How do firms actually combine personal and impersonal institutions to safeguard their contracts?

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Abstract

A survey among managers offers new evidence on the relative importance of different contract-enforcement institutions and how they are combined for the governance of interfirm relationships. By model-based clustering, we identify three distinct governance strategies that rely on distinct combinations of institutions: (1) bilateral governance, relying mostly on morality and self-enforcement; (2) third-party governance, using a mix of courts, personal and corporate reputation and community norms; and (3) comprehensive governance, relying heavily on all institutions. Governance choice is largely an optimising response to transaction characteristics. This suggests that the real choices at the level of governance are not between personal and impersonal institutions but between (i) bilateral and third-party solutions, and (ii) the partial or comprehensive use of institutions.

1. Introduction

Economists have come to agree that a broad range of institutions are needed to support the enforcement of contracts in any advanced economy (Williamson 1985; North 1990; Greif 2008; Brousseau 2008). Personal institutions, such as morality, self-enforcing contracts, personal reputation and social norms, as well as impersonal institutions, such as courts and corporate reputation, all play important roles. Although there is now an extensive literature about each of these institutions, we still know very little about how they are combined. Are they used together, or as substitutes? Are there typical 'bundles" of institutions that are used jointly? If there are, what factors influence choices among such combinations? The answers are highly pertinent for both firms and policy-makers.

Recent scholarship in strategic management has argued that firms must combine formal and informal institutions in appropriate ways to secure contractual performance in their business relationships (Zenger, Lazzarini & Poppo 2002; Poppo & Zenger 2002; Schepker et al. 2014). On a policy level, building a mix of institutions that suits the actual contract-enforcement needs of economic actors is crucial for economic growth (Trebilcock & Leng 2006). According to what we might call the classical view of development, institutional evolution is characterised by a shift from personal to impersonal forms of exchange (Greif 2006; Kimbrough et al. 2008). This implies that governments should mainly focus on developing impersonal institutions such as courts and those supporting corporate reputation. However, we know that many business relationships in developed countries retain an intensely personal character (Macaulay 1963; Macmillan & Woodruff 2001; Brousseau 2008). This suggests that impersonal and personal

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institutions should be developed jointly. Exploring how firms actually combine different institutions can help clarify the appropriate focus of policy.

Most research has so far been limited to interactions between two (or at most three) institutions and focussed on marginal effects, e.g. between formal contracts and relational norms. A few pathbreaking studies examined a broader set of contract-enforcement mechanisms used by firms (Hendley et al. 2000; Hendley & Murrell 2002; Murrell 2003) but only analysed linear relationships among them. Another limitation was that they relied on data from the rather special transitional period of post-communist countries.

In our study, we examine a comprehensive set of contract-enforcement institutions and identify the typical combinations in which they are used in interfirm relationships throughout an economy. We go beyond assuming (positive or negative) linear relationships between them and allow for more complex interactions. The technique of latent class analysis, which is a model-based clustering method (Vermont & Magidson 2002), enables us to accomplish this. We follow legal theory (Macneil 1978; Goldberg 1980) and transaction cost economics (Williamson 1979) in assuming that enforcement mechanisms must be combined into coherent governance strategies. By latent class analysis, we identify distinct classes of governance strategies in interfirm relationships and the patterns of reliance on different contract-enforcement institutions that characterise these strategies. By doing so, we shed new light on substitutions and complementarities among personal and impersonal institutions. Our analysis uses data from a national survey among managers that covers 600 business transactions of small and medium firms in a middle-income, European country with a developed legal system (Hungary).

As our main result, latent class analysis detects three distinct governance strategies: (1) *bilateral* governance, relying mostly on morality and self-enforcement; (2) *third-party* governance, using a mix of courts, personal and corporate reputation and community; and (3) *comprehensive* governance, relying heavily on all institutions. This suggests that the real choice at the level of governance may not be between personal and impersonal institutions but between bilateral and third-party solutions on the one hand, and partial or comprehensive use of institutions, on the other.

