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Mapping the Landscape of Transactions

The Governance of Business Relations in Latin America

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Abstract

A new set of survey questions is used to map governance structures that firms employ to support the successful implementation of transactions. Responses to the questions were collected as part of the Enterprise Surveys in six South American countries. Without imposing any a priori model, latent class analysis (LCA) discovers meaningful patterns of governance structures that readily match constructs in the literature. All governance structures use bilateralism. Bilateralism and formal institutions are sometimes complements, but never substitutes. For each firm, LCA provides estimates of the posterior probability that the firm uses each of the discovered governance structures.

These estimates can be used by researchers to go further, testing their own hypotheses relevant to Williamson's discriminating alignment agenda using additional data from the Enterprise Surveys or elsewhere. Variations in the effectiveness of different governance structures across countries and across different types of firms and transactions are explored. Regional variation within countries is greater than cross-country variation. Foreign-owned firms, exporters, larger firms, and better-managed ones are more likely to use governance structures that complement bilateralism with use of the legal system or with the help of paid third-parties.

Mapping the Landscape of Transactions: The Governance of Business Relations in Latin America

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I. Introduction

In the 40 years since Williamson (1979) introduced the concept of the governance of contractual relations, there has been little progress in characterizing the overall mix of those governance structures that typically exist in an economy, and especially on how this mix varies between countries. The aims of the current paper are to fill these gaps in the literature using the responses to identical survey questions posed to respondents from representative samples of firms in six South American countries. Our methodology is sufficiently general that it could be immediately applied to any country or region elsewhere in the world, producing results that are exactly comparable to those presented below.

A governance structure is the "institutional framework within which the integrity of a transaction is decided" (Williamson 1979: 240). It is a coordinated combination of different mechanisms that together encourage the fulfillment of agreements to transact. Such mechanisms might be trust, hit-men, legally enforceable contracts, etc. Although there are some datasets (and many anecdotes) on the popularity of each of these individual mechanisms in specific settings, few studies have analyzed data on the use of a comprehensive set of mechanisms for a whole economy.[1] No studies look at the comprehensive picture in a consistent manner across countries. Stated starkly, currently there exists no systematic methodology or data that would allow us to draw any conclusion on, for example, whether firms in La Paz, Bolivia, rely more or less on a combination of law and trust than firms in La Paz, Argentina, or, indeed, La Paz, Arizona.

Collection of data on each of a comprehensive set of mechanisms is necessary to study governance structures because we do not know the ways in which firms combine different mechanisms into coherent structures of transactional governance. Moreover, there is no broad theory predicting which particular combinations of mechanisms we should expect to observe often, and which we can safely ignore. For example, it is very much a matter of contention whether personal trust and law are complements or substitutes.

Given the absence of a tight theoretical framework to facilitate the characterization of those typical governance structures whose prevalence we aim to measure, there is a need to use an exploratory statistical technique that simultaneously discovers governance structures and estimates their prevalence. That is, the governance structures themselves are the estimated values, or classes, of a categorical latent variable. Discovering the characteristics of the most common classes is a key part of the statistical analysis. In an examination of Hungarian data,

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[1] Hendley et al. (2000), Hendley and Murrell (2003), and Mike and Kiss (2018) are the only country-wide studies of which we are aware that use datasets to which the current paper's methods could be applicable. These datasets are all on single countries. The World Bank's Regional Project on Enterprise Development (RPED) collected cross-country comparable data on, inter alia, firms' attempts to solve transactional problems in 7 African countries beginning in the early 1990's. (On this project and some of its work on transactional issues, see Fafchamps (2004).) Although containing very rich cross-country-comparable data on transactional problems and their solutions, the questions used in the RPED surveys are not in a form that would make the responses suitable for analysis of issues addressed in this paper. Unlike the current paper, none of the studies cited in this footnote use a sampling design and survey weights so that estimates are representative of a whole economy.

Mike and Kiss (2018) have shown that latent class analysis (LCA) is suitable for this task.[2] LCA is particularly useful because, in contrast to standard econometric techniques, no special assumptions or adjustments are required to explore whether different mechanisms can sometimes be complements and sometimes be substitutes. This flexibility is intrinsic in LCA's data-generating process.

We develop the application of LCA for the discovery and estimation of governance structures, and apply it to a six-country dataset. We characterize those governance structures that are most common, estimate the prevalence of each, and show how the use of each varies across countries, types of firms, and types of transactions. By examining the data for all countries within a single statistical analysis, we are able to construct measures that are exactly comparable across countries, facilitating diagnosis of comparative strengths and weaknesses in transactional activities. Our characterization of governance structures is data-driven: it does not rely on an a priori conception of which governance structures are used in practice. Thus our findings could stimulate theorization on how firms combine enforcement mechanisms into coherent governance structures.

The remainder of this introduction provides a fuller guide to the steps in our analysis. The data for this exercise was collected as part of the most recent work of the World Bank Enterprise Surveys Unit in Argentina, Bolivia, Ecuador, Paraguay, Peru, and Uruguay. We detail the process of data collection in Section II. The core question used here was specially developed for this paper.[3] It asks about the effectiveness of six different individual mechanisms in resolving or preventing problems in agreements. The mechanisms are trust, mutual interest, private dispute resolution, private third parties, government officials, and the legal system. The question was posed separately for relations with suppliers and relations with customers. Section II discusses both the logic of the question and provides validation of its structure by examining general characteristics of the responses to the question.

Section III presents a somewhat detailed introduction to LCA, in light of its general unfamiliarity for economists. LCA is analogous to principal components (or more generally factor analysis). In the simplest case of the latter, a continuous, cardinal, latent variable is estimated using a set of observed measures that reflect the variable with error. Undoubtedly, the most well-known application in cross-country economics is the Worldwide Governance Indicators (WGI) project. LCA is used when estimating a discrete, nominal, latent variable from a set of measures that similarly reflect the variable with error. In our application, the measures are the survey responses to the questions on the use of the six different mechanisms. Each latent class is a governance structure, reflecting the strategic combination of a set of specific mechanisms.

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[2] LCA has been used a great deal in the social sciences in general, but not much in economics. For an intuitive introduction, see Collins and Lanza (2010), for a precise description of the decisions to be made in practically implementing LCA and the criteria to be used in making them, see Masyn (2013), and for a comprehensive technical introduction to the statistical theories and methods used by the software package that produces the results for this paper, see Vermunt and Magidson (2016). The applications most similar to ours in economics are Ebers and Oerlemans (2016) and Mike and Kiss (2018).

[3] The question was adapted from the one posed by Hendley and Murrell (2003).

LCA estimation begins with the specification of a general model of the data-generating process. As is characteristic of latent models, there are detailed specification choices to be made within the structure imposed by the general model. Section III also summarizes the statistical criteria that we use to make decisions on these specifications choices. This discussion rests heavily on existing work in a variety of social science fields that have used LCA much more than has been the case in economics.

Section IV presents the estimation process and discusses general characteristics of the estimates. For relationships with suppliers and with customers separately, we argue that four latent classes, that is governance structures, summarize the data in a statistically satisfactory and parsimonious way. We detail important properties of the estimated classes, for example, the number of firms using each governance strategy and the importance of each of the six mechanisms within each strategy.

Section V justifies the names that we choose for each strategy. This is an inductive theoretical enterprise resting on the empirical properties of the latent classes. The names are chosen to evocatively convey the nature of the governance strategies, but also to resonate with existing theory in the transaction-cost literature. For example, we are able to identify firms that rely on a purely bilateral governance strategy and another set of firms that uses a governance strategy combining many different mechanisms. Section V closes by summarizing a number of exercises that establish the validity of our approach, both in terms of the details of the LCA estimates and the inductive generalizations that we derive from that implementation.

Section VI provides illustrative examples of the use of the information generated by our method. We provide descriptive statistics on the variation of the use of governance structures across subsets of firms. These are descriptive in the sense that they do not isolate the ceteris paribus causal effects of single variables, but we use techniques previously developed for LCA that produce consistent estimates of the descriptive parameters. That is, for each of the estimated parameters, we can describe a (very artificial) experiment that matches the effect that the parameters capture. The results of these exercises point the way to potential areas of further research and possible policy conclusions.

We find, for instance, that the prevalence of different governance structures varies more between regions than across countries, suggesting that the practicalities of local institutional implementation are at least as important as the formal rules set at the national level. We also find that foreign ownership, exporting status, firm size, and management quality all covary in an intuitively expected way with the use of governance structures. The associations that are absent are of interest as well: the experience of corruption, legal form, and whether sales are local, national, or international do not covary with governance structure, contrary to intuition and existing research (e.g. McMillan and Woodruff 1999).

Section VII summarizes and then concludes by adumbrating suggested extensions to the above analysis. A posted dataset contains estimates for each firm of the probabilities of the use

of each of the estimated governance structures.[4] This dataset can be matched to existing survey results that are available on the data portal of the Enterprise Surveys (ES). Using our new data, researchers can conduct analyses similar to those presented in Section VI using their own favored variables from the ES surveys. Moreover, other summary statistics or analyses can be obtained by matching the WGI at the country level, the Doing Business database also at the country level, the World Values Survey and the Americas Barometer at the country and region level. Such matching can produce datasets whose applicability can be expanded to address a broad range of questions using a Rajan-Zingales (1998) style methodology. Thus, the current exercise is not narrowly about the question of estimating the prevalence of different governance structures across countries, but also serves a broader issue—providing a database that can expand opportunities for research on institutions and transactions. Such a database, if expanded to more countries, could play a role in research endeavors similar to that provided by the WGI and Doing Business. Our data could also be used for policy-relevant analysis, for example, on whether legal structures such as small claims courts affect the usefulness of different governance structures.

II. Data

We use responses to a unique set of questions posed in 2017 and 2018 as part of the ES implemented in six Latin American countries: Argentina, Bolivia, Ecuador, Paraguay, Peru, and Uruguay.[5] The surveys are based on interviews with business owners and top managers in a sample of officially registered firms with at least five employees in the manufacturing and services sectors. The surveys are designed to be nationally representative, using a stratified survey design.[6]

As part of the implementation of the surveys, twelve newly designed questions were administered, six concerning interactions with the firms' suppliers and six on customer interactions. These questions were on the effectiveness of various methods of preventing or resolving problems when implementing agreements.[7] When designing questions to be administered in a long survey and addressed to firms of all types, in different institutional settings, both conceptual and practical issues immediately arise. Indeed, it is worth remembering that in the seminal paper in the current line of inquiry, Macaulay (1963) was forced to remark that "…to a great extent, existing knowledge has been inadequate to permit more rigorous procedures—as yet one cannot formulate many precise questions to be asked a systematically selected sample…Much time has been spent fishing for relevant questions…" Despite the length of time since the publication of that paper and the recognition in the intervening years that it had

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[4] The data is posted at www.enterprisesurveys.org/portal. Users need an account (available free of charge) to gain access to the data. After signing in, go to the "Combined Data" tab. There look for the "Landscape of Transactions" section in the listing of datasets. Then in that section download the zip file at "2018 Enterprise Survey Data".

[5] Data collection efforts benefited from generous funding from the World Bank Group's Knowledge for Change (KCP) program.

[6] Full details of the methodology can be found at http://www.enterprisesurveys.org/methodology. Stratified random sampling was used, with strata based on firm size, geographical location, and economic sector. The data includes sampling weights. All results are obtained with proper use of these weights and thus refer to the entire population of establishments in the six countries.

[7] Note that for simplicity we use firms interchangeably with establishments, which is the survey's unit of analysis. In fact, the phrase "top managers or owners of these establishments" is probably more accurate, but too cumbersome to use.

raised absolutely fundamental issues, there have been few attempts to address in a general way the problems of data collection that Macaulay so clearly acknowledged.

A first issue to resolve in question design is whether to ask firms about their relations with suppliers and customers in general, as in Hendley and Murrell (2003), or to focus on highly specific transactions, as when Mike and Kiss (2018) asked about relations with a 'typical supplier' and a 'typical buyer', allowing the respondent to choose the typical interaction.[8] Governance structures do vary within firms between transactions, suggesting that asking about s specific transaction has more direct theoretical backing. But asking respondents to focus only on a transaction of their own choice risks losing generality and invites selection bias. We therefore chose to ask about suppliers and customers in general, and not specific transactions. The assumption is that respondents will convey information that summarizes governance structures across the range of their firm's transactions. The surveyors did not report any problems with posing the question in this way.

A second issue was to decide on the specific set of properties to ask respondents to focus upon when assessing the worth of the elements of a governance structure. We chose to focus on the preventing and/or resolving of problems in the implementation of agreements because this was a fairly well circumscribed objective that would be easy for respondents to understand. It also resonates with fundamental concerns common to both the transaction-cost and contract-theory literatures. This objective is narrower than asking respondents to focus upon whether agreements work in an efficient way, although certainly part of that broader goal. For example, as Hadfield and Bozovic (2016) have argued in the context of innovation-oriented transactions, legal contracts might be very valuable in the planning and coordination of transactions, even if the parties have no intention of using the contract in a formal legal setting should disputes arise. To the extent that a contract is useful purely for such planning, respondents would not identify the use of such a contract with the effectiveness of the legal system, but rather with bilateral mechanisms.

A third issue was to frame questions whose tenor was consistent with the existing approach used by the ES. The questions were based on those in Hendley and Murrell (2003), but had to be much simplified to fit into the standard ES questionnaire. For example, specific examples of mechanisms of supporting transactions had to be excluded to shorten the questions and preserve generality. This generality implies some level of respondent interpretation, but as our goal is to develop data across heterogeneous firms and in a cross-country analysis, very general wording was essential.

The two sets of six questions were posed to respondents in section D of the ES questionnaire together with questions about firms' sales and supplies. Respondents were

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[8] This latter approach originated in the work of McMillan and Woodruff (1999) who asked respondents to reflect on their firm's first customer and its most recently added customer; and first supplier and its newest supplier. However, McMillan and Woodruff (1999) were interested in the determinants of highly specific elements of transactions—trade credit—and in that exercise a focus on highly specific transactions is necessary.

presented with a 'show card' with a Likert scale of responses and asked questions read aloud, as shown below:

> *When making agreements with **[suppliers][customers]**, please indicate to what degree each of the following is **effective in resolving or preventing** problems.*

Each one of the following questions was asked separately without numbering:

1. Personal relationship and trust
2. Mutual interest in maintaining business relationship, without involving others
3. Paid, private dispute resolution
4. Assistance of government officials
5. Intervention of other third-parties (excluding paid, private dispute resolution and government officials)
6. Legal system

Response scale (displayed on a 'show card'):

Not at all	Slightly	Moderately	Very much	Extremely

The exact wording of the questions in Spanish and English is included in Appendix A.1. It should be noted that in translation to Spanish, the use of the phrase "which of the following" necessitated a noun, with "circunstancias" used, most directly translated as "circumstances" but also possibly understood as "situations". This phrasing also led to the translation of question 6 as "recurso al sistema legal" or "recourse to the legal system". Both adjustments merit some comment as they may affect our analysis. The use of "circumstances" rather than the more generic English phrasing as well as the word "recourse" may result in respondents' understanding questions in terms of the realized circumstances in which they found themselves or the actions they had actively undertaken (for instance, through the legal system). On the other hand, the expression "resolving or preventing problems" does appear in the question, suggesting that respondents should have borne in mind pre-emptive acts that did not go as far as filing a legal action, for example. Piloting of these questions indicated that some respondents understood these questions as referring to their own actions, rather than indicating problems being prevented by the threat, but not use, of an action. To the extent that these questions are understood as referring to actions or realized experience, mechanisms that involve only the threat of action rather than the action itself, such as the shadow of the law, will be under-reported or rated lower.

Interviews were conducted face-to-face using tablet devices (CAPI) and covered a wide range of topics. [9] All interviews were conducted by local contractors in Spanish. Information on the dates of fieldwork (which started in each country following a three- or four-day training and piloting phase) and the total number of observations available for each country is given in Appendix Table A.2.

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[9] CAPI stands for Computer Assisted Personal Interview.

II.1 Response Patterns

One of the central motivations for this analysis is to ascertain whether there are meaningful patterns that emerge from datasets on how firms make agreements with their suppliers and customers. Table II.1 displays the response percentages for the twelve questions taken separately.[10] The percentages in the table are survey-weighted and can be considered representative. When looking at how firms respond to these questions, patterns seem to emerge naturally. Respondents tend to regard bilateral mechanisms (i.e., trust and mutual interest) as effective, while regarding third-parties, government officials, and legal mechanisms as less effective.

While it is tempting to categorize firms based on patterns in Table II.1, it is much more informative to consider all possible types of responses in combination, incorporating correlations of responses across questions. This task, of course, involves making sense of a daunting number of possibilities: with our six questions, each with five categories of responses, there are 15,625 possible response patterns (5^6). The respondents use far fewer than this however. For relations with suppliers, we observe 711 distinct combinations of answers. For relations with customers, we observe even fewer, 631. Tables II.2a and II.2b display the 20 most common response patterns for upstream and downstream relations, respectively.

One stylized response pattern is immediately clear and is consistent with the one we saw indirectly in Table II.1: a large proportion of respondents report that bilateral methods (trust and mutual interest) are either extremely or very much effective, and the remaining mechanisms are not at all effective. Nearly a third of respondents provide this combination of answers for each side of their business relations.[11] A second set of notable response patterns repeats the first but adds paid third parties as at least moderately effective. These combinations of responses comprise 5% of the weighted sample for relations with suppliers and 4% for relations with customers.[12]

While notable, these two response patterns cover only a fraction of the population, with the top 20 response patterns given in Tables II.2a and II.2b covering only 52% and 55% of survey responses. The fact that a sizeable percentage of responses is spread over hundreds of distinct patterns invites further, systematic methods to better summarize observed responses. What is more, one may want to know if differences in these patterns—slight or substantial—are themselves meaningful. These insights and more are provided by LCA, to which we now turn.

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[10] In Appendix A.3 we discuss item non-response due to "Don't Know" responses. As shown in Table A.3, item non-response is negligible with 97.7% and 97.3% of respondents answering all six questions for relations with suppliers and customers, respectively. Due to such high response rates, we omit from our analysis the observations with at least one "Don't Know" in the respective series of questions.

[11] Rows 1,2, 4 and 7 in Table II.2a have a cumulative share of 28%. Rows 1,2, and 3 of Table II.2b have a cumulative share of 31%. Rows 1,2,4,5,6,7, and 13 report a rating of moderately or above for bilateral methods with no effectiveness of any other method in Table II.2a. In Table II.2b this corresponds to row 1,2,3,5,13,14, and 16.

[12] Rows 9,10,16,18 of Table II.2a; Rows 8,9,19 of Table II.2b.

III. Latent Class Analysis: Data-Generating Process and Diagnostics

Most economists will be unfamiliar with LCA, judging by the few examples appearing in the economics literature.[13] Thus, we include a more lengthy than normal introduction to the statistical technique that we use and to how we apply it. LCA uses a mixture model to estimate a discrete latent variable using observations on a set of indicators. We begin with an intuitive introduction developed using an artificial example, framed in this paper's context. We then move to the general specification of the data-generating process that is used to structure our estimation.

III.1 An Example of the Use of LCA

A researcher visits the country of Erewhon and asks the following questions to representatives of 500 firms:

1. When making agreements with suppliers, please indicate to what degree personal trust is effective in resolving or preventing problems: 'not at all', 'moderately', or 'extremely'.
2. The same question with 'legal system' substituted for 'personal trust'.

The fictitious responses appear in Table III.1, a 3x3 contingency table.

Systematic patterns in this table are not obvious. A standard approach in first parsing the data would be to assume that the probability of choosing one of the three answers for personal trust is independent of the probability of choosing any one of the answers for legal system; this is the independence assumption. But that assumption is obviously incorrect: a standard chi-squared test of rejects it at the 0.001 level.

LCA is a method of uncovering a simple structure in such data. It begins by postulating that there are distinct classes of firms. In so doing, it suggests that the failure of the independence assumption in the aggregate data arises from the fact that the responses reflect a mixture of different classes of firms. Firms within a class are viewed as all having the same data-generating process for the survey responses. In the simplest application of LCA, the independence assumption is applied within classes, and hence is usually referred to as local independence.

Let us suppose that there are two classes of firms, each class having a different approach to the governance of agreements. Very roughly speaking, LCA uses correlations in the answers to the different questions to estimate the row and column probabilities for each class and the proportion of firms falling into each class. This leads to two separate contingency Tables (III.2a and III.2b), the first reflecting the responses of 200 firms and the second for 300 firms. (The numbers of firms in each category are a product of the estimation and are not imposed a priori. The number of classes is an a priori assumption.) The local independence assumption is satisfied

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[13] Of the few examples in the literature, most use LCA or related techniques to model the effects of preference heterogeneity, for example, Hynes et al. (2008) and Clark et al. (2005). Owen et al. (2009) is distinctive in not applying LCA to individuals but rather to countries and their growth experience. We are not aware of any studies within economics, apart from Mike and Kiss (2018) and Ebers and Oerlemans (2016) that apply LCA to characterize different types of firms.

exactly within each table: the number in each cell is a product of its row probability, column probability, and the number of firms in the class. Within each table, the standard chi-squared test-statistic is zero. Table III.1 is simply a cell-by-cell summation of Tables III.2a and III.2b, which shows the essence of LCA—the aggregate data are assumed to arise from a mixture of simple distributions.

