assets that they do transfer appear to be of a general nature.

The coefficients on the GI variables are not sensitive to whether a subsidiary is in the same 2-digit industry or not, which is consistent with the notion that these governance institutions improve performance in a general way. Interestingly, the positive effect of a parent's size on subsidiary profitability is stronger for subsidiaries in the same industry as the parent, and parents' size is even *negatively* associated with subsidiaries' profitability for non-related, domestic subsidiaries.

4.2. Aggregate results for Hypotheses 4 and 5

When analyzing legal origins of parents' and subsidiaries' countries we face the problem that for foreign subsidiaries there are 25 possible combinations of parent and subsidiary countries (e.g. German-origin parent and French-origin subsidiary). Estimating separate effects for each of the 25 combinations would not only produce a confusing array of results, but would also give us estimates for some cells (e.g. transition country parent and Scandinavian subsidiary) based on very few observations. We thus decided to group together the countries thought by LLSV to have the strongest legal protection of shareholders, the Anglo-Saxon and Scandinavian countries, form a second group with the German- and French-origin countries, and leave the transition countries as a third category. This grouping gives us nine possible parent/subsidiary combinations.

In equation 1 of Table 5 the dummy variable for Anglo-Saxon and Scandinavian countries has been omitted, so that the constant captures their profit rate, 0.074. The profitability of domestic subsidiaries in German- or French-origin countries is a significant 0.013 percentage point lower profit rate, with domestic subsidiaries in transition countries falling still further behind the top group by −0.030. Domestic subsidiaries in transition countries have a bit more than half the profitability of those in Anglo-Saxon and Scandinavian countries.

Turning to equation 2 in Table 5, we observe negative coefficients on all of the country combination dummies except for subsidiaries in transition countries with parents in German- or French-origin countries, which on average have an insignificant 0.003 higher profit rate than foreign subsidiaries in Anglo-Saxon or Scandinavian countries with parents from the same country group. Thus, companies in German- or French-origin countries have on average been rather successful in setting up subsidiaries in transition countries. The remaining seven coefficients on the legal-origins dummies for foreign subsidiaries are all negative with five being statistically significant at 10% or better. Foreign subsidiaries in transition countries with parents in other transition countries perform the worst – a predicted profit rate of only 0.016 (0.046 − 0.030) compared to 0.049 (0.046 + 0.003) for subsidiaries in transition countries with parents in German- or French-origin countries. All three of the coefficients on the dummies for parents in transition countries are negative and significant. These results are broadly consistent with the predictions from the legal origins literature.

Table 4
Results for related and non-related affiliated subsidiaries.

%	Domestic subsidiaries		Foreign subsidiaries	
	Related (1) OLS	Non-related (2) OLS	Related (3) OLS	Non-related (4) OLS
GI_{pct}			0.010[*]	0.015[***]
			1.89	3.20
GI_{sct}	0.027[***]	0.024[***]	0.006[*]	0.008[**]
	6.01	4.20	1.72	1.99
(Log total assets)$_{pt}$	0.001	−0.002[**]	0.003[***]	0.001[*]
	0.89	−2.29	2.72	1.73
(Log total assets)$_{st}$	−0.001	−0.001	−0.003[***]	−0.004[***]
	−0.54	−0.32	−3.14	−4.92
Age$_{pt}$	0.000	0.000	0.000	0.000
	0.32	0.26	0.89	0.87
(Profit/total assets)$_{pt-1}$	0.358[***]	0.261[***]	0.153[***]	0.160[***]
	14.50	7.14	6.84	9.00
Constant	0.048[***]	0.031[*]	−0.019	−0.009
	4.56	1.79	−1.25	−0.29
R-square adj.	0.11	0.06	0.04	0.03
Observations	14,288	17,225	14,404	18,920

Note: Subsidiaries with an ownership percentage of ≥50% are included. Subindex *p* refers to parent firm, subindex *s* to subsidiary firm. Subindex *pc* refers to country of parent firm, subindex *sc* to country of subsidiary firm. Domestic: subsidiary country is the same as the parent country. Foreign: subsidiary country is not the same as the parent country. Related means that parent and subsidiary operate in the same 2-digit industry. Non-related means that parent and subsidiary operate in different 2-digit industries. Below the regression coefficient the *t*-value is reported. All specifications control for industry and year effects. All specifications are clustered by the country of the subsidiary and the parent firm.