Latent class regression analysis reveals which factors influence the choice among the three classes of governance. Transaction features show significant correlations with governance choice while characteristics of the firms and their operating environment have no clear effects. Finally, indicators of business success are found to be similar for all governance classes, which suggests that they are similarly efficient. Hence, governance choice appears, at least partly, to be an optimising response to transaction characteristics.

Section 2 situates our study in the context of existing empirical research. The survey sample is introduced in Section 3: the economic environment of Hungary, the firms and their transactions in the sample are described. Section 4 provides an overview of the relative importance of various contract-enforcement institutions as perceived by managers in their business relationships. Section 5 presents the results of statistical analysis in four steps. First, we calculate simple correlations between contract-enforcement institutions, which allows for comparison with previous studies. Second, we carry out a latent class analysis to identify classes of governance strategies. Third, we include regressions in the latent class analysis in order to identify the factors that influence the choice of governance strategy. Fourth, we compare

average values of business success across the latent classes to check for their relative efficiency. Section 6 concludes.

2. Contract-enforcement institutions and their relationships: What do we know?

Ellickson (1991) provides a useful typology distinguishing institutions based on who applies the sanction for breaking rules, which can be applied to contract enforcement. (i) *Morality* provides '*first-party*' enforcement: a party in contractual breach sanctions himself by developing a bad conscience. Apart from physical threats, threatening to discontinue cooperation is the most important form of sanction applied by the contracting party who suffers from breach of contract. Such '*second-party*' enforcement is the basis for a (ii) *self-enforcing contract*. Morality and self-enforcement can function without help from the social environment. Parties get to know each other and reveal their moral qualities. They invest in increasing the value of cooperation, which they will later not wish to lose. By these two mechanisms, productive relationships can be built and sustained.

In any well-functioning economy, these two basic institutional mechanisms are, to some extent, complemented or replaced by *informal* mechanisms that rely on *third-party enforcement*: (iii) *community norms* and sanctioning based on the potential loss of (iv) *personal reputation*. Finally, an advanced economy must have institutions that support exchanges between strangers. (v) *Formal legal sanctions applied by courts* and (vi) the *impersonal market reputation* of firms (Greif 2006) are two such fundamental impersonal third-party institutions.

Although the list could be extended, we focus on these as the most fundamental contract-enforcement institutions in any advanced economy (cf. Hendley & Murrell 2002; Fafchamps 2004; Greif 2008; Brousseau 2008,). Besides courts and the general order of private law, government agencies could also be considered as enforcers of contracts (e.g. Hendley et al. 2000). However, they tend to be sector-specific and our focus here is on general patterns in an economy. Private-order organisations such as business clubs, professional associations or chambers, may also provide rules and sanctions for contract-enforcement (e.g. Greif 2008). We will consider them as parts of the firms' institutional environment that affect business relationships through one or more of the six basic institutional mechanisms above.

As we noted, most empirical research is limited to interactions between two or three institutions. Among these, by far the greatest attention has been devoted to the relationship between legal enforcement and the use of morality and self-enforcing contracts that constitute 'relational governance' (Poppo & Zenger 2002). One argument, corroborated by some evidence in experimental settings (Gächter & Falk 2000), is that external sanctions may 'crowd out' internal motivations to cooperate. Another line of reasoning is that contract-specific investments tend to make the termination of a contract very costly and the threat to go to court non-credible. In such cases, relational or self-enforcing contracts (Telser 1981; Macneil 1978) and bilateral governance (Williamson 1979) may be preferred. By contrast, some economic models (Baker et al. 2002; Crocker & Masten 1991) and recent management scholarship (Poppo & Zenger 2002; Lazzarini et al. 2004) suggest that the threat of judicial enforcement is in fact important for securing complex, uncertain, long-term transactions, formerly considered the domain of relational governance. Rather than undermining trust, it may support its creation or even perpetuation by providing clear 'threat points' and 'last resort' sanctions. Overall, most empirical

studies to date support the thesis of complementarity between legal enforcement and relational governance but the question is far from settled (Cao & Lumineau 2015).