Now, the patterns in the data stand out starkly and are easy to describe. For the firms in Table III.2a, both transaction mechanisms are highly effective. For Table III.2b, the legal system is ineffective and personal trust is effective. We could label the strategies of those in Table III.2a as 'comprehensive governance', while the strategies of those in Table III.2b are 'purely bilateral'. The litmus test of an insightful LCA application is an evocative description of the behavior typical within each class, and the identification of stark differences between the behaviors of each class.

Note that in this example LCA estimates nine parameters, requiring more estimates than the eight that would directly reflect Table III.1. Nevertheless, it adds a rich understanding of the data generating process by identifying two meaningful patterns of behavior. The full benefit of LCA arrives only when the complexity of the problem increases. The number of parameters to be estimated by LCA increases linearly in the number of questions asked. In contrast, the number of cells in the contingency matrix analogous to Table III.1 increases exponentially. In the data to be analyzed below, the number of cells is 5^6 (15,625), as already noted, and this many parameters would have to be estimated without the imposition of a simple structure. In contrast, a 2-class LCA model applied to the same data would require estimation of 49 parameters.

III.2 The Simplest LCA Data-Generating Process

In our data, firms were asked a series of questions about the effectiveness of six different mechanisms of supporting agreements with responses on a 5-level Likert scale. More generally, each firm, i, responds to K indicator questions. Responses are denoted $Y_i = (y_{i1}, \dots, y_{iK})$, which is observed. The response for question k, y_{ik}, can take on one of R values. In our data, $K = 6$ and $R = 5$. We observe separate Y_i's for relations with customers and relations with suppliers, but since we keep the analysis of each type of relations entirely separate, we use only one Y_i in specifying the data-generating process (DGP).

Firm i is in one of a number of latent classes, $c = 1,\dots C$. The latent class of i is denoted c_i, which will be estimated. Denote by $\theta_{kr|c}$ the probability that a firm in latent class c chooses answer r on question k. Denote by π_c the probability that a firm is in latent class c. Then the probability of observing a specific response, Y_i, for firm i is:

$$P(Y_i) = \sum_{c=1}^{C} \pi_c \prod_{k=1}^{K} \prod_{r=1}^{R} [\theta_{kr|c}]^{I(y_{ik}=r)} \tag{1}$$

where the exponent, $I(y_{ik} = r)$, on the probability, $\theta_{kr|c}$, is an indicator function that equals 1 if $y_{ik} = r$, and equals 0 otherwise. The parameters $\theta_{kr|c}$ and π_c are to be estimated. This DGP satisfies the local independence assumption because conditional on c y_{ik} is independent of y_{im} for all $k \neq m$.

III.3 Relaxing Local Independence

Exceptions to local independence can be built into LCA, and there are reasons why this might be advantageous in practical applications.[14] For example, in the piloting of the survey, we found that respondents had some degree of difficulty in separating the notions of mutual interest and personal trust. It is reasonable to assume, therefore, that errors in the responses for these two indicators could be correlated. Moreover, questions about somewhat similar mechanisms asked just before or just after each other may also result in respondents not exerting the cognitive effort to distinguish their responses, answering the successive questions in a similar way.[15] If one does not take into account the fact that pairs of indicators contain partially the same information, then LCA will give too much weight to these indicators (Vermunt and Magidson, 2002: 95). The analogy to weighted least-squares is transparent.

To formulate the relaxation of local independence, split the K indicators into H subsets. Conditional on the latent class of the firm (c_i) responses on two indicators <u>not</u> in the same subset satisfy local independence. This is not the case for two indicators within the same subset. Let Y_{ih} be the vector of firm i's responses on the indicators in the hth subset. Y_{ih}, $h=1,...H$, is observed, each Y_{ih} being a sub-vector of Y_i.

Denote by $f(Y_{ih}|c)$ the pdf of Y_{ih} given c. Then the probability of observing a specific response, Y_i, for firm i is:

$$P(Y_i) = \sum_{c=1}^{C} \pi_c \prod_{h=1}^{H} f(Y_{ih}|c) \tag{2}$$

Estimates of $f(\cdot | \cdot)$ and the π_c are obtained by maximizing the following likelihood:[16]

$$\sum_i w_i P(Y_i) = \sum_i w_i \sum_{c=1}^{C} \pi_c \prod_{h=1}^{H} f(Y_{ih}|c) \tag{3}$$

where the w_i denote the standard sampling weights included in the ES. Use of the sampling weights implies that our estimates are representative of the entire ES universe of firms in the six countries.[17]

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[14] It is at this point that our application of LCA diverges from that of Mike and Kiss (2018).

[15] This phenomenon is sometimes known as "nondifferentiation of responses" or simply "nondifferentiation" in the survey design literature (e.g. Krosnick and Alwin, 1988).

[16] We use the Latent GOLD software (Vermunt and Magidson 2016).

[17] The ES universe covers the non-agricultural, non-extractive formal private economy with five or more employees. For further details, please see http://www.enterprisesurveys.org/methodology.

III.4 Incorporating Determinants of Class Membership

One of the reasons to use LCA is to understand which factors determine the class to which a firm belongs. This is Williamson's (1991) discriminating-alignment research agenda. While this agenda is not the primary focus of the current paper, we do aim to provide readers with tools that can be used to pursue it. Therefore, in Section VI we conduct some elementary exercises relating class membership to firm characteristics.

Equation (2) is easily modified for this change. $\pi_c(Z_i)$ is the probability of membership in the latent class c given that the firm has characteristics Z_i. Then the probability of observing a specific response, Y_i, for firm i with characteristics Z_i is:

$$P(Y_i \,|Z_i) = \sum_{c=1}^{C} \pi_c(Z_i) \prod_{h=1}^{H} f(Y_{ih}|c) \tag{4}$$

With this model, one estimates the functions $f(\cdot\,|\cdot)$ and $\pi_c(.)$.

If (4) is the preferred model, there are two routes to estimation. One obvious choice is to form a likelihood from (4) and estimate the $f(\cdot\,|\cdot)$ and the $\pi_c(.)$ directly. Alternatively, one could proceed in a 3-step process. First, maximize the likelihood (3) and estimate $f(\cdot\,|\cdot)$ and the π_c. Then, use Bayes theorem to estimate firm-specific class membership probabilities for each firm, $\hat{\pi}_{ci}$. Finally, estimate the functions $\pi_c(.), c = 1, \dots C$, using $\hat{\pi}_{ci}$ and Z_i.

Our choice of estimation method is the 3-step process. There is a large literature, both theoretical and applied, reflecting on this choice. From theory, there are procedures to obtain consistent estimates of $f(\cdot\,|\cdot)$ and $\pi_c(.)$ using the 3-step process (Vermunt 2010, Bakk et al. 2013, Bakk et al. 2014). A brief summary of the applied literature would be that using the 3-step process is advisable unless one has great confidence in the specification of (4), especially understanding which Z_i to include and exclude (Nylund-Gibson and Masyn 2016). Although many insightful papers have pursued the discriminating-alignment research agenda, that agenda is still a work in progress rather than summarizing a completed plan. Even more importantly, when using cross-country data, many of the relevant Z_i remain unmeasured, or even unknown.

Our decision to use the 3-step procedure rests also on the primary practical objective of this paper. Our interest is more in the classes themselves than in the determinants of class membership. We are most interested in characterizing the most common governance structures that appear and how their prevalence varies across countries. By estimating the classes independently of the determinants of class membership, we are able to focus on this goal and provide readers with results that are unencumbered by any theoretical predispositions on discriminating-alignment theory. Moreover, by providing the data produced at step 2 of the 3-step procedure (the $\hat{\pi}_{ci}$), we make it possible for others to conduct their own step-3's, selecting their own Z_i's from the copious data available to all from the ES, or using data from other favored sources.

III.5 Criteria for Selecting a Specific LCA Model and Evaluating its Properties

In any LCA exercise there are many models that could be estimated. In most existing practical applications, flexibility has appeared when choosing the number of classes. However, the many possibilities for relaxation of local independence increase possibilities enormously. In this subsection, we briefly describe the procedures we use to choose our favored model, as well as introduce the diagnostic statistics used as criteria for this choice. Much more detailed background information can be found in Collins and Lanza (2010), Masyn (2013), and Vermunt and Magidson (2016).

Following the applied literature on LCA, settling on a specific model moves through three stages, sometimes iterating over them. First, one applies statistical measures of model-fit as criteria to choose a very small set of satisfactory models, perhaps even one model. Second, one evaluates the results of those model(s) using more subjective criteria. Parsimony—the use of a simple model—is important in order to avoid over-fitting and to facilitate interpretation of the results. Judgments on the interpretability of the estimated classes come into play. If the estimated classes cannot be easily interpreted and intuitively named, then the results will not be usable.

Lastly, one checks class homogeneity and separability using standard measures. Homogeneity is the notion that the members of a specific class should exhibit similar characteristics or, equivalently, that there are certain configurations of responses typifying each of the classes. Separability is the notion that each class looks quite different from all other classes, equivalently, that there are certain configurations of responses that distinguish each class from the others.

Those readers who are interested purely in substantive economics could now skip to Section V. The remainder of this section lists the properties of the statistical measures that we use as model-selection criteria. Section IV applies those criteria in choosing one LCA model for customer relations and one for supplier relations. Providing the details of the process of model selection is necessary for completeness, but understanding the details of that process adds little to the interpretation of our substantive findings.

The first stage of model selection employs a number of standard statistical measures. All measures use the log likelihood (LL) plus extra terms. Whereas the LL reflects only goodness-of-fit, the extra terms reward parsimony and penalize classification uncertainty. The likelihood-ratio χ^2 goodness-of-fit statistic (referred to as L^2 in Vermunt and Magidson (2016)) is used to test the null hypothesis that the estimated model fits the data. To save space, we will only present the p-values for L^2, since its distribution varies across models, precluding comparisons of absolute values.[18] The Bayesian information criterion (BIC), the consistent Akaike information criterion (CAIC), and the approximate weight of evidence criterion (AWE) are varieties of information criteria, all reflecting the log likelihood, and thus goodness-of-fit, plus a penalty

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[18] For background and formulae see Collins and Lanza (2010: 83) or Vermunt and Magidson (2016: 68).

term that is a function of the number of estimated parameters and the number of observations.[19] As a consequence of the specification of the penalty terms, AWE favors more parsimonious models than does CAIC, followed, in terms of favoring parsimony, by BIC and then log likelihood. Lower values of the information criteria indicate preferred models.

Entropy R^2 is a measure of classification certainty. It has not been traditionally used as a model selection criterion but rather as an ex-post check on the model's results (Masyn 2013). An entropy R^2 that is close to zero indicates that the estimated latent classes are not well-distinguished. Two additional information criteria add a term based on the entropy R^2, thus penalizing classification uncertainty (in addition to rewarding goodness-of-fit and parsimony). These are the 'classification AWE' and the 'integrated classification likelihood' (ICL-BIC)'. Again, lower values indicate preferred models.[20]

As a final check on acceptability of a model, statistics on homogeneity and separability are evaluated. In terms of the notation of subsection III.3, homogeneity is characterized by estimated $\theta_{kr|c}$ that are not too close to $1/R$. For binary ($R = 2$) indicator variables, one standard implementation of this criterion is that the $\theta_{kr|c}$ should not be in the interval [0.3, 0.7] (Masyn 2013). When we evaluate homogeneity, we aggregate responses into binary categories and apply this criterion.

The statistical measures related to separability are less ad hoc. Roughly speaking, in terms of the notation of subsection III.5, the measures assess whether the estimated $\hat{\pi}_{ci}$ are close to 0 or 1, that is classification certainty. These measures use modal class assignments—setting respondent i's class assignment to the j that maximizes $\hat{\pi}_{ji}$. Average posterior class probability for class c ($AvePP_c$) is the mean value of $\hat{\pi}_{ci}$ for all i classified in c using modal class assignment. Satisfactory values are close to 1. Odds of correct classification (OCC_c) is a ratio of two odds ratios. The numerator reflects $AvePP_c$ and the denominator uses $\hat{\pi}_c$, the estimated class membership probability for c derived at step-1 of the 3-step procedure. OCC_c equals 1 if class membership assignment is no better than random. A rule-of-thumb is that OCC_c should be at least 5.0, for all c. The modal class assignment proportion ($mcaP_c$) is the proportion of respondents in class c when respondent i's class assignment is set using modal class assignment. If respondents are assigned to classes with certainty, then $mcaP_c = \hat{\pi}_c$. Since step-1 of the LCA estimation gives standard errors for $\hat{\pi}_c$, a natural diagnostic is to examine whether $mcaP_c$ lies in a small confidence interval of $\hat{\pi}_c$.

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[19] We use the BIC and CAIC based on the log likelihood, not the alternatives that are based on L^2. The formulae are standard (Vermunt and Magidson 2016: 70). See Banfield and Raftery (1993) for the statistic we label AWE in Section IV, which is the standard one employing this label (Masyn 2013: 568). This is not directly reported by Latent GOLD, but is easily derived from the LL, the number of estimated parameters, and the number of observations.

[20] See Biernacki et al. 2000 for a discussion of the ICL-BIC. The version of the approximate weight of evidence criterion reported by Latent GOLD (Vermunt and Magidson 2016: 72) is different from the more standard one that is in the literature (Banfield and Raftery 1993; Masyn 2013: 568). Thus, when we report Latent GOLD's statistic we refer to it (idiosyncratically) as the "classification AWE" to distinguish the two different concepts. The "classification AWE" modifies the standard AWE taking into account entropy in a manner exactly analogous to the Biernacki et al. (2000) modification of the BIC to obtain the ICL-BIC.

IV. Estimating the LCA, Methods and Results

This section details the procedures and the choices made in choosing one LCA model for customer relations and one for supplier relations, the models on which we base our substantive conclusions. As noted above, this section could be skipped without loss of continuity by those readers who are not focused on how we apply LCA, but interested only in the substantive economic results that LCA generates.

IV.1 Analytical Procedures for Model Selection

We now proceed to step-1 of the 3-step process laid out in subsection III.4. First, this entails estimation of $f(\cdot \mid \cdot)$ and the π_c by maximizing the likelihood at (3). The next step, estimation of the $\hat{\pi}_{ci}$, is automatic and requires no elaboration. At that stage, the most important substantive contribution of this paper is already complete: understanding the nature of commonly observed governance structures. Step-3, relating the $\hat{\pi}_{ci}$ to firm characteristics, is conducted completely separately. We do this in Section VI in order to show the potential of our methodology to produce insights into firm behavior and differences across countries.

Before beginning the estimation process, it was necessary to make two preliminary decisions. First, we chose to treat firms' mechanisms for making agreements with suppliers and customers separately. This decision followed from the judgment that firms might employ very different types of strategies in conducting upstream relations than downstream ones. After all, the firm's objectives in these are very different: for the former, it is primarily about securing timely delivery at an appropriate level of product quality; for the latter it is primarily about getting paid by a satisfied customer. Because of this, our survey asked separate questions vis-à-vis supplier relations and customer relations. The large samples meant that sufficient statistical power could be generated in two separate statistical analyses.[21]

The second decision was whether to explore the use of LCA models under both the assumption of local independence and a relaxation of that assumption, as described in III.3. Relaxing local independence results in many more design possibilities and so places an additional burden on the process of model choice. Our 6 indicators can form a total of 15 unique pairs of indicators, with 32,766 combinations of these pairs possible.[22] Dealing with this number of possible models is obviously untenable. We thus chose to look initially where theory and the observations from survey implementation point us. As mentioned previously, the responses to questions numbers 1 and 2 may be related. From the cognitive interviews conducted prior to the survey, we learned that individuals sometimes did not clearly distinguish assistance of government officials (question 4) from intervention of other third parties (question 5). As a result, it seems natural to consider model specifications that relax independence of these two

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[21] Compare Mike and Kiss (2018), which merges data from the two types of questions, and Hendley and Murrell (2003), which does not differentiate between upstream and downstream.

[22] $32{,}766 = \sum_{k=1}^{14} \binom{15}{k}$.

responses as well. This gives us four types of models to consider. These are: (i) the basic specification with local independence, (ii) allowing a correlation between the answers to questions 1 and 2 (in brief a 1-2 correlation), (iii) allowing a 4-5 correlation, and (iv) allowing both 1-2 and 4-5 correlations. Invoking parsimony, we focused on 3-, 4-, 5-, and 6-class specifications for each of these four types of model structures. This gives 16 models to estimate for each of customers and suppliers when beginning to explore model selection.

With this starting point, we conducted an empirical exploration of whether there was a need to further relax the local independence assumption. To do this, we estimated the 16 models and examined the size of bivariate residual correlations, a measure of the marginal increase in the log-likelihood function that could be obtained by any specific relaxation of the local independence assumption (Vermunt and Magidson, 2016: 83-5). We then observed which particular combinations of indicators had bivariate residual correlations that were most prominent in this set of models. Table IV.1 reports the patterns that we found.

Table IV.1 suggests that answers to adjacent questions are related. As already noted, this may be due to non-differentiation of responses. This effect is known to be smaller in face-to-face surveys (Holbrook et al, 2003, Heerwegh and Loosveldt, 2008), which may be a reason that only adjacent and not the full series of responses seem correlated in our data.[23] Based on the correlation patterns reported in Table IV.1, for transactions with suppliers, a model with the correlation structure: 1-2, 2-3, 3-4, 3-5, 4-5 was added to the original four model structures. And for transactions with customers, a model with the correlation structure 1-2, 4-5, 4-6, 5-6 was added to the same four original structures. In sum, for each side of business relations (with suppliers and with customers), we chose to consider a total of 20 models, that is five correlation structures each with 3-, 4-, 5-, and 6-class specifications.[24]

IV.2 Choosing the Preferred Model

In selecting one model from the 20 estimated, we use the three general sets of criteria outlined in Section III.5. These are statistical measures of model-fit and parsimony, together with interpretability of the results. At this stage the implementation of the lattermost criterion meant a preference, but not a constraint, for describing the two sides of business relations with the same number of latent classes. Tables IV.2a and IV.2b present the measures of model fit for the two sets of 20 estimated models. In addition, the column listing the number of parameters is included as a basic measure of parsimony.[25]

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[23] An additional reason behind these correlations may be a version of the "anchoring effect" (e.g. Furnham and Boo, 2011), where a subsequent response is biased towards a previously selected response; or "straight-lining" (Kaminska, McCutcheon, and Billiet, 2010), where respondents give the same answer to many consecutive, if not all, questions, visually indicated by the appearance of a "straight-line" of responses. Notably, the second effect should be minimal in our data as the interview was conducted face-to-face by trained interviewers without the respondents seeing the screen with possible answers.

[24] As noted immediately above, the specific of the 20 models differs between supplier- and customer-relations.

[25] Vermunt and Magidson (2016: 68) state that asymptotic p-values of L^2 cannot be trusted with sparse tables, which is why we report the p-values obtained from the $Bootstrap\ Chi^2$ option of Latent GOLD software. Our data does have sparse tables since we only observe 711 from the total of 15,625 possible distinct response combinations in questions about the relations with suppliers, and for customers we observe even less – 631 (see Section II for response patterns).

In both tables, the numbers in bold highlight the three best-performing models according to the statistic noted in the relevant column. A quick glance at Tables IV.2a and IV.2b already suggests that the models with complex correlation structures generally perform better across a variety of statistics. This is hardly surprising given the steps leading up to the consideration of this specific correlation structure (i.e. relaxation of local independence based on statistics on bivariate residual correlations).

For relations with suppliers, Table IV.2a indicates that the model with 4 classes and correlation structure 1-2, 2-3, 3-4, 3-5, 4-5 performs well across most statistics. It is in the best three models across all statistics except AWE; it is the best-performer on BIC, CAIC, and ICL-BIC; it is the second-best on Entropy-R^2 and third-best on LL and classification AWE. Note that both AWE statistics penalize an increase in the number of parameters most strongly among the Bayesian statistics and therefore, not surprisingly, the first- and second-best models on the classification AWE are far more parsimonious than those classified as best by other statistical criteria. However, given the strong performance on most statistics for the 4-class, 1-2, 2-3, 3-4, 3-5, 4-5 model to describe relations with suppliers, it is difficult to argue for a more parsimonious model. The 5-class model with the same correlation structure is the next best model.

Model selection for the relations with customers is less clear-cut. Since the 4-class model is preferred for suppliers, it is worth focusing first on 4-class models for the customer-side as well. Among these, the best performers are the one with no correlations, and the one with the most complex correlation structure. While the model with no correlations performs better on some classification statistics (Entropy-R^2 and classification AWE), it underperforms the correlation structure 1-2, 4-5, 4-6, 5-6 on all other Bayesian statistics. Importantly, both BIC statistics are lower for the more complex model. Consequently, among the 4-class models, the correlation structure 1-2, 4-5, 4-6, 5-6 is preferred. Comparing the performance of this model with other models more broadly, the 5- and 6-class models with the same correlation structure are the closest in performance. However, the 4-class model is the best-performer on CAIC and ICL-BIC, and is only slightly inferior on BIC as well as other measures. Combining this statistical evidence and an a priori preference to select models with the same number of latent classes across the two types of relations, we select the 4-class, 1-2, 4-5, 4-6, 5-6 correlation model to describe relations with customers. Here too, the 5-class model with the same correlation structure is the next best alternative.