[*] Significance is reported at 10%.
[**] Significance is reported at 5%.
[***] Significance is reported at 1%.

The coefficients on the parent's profitability are again both highly significant and very close to their values in Table 3. Hypothesis 1 continues to receive strong support.

It is possible, of course that the legal-origins dummies are not capturing differences in degrees of protection of shareholders, as claimed by LLSV, but other institutional differences across the countries, perhaps even some of the differences measured by the governance index. Paul Mahoney (2001), for example, argues that it is the greater protection of individual citizen property rights that explains why countries with Anglo-Saxon legal institutions grow faster than countries with civil law systems. Acemoglu and Johnson (2005) have also found differences in the protection of property rights to be important in explaining differences in the sizes of external capital markets and GDP per capita in former colonies of Western countries. They also discuss the difficulty in constructing pure "property rights" measures, and show that one of their proxies for property rights institutions in fact incorporates information closely related to legal institutions. If the legal origin dummies are partially capturing such institutional differences, then adding the governance indexes back into the equations with the legal origins' dummies should detract from their explanatory power and, indeed, they do. The intercept in equation 3, which measures profitability for a subsidiary in an Anglo-Saxon/Scandinavian country with a parent in the same country, falls from 0.074 to 0.047. Domestic subsidiaries in the other two country categories have insignificantly lower profit rates. The profit rate for foreign subsidiaries in Anglo-Saxon/Scandinavian countries with parents in Anglo-Saxon/Scandinavian countries drops from a significant 0.046 to essentially zero (0.003). The predicted profit rates for subsidiaries in transition countries with parents in German/French origin countries falls from 0.049 to 0.023, but remains statistically significant. All of the coefficients on the other country categories are insignificantly different from the 0.003 coefficient for foreign subsidiaries in Anglo-Saxon/Scandinavian countries with parents in Anglo-Saxon/Scandinavian countries except for subsidiaries in German/French origin countries with parents in transition countries. Thus, the combination of German/French origin and transition country yields the highest (German/French parent) and lowest (transition parent) predicted profit rates.

We conclude that controlling for the quality of a country's governance institutions does reduce the importance of the legal origin of a country. The reverse is also somewhat the case. The coefficient on governance institutions in the domestic subsidiaries equation is 0.026 in Table 3, but only 0.016 in Table 5, although still statistically significant. In the foreign subsidiaries equation, the coefficient on the GI for the parents' countries falls only slightly, from 0.012 to 0.011. The coefficient on the subsidiaries GI, on the other hand, *more than doubles* rising from 0.007 to 0.015 and now actually is *greater* than the coefficient of the GI for a parent.

We conclude that both the quality of a country's governance institutions and the origin of its legal system for both parents and subsidiaries are related to the subsidiary's profitability. But both sets of institutions appear to be partly capturing the same underlying differences across countries.

4.3. Decomposing institutional quality

The index of institutional quality used above is an average of five different measures. Some World Bank indexes of institutional quality, like "the rule of law," measure an attribute of a country's institutional structure. Others, like "political stability" or "government effectiveness," represent *consequences* of a country's institutional structure. It is possible that these country characteristics might affect the performance of companies differently. High corruption and the absence of the rule of law should seriously handicap businesses, but political instability might leave them unaffected. Italy had by most measures considerable political instability during the last half of the 20th century, but its companies performed very well over most of this period. It is worth examining, therefore, whether we get similar results for the individual measures of institutional quality as we obtained for the aggregate measure.

Table 6 contains the correlation matrix for the six World Bank indexes of institutional quality and the average index that we use.

Table 5
Results for Hypotheses 4 and 5.