Even less do we know about links between the uses of other contract-enforcement institutions, which few works discuss. Courts can support the mechanisms of reputation by providing reliable information about business conduct (Milgrom et al. 1990). *Vice versa*, effective reputational mechanisms may make up for the inefficiencies of a legal system and make reliance on the latter more likely (Woodruff 2004). In other cases, the availability of legal sanctions can make reliance on reputation less necessary (Johnson et al. 2002). Community norms may be enhanced (Cooter 1994) or replaced (Johnson et al. 2002) by legal enforceability.

We are aware of only a few studies that attempt to provide a comprehensive view of the most important contract-enforcement mechanisms in a country's private economy.[3] Hendley et al. (2000) asked managers of Russian manufacturing firms to evaluate the importance of various institutions (on a scale 0 to 10) for enforcing the contractual promises of suppliers and buyers. Correlations between the relative perceived importance of institutions within relationships showed that (i) personal trust (morality) and self-enforcement were closely linked but independent of other institutions; (ii) reliance on lower level courts, local governments and banks as private third-party actors were used jointly, while (iii) business reputation, membership in business associations, personal ties with business partners, contractual penalties and reliance on federal government formed another subset. In the authors' interpretation, the latter two bundles of institutions reflected the use of newly created market-supporting institutions by new firms and reliance on institutions inherited from the Soviet past by older enterprises, respectively. This corresponded to the still transitional state of Russian economy in the late 1990s.

A survey using the same method was conducted in Romania in 2001, whose results were analysed by Hendley & Murrell (2002) and Murrell (2003). Strong positive correlations were found between 'personal relationships and trust' and 'relying on each other's own incentives', while other pairs of institutions (third-party social or business relationship, private dispute resolution services, government, and the legal system) showed weak positive or non-significant correlations (Murrell 2003). The latter finding was thought to be due mainly to greater general reliance on contract-enforcement institutions for relationships with higher exchange hazards. Extracting principal components from the institutional variables revealed three independent aspects of strategic choice among contract-enforcement institutions: (1) bilateralism, i.e. the joint use of personal trust and self-enforcing contracts; (2) reliance on the legal system; and (4) the decision about the aggregate use of contract-supporting institutions in general. Regression analysis suggested that the use of institutions was mainly driven by the closeness of the firm to the former state sector rather than transaction characteristics.

The analysis of correlations (and principal components) has a serious limitation: it assumes that the relationships among the uses of institutions are linear. However, the ambiguity of interactions between any two institutions, discussed above, questions the validity of this assumption. For example, we may have contracts that combine heavy reliance on legal enforceability and self-enforcement, while others use the former but not the latter. Correlations are mainly useful for revealing subsets of institutions that are used jointly under most

[3] Fafchamps (1996) and Kähkönen & Meagher (2001) conducted similar surveys for two African countries (Ghana and Tanzania, respectively) but impersonal institutions were basically not used in these underdeveloped contexts.

circumstances. Indeed, the only clear finding so far is the joint use of morality (or personal trust) and self-enforcing contracts, forming two aspects of bilateral governance. We follow the work of Hendley & Murrell (2002) and Murrell (2003) in identifying the patterns of reliance on a comprehensive set of institutions but move beyond their analysis by applying the more nuanced technique of latent class analysis, which posits no specific functional form for the relationships among institutional variables.

Can the findings in one country at one date be generalised to other economies at other dates? One objection is that there exist obvious differences in the relative importance of some institutions. For example, East-Asian economies rely much less on the legal system and much more on personal ties and the norms sustained by them than European countries at comparable levels of development (Murrell 2001). Another objection is that changes in the broader institutional environment can lead to changes in firms' governance strategies over time, as argued by the studies about post-communist countries discussed above (see also Peng 2003; Zhou & Poppo 2010). However, to the extent forms of contractual governance depend on transaction features rather than the firm's environment (as in Williamson 1979), we should expect similar governance strategies to occur in different countries. Therefore, if we find strong links between transaction characteristics and governance strategies using well-defined combinations of institutions, we have reason to expect that our results would also be valid at least for broadly similar countries.