Note that in all these steps leading up to selecting one model for each type of business relation, we have not examined the behavioral patterns reported by each of the 40 estimated models. This is entirely intentional as we followed the standard model-selection steps separating the process of selection from the analysis and interpretation of its findings.

Appendixes B and C provide further checks on the validity of our choices of LCA models. Since both these appendixes use terminology laid out in the next section, we recommend reading them after completing Section V, even though their results are most relevant at this stage,

bolstering the process of model choice that has been laid out above. Appendix B examines the patterns suggested by the next-best models noted above (the 5-class models with the same complex correlation structure as our chosen 4-class models) comparing the governance structures of the chosen models with those of the next-best models. Appendix C examines standard measures of class homogeneity and separability, as discussed in Subsection III.5. Homogeneity is the notion that that there are configurations of responses that typify each member of a class, while separability is the notion that these typical response patterns vary between the classes. As Tables C.1, C.2a and C.2b show, all four classes in both upstream and downstream relations appear highly homogeneous and well separated, comfortably passing the thresholds for all relevant rules-of-thumb.

V. Class Characteristics, Names, and Validity

The chief goal of this section is to choose names for each of the four estimated classes (for each of supplier and customer relations). The assignment of names to the classes is a crucially substantive element of the analysis because important insights are generated only if LCA uncovers readily recognizable types of governance structures that appear in all countries. Moreover, examining the substantive content of the chosen models is also a part of the process of examining model validity—finding resonance between our estimates and existing ideas and concepts.

V.1 Characteristics of Chosen Models

The naming of classes primarily builds on an examination of the estimated indicator response probabilities (in the notation of subsection III.3, the $\hat{\theta}_{kr|c}$, that is the estimated probability of choosing response r for indicator k if the firm is in class c).[26] Tables V.1a and V.1b show these estimated probabilities for respectively, relations with suppliers and customers. Both tables are accompanied by graphical representations of these estimated probabilities. In subsection V.2, we provide justifications for the class names that are included in the tables.

The tables of estimated probabilities include standard errors. The probabilities are quite precisely estimated. Most estimated probabilities do not lie in the 95% confidence intervals of their neighboring probabilities (either vertical or horizontal). This implies that easily discerned differences in the figures are almost certainly statistically significant differences. Readers can therefore use quick inspections of the figures to deliberate on differences between classes and the associated effectiveness of different mechanisms, remaining comfortable that what they observe are real differences.

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[26] The $\hat{\theta}_{kr|c}$ appear explicitly in equation (1), which satisfies local independence, but not in equation (2), which relaxes local independence and is the one we actually implement. Therefore, $\hat{\theta}_{kr|c}$ should be interpreted here as the marginal probability that a firm in latent class c chooses answer r on question k.

V.2 Class Names

The nature of class 1 for both upstream and downstream relations is transparent and is the same for both types of relations: only trust or mutual interest are endorsed. Both class 1's are *pure bilateralism*. The use of 'pure' is emphasized as a contrast to the remaining classes, which differ primarily in what they add to bilateralism. For pure bilateralism, the response patterns look remarkably similar for either suppliers or customers.

Turning to the other end of the spectrum, for both class 4's there are significant contributions from all mechanisms. For upstream relations, firms find the legal system as effective as any other mechanism, with governmental officials and third-parties both used almost as much as each type of mutual interest. This governance structure is one where a full set of mechanisms is used. For class 4 of relations with suppliers, where every single mechanism is rated as effective as in every other class, we use the label *strong comprehensive governance*. However, for downstream relationships *weak comprehensive governance* is more appropriate given that all mechanisms are less effective (within the class 4's) for customer relations than for supplier relations.

All other governance classes fall between the extremes of bilateral and comprehensive. Class 2 firms have as strong a presence of the two bilateral mechanisms as the firms in the pure bilateral class, but there is also a significant presence of all other mechanisms. For firms in class 2, the relative contributions of the different non-bilateral mechanisms varies, with paid private dispute resolution the most important. Notably the legal system is second most important among the non-bilateral mechanisms. This is consistent with how paid private third parties often work in practice. Arbitration mechanisms always need the backing of formal legal enforcement; the job of goons is often simply to forcefully remind miscreants of the possibility of legal sanctions; debt-collection firms invoke legalistic mechanisms while harassing. We thus use the name *bilateralism with private support* for the firms in class 2, remembering that only brevity precludes mentioning the secondary role of legal mechanisms.

It is for firms in the class 3's that there is a need to distinguish clearly between the names for upstream and downstream governance structures, the patterns of mechanism-ratings differing considerably between customer- and supplier-relations. For supplier relations, there is a contribution from the two bilateral mechanisms, but it is weaker than in other supplier classes. There is also a significant presence of all other mechanisms. The relative contributions of the different non-bilateral mechanisms varies, with the legal system most important. Notably the role of paid private dispute resolution is second in importance among the non-bilaterals. Again, therefore, there is some complementarity between paid private dispute resolution and the legal system. For supplier relations, class 3 differs from class 2 primarily in the relative emphasis on these two. We thus use the name *bilateralism with legal support* for class 3 on the upstream side, remembering that only brevity precludes mentioning the role of paid private dispute resolution.

For class 3 for customer relations, there is a contribution of the two bilateral mechanisms, but it is weaker than in all other classes on the customer side. But the way in which this downstream class 3 differs from that on the upstream side is that the contribution of the non-bilateral mechanisms is quite weak, albeit stronger than in the case of pure bilateralism. Thus, we name this class *bilateralism with weak support*, recognizing that among all eight estimated latent classes, this is the governance class where the aggregate effect of all 6 mechanisms is rated lowest by respondents. Compared to other classes, the label 'ineffective governance' might also be appropriate.

The identification and naming of the classes not only reveals which governance structures are used in practice, but also which possibilities are absent. All governance structures rely, at least in part, on bilateral mechanisms: no firm relies solely on a combination of third-parties and formal institutions.[27] This flies in the face of many claims in the literature that characterize development as a process of escaping personalized interaction and moving to a rule-based, impersonalized set of interactions.[28] While our data do not capture the process of development, they do show that there is no evidence of the existence of those purely rule-based, impersonalized transactions in the set of countries that we analyze.

A corollary of this is that bilateralism and the legal system should not be viewed as substitutes: indeed, in several of the classes they play highly complementary roles.[29] There is evidence that paid private dispute resolution and the legal system are sometimes substitutes and sometimes complements. For example, for supplier relations, when moving from the pure bilateral class to any of the three other classes there is an increase in the use of both paid private dispute resolution and the law. But, as indicated by their very names, a move from bilateralism with private support to bilateralism with legal support indicates some substitutability between private and legal support.

Lastly, we examine LCA estimates of the proportion of firms placed within each class. Table V.2 presents the probabilities of class membership directly estimated by maximum-likelihood (in the notation of Section III, the $\hat{\pi}_c$). All class membership sizes are significantly different from 0. Firms may be more willing to turn to private dispute resolution when dealing with customers than when dealing with suppliers. There are more pure-bilateral firms on the supplier side than the customer side, but supplier relations generally also involve more use of the legal system than customer relations. Note also that a quick visual comparison of Figures V.1a and V.1b reveals that, in general, firms rate mechanisms as less effective for customer-relations than for supplier-relations, a characteristic that is epitomized in the two class-4 names—*strong comprehensive*

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[27] This is also a finding of Mike and Kiss (2018) for Hungary: "Law never stands alone."

[28] Mike and Kiss (2018) characterize this as the classical view, and give many references to its use. For a very widely cited version of this view in the business economics literature, see Peng (2003: 276): the most important transition for emerging economies is the process of moving "from a relationship-based, personalized transaction structure calling for a network-centered strategy to a rule-based, impersonal exchange regime".

[29] For a long time, the dominant view in the literature was that formal legal arrangements for transactions were inconsistent with personalized relationships based on trust: the formality eroded the trust. But this view has been moderated somewhat especially after Poppo and Zenger's (2002) seminal contribution. Our results are consistent with the changing view but are based on a broader overview of existing governance structures than any current contribution to the literature.

governance and *weak comprehensive governance*. In fact, the difference between supplier-relations and customer-relations is one observation that will surface repeatedly in the remainder of the paper.

Two further facets of the data are worth noting because of their contrast to emphases in the existing economics literature. First, in that literature, the role of government officials in supporting transactional governance is almost entirely neglected.[30] Yet, for several of our classes, government officials are awarded an important role, and in the *strong comprehensive governance* class of supplier-relations, that is a prominent role. Second, if one were to judge the importance of non-paid private third parties by the amount of attention paid to them in the literature, especially in the study of networks, one would imagine that they play a prominent role.[31] Yet, in none of our classes do non-paid third parties play any significant or defining role, and on the suppliers' side they seem almost irrelevant to transactional governance.

At this stage, it is informative to understand where our results are consistent with those of Mike and Kiss (2018). Given that these authors use different survey questions, study a different context (Hungary), and implement LCA in a different way, such consistencies surely point to robust general conclusions about landscapes of transactions. Both this study and that of Mike and Kiss (2018) find that bilateral mechanisms are important in all business relationships; that the key governance choice is between bilateralism alone, or bilateralism supplemented with other mechanisms; and that there are a significant number of firms that implement comprehensive governance. This consistency strongly argues for the validity of the general approach taken here. But, not surprisingly, there are differences between the two studies. For example, Mike and Kiss (2018) find a latent class in which third-party reputational mechanisms are quite important. Whether this is a reflection of the different context, Hungary, or of different survey questions is an open question, to be answered only by implementing one of the key ingredients of this paper, a consistent cross-country methodology.

VI. Variations in the Use of Governance Structures

In this section, we study associations between the governance structure of firms and their other behaviors or characteristics. This is a first, exploratory step in understanding the links between governance structures and the broader environment of the firm—we simply explore patterns in the data and do not attempt to isolate ceteris paribus, causal effects. The latter would need a separate paper in itself. To illustrate the type of thought experiments applied here, consider firm size. We compare the pattern of governance structures used by small firms with that used by large firms. This shows the resultant change in the choice of governance structures as a firm becomes large for any reason and then simultaneously goes through all other changes

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[30] For an exception to the lack of emphasis on the role of government, see Hendley and Murrell (2003). But that paper was very much data-driven in its emphases, and clearly focused on the role of transition from socialism as an ingredient that led to the role of government in Romania.

[31] Network approaches have been very popular in the past few decades, following Granovetter's (1985) emphasis that transactions are embedded in a broader social structure, the historical-theoretical analysis of Greif (1989), and case-studies on the importance of trading networks in varied settings (Bernstein. 1992; Landa 1981).

associated with the differences between small and large firms. In terms of the notation of Section III, we estimate $\pi_c(Z_i)$ one Z_i at a time without considering why the Z_i vary with i.[32]

In previous sections of the paper, we implemented steps 1 and 2 of the 3-step method outlined in Section III, obtaining a dataset of posterior probabilities of membership in each of the four governance structures. Then the most obvious way of exploring the $\pi_c(Z_i)$ would be to use those probabilities to assign firms to governance structures and tabulate the prevalence of each structure across each Z_i of interest (or apply logistic regression). However, Bolck, Croon, and Hagenaars (2004) showed that this naïve approach leads to systematic underestimation of the strength of associations. These authors developed a simple correction procedure to eliminate this bias. Vermunt (2010), Bakk, Tekle and Vermunt (2013), and Bakk, Oberski, and Vermunt (2014) extended the correction procedure, developing a maximum-likelihood method that produced consistent estimates of the parameters defining the $\pi_c(.)$. We apply this method in implementing our step-3 analysis.[33]

With the richness of the ES data and the complex and largely unknown origins of the governance structures used by firms, it is challenging to select a manageable set of covariates that are particularly germane. While some covariates are obviously crucial to examine, e.g. country or sector, others are less so, e.g. a firm's experience of corruption. Recognizing the exploratory nature of the exercise, we selected a set of variables that piqued our curiosity, without requiring a precise theory. Our interest is mainly in checking whether there is substance in the estimated governance structures by examining whether there are significant associations between governance and covariates. In contrast, it is likely that readers will be interested in the results for specific covariates. Table D.1 in Appendix D lists the covariates, together with their summary statistics. For ease of exposition, the variables are organized in seven broad categories, also listed in this table.

We study the relation of the governance structures with each of the covariates, one at a time. We report single-variable p-statistics in columns 3 of Tables VI.1a and VI.1b. These are p-statistics for a Wald test of the null hypothesis that there is no association between the covariate and governance structure. Interpreting these statistics involves a multiple comparisons problem: which criteria to apply when judging statistical significance? This depends upon the insights that the reader hopes to draw—the hypothesis being tested. One natural null hypothesis is that our estimated class probabilities are no better than random in terms of their relationship with the whole set of variables listed in Table D.1. Then, the appropriate approach is to apply a family-wise error rate (FWER) method. We use the Holm-Bonferroni method (Holm 1979), reporting criteria for statistical significance in the rightmost three columns of Tables VI.1a and VI.1b. A

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[32] In addition to providing insights into the associations between governance structure and variables of interest, this section aims to illustrate how others can conduct their own analyses, exploring their favored Z_i's taken from the Enterprise Surveys or elsewhere.

[33] Mike and Kiss (2017) also conduct an exploratory analysis of the determinants of class membership, but employ the one-step process discussed in Section III.4

significant value for even one *p*-statistic is evidence of better-than-random for the LCA procedure.

The null hypothesis that our estimated class probabilities are no better than random is rejected decisively. This is the case for both relations with suppliers and with customers. This rejection of the null hypothesis provides overall support for the validity of the method we have developed in this paper, including the formulation of the survey questions and LCA's interpretation of the data.

Given the confidence that we have that our governance structure posterior-probability data are better-than-random, we can proceed to examine hypotheses on individual variables using a criterion that has more power than the FWER. An alternative agenda examines hypotheses on individual variables. However, using standard criteria applied to the highest values of a set of *p*-statistics violates the conditionality assumptions of standard tests. Therefore, we use the false discovery rate (FDR). If the FDR is set at 5%, for example, significance levels are set so that 95% of the individual-variable effects labeled as significant are inconsistent with the null hypothesis of no effect. We use the Benjamini–Hochberg (1995) version of FDR in columns 4 through 6 of Tables VI.1a and VI.1b. These columns are most relevant to readers with no prior theoretical hypotheses.

Lastly, some readers might come to this paper interested in a specific a priori hypothesis. These readers should focus on the standard statistical criteria for the corresponding variable in columns 3 of Tables VI.1a and VI.1b. The problem of multiple comparisons is not relevant to them. But note that if the information in Tables VI.1a and VI.1b is viewed before the formulation of a specific theory, the resultant hypothesis is no longer a priori, and the conditionality assumptions in standard tests of significance are no longer valid.

VI.1 Cross- and Within-country Variation of Governance Structures

We find a large and statistically significant variation in the use of governance structures across countries. Figures VI.1a and VI.1b illustrate this variation. In these figures, and all that follow in this section, we use darker colors to denote governance structures that are more complex, that is, use more mechanisms, more effectively (reflecting the $\hat{\theta}_{kr|c}$ in Tables V.1a and V.1b).[34] Thus, for example, it is easy to see the rather surprising result that governance structures that include more than just bilateralism are more effective in Bolivia, the least developed of the six countries, than in the other countries.

To facilitate interpretation of such results, Table VI.2 lists some standard statistics on the six countries, together with regional and global averages. However, none of the statistics on the absolute quality of legal institutions in that table prepare us for the surprising result on Bolivia. Given the low levels of personal trust in Bolivia, it is tempting to think that this result, instead,

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[34] And thus the ordering of classes is different from that in Tables V.1a and V.1b of Section V, which followed the, somewhat arbitrary, order produced in the initial LCA estimates.

might be a reflection of comparative, rather than absolute, advantage in the legal realm.[35]   This, however, is at most a partial explanation. Note that the first two steps of the LCA treat Bolivian firms and Uruguayan firms, for example, in exactly the same way. Therefore, the greater effectiveness indicated by the LCA for legal institutions in Bolivia than in Uruguay in our data is inconsistent with the much higher ratings for legal institutions in the latter country indicated in Table VI.2. This is a puzzle that needs further investigation.

We next look at the within-country, regional variation in governance structures. We do so by applying the third step of the 3-step method to each country separately, using regional dummy variables as covariates. Tables VI.3a and VI.3b report *p*-values analogous to those in Tables VI.1a and VI.1b. The results on FWER strongly reject the hypothesis that our estimated governance structures are just noise. For supplier-relations, using the FDR, we reject the null hypothesis of no association between governance structures and regions at the 5% level for all countries except Bolivia. In contrast, for customer-relations, only Ecuador exhibits significant within-country regional variation in governance structures using the FDR.

Figures VI.2a and VI.2b show inter-regional variation in governance structures for those countries where we find statistically significant variation. The prevalence of bilateralism varies enormously, even within countries. For example, an average firm in Rosario (in Argentina) is 22 percentage points more likely to use pure bilateralism in its relations with suppliers than an average firm in the neighboring region of Cordoba. The difference on the customer side is even starker—44%. Piura (in Peru) has the lowest level of pure bilateralism amongst any of the 17 regions in Figure VI.2a, even though Peru has the highest level of pure bilateralism of the six countries in Figure VI.1a.

Perusing all the tables and figures relating to country and regional variation, it is an inescapable conclusion that inter-regional variation is even more important than cross-country variation. For example, the standard deviation of the percentage of bilateralism in Figure VI.2a is greater within the regions of each of Argentina, Ecuador, Peru, and Uruguay than it is for countries in Figure VI.1a. Thus, despite the fact that legal systems are usually country-level institutions, regions, rather than countries, might be the best unit of analysis for conducting reform aimed at improving transactional mechanisms.

VI.2 Attitudes Towards Courts

We examine two standard questions that appear in every ES. The first ("fair-court") asks whether the respondent agrees or disagrees with the statement "the court system is fair, impartial and uncorrupted". The second asks the degree to which the courts are an obstacle to the current operations of the firm ("court-as-obstacle"). These questions have often been used as measures of court performance.

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[35] The low level of personal trust is indicated directly in Table VI.2, but also indirectly since Bolivia has the highest level of ethnic fractionalization and there is evidence connecting high ethnic fractionalization with low levels of trust (Alesina and La Ferrara 2002 and Knack and Keefer 1997).

Figures VI.3a and VI.3b show the patterns in the data. On the suppliers' side, consistent with our intuition, firms considering the court fair are more likely to employ governance structures with a stronger legal element. This relation is weaker on the customers' side, where there is little case to be made for an association between attitudes on the courts and use of the law. The conclusion is that the fair-court question is not a consistently reliable indicator of a firm's commitment to a legally-oriented governance strategy.

For the court-as-obstacle question, the firms that do not consider the court as an obstacle are the least likely to rely on the legal system. In contrast, as the assessment of the court as an obstacle increases, there is more reliance on governance mechanisms that involve legal systems. If one viewed this question as a measure of court quality, one would expect exactly the opposite association.[36] The most likely explanation of this apparent paradox is reverse causality: if firms do not choose to use governance involving the legal system, then the courts are not an obstacle. The firms that need the legal system are more likely to be hindered by its flaws. That is, the interpretation of answers to this court-as-obstacle question in the literature seems to be diametrically opposite to what it actually reflects. Our conclusion here is consistent with observations on data on Russia's early transition made by Hendley et al. (2000) and explored thoroughly in papers by Hendley (2016; 2017): because going to court is inherently an unpleasant experience, attitudes to the courts are not good predictors of the use of the law.

VI.3 Interactions with Business Associations

Figures VI.4a and VI.4b illustrate the correlation between business membership and governance structures. In all four figures, firms with stronger ties to business associations are more likely to rely on bilateralism with private support. But, as shown in Tables VI.1a and VI.1b, this observation is backed by only weak statistical support, and only on the customer side. Perhaps what the data is showing here is that business associations are important in somewhat niche activities within particular sectors (Bernstein 2001), but not important generally in those sectors. Our test is too-low-power to identify such niche relationships. This is precisely an example of a very specific hypothesis that could be pursued further with our data.

VI.4 Sectors

As the statistical tests in Tables VI.1a and VI.1b show, governance classes do vary significantly between sectors.[37] Figures VI.5a and VI.5b illustrate this variation, which is

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[36] Gutmann and Voigt (2017) use the courts-as-obstacles question as a dependent variable that is viewed as a proxy for the quality of the courts. See also the following from World Bank (2014) on survey results for the Kyrgyz Republic: "Courts are perceived as one of the least problematic areas for doing business…In 2013, only 13 percent of firms saw courts as a problem, and only 4 percentage points of respondents saw it as major or very severe problem…. This is a significant improvement compared to 2008 when 60 percent of firms saw courts as a problem and 29 percent saw them as a major/severe problem." Note that over the same period, there were declines in the percentages of firms believing that the court system is fair, impartial, and uncorrupted, quick, and able to enforce its decisions.