%	Domestic subsidiaries (1) OLS	Foreign subsidiaries (2) OLS	Domestic subsidiaries (3) OLS	Foreign subsidiaries (4) OLS
GI_{pct}				0.011**
				2.36
GI_{sct}			0.016***	0.015***
			2.90	2.95
(Log total assets)$_{pt}$	−0.001	0.001**	−0.002	0.001**
	−1.06	2.39	−1.15	2.52
(Log total assets)$_{st}$	−0.001	−0.003***	−0.001	−0.003***
	−0.53	−4.81	−0.56	−5.01
Age$_{pt}$	0.000	0.000	0.000	0.000
	0.05	1.11	0.02	1.03
(Profit/total assets)$_{pt-1}$	0.318***	0.180***	0.319***	0.178***
	14.83	11.84	14.96	11.42
German–French$_{sc}$/German–French$_{pc}$	−0.013***	−0.010***	−0.006	−0.003
	−5.16	−2.72	−1.61	−0.79
Transition$_{sc}$/Transition$_{pc}$	−0.030***	−0.030***	−0.010	0.001
	−3.64	−3.06	−1.05	0.07
Anglo-Scandinavian$_{sc}$/German–French$_{pc}$		−0.004		−0.003
		−0.98		−0.83
Anglo-Scandinavian$_{sc}$/Transition$_{pc}$		−0.021***		−0.008
		−4.39		−1.37
German–French$_{sc}$/Anglo-Scandinavian$_{pc}$		−0.004		0.001
		−1.14		0.36
German–French$_{sc}$/Transition$_{pc}$		−0.024***		−0.015***
		−6.04		−2.99
Transition$_{sc}$/Anglo-Scandinavian$_{pc}$		−0.010*		0.005
		−1.65		0.55
Transition$_{sc}$/German–French$_{pc}$		0.003		0.020**
		0.40		2.28
Anglo-Scandinavian$_{sc}$/Anglo-Scandinavian$_{pc}$	0.074***	0.046***	0.047***	0.003
	4.03	5.48	2.76	0.22
R-square adj.	0.06	0.02	0.06	0.02
Observations	31,652	33,331	31,652	33,331

Note: Subsidiaries with an ownership percentage of ≥50% are included. Subindex *p* refers to parent, subindex *s* to subsidiary. Subindex *pc* refers to country of parent firm, subindex *sc* to country of subsidiary firm. Domestic: subsidiary country is the same as the parent country. Foreign: subsidiary country is not the same as the parent country. Below the regression coefficient the *t*-value is reported. All specifications are clustered by the country of the subsidiary and the parent firm. We categorize countries according to three groups of legal origin. German–French refers to the legal origin being Germanic or French. Anglo-Scandinavian refers to the legal origin being either Anglo-Saxon or Scandinavian. Transition refers to the legal origin being from a Transition country. The reference category is subsidiary–parent pairs both with Anglo-Scandinavian legal origin.

* Significance is reported at 10%.
** Significance is reported at 5%.
*** Significance is reported at 1%.

Three of the indexes have correlations with Aggregate GI of around 0.85. The lowest correlation with this GI is for political stability as expected, but even it is fairly high ($r = 0.71$). The correlations between pairs of sub-indexes are also generally quite high reaching 0.969 between rule of law and control for corruption. Political stability exhibits the weakest correlations with the other indexes.

Table 6 essentially answers the question posed in this subsection. With such high correlations among the aggregate index and the sub-indexes one does not expect that one of the sub-indexes will dramatically outperform the others or the aggregate index. And this is what we observe. Table 7 reports results for domestic subsidiaries when the aggregate index used in Table 3 is replaced sequentially with the six individual World Bank indexes. All six coefficients on the individual indexes are positive and, except for political stability, all are significant. The largest coefficient is on the voice-and-accountability index, while rule of law and control for corruption pick up the highest *t*-values. Political stability has the smallest coefficient. Nevertheless, the R^2s for all six equations are essentially the same. Thus, we confirm our suspicion that political stability is unrelated to subsidiary profitability, but cannot conclude that any of the other five governance indicators is superior to the other four or to their average.

Table 6
Correlation table of Worldwide Governance Indicators.