3. Firms and their transactions in the sample

A nationwide survey was conducted among 300 privately owned small and medium sized enterprises (with 5-49 employees) in Hungary.[4] In April and May 2011, personal interviews with executive managers were carried out in seven Hungarian cities, including its capital city (Budapest), three mid-sized cities in East Hungary and another three cities in West Hungary. Locations were chosen to cover all major regions of the country, with different levels of economic development. All major sectors, except agriculture[5], were covered, roughly in proportion to their contribution to national income (29% manufacturing, 32% commerce, 39% services). Within cities and sectors, companies were chosen randomly from the database of the official firm registry. Overall, the survey sample can be considered as fairly representative of the country's population of non-agricultural SMEs. As such, it belongs to a very limited number of surveys about contract-enforcement mechanisms with at least some claim to national representation (McMillan & Woodruff 2001; Hendley et al. 2000; Johnson et al. 2002; Murrell 2003; Lu & Tao 2009; Steer & Sen 2010)

Hungary belongs to those former Soviet-occupied countries in East-Central Europe where a functioning institutional order of markets emerged roughly by the turn of the millennium (Campos 1999; Crafts & Kaiser 2004; Beck & Leaven 2006; Murrell 2008;). Like other countries in East Central Europe, Hungary has a highly developed legal system (Murrell 2008), although trust in the rule of law is lower than in Western Europe (Kaufmann et al. 2009). Hungary is one of the less well-off countries in the European Union, with per capita GDP at 65% of the EU average (in 2014, at pps). However, its three large regions exhibit large differences in terms of

[4] The survey was carried out by HETFA Research Institute in collaboration with Bell Research Ltd. Among the firms, 48% had 5-9 employees, 52% had 10-49 employees.
[5] The questionnaire was part of a larger survey, which focussed on non-agricultural firms for reasons unrelated to our research.

economic development: the GDP/capita measure is at 107% in Central Hungary, 60% in West Hungary (Transdanubia) and 44% in East Hungary (North and Great Plain).

Managers were asked questions about their company's experience with two firms: one which they considered a 'typical supplier' and another considered a 'typical buyer'. The questionnaire focussed on the transactional characteristics of their relationships, their reliance on various institutional mechanisms to safeguard their contracts as well as the perceived success of collaboration.

Managers were free to think about any business partner whom they considered as 'typical'. Their answers included a diverse array of firms (Table 1). While the majority were other Hungarian SMEs (59,7%), many relationships with large Hungarian-owned enterprises, multinationals and foreign firms were mentioned. This diversity was also reflected in the geographical distance between the interviewed firm and its business partner (Table 2). Hence, our sample allows us to examine contracts both within and beyond the local environments of SMEs.

Table 1. Type of business partner

	Frequency	Percent
Hungarian SME	358	59,7
Multinational company operating in Hungary	92	15,3
Hungarian-owned large enterprise	88	14,7
Firm operating abroad [export]	44	7,3
N/A	18	3,0
Total	600	100,0

Table 2. Geographical distance. (*'What is the location of your business partner's operating unit with which you do business?'*)

	Frequency	Percent
Own city	210	35,0
Own county	92	15,3
Another county in Hungary	226	37,7
Outside Hungary	44	7,3
N/A	72	11,9
Total	600	100,0

Most managers equated 'typical' business partners with long-standing ties. Only 10% of the relationships were two years old or younger (Table 3). On the one hand, it is an important finding in itself that long-term business ties are fundamental for SMEs throughout the economy. On the other hand, such responses limit our sample to relatively long-term contractual relationships and exclude novel and short-term dealings. Extending survey data to newly founded relationships may well provide additional insights in the future.

Table 3. Age of business relationship.

	Frequency	Percent
2 years or less	55	9,2
3-4 years	61	10,2
5-6 years	83	13,8
7-8 years	57	9,5
9-10 years	66	11,0
More than 10 years	216	36,0
N/A	62	10,3
Total	600	100,0

We asked managers about transaction features that were likely to affect transactions costs and the governance of contracts. We focussed on the three fundamental aspects of transactions that were proposed by Williamson (1979) and whose relevance has been amply proven by empirical studies (Masten & Saussier 2000): the recurrence of transactions, transactional uncertainty and asset specificity. Asset specifity was captured by geographical distance, the presence of specific investments (by buyer and seller) and the availability of alternatives (for buyer and seller). Each transactional aspect was evaluated using a scale from 1 to 4.