[37] The ES contains four-digit ISIC Rev.3.1 information on the main product and activity of each establishment. We used two-digit codes and grouped sectors as follows: Food (codes 15,16), Textiles and Garments (17,18,19), Wood and Wood Products (20-22, 36), Chemicals, Plastics, Non-metallic Mineral Products (24-26), Metals (27, 28), Machinery and Equipment (29, 31-35), Construction (45), Retail, Wholesale, Tourism (50-52, 55, 63), Transport (60-62), Telecom and IT (64, 72).

substantial. For example, the use of bilateralism varies from 74% when food processors interact with their suppliers to 24% in the sales of construction companies. One conjecture on this difference immediately follows from Williamson's emphasis on frequency: the more frequent are exchanges, the easier it is to construct purely bilateral governance. In their sales, construction companies use governance structures that employ private, paid, dispute resolution and the legal system, consistent with Williamson's emphasis on more complex governance when exchange is infrequent and involves idiosyncratic interactions (Williamson 1985). Beyond this, we leave readers with specialized knowledge of particular sectors to speculate on the reasons for the distinctive patterns in Figures VI.5a and VI.5b.

VI.5 Management Practices

The effects of firms' management practices are an important avenue of investigation currently in economics (Bloom et al. 2012, Bloom et al. 2013). To quantify the role of management practices, Bloom and Van Reenen (2007, 2010) developed a set of survey questions, which The World Bank's Enterprise Analysis Unit modified and implemented as part of the standard ES. In this subsection, we examine the association between the responses to these questions and the governance structures chosen by firms. Figures VI.6a and VI.6b illustrate this association. The prevalence of pure bilateralism falls as firms' management practices improve (from 76% to 54% on the suppliers' side and from 72% to 41% on the customers' side), indicating that the improvement in internal management practices is accompanied by the use of more complex methods of governance of external relations.

VI.6 Miscellaneous Firm Characteristics and Non-Significant Associations

We follow the ES in calling firms "foreign owned" if they are at least 10% owned by foreign private entities. Similarly, we call firms "exporters" if at least 10% of their total sales are in foreign markets. As Tables VI.1a and VI.1b indicate, the associations between these measures and the choice of governance structures are weak. But the direction of association is intuitive, as illustrated in Figures VI.7 and VI.9. Foreign-owned firms and exporters use pure bilateralism less than firms that are domestically owned and oriented.

Lastly, we examine firm size, which only has a weak association with the choice of governance structures. As Figure VI.9 shows, this association reflects the distinctive behavior of very large firms, which have a much a greater tendency to use governance structures that are comprehensive and make use of the legal system.

We have not commented so far on the variables that fail to reach a reasonable level of statistical significance in Tables VI.1a and VI.1b. There are also insights there. For example, we find no association between measures of corruption and governance structure, indicating that the effect of the quality of the legal system on these two might be orthogonal. Similarly, there are few connections between governance and firm ownership (apart from that of foreigners). Finally, there seems to be no difference in governance structures of the firms who trade locally than the firms who trade nationally, a result not to be expected from the existing literature

(McMillan and Woodruff 1999) and worthy of further investigation at a much-more micro-level than has been done in this section.

VI.7 Summary

This section has been exploratory, an initial inquiry into the association between choice of governance structures and characteristics of firms. Without being guided by any specific theoretical program, we have selected a set of variables that might be relevant to governance choice. A number of those variables are statistically significantly related to governance, indicating that our data predicting class membership passes this test of economic validity. Readers wishing to use our data can then approach empirical tests of their own hypotheses with confidence that our data has discriminatory power.

VII. Conclusion: Lessons Learned

There has been no previous work consistently mapping cross-country variation in the governance structures that firms employ to support the successful implementation of transactions. In part, this has been due to the lack of data collection. What has been missing is a method to elicit information on the conduct of transactions in a consistent way from firms of all types, firms functioning in very different environments. We have designed survey questions that have solved this problem, obtaining data whose validity is amply substantiated by the various exercises conducted here. Our paper provides a meaningful picture of the landscape of transactions.

Yet, obtaining the data provided only part of the solution to mapping the landscape. There was also the need to summarize the patterns in the data in a way that produced evocative measures, resonating comfortably with standard concepts in the economic and legal analysis of transactions. The aggregation method that we have used, LCA, eminently suits this task, generating economically meaningful constructs—distinctive types of governance structures—that were extracted from the data without the imposition of an a priori model of what those structures should look like.

LCA is unsupervised in discovering patterns in the data, but it does rely on an underlying probabilistic, generative model. Thus, it combines the advantages of both machine learning and classical statistical methodology. The unsupervised learning offers the possibility of the discovery of new structures, unexpected before analysis and not imposed by the researcher. At the same time, the choice between model specifications and the evaluation of estimates can rely on standard statistical techniques. One of the purposes of this paper has been to lay out the procedures for implementation of LCA because it is a technique that has not been commonly used by economists. It offers a fruitful approach that can be extended to other areas of economics where there is a need to construct parsimonious summaries of behavior whose essential nature is implicit in large amounts of data.

We produce some results that would be entirely expected by most readers, but even in those cases we are able to add additional quantitative evidence. For example, pure bilateralism is the most common governance structure that we observe. But we are able to estimate the proportion of firms that rely on this approach, and importantly how that proportion varies across countries, regions, and different types of firms. In dealing with suppliers, sizeable numbers of firms supplement their bilateralism with the use of either paid private dispute resolution or formal legal mechanisms. In dealing with customers, a significant number of firms supplement their bilateralism with the use of paid private dispute resolution. Formal legal mechanisms, while used in customer relations, are less important than for supplier relations. For both upstream and downstream transactions, a relatively small proportion of firms rely on a comprehensive set of mechanisms to solve their transactional problems.

Notably, all governance structures use bilateralism. Thus, we find no evidence for the presence in our data of pure arm's length transactions, where firms rely on impersonal mechanisms and formal institutions to support their contracting. This is interesting because sometimes, especially in the economics literature, arm's length transactions are viewed as something of an ideal, the aspirational endpoint in the process of economic development and sometimes, even, thought to be a summary of the situation in developed economies.[38] This view implicitly looks upon bilateralism and formal institutions as substitutes, for which we find no evidence. For many firms, they are indeed complements.

In the existing literature, there are naturally many different implicit assumptions that exist on the relative importance of the different governance structures. Given the lack of existing consistent evidence analogous to that produced above, such assumptions have usually reflected intellectual concerns and ad hoc observation. For example, much attention has been paid in the literature to various unpaid, third-party, mechanisms of supporting agreements, such as networks, social clubs, and culturally defined groups. We see no evidence in our data to support this emphasis. Indeed, our data suggest that the role of government officials in supporting private transactions is at least as significant as the role of these types of third-parties, albeit both being quite small. Any reader viewing these findings with priors gained from the existing economics literature would be quite surprised, given the relative emphasis in that literature on networks in supporting private transactions and given that the role of government officials is almost completely ignored.

In Section VI, we provide examples of further analyses that can be conducted, once our LCA estimates of governance structures are obtained. The dependent variables in these analyses are, for each firm-level observation, a set of probabilities that the firm has chosen each governance structure. Thus, one can relate such probabilities to the characteristics of individual firms. For example, we find that foreign-owned firms, exporters, larger firms, and better-managed ones are less likely to use pure bilateralism. Notably, we find that regional variation in

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[38] To be sure, this is an aspiration not shared by diverse groups of scholars studying the detailed workings of the legal system, for example, both the law and economics, and the law and society schools.

the use of governance structures is more important than cross-country variation. This is somewhat of a surprise given that institutional rules relevant to transactions are set at the national level in all the countries that we analyze. It suggests that the practicalities of institutional implementation are at least as important as the quality of formal rules.

Nevertheless, generating the conclusions reached in Section VI has not been the prime objective of this paper. They are provided mainly as examples of the potential in the datasets that we generate. Our objective has been to develop a methodology that will enable readers to go further than we have done, to consider testing their own hypotheses by linking their own data to the data we have posted. Moreover, given the information we have provided, readers could add their own countries, or cities, or sectors to those we have studied here. If readers implemented the questions that we lay out in Section II in a survey of any size, even one firm, then they could use our posted tools to characterize the governance structure of the firms in their survey. The tools we have provided make it possible for other researchers to test their own theories on the use of governance structures in a simple, consistent way without repeating the laborious steps that we have undertaken but using their own data on different types of firms from many different origins. Of course, readers could repeat all the steps laid out above by conducting their own latent class analyses on different datasets, perhaps their own data or a particular subset of ours. Our extensive discussion of the methodology should facilitate this. In such analyses, we would expect details in the results to vary from those above, as in any statistical analysis, but we would not expect major substantive conclusions to be different, given the robustness exercises that we have conducted above.

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Tables and Figures

Table II.1: Share of responses in the samples used for the analyses

	Not at all	Slightly	Moderately	Very much	Extremely	Total
Relations with suppliers (n=3,350)						
Trust	8.3	8.0	14.4	41.8	27.6	100.0
Mutual interests	10.9	6.7	14.4	42.4	25.5	100.0
Paid private third parties	61.9	15.4	13.9	5.6	3.1	100.0
Gov't officials	86.2	8.0	2.5	1.9	1.4	100.0
Other third parties	81.5	12.5	3.8	1.7	0.4	100.0
Legal system	70.1	17.6	8.2	2.7	1.4	100.0
Relations with customers (n=3,339)						
Trust	6.5	7.8	12.2	39.3	34.2	100.0
Mutual interests	9.0	7.1	11.5	42.3	30.0	100.0
Paid private third parties	62.0	19.9	10.9	5.2	2.1	100.0
Gov't officials	89.5	6.2	2.3	1.2	0.8	100.0
Other third parties	82.0	12.3	3.7	1.6	0.3	100.0
Legal system	72.5	16.1	7.6	2.4	1.5	100.0

Table II.2a: Most common response patterns on questions about relations with suppliers

	Trust	Mutual interests	Paid third parties	Gov't officials	Other third parties	Legal system	Weighted Share	Cumul.	N
				Effectiveness of:					
1	Vm	Vm	No	No	No	No	12%	12%	428
2	Ex	Ex	No	No	No	No	10%	22%	253
3	No	No	No	No	No	No	5%	27%	146
4	Ex	Vm	No	No	No	No	4%	30%	96
5	Mo	Mo	No	No	No	No	3%	33%	118
6	Vm	Mo	No	No	No	No	2%	36%	65
7	Vm	Ex	No	No	No	No	2%	38%	45
8	Vm	Vm	Sl	No	No	No	2%	40%	64
9	Vm	Vm	Vm	No	No	No	2%	41%	52
10	Vm	Vm	Mo	No	No	No	1%	43%	51
11	Sl	Sl	No	No	No	No	1%	44%	63
12	Vm	Vm	Mo	No	No	Sl	1%	45%	21
13	Mo	Vm	No	No	No	No	1%	46%	52
14	Sl	No	No	No	No	No	1%	47%	49
15	Ex	Ex	Sl	No	No	No	1%	48%	23
16	Ex	Ex	Ex	No	No	No	1%	49%	13
17	Vm	No	No	No	No	No	1%	50%	29
18	Mo	Mo	Mo	No	No	No	1%	51%	33
19	Vm	Vm	Sl	No	No	Sl	1%	52%	34
20	Mo	Sl	No	No	No	No	1%	52%	28

Ex	Vm	Mo	Sl	No
Extremely	Very much	Moderately	Slightly	Not at all

Table II.2b: Most common response patterns on questions about relations with customers

	Trust	Mutual interests	Paid third parties	Gov't officials	Other third parties	Legal system	Weighted Share	Cumul.	N
			Effectiveness of:						
1	Vm	Vm	No	No	No	No	14%	14%	497
2	Ex	Ex	No	No	No	No	13%	27%	336
3	Ex	Vm	No	No	No	No	4%	31%	107
4	No	No	No	No	No	No	3%	34%	134
5	Mo	Mo	No	No	No	No	2%	36%	101
6	Ex	Ex	Sl	No	No	No	2%	37%	33
7	Vm	Vm	Sl	No	No	Sl	2%	39%	48
8	Vm	Vm	Mo	No	No	No	2%	41%	52
9	Vm	Vm	Vm	No	No	No	1%	42%	41
10	Ex	Ex	No	No	No	Sl	1%	43%	36
11	Vm	Vm	Sl	No	No	No	1%	45%	69
12	Sl	Sl	Sl	No	No	No	1%	46%	42
13	Mo	Vm	No	No	No	No	1%	47%	46
14	Vm	Ex	No	No	No	No	1%	48%	39
15	Vm	Vm	No	No	No	Sl	1%	50%	48
16	Vm	Mo	No	No	No	No	1%	51%	48
17	Sl	Sl	No	No	No	No	1%	52%	54
18	Sl	No	No	No	No	No	1%	53%	43
19	Mo	Mo	Mo	No	No	No	1%	54%	29
20	Vm	Ex	Sl	No	No	No	1%	55%	13

Ex	Vm	Mo	Sl	No
Extremely	Very much	Moderately	Slightly	Not at all

Table III: An example of the use of LCA: whole sample

		Effectiveness of personal trust			Row probability
		Not at all	Moderately	Extremely	
Effectiveness of legal system	Not at all	26	30	204	**0.52**
	Moderately	7	15	48	**0.14**
	Extremely	17	45	108	**0.34**
	Column probability	**0.10**	**0.18**	**0.72**	

Table III.2a: An example of the use of LCA: class 1

		Effectiveness of personal trust			Row probability
		Not at all	Moderately	Extremely	
Effectiveness of legal system	Not at all	2	6	12	**0.10**
	Moderately	4	12	24	**0.20**
	Extremely	14	42	84	**0.70**
	Column probability	**0.10**	**0.30**	**0.60**	

Table III.2b: An example of the use of LCA: class 2

		Effectiveness of personal trust			Row probability
		Not at all	Moderately	Extremely	
Effectiveness of legal system	Not at all	24	24	192	**0.80**
	Moderately	3	3	24	**0.10**
	Extremely	3	3	24	**0.10**
	Column probability	**0.10**	**0.10**	**0.80**	

Table IV.1: The most prominent correlation structures found in initial model estimates

order in which question appears	1: Trust	2: Mutual interests	3: Paid third parties	4: Gov't officials	5: Other third parties	6: Legal system
1: Trust		S, C				
2: Mutual interests			S			
3: Paid third parties				S	S	
4: Gov't officials					S, C	C
5: Other third parties						C
6: Legal system						

Notes:

S indicates frequent occurrence of large bivariate residual correlations in the models estimated for relations with suppliers. C indicates the same phenomenon for customer-relations models.

Table IV.2a: Statistics on goodness-of-fit for estimated models for relations with suppliers

Model	Npar	LL	p-value of L^2	BIC	CAIC	AWE	Entropy R^2	Classification AWE	ICL-BIC
3 classes: no correlations	74	-18580.0	1.00	37760.7	37834.7	38583.3	0.791	39998.9	39176.2
4 classes: no correlations	99	-18174.4	1.00	37152.4	37251.4	38252.9	0.811	39952.7	38852.2
5 classes: no correlations	124	-17964.1	1.00	36934.6	37058.6	38313.1	**0.814**	40151.0	38772.5
6 classes: no correlations	149	-17776.5	1.00	36762.4	36911.4	38418.8	0.812	40445.5	38789.2
3 classes: 1-2 corr	90	-17834.5	1.00	36399.5	36489.5	**37400.0**	0.728	**38653.4**	37652.9
4 classes: 1-2 corr	115	-17667.0	1.00	36267.3	36382.3	**37545.7**	0.720	39825.6	38547.2
5 classes: 1-2 corr	140	-17541.5	1.00	36219.3	36359.3	37775.6	0.735	39967.4	38411.1
6 classes: 1-2 corr	165	-17421.5	1.00	36182.2	36347.2	38016.4	0.724	40567.7	38733.4
3 classes: 4-5 corr	90	-18400.7	1.00	37531.8	37621.8	38532.3	0.776	40091.1	39090.5
4 classes: 4-5 corr	115	-18013.3	1.00	36960.0	37075.0	38238.4	0.798	40099.6	38821.2
5 classes: 4-5 corr	140	-17799.3	1.00	36735.0	36875.0	38291.4	0.812	40225.6	38669.3
6 classes: 4-5 corr	165	-17595.8	1.00	36530.9	36695.9	38365.1	0.814	40372.2	38537.9
3 classes: 1-2, 4-5 corr	106	-17699.4	1.00	36259.2	36365.2	**37437.6**	0.718	**38664.5**	37486.1
4 classes: 1-2, 4-5 corr	131	-17518.6	1.00	36100.5	36231.5	37556.8	0.709	39809.4	38353.1
5 classes: 1-2, 4-5 corr	156	-17410.9	1.00	36088.0	36244.0	37822.2	0.721	40120.5	38386.3
6 classes: 1-2, 4-5 corr	181	-17321.2	1.00	36111.6	36292.6	38123.7	0.740	40465.6	38453.5
3 classes: 1-2, 2-3, 3-4, 3-5, 4-5 corr	154	-17365.1	1.00	**35980.2**	**36134.2**	37692.1	0.713	38919.6	**37207.6**
4 classes: 1-2, 2-3, 3-4, 3-5, 4-5 corr	179	**-17222.0**	1.00	**35897.0**	**36076.0**	37886.9	**0.846**	**38850.9**	**36861.0**
5 classes: 1-2, 2-3, 3-4, 3-5, 4-5 corr	204	**-17140.4**	1.00	**35936.6**	**36140.6**	38204.4	**0.847**	39389.4	**37121.6**
6 classes: 1-2, 2-3, 3-4, 3-5, 4-5 corr	229	**-17063.8**	1.00	35986.3	36215.3	38532.0	0.776	40724.8	38179.1

Note: p-values of L^2 were obtained using the bootstrap chi^2 procedures of Latent GOLD (Vermunt and Magidson 2016, p. 52).

Table IV.2b: Statistics on goodness-of-fit for estimated models for relations with customers

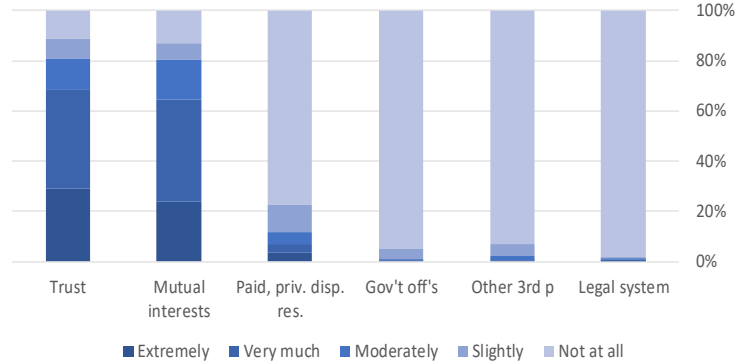| Model	Npar	LL	p-value of L^2	BIC	CAIC	AWE	Entropy R^2	Classification AWE	ICL-BIC
3 classes: no correlations	74	-17791.0	1.00	36182.5	36256.5	37004.9	0.795	38274.2	37451.8
4 classes: no correlations	99	-17232.9	1.00	35269.0	35368.0	36369.2	**0.881**	**37397.2**	**36297.0**
5 classes: no correlations	124	-17023.1	1.00	35052.3	35176.3	36430.3	**0.847**	37934.9	36556.8
6 classes: no correlations	149	-16863.9	1.00	34936.8	35085.8	36592.7	0.837	38431.0	36775.1
3 classes: 1-2 corr	90	-17537.6	1.00	35805.4	35895.4	**36805.6**	0.826	38019.6	37019.4
4 classes: 1-2 corr	115	-17115.7	1.00	35164.4	35279.4	**36442.4**	0.847	**37801.5**	36523.4
5 classes: 1-2 corr	140	-16923.7	1.00	34983.2	35123.2	36539.1	0.838	38151.5	36595.7
6 classes: 1-2 corr	165	-16765.3	1.00	34869.3	35034.3	36703.0	**0.850**	38375.4	36541.7
3 classes: 4-5 corr	90	-16969.3	0.946	34668.7	34758.7	35668.9	0.719	**36705.8**	**35705.6**
4 classes: 4-5 corr	115	-16801.2	1.00	34535.5	34650.5	35813.5	0.635	38458.7	37180.6
5 classes: 4-5 corr	140	-16678.4	1.00	34492.6	**34632.6**	36048.5	0.642	39227.5	37671.6
6 classes: 4-5 corr	165	-16568.8	1.00	34476.3	34641.3	36310.0	0.659	39426.6	37592.8
3 classes: 1-2, 4-5 corr	106	-16878.0	1.00	34616.1	34722.1	**35794.1**	0.596	38353.2	37175.2
4 classes: 1-2, 4-5 corr	131	-16723.8	1.00	34510.4	34641.4	35966.2	0.653	38335.1	36879.3
5 classes: 1-2, 4-5 corr	156	-16608.2	1.00	34482.0	34638.0	36215.7	0.631	38954.5	37220.8
6 classes: 1-2, 4-5 corr	181	**-16502.6**	1.00	34473.7	34654.7	36485.3	0.651	39712.8	37701.3
3 classes: 1-2, 4-5, 4-6, 5-6 corr	138	-16697.7	1.00	34515.1	34653.1	36048.8	0.632	38488.3	36954.6
4 classes: 1-2, 4-5, 4-6, 5-6 corr	163	-16561.5	1.00	**34445.6**	**34608.6**	36257.0	0.754	38054.9	**36243.4**
5 classes: 1-2, 4-5, 4-6, 5-6 corr	188	**-16450.4**	1.00	**34426.0**	**34614.0**	36515.4	0.673	39157.9	38891.2
6 classes: 1-2, 4-5, 4-6, 5-6 corr	213	**-16366.0**	1.00	**34460.1**	34673.1	36827.3	0.665	40385.1	38018.0

Note: p-values of L^2 were obtained using the bootstrap chi^2 procedures of Latent GOLD (Vermunt and Magidson 2016, p. 52)

Table V.1a: Predicted Response Probabilities, Relations with Suppliers

Class 1 – Pure Bilateralism

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.11	0.08	0.13	0.39	0.29
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Mutual interests	0.13	0.06	0.16	0.41	0.24
	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
Paid, priv. disp. res.	0.77	0.11	0.05	0.03	0.03
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)
Gov't off's	0.95	0.05	0.00	0.00	0.00
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
Other 3rd p	0.93	0.05	0.02	0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Legal system	0.98	0.00	0.00	0.01	0.00
	(0.02)	(0.01)	(0.01)	(0.01)	(0.00)

Standard errors in parenthesis.