	Voice-accountability	Rule of law	Regulatory quality	Control for corruption	Governmental efficiency	Political stability
Voice-accountability	1.000					
Rule of law	0.770	1.000				
Regulatory quality	0.684	0.795	1.000			
Control of corruption	0.732	0.969	0.820	1.000		
Government effectiveness	0.739	0.962	0.794	0.951	1.000	
Political stability	0.746	0.685	0.521	0.646	0.636	1.000
GI aggregate	0.772	0.857	0.769	0.853	0.847	0.706

Note: The 6 dimensions of Worldwide Governance Indicator by Kaufmann et al. (2008) include the following. Voice and accountability: citizens' participation in governmental processes, freedom of association, free media. Political stability: likelihood of governmental destabilization by unconstitutional means. Government effectiveness: quality of public services, policy implementation and commitments. Regulatory quality: formulation of governmental regulations that promote private sector development. Rule of law: law and contract enforcement, likelihood of crime and violence. Control of corruption: extent to which public power is exercised for private gain.

Table 7
Domestic subsidiaries and individual components of the Worldwide Governance Indicator.

	Voice and accountability	Rule of law	Control for corruption	Regulatory quality	Governmental efficiency	Political stability
GI_{sct}	0.028***	0.026***	0.018***	0.021***	0.023***	0.011
	3.00	6.64	7.27	4.77	6.51	1.49
(Log total assets)$_{pt}$	−0.002**	−0.002*	−0.002*	−0.001	−0.002*	−0.003**
	−2.51	−1.93	−1.88	−1.32	−1.93	−2.62
(Log total assets)$_{st}$	−0.000	−0.001	−0.001	−0.001	−0.001	−0.000
	−0.21	−0.45	−0.48	−0.51	−0.43	−0.10
Age$_{pt}$	0.000	0.000	0.000	0.000	−0.000	0.000
	0.03	0.01	0.05	0.27	−0.04	0.02
(Profit/total assets)$_{pt-1}$	0.318***	0.311***	0.309***	0.303***	0.309***	0.320***
	10.82	10.51	10.58	10.48	10.72	10.60
Constant	0.057***	0.048***	0.056***	0.059***	0.046***	0.077***
	4.48	6.21	8.61	8.14	6.91	5.89
R-square adj.	0.07	0.07	0.07	0.07	0.07	0.07
Observations	31,652	31,652	31,652	31,652	31,652	31,652

Note: The 6 dimensions of Worldwide Governance Indicator by Kaufmann et al. (2008) include the following. Voice and accountability: citizens' participation in governmental processes, freedom of association, free media, etc. Political stability: likelihood of governmental destabilization by unconstitutional means. Government effectiveness: quality of public services, policy implementation and commitments. Regulatory quality: formulation of governmental regulations that promote private sector development. Rule of law: law and contract enforcement, likelihood of crime and violence. Control of corruption: extent to which public power is exercised for private gain. Below the regression coefficient the *t*-value is reported. All specifications control for industry and year effects. All specifications are clustered by the country of the subsidiary and the parent firm.
* Significance is reported at 10%.
** Significance is reported at 5%.
*** Significance is reported at 1%.

Table 8
Foreign Subsidiaries and individual components of the Worldwide Governance Indicator.

	Voice and accountability	Rule of law	Control for corruption	Regulatory quality	Governmental efficiency	Political stability
GI_{sct}	0.016***	0.005*	0.004*	0.010***	0.006**	0.013***
	3.23	1.68	1.78	3.42	2.22	2.85
GI_{pct}	0.015***	0.009**	0.010***	0.007*	0.012***	−0.001
	2.76	2.30	3.25	1.80	3.28	−0.40
(Log total assets)$_{pt}$	0.001**	0.001**	0.001**	0.002**	0.002**	0.001**
	2.42	2.25	2.39	2.54	2.57	2.43
(Log total assets)$_{st}$	−0.003***	−0.003***	−0.003***	−0.004***	−0.003***	−0.003***
	−5.19	−5.12	−5.02	−5.44	−5.17	−5.31
Age$_{pt}$	0.000	0.000	0.000	0.000	0.000	0.000
	0.71	0.96	0.79	1.13	0.86	0.94
(Profit/total assets)$_{pt-1}$	0.167***	0.171***	0.166***	0.165***	0.163***	0.173***
	11.00	10.86	11.00	11.25	11.13	11.05
Constant	−0.000	0.003	0.003	0.002	−0.008	0.026**
	−0.04	0.27	0.26	0.17	−0.63	2.30
R-square adj.	0.03	0.03	0.03	0.03	0.03	0.03
Observations	33,331	33,331	33,331	33,331	33,331	33,325