Transactions were very diverse (see Tables 12–17 in the Appendix). Although most relationships had a long history, the parties' dependence on each other and the degree of exchange hazards varied considerably. Thus, the sample includes a mixed array of relationships along the continuum between the extremes of easy-to-replace market contracts and virtual bilateral monopolies (cf. Williamson 1979). Despite its limitations, our data set can be expected to cover a broad range of contractual governance forms in Hungary's entrepreneurial economy.

4. Contract-enforcement institutions

Managers were asked to rate the importance of six contract-enforcement institutions for safeguarding their two 'typical' contractual relationships: morality, self-enforcing contract, community norms, personal reputation, the law, and impersonal market reputation. Table 4 shows the questions used to identify the institutions and summarises the distributions and averages of evaluations. Although our data cover all major institutions, a caveat concerning social norms is in order. A businessperson may belong to several (overlapping) communities, in which contract-supporting norms may develop. Our focus is on the closest and most fundamental social community in which businessmen are embedded: friends and the extended family. Nonetheless, norms of other communities (e.g. neighbourly, religious, or professional) may well matter but are not examined here due to lack of data.

All institutions were used by a substantial number of firms. Morality and self-enforcement stand out as they were deemed important or very important in approx. 90% of relationships. Personal reputation, the legal order and impersonal market reputation were less widely relied upon: they were perceived important or very important in 40-50% of all relationships. Norms based on personal (friendly or familial) ties were used least (by less than 20%).

This reflects the relatively highly developed character of the legal system in East-Central Europe and the lack of importance of kinship and community, at least as compared with East Asia's

emerging economies (McMillan & Woodruff 2001; Steer & Sen 2010). It is also in accordance with previous findings about the importance of personal trust in business life in Europe's post-communist region (Hendley et al. 2000; Johnson et al. 2002) as well as the widespread presence of informal, highly personal mechanisms observed in highly developed countries such as the United States (Macaulay 1963) or Germany and Italy (Arrighetti et al. 1997).

Table 4. The importance of contract-enforcement institutions: distribution and average values

Contract-enforcing institution	Question asked: What guarantees that your business partner will perform his promises according to your expectations? How true are the following statements of your relationship? Please rate them from 1 (not at all) to 4 (completely true).	Importance					Average evaluation (1–4)
		1 (no)	2 (rather no)	3 (rather yes)	4 (yes, very much)	N/A	
Morality	It is important that I have experienced personal trustworthiness [during our cooperation so far] (N=571)	5%	3%	21%	69%	3%	3.89
Self-enforcing contract	It is important that my partner wants to maintain the relationship (N=572)	2%	3%	22%	70%	3%	3.63
Community norms	It helps that we are friends or have family ties with each other (N=566)	62%	15%	12%	8%	4%	1.64
Personal reputation	If my partner performs badly, others will not do business with him in the future (N=515)	17%	27%	26%	23%	8%	2.60
Law	We sign a detailed contract that is enforceable in court (N=572)	33%	18%	14%	31%	3%	2.44
Impersonal market reputation	It is important that my partner is a well-known market actor (N=567)	16%	23%	24%	34%	4%	2.79

Note: the percentages may not add up to 100% due to rounding.

5. Governance strategies combining institutions

5.1. Correlations between contract-enforcement institutions

Before delving into more nuanced analysis, it is worth examining simple correlations between contract-enforcement institutions. These measures detect linear relationships, which we have no particular reason to assume. Nonetheless, they may signal patterns of substitution or complementarity. The first observation to note is the lack of negative correlations (Table 5). The use of institutions is either uncorrelated or positively correlated (as in Murrell 2003). This suggests that the institutions used are complements rather than substitutes. One reason may be that transactions with a high level of exchange hazard are protected by 'more of every institution'. Therefore, we controlled for the transaction features that influence exchange hazards (asset specifity, transactional uncertainty, recurrence of transactions). We found that

the correlation coefficients became somewhat smaller but kept their signs and significance.[6] That is, a general (linear) substitution between any two contract-enforcement institution was not observed even for the same types of transactions.