Class 2 – Bilateralism with private support

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.04	0.04	0.11	0.52	0.29
	(0.01)	(0.02)	(0.04)	(0.06)	(0.05)
Mutual interests	0.00	0.10	0.01	0.33	0.56
	(0.00)	(0.03)	(0.01)	(0.07)	(0.07)
Paid, priv. disp. res.	0.28	0.14	0.52	0.06	0.00
	(0.06)	(0.04)	(0.07)	(0.02)	(0.00)
Gov't off's	0.76	0.18	0.05	0.01	0.00
	(0.04)	(0.04)	(0.02)	(0.00)	(0.00)
Other 3rd p	0.62	0.23	0.10	0.04	0.00
	(0.05)	(0.05)	(0.03)	(0.02)	(0.00)
Legal system	0.31	0.45	0.17	0.04	0.03
	(0.06)	(0.06)	(0.04)	(0.02)	(0.02)

Standard errors in parenthesis.

Class 3 – Bilateralism with legal support

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.02	0.14	0.25	0.45	0.15
	(0.01)	(0.04)	(0.04)	(0.05)	(0.03)
Mutual interests	0.14	0.06	0.22	0.59	0.00
	(0.03)	(0.03)	(0.04)	(0.05)	(0.00)
Paid, priv. disp. res.	0.40	0.35	0.12	0.11	0.02
	(0.06)	(0.05)	(0.05)	(0.03)	(0.02)
Gov't off's	0.69	0.13	0.08	0.05	0.05
	(0.05)	(0.03)	(0.03)	(0.02)	(0.02)
Other 3rd p	0.58	0.34	0.05	0.03	0.00
	(0.05)	(0.05)	(0.01)	(0.02)	(0.00)
Legal system	0.01	0.62	0.33	0.04	0.00
	(0.02)	(0.05)	(0.05)	(0.02)	(0.00)

Standard errors in parenthesis.

Class 4 – Strong comprehensive

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.03	0.00	0.12	0.08	0.77
	(0.03)	(0.00)	(0.07)	(0.05)	(0.10)
Mutual interests	0.04	0.00	0.19	0.52	0.25
	(0.04)	(0.00)	(0.10)	(0.13)	(0.12)
Paid, priv. disp. res.	0.01	0.25	0.00	0.38	0.36
	(0.03)	(0.11)	(0.00)	(0.15)	(0.14)
Gov't off's	0.13	0.00	0.00	0.57	0.30
	(0.10)	(0.00)	(0.00)	(0.13)	(0.14)
Other 3rd p	0.50	0.00	0.16	0.31	0.03
	(0.15)	(0.00)	(0.10)	(0.13)	(0.03)
Legal system	0.03	0.00	0.00	0.47	0.50
	(0.02)	(0.00)	(0.00)	(0.15)	(0.15)

Standard errors in parenthesis.

Table V.1b: Predicted Response Probabilities, Relations with Customers

Class 1 – Pure Bilateralism

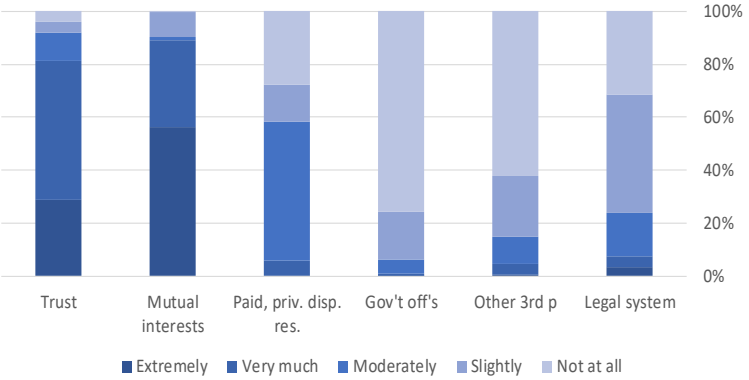| Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.08	0.04	0.13	0.39	0.37
	(0.02)	(0.01)	(0.02)	(0.03)	(0.03)
Mutual interests	0.10	0.03	0.13	0.46	0.27
	(0.02)	(0.01)	(0.02)	(0.03)	(0.03)
Paid, priv. disp. res.	0.94	0.00	0.04	0.02	0.00
	(0.04)	(0.00)	(0.03)	(0.02)	(0.00)
Gov't off's	0.98	0.02	0.00	0.00	0.00
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
Other 3rd p	0.94	0.05	0.00	0.00	0.00
	(0.02)	(0.02)	(0.00)	(0.00)	(0.00)
Legal system	0.84	0.08	0.06	0.01	0.00
	(0.02)	(0.02)	(0.01)	(0.01)	(0.00)

Standard errors in parenthesis.

Class 2 – Bilateralism with private support

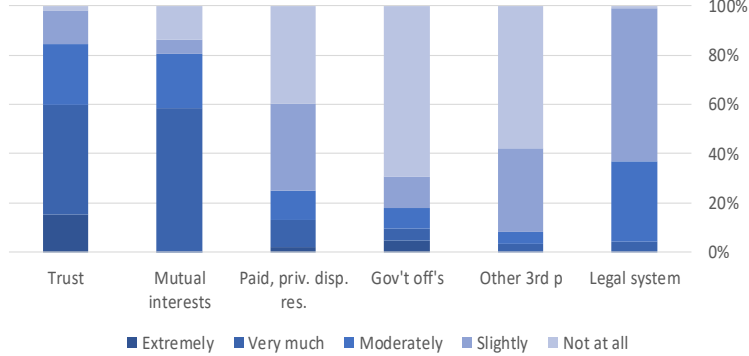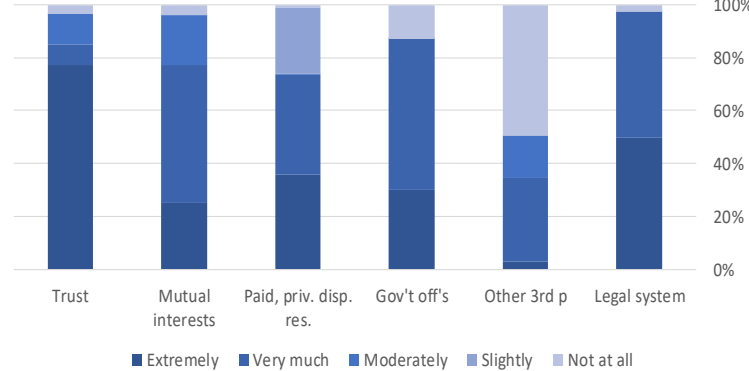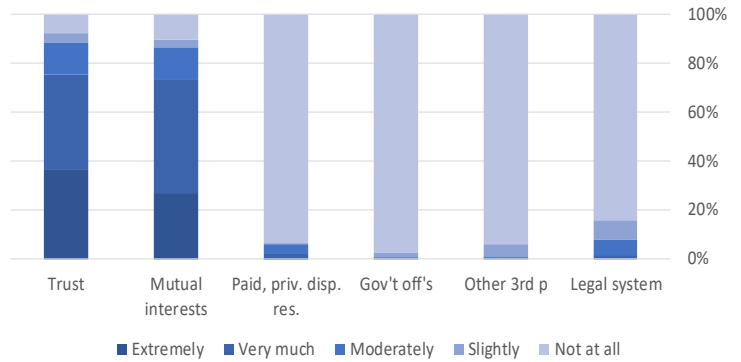| Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.00	0.07	0.14	0.50	0.29
	(0.01)	(0.02)	(0.02)	(0.04)	(0.04)
Mutual interests	0.03	0.10	0.15	0.54	0.19
	(0.01)	(0.03)	(0.03)	(0.04)	(0.04)
Paid, priv. disp. res.	0.03	0.53	0.29	0.15	0.00
	(0.07)	(0.07)	(0.06)	(0.05)	(0.00)
Gov't off's	0.74	0.19	0.02	0.04	0.01
	(0.04)	(0.04)	(0.02)	(0.01)	(0.01)
Other 3rd p	0.61	0.31	0.05	0.03	0.00
	(0.05)	(0.05)	(0.01)	(0.01)	(0.00)
Legal system	0.50	0.29	0.15	0.06	0.01
	(0.05)	(0.05)	(0.03)	(0.02)	(0.01)

Standard errors in parenthesis.
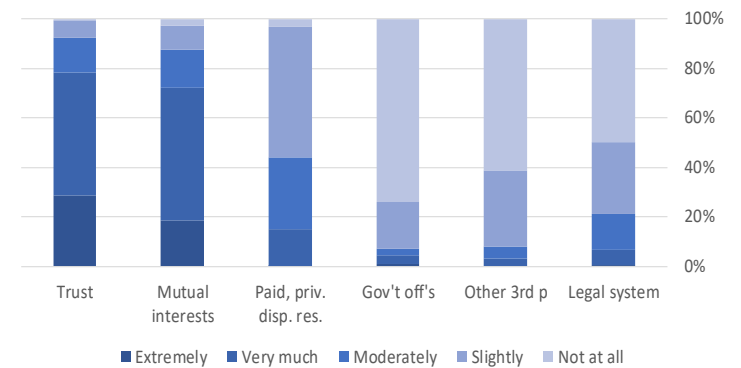
Class 3 – Bilateralism with weak support

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.14	0.24	0.00	0.25	0.37
	(0.05)	(0.06)	(0.00)	(0.06)	(0.07)
Mutual interests	0.17	0.18	0.00	0.00	0.64
	(0.05)	(0.05)	(0.00)	(0.01)	(0.07)
Paid, priv. disp. res.	0.45	0.45	0.00	0.00	0.10
	(0.09)	(0.08)	(0.00)	(0.00)	(0.04)
Gov't off's	0.93	0.04	0.02	0.00	0.02
	(0.03)	(0.02)	(0.01)	(0.00)	(0.01)
Other 3rd p	0.85	0.13	0.00	0.02	0.01
	(0.05)	(0.05)	(0.00)	(0.01)	(0.00)
Legal system	0.71	0.27	0.00	0.02	0.01
	(0.06)	(0.06)	(0.00)	(0.01)	(0.00)

Standard errors in parenthesis.
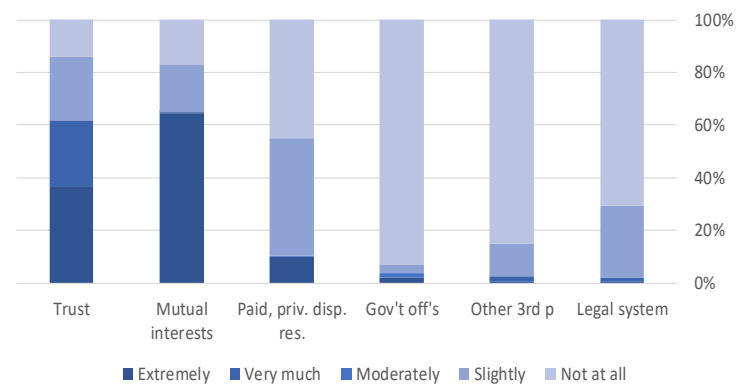
Class 4 – Weak comprehensive

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.01	0.03	0.36	0.37	0.22
	(0.01)	(0.02)	(0.09)	(0.09)	(0.07)
Mutual interests	0.02	0.07	0.07	0.66	0.19
	(0.01)	(0.03)	(0.03)	(0.08)	(0.07)
Paid, priv. disp. res.	0.36	0.13	0.32	0.07	0.12
	(0.09)	(0.05)	(0.09)	(0.03)	(0.07)
Gov't off's	0.64	0.00	0.30	0.02	0.04
	(0.07)	(0.00)	(0.06)	(0.01)	(0.03)
Other 3rd p	0.37	0.02	0.49	0.12	0.01
	(0.10)	(0.01)	(0.10)	(0.05)	(0.01)
Legal system	0.54	0.12	0.10	0.01	0.23
	(0.09)	(0.05)	(0.04)	(0.01)	(0.09)

Standard errors in parenthesis.
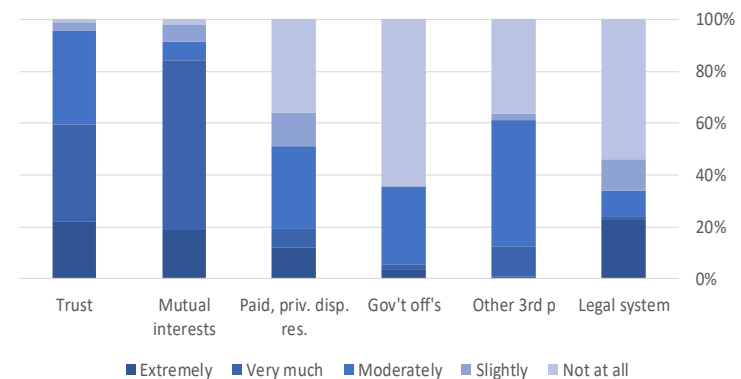
Table V.2: Estimated Class Membership Probabilities

	$\hat{\pi}_c$	s.e.
Relations with Suppliers		
Pure bilateralism	0.657	0.024
Bilateralism with private support	0.166	0.022
Bilateralism with legal support	0.160	0.017
Strong comprehensive governance	0.017	0.004
Relations with Customers		
Pure bilateralism	0.565	0.032
Bilateralism with private support	0.242	0.000
Bilateralism with weak support	0.145	0.025
Weak comprehensive governance	0.050	0.008

Table VI.1a: Tests of the association between governance structures and a variety of variables, relations with suppliers

Description	p-value	FDR			FWER		
		1%	5%	10%	1%	5%	10%
Country	0.001***	0.0008	0.0040**	0.0080*	0.0004	0.0021**	0.0042*
Attitudes towards courts							
"the court system is fair…"	0.004***	0.0012	0.0060**	0.0120*	0.0004	0.0022	0.0044*
Courts as an obstacle	0.016**	0.0020	0.0100	0.0200*	0.0005	0.0024	0.0048
Relations with business associations							
Belong to a business association?	0.240	0.0056	0.0280	0.0560	0.0008	0.0042	0.0083
Regularly interact with a business association?	0.390	0.0064	0.0320	0.0640	0.0010	0.0050	0.0100
Sector of operation							
Manufacturing, retail, or other services	0.180	0.0052	0.0260	0.0520	0.0008	0.0039	0.0077
Disaggregated sector	0.000***	0.0004***	0.0020**	0.0040*	0.0004***	0.0020**	0.0040*
Management practices							
Management practices (high means better)	0.078*	0.0036	0.0180	0.0360	0.0006	0.0029	0.0059
Top manager's experience working in sector	0.470	0.0068	0.0340	0.0680	0.0011	0.0056	0.0111
Firm characteristics							
Size	0.082*	0.0040	0.0200	0.0400	0.0006	0.0031	0.0063
Age	0.770	0.0092	0.0460	0.0920	0.0033	0.0167	0.0333
Proportion domestic private ownership	0.008***	0.0016	0.0080**	0.0160*	0.0005	0.0023	0.0046
At least 10% foreign owned	0.073*	0.0032	0.0160	0.0320	0.0006	0.0028	0.0056
Exporting directly at least 10% of sales	0.070*	0.0028	0.0140	0.0280	0.0005	0.0026	0.0053
Proportion owned by females	0.820	0.0096	0.0480	0.0960	0.0050	0.0250	0.0500
Female top manager	0.530	0.0076	0.0380	0.0760	0.0014	0.0071	0.0143
Main Market – local, national, international	0.350	0.0060	0.0300	0.0600	0.0009	0.0046	0.0091
Multi-establishment	0.740	0.0084	0.0420	0.0840	0.0020	0.0100	0.0200
Legal form	0.130	0.0048	0.0240	0.0480	0.0007	0.0036	0.0071
Sole Proprietorship	0.033**	0.0024	0.0120	0.0240	0.0005	0.0025	0.0050
Shareholding company	0.760	0.0088	0.0440	0.0880	0.0025	0.0125	0.0250
Share of transactions with suppliers that were fulfilled smoothly	0.130	0.0044	0.0220	0.0440	0.0007	0.0033	0.0067
Corruption and security							
Bribery depth	0.680	0.0080	0.0400	0.0800	0.0017	0.0083	0.0167
Bribery incidence	0.510	0.0072	0.0360	0.0720	0.0013	0.0063	0.0125
Paying for security	0.870	0.0100	0.0500	0.1000	0.0100	0.0500	0.1000

* significance at 10%, ** at 5%, *** at 1%.

Table VI.1b: Tests of the association between governance structures and a variety of variables, relations with customers

Description	p-value	FDR			FWER		
		1%	5%	10%	1%	5%	10%
Country	0.000***	0.0004***	0.0020**	0.0040*	0.0004***	0.0020**	0.0040*
Attitudes towards courts							
"the court system is fair…"	0.280	0.0076	0.0380	0.0760	0.0014	0.0071	0.0143
Courts as an obstacle	0.000***	0.0008***	0.0040**	0.0080*	0.0004***	0.0021**	0.0042*
Relations with business associations							
Belong to a business association?	0.041**	0.0032	0.0160	0.0320	0.0006	0.0028	0.0056
Regularly interact with a business association?	0.024**	0.0020	0.0100	0.0200	0.0005	0.0024	0.0048
Sector of operation							
Manufacturing, retail, or other services	0.000***	0.0012***	0.0060**	0.0120*	0.0004***	0.0022**	0.0044*
Disaggregated sector	0.034**	0.0028	0.0140	0.0280	0.0005	0.0026	0.0053
Management practices							
Management practices (high means better)	0.031**	0.0024	0.0120	0.0240	0.0005	0.0025	0.0050
Top manager's experience working in sector	0.056*	0.0036	0.0180	0.0360	0.0006	0.0029	0.0059
Firm characteristics							
Size	0.160	0.0044	0.0220	0.0440	0.0007	0.0033	0.0067
Age	0.180	0.0056	0.0280	0.0560	0.0008	0.0042	0.0083
Proportion domestic private ownership	0.200	0.0064	0.0320	0.0640	0.0010	0.0050	0.0100
At least 10% foreign owned	0.019**	0.0016	0.0080	0.0160	0.0005	0.0023	0.0046
Exporting directly at least 10% of sales	0.180	0.0060	0.0300	0.0600	0.0009	0.0046	0.0091
Proportion owned by females	0.240	0.0068	0.0340	0.0680	0.0011	0.0056	0.0111
Female top manager	0.720	0.0092	0.0460	0.0920	0.0033	0.0167	0.0333
Main Market – local, national, international	0.620	0.0088	0.0440	0.0880	0.0025	0.0125	0.0250
Multi-establishment	0.910	0.0100	0.0500	0.1000	0.0100	0.0500	0.1000
Legal form	0.240	0.0072	0.0360	0.0720	0.0013	0.0063	0.0125
Sole Proprietorship	0.170	0.0048	0.0240	0.0480	0.0007	0.0036	0.0071
Shareholding company	0.450	0.0080	0.0400	0.0800	0.0017	0.0083	0.0167
Share of transactions with customers that were fulfilled smoothly	0.180	0.0052	0.0260	0.0520	0.0008	0.0039	0.0077
Corruption and security							
Bribery depth	0.900	0.0096	0.0480	0.0960	0.0050	0.0250	0.0500
Bribery incidence	0.530	0.0084	0.0420	0.0840	0.0020	0.0100	0.0200
Paying for security	0.110	0.0040	0.0200	0.0400	0.0006	0.0031	0.0063

* significance at 10%, ** at 5%, *** at 1%.