Note: The 6 dimensions of Worldwide Governance Indicator by Kaufmann et al. (2008) include the following. Voice and accountability: citizens' participation in governmental processes, freedom of association, free media. Political stability: likelihood of governmental destabilization by unconstitutional means. Government effectiveness: quality of public services, policy implementation and commitments. Regulatory quality: formulation of governmental regulations that promote private sector development. Rule of law: law and contract enforcement, likelihood of crime and violence. Control of corruption: extent to which public power is exercised for private gain. Below the regression coefficient the *t*-value is reported. All specifications are clustered by the country of the subsidiary and the parent firm.
* Significance is reported at 10%.
** Significance is reported at 5%.
*** Significance is reported at 1%.

In Table 8, the two average GI indexes used in Table 3 for foreign subsidiaries are replaced by the individual indexes. Eleven of the twelve coefficients on the governance indexes are statistically significant at the 10% level or better. The exception is again for political stability, which is insignificant for the parent country. While there are differences in the sizes of the coefficients across the indexes and their *t*-values, the R^2s for the six equations are again essentially the same, and we think it would be wrong to conclude that one or another governance institution is superior to all others.

5. Conclusions

A great deal of research has claimed that "institutions matter" when it comes to the performance of countries. Good institutions are claimed to produce higher incomes per capita, higher growth rates and other dimensions of social welfare. Companies in countries with good institutional environments have higher returns on investment, pay out more in dividends and exhibit other attributes of good performance. In this article, we have tested to see whether good institutions are also associated with better performance of subsidiaries using two sets of definitions of good institutions.

Our results are consistent with previous findings in the literature. Good institutions are associated with better performance for subsidiaries. Both the quality of the parent country's institutional environment, and that of the country in which the subsidiary is located are positively related to the profitability of a subsidiary. For foreign subsidiaries, the quality of institutions in the parent's country had about the same impact on the profitability of a subsidiary as did the quality of institutions in the subsidiary's country. This finding combined with the large coefficients on the profitability of the parents in all of our models suggests that profitable companies located in countries with strong institutional environments are able to transfer some of their advantages to their subsidiaries, domestic or foreign.

We also found that the origins of the legal systems were significantly related **to** subsidiaries' profits. When the governance institutions were added to the model with legal origins, however, the relationships between legal origins and subsidiary profitability weakened. Thus, there appears to be some overlap between the quality of a country's legal institutions in protecting shareholders and the quality of its governance institutions.

While much of the literature views institutional quality as *causing* good performance, we believe in caution in interpreting our results in this way. The facts that both the legal origins of countries and their governance institutions are related to subsidiaries' profitability, and that there is overlap in their explanatory power, suggest that both sets of explanatory variables may be capturing the effects of some other underlying variables. Thus, while we have not established causal relationships, our results reveal significant correlations between the two sets of institutional variables and subsidiary profitability consistent with our theoretical intuitions.

Acknowledgments

Appendix A. Worldwide Governance Indicators (WGIs)

Various institutions (e.g. Freedom House, the Heritage Foundation, the Business Environment Risk Intelligence (BERI), Gallup International, the World Economic Forum, the International Country Risk Guide (ICRG) compiled by the Political Risk Services group) construct measures of institutional quality. Drawing on the data sources provided by the institutions mentioned above and other sources, Kaufmann et al. (2008) estimate six different dimensions of institutional quality: voice and accountability, government effectiveness, rule of law, regulatory quality, absence of corruption and political stability. The indicators are constructed using unobserved components methodology and are measured in units ranging from -2.5 to $+2.5$, with higher values corresponding to better governance:

Voice and accountability – measuring perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.

Political stability – measuring perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.

Government effectiveness – measuring perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.

Regulatory quality – measuring perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

Rule of law – measuring perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

Control of corruption – measuring perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

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