The second observation is that the correlations are rather weak for most pairs of institutions. One exception is the strong link between morality and self-enforcing contracting. These are the two institutional mechanisms on which parties must rely if they are to manage their relationship by *bilateral governance* (Williamson X; Hendley et al. 2002; Murrell 2003;), without third-party support.

Table 5. Correlations between contract-enforcement institutions.

	Morality	Self-enforcement	Community norms	Personal reputation	Law
Morality					
Self-enforcement	0.4977*				
Community norms	0.0433	0.0233			
Personal reputation	0.2335*	0.1777*	0.1749*		
Law	0.0857	0.0857	0.1299*	0.1065	
Impersonal reputation	0.2041*	0.2531*	0.2239*	0.2657*	0.2199*

*Significant correlations at 5%, with Bonferroni-correction

5.2. Latent classes of governance strategies

Firms engage in diverse strategies to govern their relationships. Although governance may not take the form of 'discrete structural alternatives' (Williamson 1991), we should still be able to identify ideal-types of governance strategies to which real-life relationships bear a more or less close resemblance (cf. Nee 1992). We therefore assume that it is possible to identify distinct forms of governance in the population of business relationships, and for each relationship to determine the ideal-type governance strategy to which it is closest. Furthermore, it is also reasonable to assume that each governance strategy relies on certain combinations of institutions rather than others (Macneil 1978; Williamson 1979; Hendley et al 2000).

Hence, our formal presumption is that a hidden variable – governance strategy – determines the levels of reliance on different institutional mechanisms. Latent class analysis identifies this hidden variable. Latent class modelling assumes that the observed categorical variables (in this case: degrees of reliance on various institutions) are independent, conditional on the unobserved categorical variable of governance strategy. In other words, the response variables are mutually independent *within each category* of the latent variable (Agresti 2002). Based on a pre-determined number of unobserved classes, the analysis proceeds by estimating the conditional observed variable and class membership probabilities by maximum likelihood. The main difference between standard cluster analysis techniques – e.g. hierarchical or K-means clustering algorithms – and latent class analysis is that the latter is a model-based approach, which postulates a statistical model for the population from which the sample is coming (Vermunt & Magidson, 2002). Moreover, in contrast to the cluster analysis techniques mentioned above, the LCA method applied here was developed especially for categorical

[6] Except for the correlation between law and community norms, which lost its significance.

variables, making it more appropriate in this context.[7] The analysis was performed using the poLCA package for R developed by Linzer and Lewis (2011 and 2013), which applies the expectation maximization (EM) algorithm (Dempster et al. 1977) to maximize the log-likelihood function. After estimating models with two, three and four classes, we relied primarily on the Bayesian Information Criterion (BIC) to choose between them. According to Lin and Dayton (1997), BIC is appropriate in the case of basic latent class models due to their relative simplicity.

We compared the results for 2, 3 and 4 classes (Table 6).[8] The Bayesian Information Criterion selected the model with 3 classes. Since maximum likelihood was higher and the Akaike Iinformation Criterion (AIC) was somewhat lower for the model with 4 classes, we also inspected the results of the 4 class version but found that the classes did not lend themselves to meaningful interpretation. This reassured us that the focus on three classes is justified. (As we shall see below, for more complicated models, the other criteria also select 3 classes.)

Table 6. Evaluation of basic latent class models with 2, 3 and 4 classes

Criterion	2 classes	3 classes	4 classes
maximum log-likelihood:	-3499.018	-3406.119	-3361.211
AIC (Akaike Information Criterion)	7072.036	6924.238	6872.421
BIC (Bayesian Information Criterion)	7230.96	7164.773	7194.566
X^2 (Chi-square goodness of fit)	8997.629	3347.811	2799.917

Recall that managers were asked to evaluate the importance of each contract-enforcement institution on a scale 1 to 4. Each latent class is characterised by a distinct probability distribution of responses between 1 (i.e. unimportant) and 4 (i.e. very important). Table 7 illustrates this for law. For relationships in class 1, the probability of a manager choosing '1' was 0.5870; the probability of '2' was 0.2444, etc. How to interpret these results? Class 1 is characterised by the least emphasis on the legal order; class 2 by the heaviest emphasis; and class 3 is in between the two.