Figure VI.1a: Cross-country variation of the mix of governance structures used in relations with suppliers

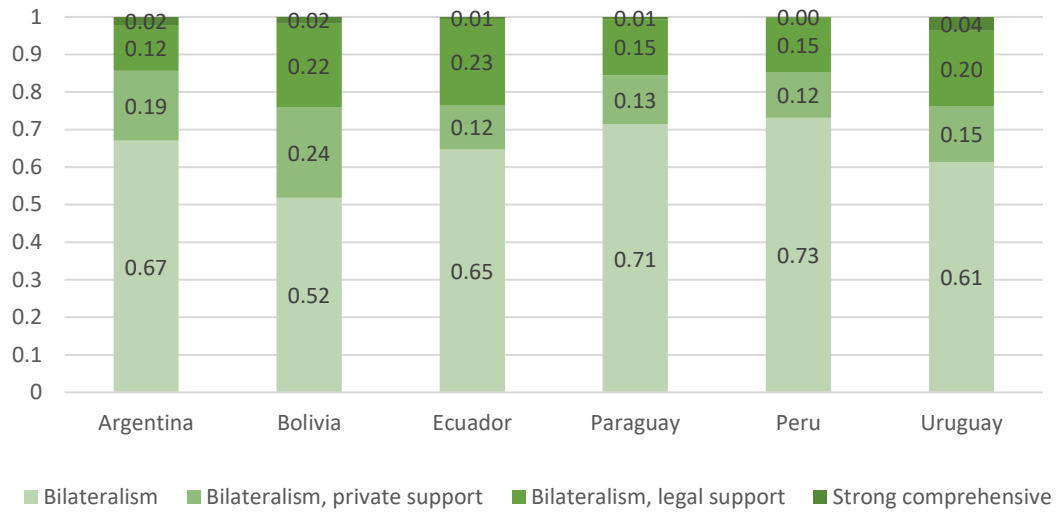Bilateralism ■ Bilateralism, private support ■ Bilateralism, legal support ■ Strong comprehensive

Figure VI.1b: Cross-country variation of the mix of governance structures used in relations with customers

Bilateralism ■ Bilateralism, weak support ■ Bilateralism, private support ■ Weak comprehensive
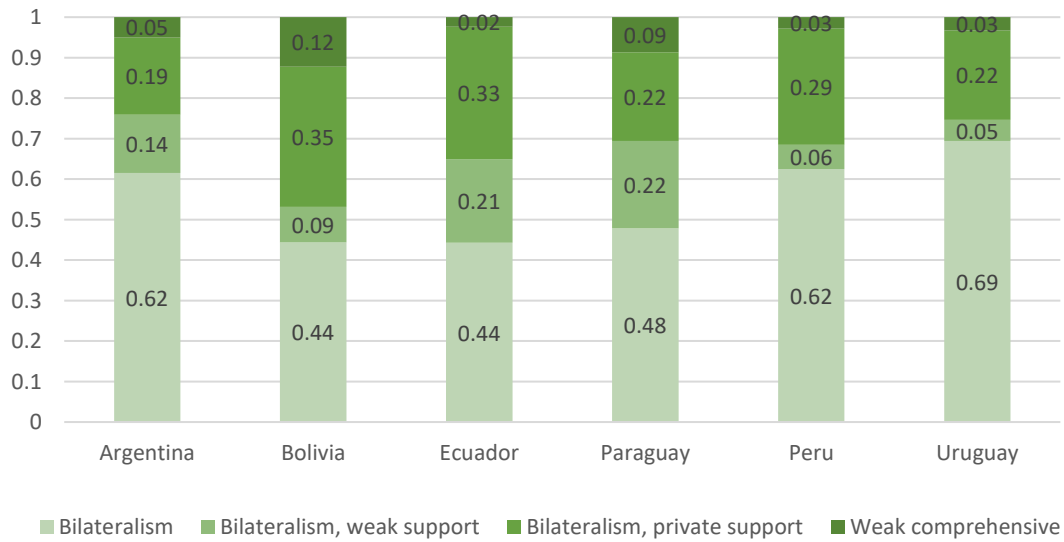
Table VI.2: Some characteristics of the six South American countries

Country	GDP per capita, PPP (current int. $, 2016)	WGI: Rule of Law, 2016	WJP: Civil Justice Index, 2017	Doing Business DTF: Enforcing Agreements 2017 (higher is better)	Interpersonal trust (% very or somewhat trustworthy)	Fractionalization		
						Ethnic	Language	Religion
Argentina	19,939	-0.35	0.58	55.6	71.6%	25.5%	6.2%	22.4%
Bolivia	7,234	-1.20	0.34	54.6	46.0%	74.0%	22.4%	20.8%
Ecuador	11,242	-0.69	0.46	56.0	55.2%	65.5%	13.1%	14.2%
Paraguay	9,567	-0.67		59.7	69.0%	16.9%	59.8%	21.2%
Peru	13,018	-0.49	0.44	60.7	46.7%	65.7%	33.6%	19.9%
Uruguay	21,619	0.63	0.74	54.4	75.9%	25.0%	8.2%	35.5%
Latin America & Caribbean	15,210	-0.06	0.53	54.0	65.7%	40.5%	18.9%	44.4%
Europe & Central Asia	31,361	0.53	0.63	65.7		32.7%	31.2%	40.0%
East Asia & Pacific	17,021	0.21	0.58	56.4		29.6%	39.3%	52.0%
World	16,214	0.00	0.56	55.3	67.4%	43.9%	38.6%	43.7%

Notes:

WGI = World Governance Indicators; WJP = World Justice Project; Doing Business DTF = the distance to the frontier measure of Doing Business.

Countries included in regional averages vary by the respective data availability (e.g. the interpersonal trust world average includes only Canada and the United States of America in addition to the Latin American and Caribbean countries).

The WGI rule of law index captures perceptions of the extent to which agents have confidence in and abide by the society's rules.

The WJP Civil Justice Index measures whether disputes can be resolved peacefully and effectively through the civil justice system.

The DB distance to frontier score is measured on a scale of 0 to 100, where 100 is best practice on enforcing agreements and 0 represents the lowest performance.

Interpersonal trust is based on Americas Barometer and shows the percentage answering 'Very trustworthy' or 'Somewhat trustworthy' to the following question: "And speaking of the people from around here, would you say that people in this community are very trustworthy, somewhat trustworthy, not very trustworthy or untrustworthy?"

The data on fractionalization is from Alesina et al. (2003) and is available for different countries in different years, ranging from 1981 to 1998. The data measures 100 times the probability that a random member of the population is not from the same group.

Table VI.3a: Tests of overall significance of the association of regions with governance structures for supplier-relations

Sub-regions of	p-value	FDR			FWER		
		1%	5%	10%	1%	5%	10%
Argentina	0.000***	0.0017***	0.0083**	0.0167*	0.0017***	0.0083**	0.0167*
Bolivia	0.390	0.0100	0.0500	0.1000	0.0100	0.0500	0.1000
Ecuador	0.000***	0.0033***	0.0167**	0.0333*	0.0020***	0.0100**	0.0200*
Paraguay	0.000***	0.0067***	0.0333**	0.0667*	0.0033***	0.0167**	0.0333*
Peru	0.000***	0.0050***	0.0250**	0.0500*	0.0025***	0.0125**	0.0250*
Uruguay	0.019**	0.0083	0.0417**	0.0833*	0.0050	0.0250**	0.0500*

* significance at 10%, ** at 5%, *** at 1%.

Table VI.3b: Tests of overall significance of the association of regions with governance structures for customer-relations

Sub-regions of	p-value	FDR			FWER		
		1%	5%	10%	1%	5%	10%
Argentina	0.040**	0.0033	0.0167	0.0333	0.0020	0.0100	0.0200
Bolivia	0.140	0.0050	0.0250	0.0500	0.0025	0.0125	0.0250
Ecuador	0.000***	0.0017***	0.0083**	0.0167*	0.0017***	0.0083**	0.0167*
Paraguay	0.780	0.0100	0.0500	0.1000	0.0100	0.0500	0.1000
Peru	0.270	0.0067	0.0333	0.0667	0.0033	0.0167	0.0333
Uruguay	0.520	0.0083	0.0417	0.0833	0.0050	0.0250	0.0500

* significance at 10%, ** at 5%, *** at 1%.

Figure VI.2a: Within-country variation of governance structures for supplier-relations with suppliers

Legend: Bilateralism · Bilateralism, private support · Bilateralism, legal support · Strong comprehensive
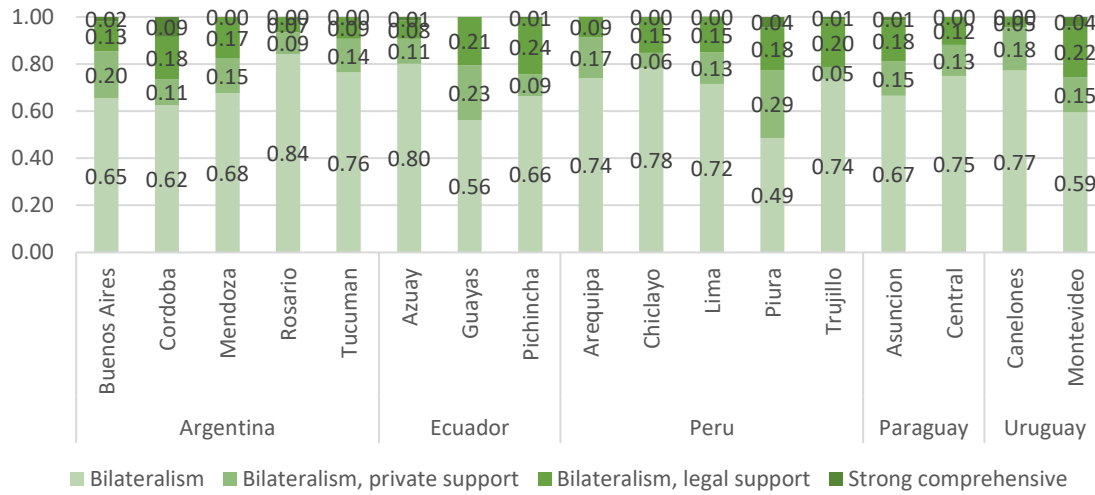
Figure VI.2b: Within-country variation of governance structures for customer-relations

Legend: Bilateralism · Bilateralism, weak support · Bilateralism, private support · Weak comprehensive
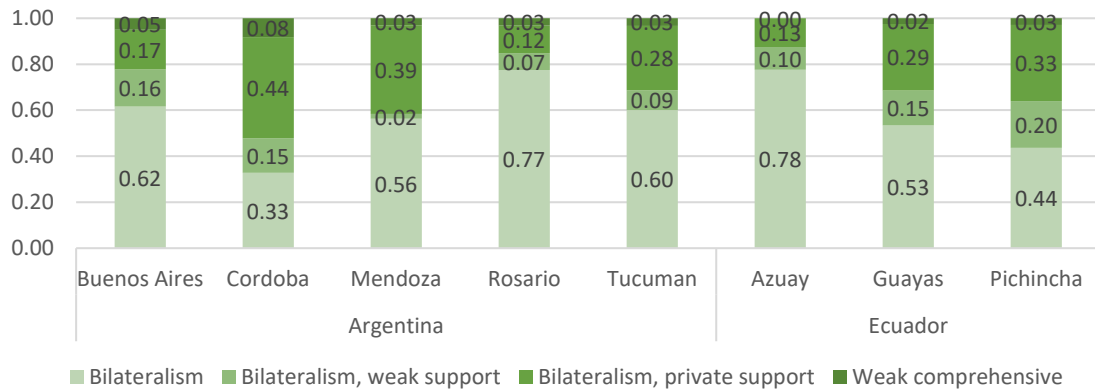
Figure VI.3a: Attitudes towards courts and governance structures in relations with suppliers
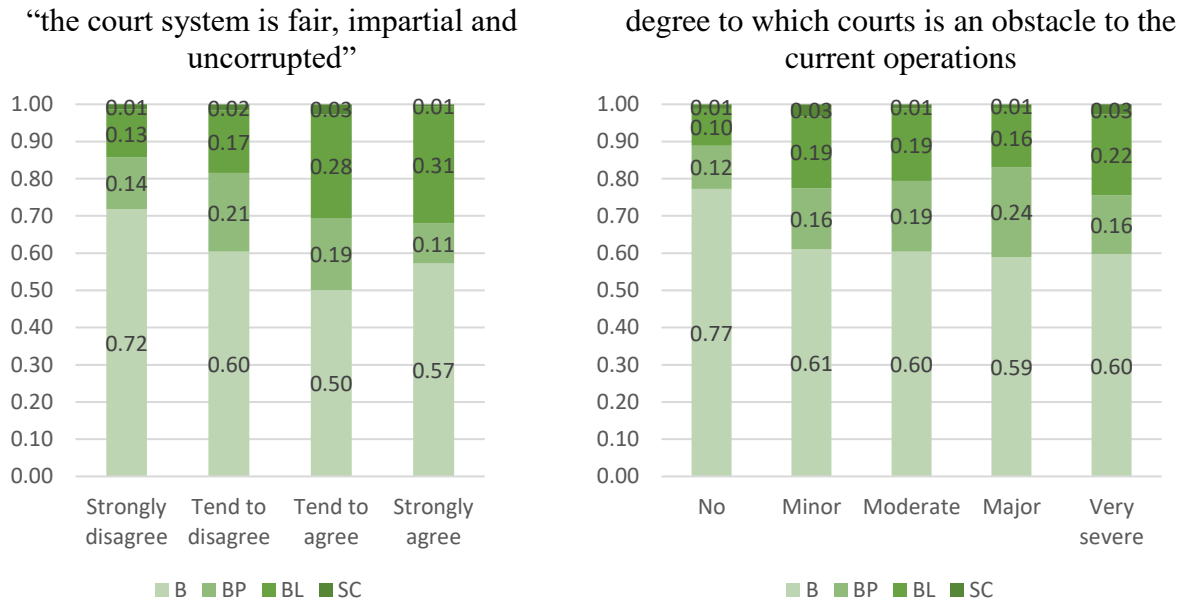
"the court system is fair, impartial and uncorrupted"

degree to which courts is an obstacle to the current operations

B stands for bilateralism, BP – bilateralism with private support, BL – bilateralism with legal support, SC – strong comprehensive

Figure VI.3b: Attitudes towards courts and governance structures in relations with customers
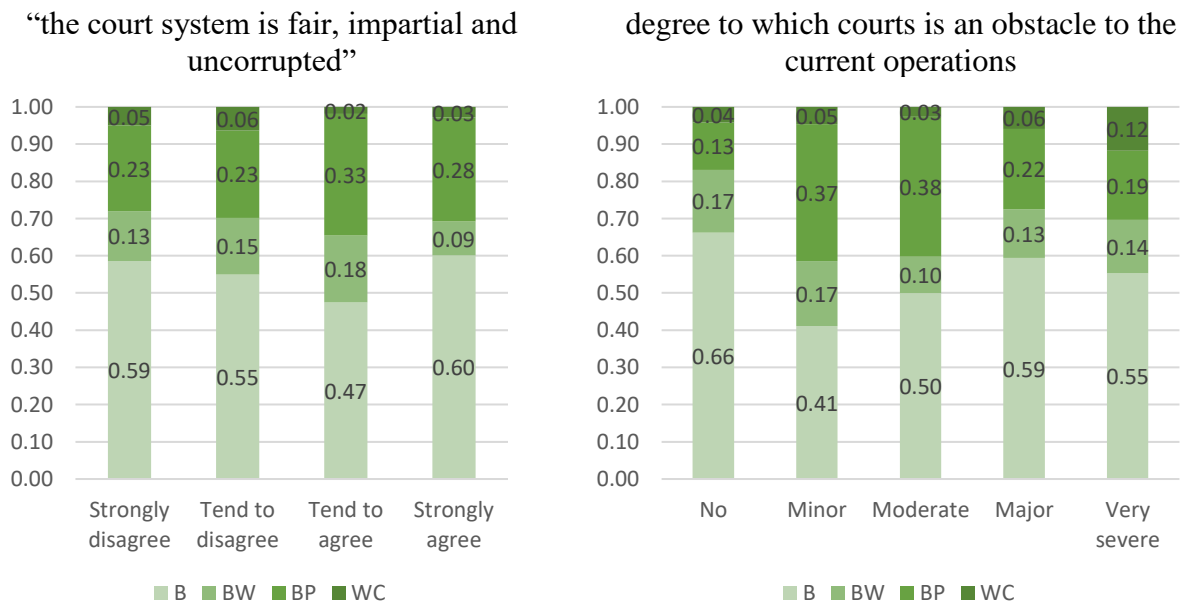
"the court system is fair, impartial and uncorrupted"

degree to which courts is an obstacle to the current operations

B stands for bilateralism, BW – bilateralism with weak support, BP – bilateralism with private support, WC – weak comprehensive

Figure VI.4a: Membership and interactions with business associations as they relate to the governance structures in relations with suppliers

Belong to a business association?
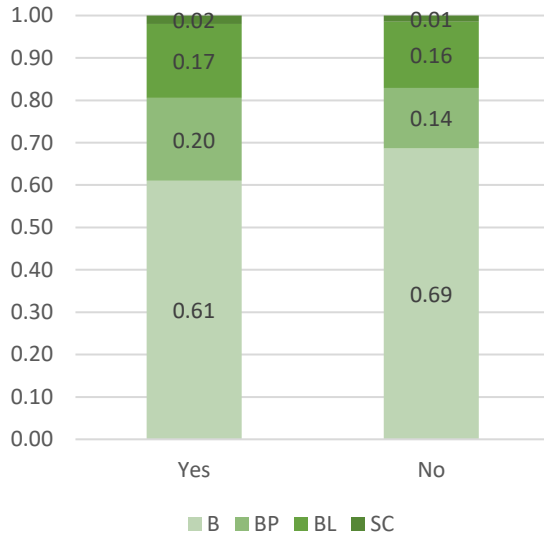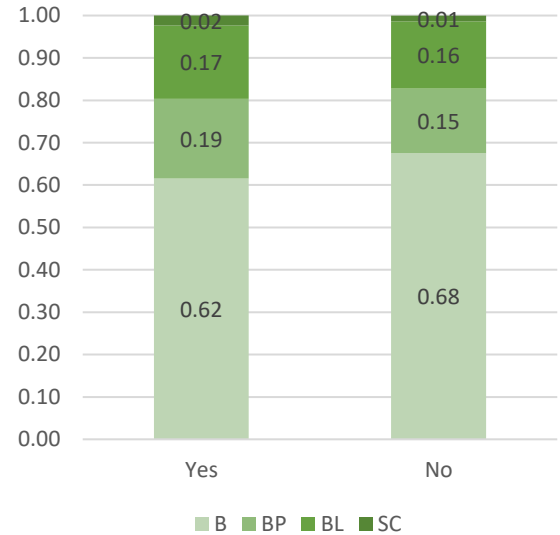
Regularly interact with business association?

B stands for bilateralism, BP – bilateralism with private support, BL – bilateralism with legal support, SC – strong comprehensive

Figure VI.4b: Membership and interactions with business associations as they relate to the governance structures in relations with customers

Belong to a business association?
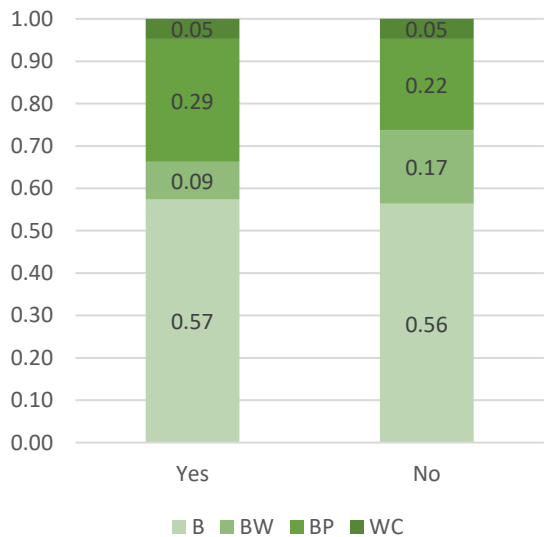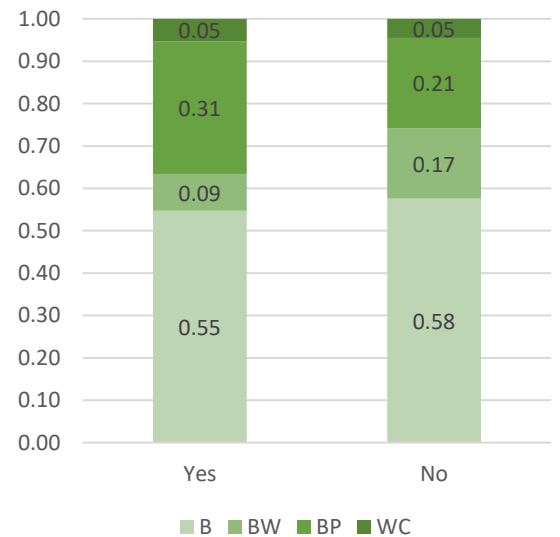
Regularly interact with business association?