Table 7. Probability distributions of the importance of law for 3 latent classes

	Pr(1)	Pr(2)	Pr(3)	Pr(4)
class 1	0.5870	0.2444	0.0527	0.1159
class 2	0.2627	0.1517	0.1505	0.4350
class 3	0.2092	0.2449	0.3765	0.1694

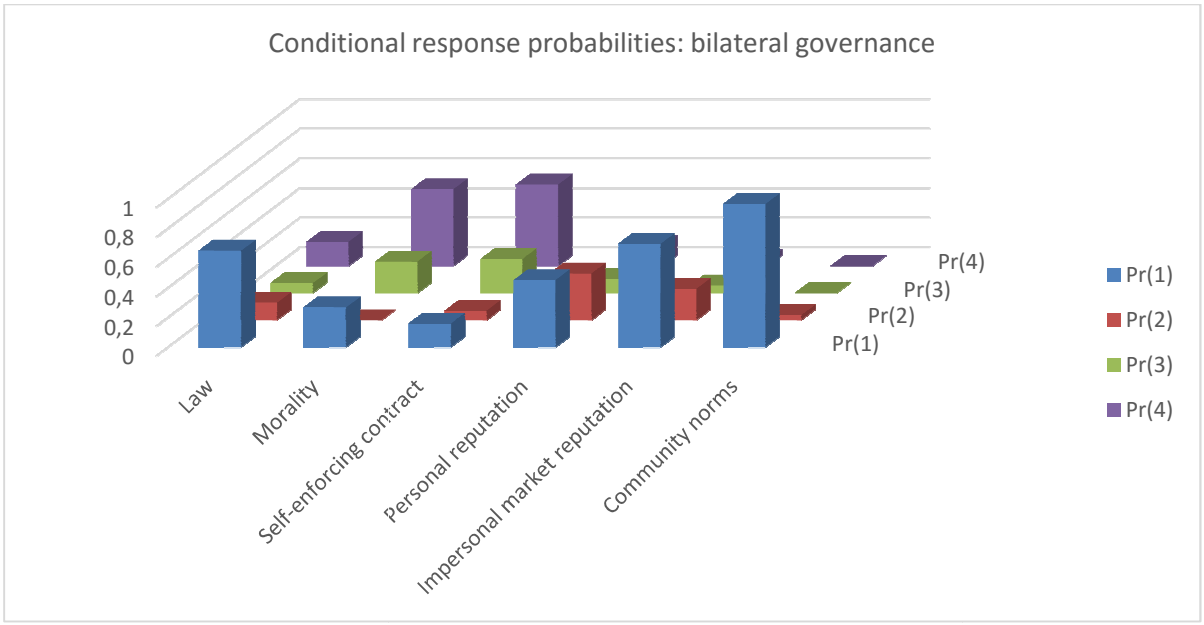
[7] Magidson and Vermunt (2002) found that latent class models outperform K-means clustering in many respects even in the case of continuous response variables.