B stands for bilateralism, BW – bilateralism with weak support, BP – bilateralism with private support, WC – weak comprehensive

Figure VI.5a: Sectors and governance structures in relations with suppliers

Legend: ■ Bilateralism ■ Bilateralism, private support ■ Bilateralism, legal support ■ Strong comprehensive

Values by sector (bottom to top):
- Food: 0.74, 0.12, 0.11, 0.02
- Textiles and Garments: 0.67, 0.20, 0.12, 0.01
- Wood and Wood Products: 0.73, 0.15, 0.12, 0.00
- Chemicals, Plastics, Non-metallics: 0.69, 0.16, 0.15, 0.00
- Metals: 0.52, 0.28, 0.20
- Machinery and Equipment: 0.74, 0.12, 0.11, 0.03
- Construction: 0.51, 0.14, 0.32, 0.03
- Retail, Wholesale, Tourism: 0.66, 0.16, 0.17, 0.01
- Transport: 0.71, 0.20, 0.08, 0.01
- Telecom and IT: 0.54, 0.30, 0.10, 0.06

Figure VI.5b: Sectors and governance structures in relations with customers

Legend: ■ Bilateralism ■ Bilateralism, weak support ■ Bilateralism, private support ■ Weak comprehensive

Values by sector (bottom to top):
- Food: 0.70, 0.11, 0.15, 0.05
- Textiles and Garments: 0.63, 0.07, 0.23, 0.07
- Wood and Wood Products: 0.72, 0.09, 0.16, 0.03
- Chemicals, Plastics, Non-metalics: 0.61, 0.14, 0.21, 0.04
- Metals: 0.73, 0.05, 0.14, 0.08
- Machinery and Equipment: 0.55, 0.24, 0.15, 0.05
- Construction: 0.24, 0.28, 0.38, 0.10
- Retail, Wholesale, Tourism: 0.56, 0.13, 0.28, 0.03
- Transport: 0.59, 0.10, 0.19, 0.12
- Telecom and IT: 0.38, 0.30, 0.24, 0.08

Figure VI.6a: Management practices and governance structures towards suppliers
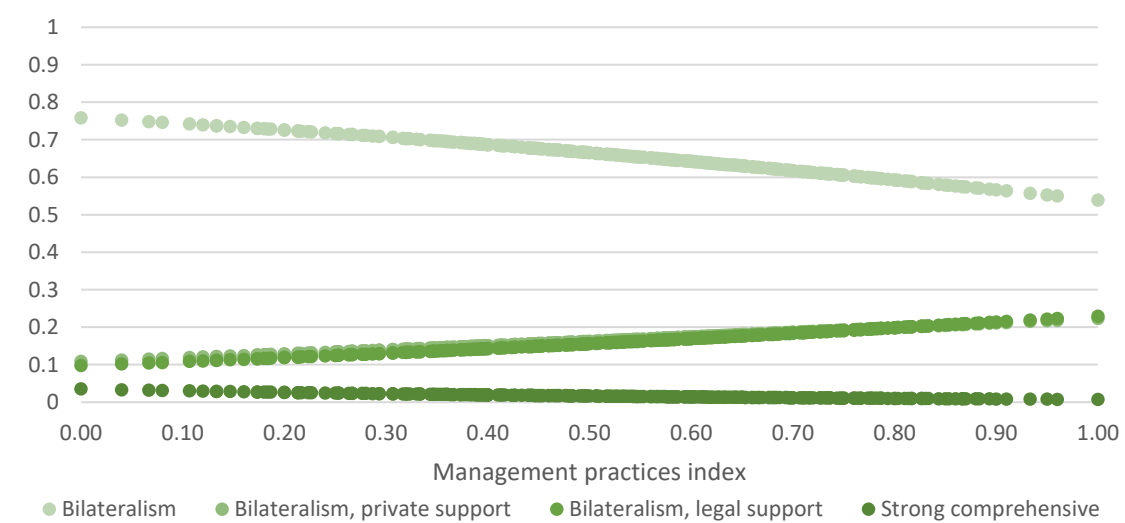
Figure VI.6b: Management practices and governance structures towards customers
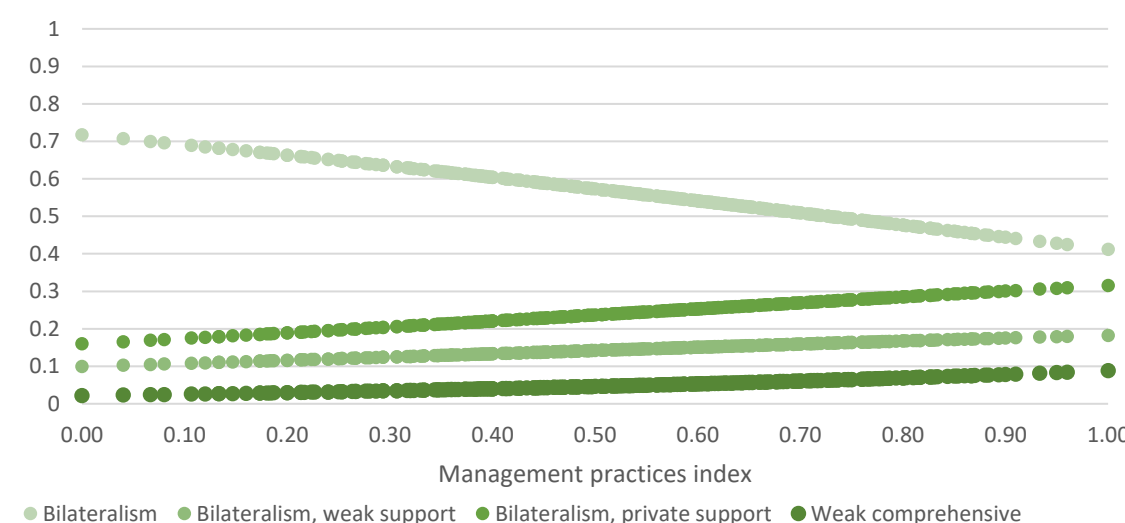
Figure VI.7: Foreign ownership and governance structures

towards suppliers

	Domestic owned	Foreign owned
SC	0.02	0.02
BL	0.15	0.27
BP	0.16	0.22
B	0.67	0.50

towards customers

	Domestic owned	Foreign owned
WC	0.05	0.11
BP	0.23	0.40
BW	0.15	0.09
B	0.58	0.41
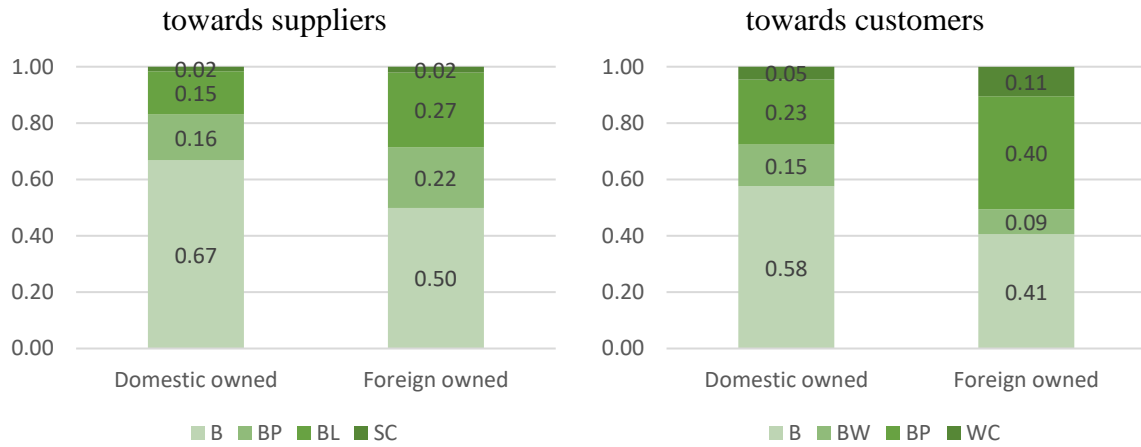
Figure VI.8: Exporting status and governance structures

towards suppliers

	Non exporter	Exporter
SC	0.01	0.05
BL	0.16	0.20
BP	0.16	0.26
B	0.67	0.49

towards customers

	Non exporter	Exporter
WC	0.05	0.11
BP	0.24	0.34
BW	0.15	0.06
B	0.57	0.49

Figure VI.9: Firm size and governance structures

towards suppliers

	Small (5-19)	Medium (20-99)	Large (100-399)	Very large (400+)
SC	0.01	0.02	0.03	0.02
BL	0.15	0.15	0.20	0.34
BP	0.16	0.17	0.18	0.25
B	0.67	0.66	0.59	0.39

towards customers

	Small (5-19)	Medium (20-99)	Large (100-399)	Very large (400+)
WC	0.05	0.06	0.03	0.12
BP	0.24	0.22	0.32	0.40
BW	0.14	0.18	0.10	0.10
B	0.58	0.54	0.55	0.38
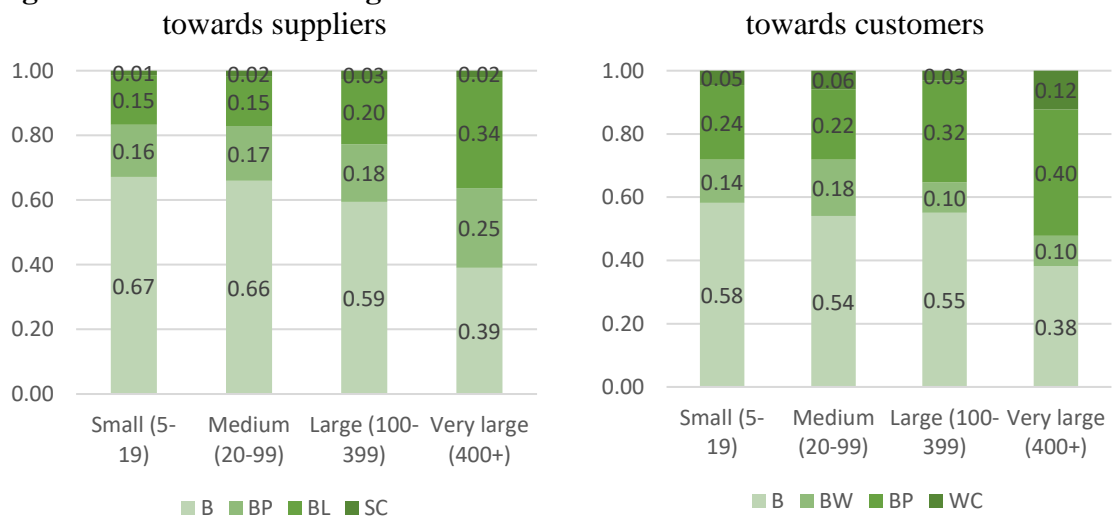
Appendix A

A.1 Wording of Questions in English and Spanish

ASCD.9	When making agreements with **suppliers**, please indicate to what degree each of the following is **effective in resolving or preventing** problems. **[READ OUT OPTIONS] SHOW CARD 8**

	Not at all	Slightly	Moderately	Very much	Extremely	**DON'T KNOW (SPONTANEOUS)**
Personal relationship and trust **ASCd9a**	1	2	3	4	5	**-9**
Mutual interest in maintaining business relationship, without involving others **ASCd9b**	1	2	3	4	5	**-9**
Paid, private dispute resolution **ASCd9d**	1	2	3	4	5	**-9**
Assistance of government officials **ASCd9e**	1	2	3	4	5	**-9**
Intervention of other third-parties (excluding paid, private dispute resolution and government officials) **ASCd9c**	1	2	3	4	5	**-9**
Legal system **ASCd9f**	1	2	3	4	5	**-9**

ASCD.9	Por favor indique en qué medida las siguientes circunstancias son efectivas para resolver o evitar problemas en los acuerdos con proveedores. **LEER OPCIONES -MOSTRAR TARJETA 8**

	Para nada	Ligera-mente	Modera-damente	Bastante	Extreme-damente	**NO SABE (ESPONTÁNEO)**
Relaciones personales y confianza **ASCd9a**	1	2	3	4	5	**-9**
El interés mutuo de mantener una relación de negocios sin tener que involucrar a terceros **ASCd9b**	1	2	3	4	5	**-9**
Mecanismos de resolución privados ofrecidos por terceros y que son pagados **ASCd9d**	1	2	3	4	5	**-9**
Ayuda de funcionarios del gobierno **ASCd9e**	1	2	3	4	5	**-9**
Intervención de otros terceros (excluyendo entes privados y pagados y personas del gobierno **ASCd9c**	1	2	3	4	5	**-9**
Recurso al sistema legal **ASCd9f**	1	2	3	4	5	**-9**

ASCD.18	When making agreements with **customers**, please indicate to what degree each of the following is **effective in resolving or preventing** problems. **[READ OUT OPTIONS]** **SHOW CARD 8**

	Not at all	Slightly	Moderately	Very much	Extremely	**DON'T KNOW (SPONTANEOUS)**
Personal relationship and trust **ASCd18a**	1	2	3	4	5	**-9**
Mutual interest in maintaining business relationship, without involving others **ASCd18b**	1	2	3	4	5	**-9**
Paid, private dispute resolution **ASCd18d**	1	2	3	4	5	**-9**
Assistance of government officials **ASCd18e**	1	2	3	4	5	**-9**
Intervention of other third-parties (excluding private dispute resolution and government officials) **ASCd18c**	1	2	3	4	5	**-9**
Legal system **ASCd18f**	1	2	3	4	5	**-9**

ASCD.18	Por favor indique en qué medida las siguientes circunstancias son efectivas para resolver o evitar problemas en los acuerdos con clientes. **[LEER OPCIONES] MOSTRAR TARJETA 8**

	Para nada	Ligera-mente	Moderada-mente	Bastante	Extreme-damente	**NO SABE (ESPONTANEO)**
Relaciones personales y confianza **ASCd18a**	1	2	3	4	5	**-9**
El interés mutuo de mantener una relación de negocios sin tener que involucrar a terceros **ASCd18b**	1	2	3	4	5	**-9**
Mecanismos de resolución privados ofrecidos por terceros y que son pagados **ASCd18d**	1	2	3	4	5	**-9**
Ayuda de funcionarios del gobierno **ASCd18e**	1	2	3	4	5	**-9**
Intervención de otros terceros (excluyendo entes privados y pagados y personas del gobierno **ASCd18c**	1	2	3	4	5	**-9**
Recurso al sistema legal **ASCd18f**	1	2	3	4	5	**-9**

A.2 Data Collection

All interviews were conducted face-to-face with business owners and top managers using tablet devices. Table A.2 provides information on the dates of fieldwork and the total number of interviews conducted in each country. Fieldwork started in each country following a three- or four-day training and piloting phase.

Table A.2: Description of the Surveys

Country	Dates of Fieldwork	Total Surveyed
Argentina	March 2017 through March 2018	991
Bolivia	January 2017 through June 2017	364
Ecuador	March 2017 through October 2018	361
Paraguay	February 2017 through August 2017	364
Peru	March 2017 through March 2018	1,003
Uruguay	March 2017 through December 2017	347
Total		3,430

A.3 Item Non-response

Table A.3 shows item non-response rates due to respondents spontaneously answering "Don't Know" (which was not displayed as a possible option in the 'show card' listing possible responses). Fewer than 3% of the respondents chose at least one "Don't Know" across the six questions about the methods of governing relations with suppliers and customers. The question with the most frequent occurrence of "Don't Know" on relations with suppliers is on paid private dispute resolution (1.4% of sample); for relations with customers, the question about personal trust had the highest item non-response (1.2% of sample). Given the low item non-response rates, in our application of LCA we drop observations that have at least one "Don't Know" in the relevant series of questions. This leaves 3,350 observations on relations with suppliers (97.7% of the sample), and 3,339 observations on relations with customers (97.3% of the sample).

Table A.3: Item non-response due to "Don't Know" responses

Country	Total	Share (%) of respondents with shown number of "Don't Know" responses (of 6 questions)					
		Relations with suppliers			Relations with customers		
		0	1	2+	0	1	2+
Argentina	991	**96.5**	2.1	1.4	**94.9**	2.7	2.4
Bolivia	364	**95.6**	3.3	1.1	**96.7**	1.6	1.6
Ecuador	361	**99.7**	0.3	0.0	**99.4**	0.6	0.0
Paraguay	364	**98.1**	1.1	0.8	**98.6**	1.1	0.3
Peru	1,003	**99.1**	0.6	0.3	**98.8**	0.6	0.6
Uruguay	347	**96.5**	1.4	2.0	**97.4**	0.9	1.7
Overall N	3,430	**3,350**	49	31	**3,339**	48	43

Appendix B

As a robustness check, we examined the extent to which the behavioral patterns suggested by our chosen models differ from the behavioral patterns suggested by the next best alternatives – the 5-class models with the same correlation structure across questions as our chosen 4-class models (see Tables IV.2 and IV.3 in Section IV). Tables B.1a and B.1b illustrate the governance structures of the 5-class models in the same format as Tables V.1a and V.1b from Section V. Even a quick glance at these tables and figures is enough to recognize the same governance structures we already saw in Section V, with no new behavioral pattern meriting a distinct name. As the behavioral patterns identified by the 5-class models are similar to those of the 4-class models, it is unsurprising that the measures of class separation are lower for the 5-class models.[39]

Table B.2a presents the firm-by-firm correspondence between governance structures assigned (modally) by the 4-class models with those of 5-class models, for supplier-relations. Four of the five classes in the 5-class model have a near perfect mapping with the original four classes. The additional 5th class can be safely described as using pure bilateralism, albeit with a small tinge of legal support (see Table B.1a). It comprises mostly the firms that were assigned to the group using pure bilateralism in the original classification. A close mapping between the class assignments is also reflected in the estimates of class membership probabilities, with the prevalence of governance structures similar whether we apply the 4- or 5-class LCA.

While the governance structures for customer-relations suggested by the 5-class model (Table B.1b) does not contain a structure that is qualitatively different from the structures of the 4-class model (See Table B.2b), the firm-by-firm correspondence is less straightforward than it was for suppliers-relations. Three governance structures in the 5-class group are clearly mapped into single classes in the 4-class group. The rest of the mapping is straightforward from the figures that illustrate the underlying behavior of classes 4 and 5. Namely, class 4 comprises firms that were assigned to pure bilateralism, or bilateralism with private support, or weak comprehensive. However, examining Table B.1b, class 4 is substantively indistinguishable from bilateralism with private support. Similarly, class 5 comprises firms that were assigned across all possible classes, but in terms of the behavioral pattern given in Table B.2b it is a close version of weak comprehensive governance.

To summarize, the 4-class and the 5-class models produce very similar overall estimates of governance structures. For supplier relations, nearly all firms are assigned to the same governance structures across the two models. For customer relations, the firm-by-firm assignments are clear-cut only for some governance structures. In cases with a more noisy mapping of the firm-by-firm assignments, the governance structures of the 5-class models have a structure that closely corresponds to ones already suggested by the 4-class model. Such a close correspondence between the governance structures across our chosen and the next-best models indicates that our findings are robust to small changes in model selection.

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[39] We do not report results on measures of class separation for the 5-class model. These are available on request to the authors.

Table B.1a: Predicted Response Probabilities, Suppliers Second Best Model

Class 1

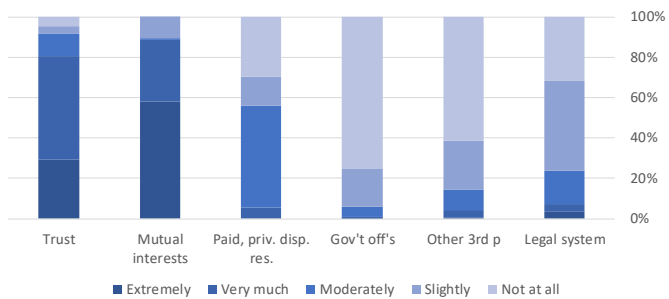| Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.12	0.07	0.14	0.43	0.24
	(0.02)	(0.01)	(0.02)	(0.02)	(0.03)
Mutual interests	0.14	0.07	0.17	0.35	0.26
	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)
Paid, priv. disp. res.	0.76	0.11	0.06	0.04	0.04
	(0.02)	(0.02)	(0.02)	(0.01)	(0.01)
Gov't off's	0.95	0.04	0.00	0.00	0.00
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
Other 3rd p	0.94	0.04	0.02	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)
Legal system	1.00	0.00	0.00	0.00	0.00
	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)

Standard errors in parenthesis.

Class 2

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.04	0.04	0.11	0.51	0.29
	(0.01)	(0.02)	(0.04)	(0.06)	(0.05)
Mutual interests	0.00	0.10	0.01	0.31	0.58
	(0.00)	(0.03)	(0.01)	(0.07)	(0.08)
Paid, priv. disp. res.	0.30	0.14	0.50	0.06	0.00
	(0.06)	(0.04)	(0.07)	(0.02)	(0.00)
Gov't off's	0.75	0.19	0.05	0.01	0.00
	(0.04)	(0.04)	(0.02)	(0.00)	(0.00)
Other 3rd p	0.61	0.24	0.10	0.04	0.00
	(0.05)	(0.05)	(0.03)	(0.02)	(0.00)
Legal system	0.32	0.45	0.16	0.04	0.03
	(0.07)	(0.06)	(0.04)	(0.02)	(0.02)

Standard errors in parenthesis.

Class 3

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.01	0.14	0.27	0.51	0.07
	(0.01)	(0.04)	(0.05)	(0.06)	(0.03)
Mutual interests	0.15	0.06	0.25	0.54	0.00
	(0.04)	(0.03)	(0.04)	(0.06)	(0.00)
Paid, priv. disp. res.	0.35	0.37	0.13	0.12	0.02
	(0.05)	(0.06)	(0.06)	(0.04)	(0.02)
Gov't off's	0.69	0.13	0.08	0.05	0.05
	(0.05)	(0.03)	(0.03)	(0.02)	(0.03)
Other 3rd p	0.56	0.36	0.05	0.04	0.00
	(0.05)	(0.05)	(0.02)	(0.02)	(0.00)
Legal system	0.02	0.59	0.34	0.05	0.00
	(0.03)	(0.06)	(0.05)	(0.02)	(0.00)

Standard errors in parenthesis.

Class 4

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.03	0.00	0.12	0.08	0.77
	(0.03)	(0.00)	(0.06)	(0.05)	(0.10)
Mutual interests	0.04	0.00	0.19	0.52	0.25
	(0.04)	(0.00)	(0.10)	(0.13)	(0.12)
Paid, priv. disp. res.	0.01	0.25	0.00	0.38	0.36
	(0.01)	(0.11)	(0.01)	(0.15)	(0.14)
Gov't off's	0.12	0.00	0.00	0.57	0.30
	(0.10)	(0.00)	(0.00)	(0.13)	(0.13)
Other 3rd p	0.49	0.00	0.16	0.32	0.03
	(0.15)	(0.00)	(0.10)	(0.13)	(0.03)
Legal system	0.03	0.00	0.00	0.48	0.50
	(0.02)	(0.00)	(0.00)	(0.15)	(0.15)

Standard errors in parenthesis.

Class 5

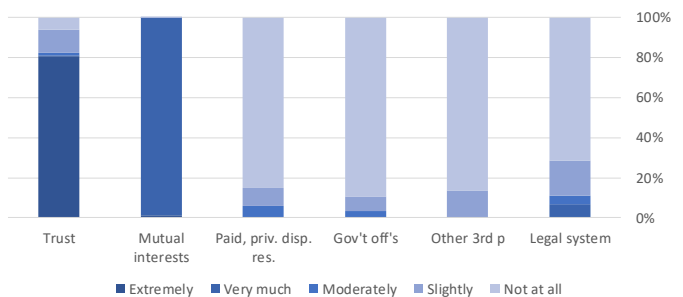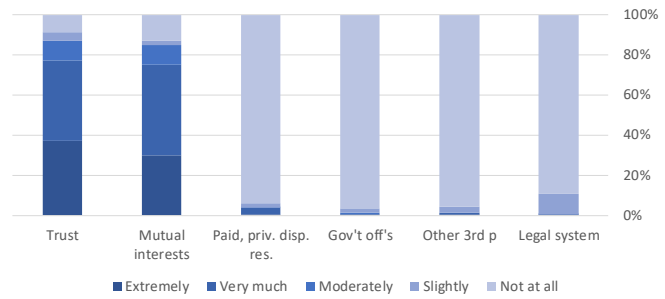| Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.06	0.12	0.01	0.01	0.80
	(0.03)	(0.06)	(0.06)	(0.01)	(0.09)
Mutual interests	0.00	0.00	0.00	0.99	0.01
	(0.00)	(0.00)	(0.00)	(0.07)	(0.07)
Paid, priv. disp. res.	0.85	0.09	0.06	0.00	0.00
	(0.09)	(0.08)	(0.03)	(0.01)	(0.00)
Gov't off's	0.89	0.07	0.03	0.00	0.01
	(0.07)	(0.07)	(0.03)	(0.00)	(0.01)
Other 3rd p	0.86	0.13	0.00	0.00	0.00
	(0.06)	(0.06)	(0.00)	(0.00)	(0.00)
Legal system	0.72	0.17	0.04	0.07	0.00
	(0.08)	(0.07)	(0.03)	(0.04)	(0.00)

Standard errors in parenthesis.

Table B.1b: Predicted Response Probabilities, Customers Second Best Model

Class 1

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.09	0.04	0.10	0.40	0.37
	(0.02)	(0.01)	(0.02)	(0.03)	(0.03)
Mutual interests	0.13	0.02	0.10	0.45	0.30
	(0.02)	(0.01)	(0.02)	(0.04)	(0.03)
Paid, priv. disp. res.	0.94	0.02	0.00	0.03	0.00
	(0.05)	(0.04)	(0.00)	(0.02)	(0.00)
Gov't off's	0.97	0.02	0.01	0.00	0.00
	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
Other 3rd p	0.96	0.03	0.00	0.01	0.00
	(0.02)	(0.02)	(0.00)	(0.01)	(0.00)
Legal system	0.89	0.10	0.00	0.00	0.00
	(0.02)	(0.02)	(0.00)	(0.00)	(0.00)

Standard errors in parenthesis.

Class 2

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.16	0.34	0.00	0.31	0.19
	(0.06)	(0.11)	(0.02)	(0.09)	(0.13)
Mutual interests	0.20	0.26	0.00	0.00	0.54
	(0.07)	(0.11)	(0.00)	(0.01)	(0.11)
Paid, priv. disp. res.	0.44	0.50	0.02	0.00	0.04
	(0.09)	(0.09)	(0.04)	(0.00)	(0.03)
Gov't off's	0.96	0.01	0.02	0.00	0.00
	(0.02)	(0.01)	(0.02)	(0.00)	(0.00)
Other 3rd p	0.84	0.15	0.01	0.00	0.00
	(0.06)	(0.06)	(0.01)	(0.00)	(0.00)
Legal system	0.68	0.30	0.00	0.02	0.00
	(0.09)	(0.09)	(0.00)	(0.02)	(0.00)

Standard errors in parenthesis.
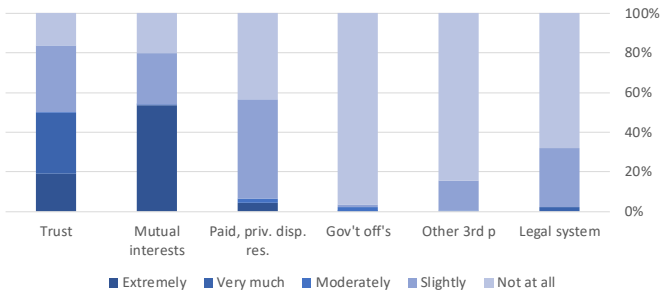
Class 3

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.02	0.05	0.25	0.35	0.34
	(0.01)	(0.02)	(0.04)	(0.05)	(0.05)
Mutual interests	0.01	0.06	0.24	0.50	0.19
	(0.01)	(0.02)	(0.04)	(0.05)	(0.04)
Paid, priv. disp. res.	0.51	0.16	0.30	0.03	0.00
	(0.06)	(0.04)	(0.05)	(0.02)	(0.00)
Gov't off's	0.94	0.01	0.02	0.02	0.00
	(0.02)	(0.01)	(0.01)	(0.01)	(0.00)
Other 3rd p	0.81	0.07	0.11	0.01	0.00
	(0.04)	(0.02)	(0.03)	(0.01)	(0.00)
Legal system	0.61	0.00	0.30	0.05	0.04
	(0.06)	(0.01)	(0.05)	(0.01)	(0.02)
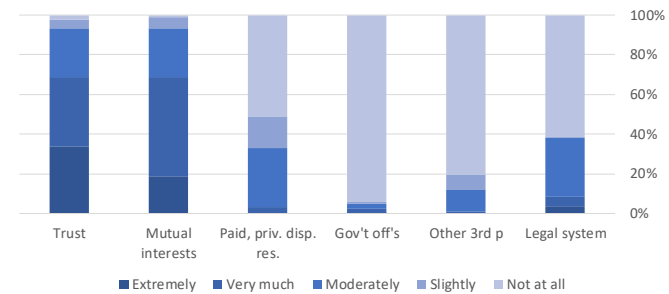
Standard errors in parenthesis.

Class 4

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.00	0.06	0.10	0.54	0.29
	(0.01)	(0.04)	(0.03)	(0.06)	(0.06)
Mutual interests	0.03	0.10	0.08	0.59	0.21
	(0.02)	(0.04)	(0.02)	(0.06)	(0.05)
Paid, priv. disp. res.	0.07	0.60	0.25	0.07	0.00
	(0.06)	(0.07)	(0.06)	(0.04)	(0.00)
Gov't off's	0.63	0.29	0.07	0.01	0.00
	(0.07)	(0.06)	(0.03)	(0.01)	(0.00)
Other 3rd p	0.48	0.48	0.03	0.01	0.00
	(0.10)	(0.09)	(0.01)	(0.01)	(0.00)
Legal system	0.44	0.48	0.05	0.02	0.01
	(0.09)	(0.08)	(0.03)	(0.02)	(0.01)

Standard errors in parenthesis.
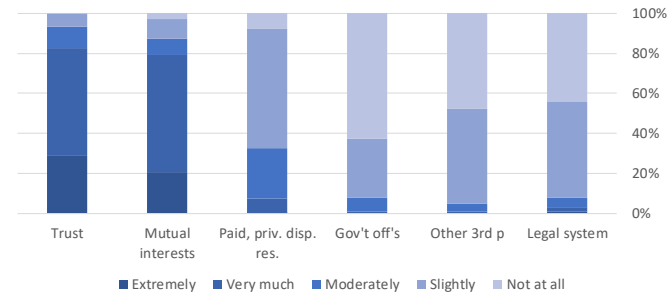
Class 5

Method	Not at all	Slightly	Moderately	Very much	Extremely
Trust	0.00	0.00	0.13	0.18	0.69
	(0.00)	(0.00)	(0.09)	(0.16)	(0.15)
Mutual interests	0.00	0.07	0.08	0.14	0.71
	(0.00)	(0.05)	(0.08)	(0.12)	(0.16)
Paid, priv. disp. res.	0.00	0.00	0.00	0.54	0.45
	(0.00)	(0.01)	(0.01)	(0.17)	(0.16)
Gov't off's	0.60	0.05	0.00	0.16	0.19
	(0.12)	(0.04)	(0.00)	(0.10)	(0.09)
Other 3rd p	0.51	0.00	0.21	0.25	0.02
	(0.14)	(0.00)	(0.11)	(0.11)	(0.02)
Legal system	0.55	0.03	0.10	0.22	0.12
	(0.12)	(0.03)	(0.07)	(0.09)	(0.06)

Standard errors in parenthesis.

Table B.2a: Comparison of modal class assignments across the 4-class and the 5-class models for relations with suppliers

Read by rows: from 4-class (row) to 5-class (column)

	Class 1	Class 2	Class 3	Class 4	Class 5	Total
Pure bilateralism	**89.04**	0.84	0.29	0	9.83	100
Bilateralism with private support	9.23	**88.93**	0.03	0	1.81	100
Bilateralism with legal support	0	1.06	**88.53**	0.01	10.4	100
Strong comprehensive governance	0	0	0	**100**	0	100
Total	60.69	14.88	14.32	1.62	8.49	100

Read by columns: from 5-class (column) to 4-class (row)

	Class 1	Class 2	Class 3	Class 4	Class 5	Total
Pure bilateralism	**97.58**	3.77	1.34	0.07	77.06	66.52
Bilateralism with private support	2.42	**95.09**	0.03	0	3.4	15.91
Bilateralism with legal support	0	1.13	**98.63**	0.09	19.54	15.95
Strong comprehensive governance	0	0	0	**99.84**	0	1.62
Total	100	100	100	100	100	100

Estimated class membership probabilities and standard errors

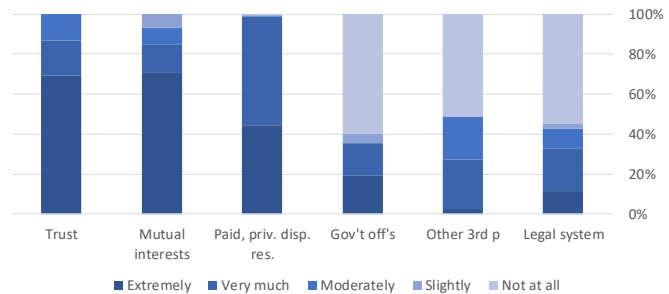|					
Pure bilateralism	0.657	0.0243	Class 1	0.5932	0.0273
Bilateralism with private support	0.166	0.0218	Class 2	0.1655	0.0244
Bilateralism with legal support	0.160	0.0171	Class 3	0.1496	0.0171
Strong comprehensive governance	0.017	0.0043	Class 4	0.0165	0.0043
			Class 5	0.0751	0.0204

Table B.2b: Comparison of modal class assignments across the 4-class and the 5-class models for relations with customers

Read by rows: from 4-class (row) to 5-class (column)

	Class 1	Class 2	Class 3	Class 4	Class 5	Total
Pure bilateralism	**89.42**	0.65	0.1	8.87	0.97	100
Bilateralism with private support	8.7	**51.75**	0.48	<u>33.86</u>	5.21	100
Bilateralism with weak support	1.54	6.28	**84.1**	0.15	7.94	100
Weak comprehensive governance	15.73	10.13	1.1	56.73	<u>16.32</u>	100
Total	54.58	14.17	11.65	15.94	3.66	100

Read by columns: from 5-class (column) to 4-class (row)

	Class 1	Class 2	Class 3	Class 4	Class 5	Total
Pure bilateralism	**94.43**	2.65	0.47	32.06	15.28	57.64
Bilateralism with private support	3.84	**87.98**	0.99	<u>51.16</u>	34.33	24.09
Bilateralism with weak support	0.38	6.02	**98.1**	0.12	29.52	13.59
Weak comprehensive governance	1.35	3.35	0.44	16.65	<u>20.88</u>	4.68
Total	100	100	100	100	100	100

Estimated class membership probabilities and standard errors

Pure bilateralism	0.565	0.032	Class 1	0.4739	0.0422
Bilateralism with private support	0.145	0.025	Class 2	0.1152	0.0267
Bilateralism with weak support	0.242	0.000	Class 3	0.2205	0.0305
Weak comprehensive governance	0.050	0.008	Class 4	0.1579	0.0264
			Class 5	0.0325	0.0088

Appendix C

As a check on the reliability of our chosen models, we examine class homogeneity and separability using standard measures, as discussed in Subsection III.5. Recall that homogeneity is the notion that that there are configurations of responses that typify each member of a class, while separability is the notion that these typical response patterns vary between the classes.

As noted by Masyn (2013), a class has a high degree of homogeneity if there are both high and low probabilities of endorsement of indicator categories within that class (that is, high and low $\hat{\theta}_{kr|c}$ within each c).[40] A standard rule-of-thumb is to consider a category homogeneous if endorsement probabilities are either below 0.3 or above 0.7, but this rule-of-thumb is applicable only to binary indicators. Therefore, for this exercise alone, we converted the probability data given in Tables V.1a and V1b into two binary categories—'Not at all', 'Slightly' and 'Moderately' versus 'Very much' and 'Extremely'. Table C.1 reports counts of the estimated probabilities of responses in our model that qualify as homogeneous by this criterion. (Note that we now have 12 categories = 6 questions × binary responses). All four classes in both types of relations appear highly homogeneous.

Table C.1: Degree of homogeneity of classes

	Count	Share
Relations with suppliers		
Pure bilateralism	8	67%
Bilateralism with private support	12	100%
Bilateralism with legal support	8	67%
Strong comprehensive governance	10	83%
Relations with customers		
Pure bilateralism	12	100%
Bilateralism with private support	12	100%
Bilateralism with weak support	8	67%
Weak comprehensive governance	10	83%

Because all classes could be highly homogenous but very similar, it is also important to be check whether one can reliably distinguish between the classes. This is the notion of separability, several measures of which were laid out in subsection III.5. Tables C.2a and C.2b report the estimates of these measures for our classes.

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[40] As already noted, the $\hat{\theta}_{kr|c}$ as referenced here should be interpreted as the <u>marginal</u> probability that a firm in latent class c chooses answer r on question k.

Table C.2a: Degree of separation of classes, relations with suppliers

	$AvePP_c$	OCC_c	$mcaP_c$	class membership probabilities $(\hat{\pi}_c)$	95% CI of the $\hat{\pi}_c$	
Pure bilateralism	0.963	13.730	0.665	0.657	0.609	0.705
Bilateralism with private support	0.883	37.990	0.159	0.166	0.123	0.209
Bilateralism with legal support	0.940	81.934	0.159	0.160	0.127	0.194
Strong comprehensive governance	0.977	10016.817	0.016	0.017	0.008	0.025
Rule-of-thumb minimum	0.7	5				

Table C.2b: Degree of separation of classes, relations with customers

	$AvePP_c$	OCC_c	$mcaP_c$	class membership probabilities $(\hat{\pi}_c)$	95% CI of the $\hat{\pi}_c$	
Pure bilateralism	0.915	8.310	0.576	0.565	0.503	0.626
Bilateralism with private support	0.874	21.833	0.241	0.242	0.184	0.299
Bilateralism with weak support	0.810	25.188	0.136	0.145	0.096	0.193
Weak comprehensive governance	0.965	3412.999	0.047	0.050	0.034	0.065
Rule-of-thumb minimum	0.7	5				

$AvePP_c$ (Average Posterior Class Probability) measures average class membership probability across all respondents classified into c by modal class assignment (i.e., using the maximum posterior class probability). If the class memberships are assigned with certainty, then this measure equals 1. As the tables show, $AvePP_c$ is very close to 1, comfortably exceeding the minimum rule-of-thumb rule.

OCC_c (Odds of Correct Classification Ratio) is a ratio of odds ratio, with the denominator reflecting the $\hat{\pi}_c$ and the numerator reflecting $AvePP_c$. It equals 1 if average posterior probabilities are no better than a random application of the estimated class membership probabilities (that is, if Bayes theorem using firm-specific responses for class assignment does no better than class assignment ignoring the firm-specific data). Again, the tables show that our model exhibits a high degree of class separation, well above the rule-of-thumb minimum.

$mcaP_c$ (Modal Class Assignment Proportion) is the proportion of respondents in each class when firms are assigned to classes modally. If respondents are assigned to classes with certainty, then $mcaP_c$ exactly equals the directly estimated class membership probabilities ($\hat{\pi}_c$). To assess any discrepancy, one rule of thumb is whether this statistic lies within a 95% confidence interval (CI) for the corresponding class membership probability estimates. The tables demonstrate again that we are able to clearly separate classes as our $mcaP_c$'s fall within the 95% CIs, and are very close to the estimated class membership probabilities. Indeed, all $mcaP_c$ lie in a 33% CIs of the corresponding $\hat{\pi}_c$.

Appendix D

Table D.1 lists the covariates used in Section VI, together with their summary statistics. The variables are organized in seven broad categories.

Table D.1: Summary statistics of covariates of the governance structure

Topic and variable	Type	Supplier Relations			Customer Relations		
		N	mean	s.d.	N	mean	s.d.
Cross- and within-country variation							
Country	6 categ.	3350			3339		
Regions within country	2-5 categ.	3350			3339		
Attitudes towards courts							
The extent of agreement with the statement "the court system is fair, impartial and uncorrupted"	4 categ. [1: strongly agree - 4: strongly disagree]	3278	1.62	0.77	3266	1.62	0.77
The degree to which courts are an obstacle to the firm's current operations	5 categ. [0: no obstacle - 4: very severe obstacle]	3259	1.63	1.37	3249	1.62	1.38
Relations with business associations							
Currently belong to an industry organization or business association?	Yes/No	3298	0.38	0.49	3289	0.38	0.49
Does the senior management regularly interact with a main Business Association to which the firm belongs?	Yes/No	3281	0.31	0.46	3271	0.31	0.46
Sector of operation							
Manufacturing, retail, or other services	3 categ.	3350			3339		
Disaggregated sector	10 categ.	3347			3336		
Management practices							
Index for management practices (larger equals better practices)	Cont.	3350	0.53	0.17	3339	0.52	0.17
Top manager's years of experience working in this sector	Cont.	3318	24.22	12.52	3307	24.25	12.54

Topic and variable	Type	Supplier Relations			Customer Relations		
		N	mean	s.d.	N	mean	s.d.
Firm characteristics							
Size	4 categ. [1: small – 4: very large]	3350	1.49	0.72	3296	1.49	0.72
Age	Cont.	3329	23.83	17.57	3318	23.81	17.60
Proportion of domestic private ownership	Cont.	3347	0.94	0.22	3336	0.94	0.23
Dummy variable for at least 10% foreign ownership	Yes/No	3347	0.06	0.25	3336	0.06	0.25
Dummy variable for exporting directly at least 10% of sales	Yes/No	3347	0.06	0.24	3336	0.06	0.24
Proportion of female ownership	Cont.	3202	0.23	0.31	3194	0.23	0.31
Dummy variable for a female top manager	Yes/No	3339	0.14	0.35	3328	0.14	0.35
Main Market – local, national, international	3 categ. [1-3]	1602	1.59	0.56	1602	1.59	0.55
Part of a multi-establishment firm?	Yes/No	3350	0.12	0.32	3339	0.12	0.33
Legal form	4 categ.	3303			3292		
Dummy variable for the legal form "Sole Proprietorship"	Yes/No	3350	0.09	0.29	3339	0.09	0.29
Dummy variable for shareholding company	Yes/No	3346	0.50	0.50	3335	0.49	0.50
Proportion of transactions with suppliers that were fulfilled smoothly	Cont.	3232	0.85	0.25	3184	0.85	0.25
Proportion of transactions with customers that were fulfilled smoothly	Cont.	3242	0.88	0.21	3283	0.88	0.21
Corruption and security							
Bribery depth (among 8 types of interactions with government officials, share where a gift or informal payment was requested)	Cont.	2537	0.08	0.23	2533	0.08	0.23

Topic and variable	Type	Supplier Relations			Customer Relations		
		N	mean	s.d.	N	mean	s.d.
Bribery incidence (dummy variable if experienced at least one gift or informal payment request across 8 types of interactions with government officials)	Yes/No	2537	0.13	0.34	2533	0.13	0.33
Dummy variable for paying for security	Yes/No	3344	0.65	0.48	3333	0.65	0.48