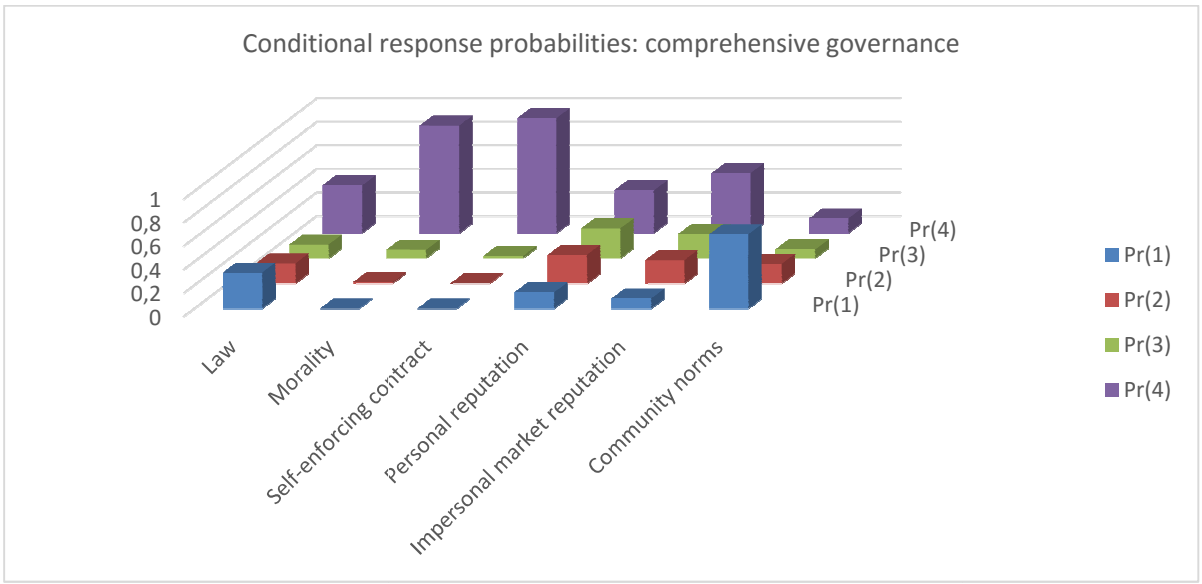
[8] The maximum number of iterations was 2000 during every single estimation. We ran the algorithm 100 times for each model, except for the ones with 4 classes augmented with multinomial logistic regression (see 5.3. below), for which we performed the analysis only 5 times. The reason for the latter was computational constraints – the estimation of these highly complex models was very costly in terms of time.

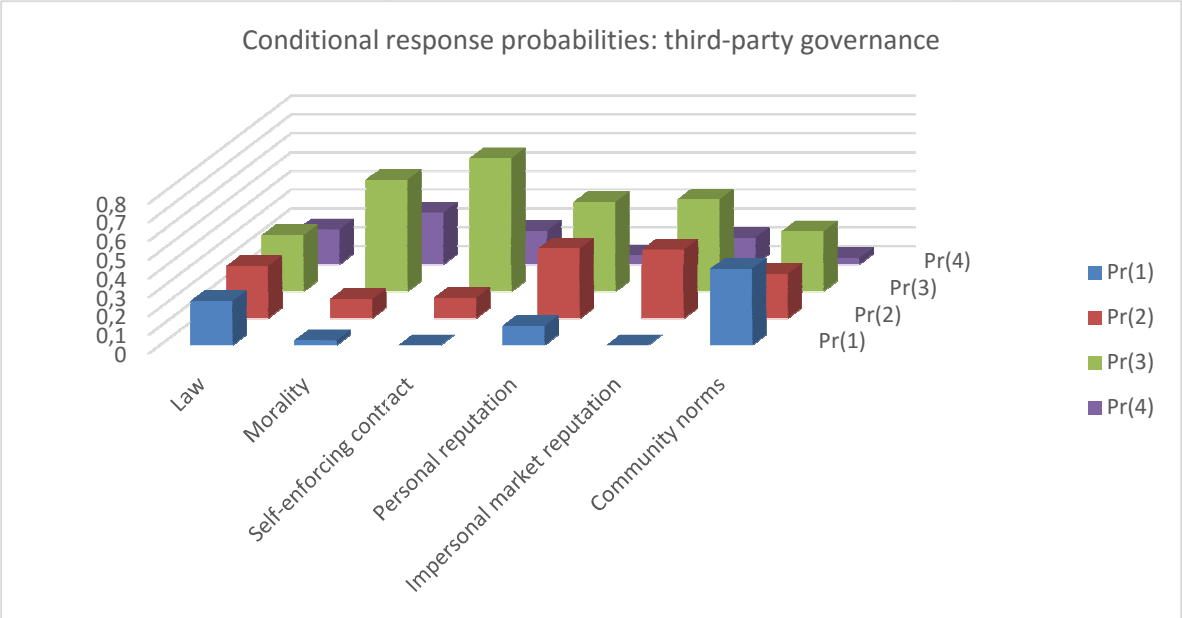
Graph 1 summarises the probability distributions in each of the three latent classes for all six contract-enforcement institutions.

Business relationships that fall into class 1 are characterised overall by a relatively low level of reliance on contract-enforcement institutions. (The easiest way to comprehend the graphs is to look for the modal probability for each institution.) Among the institutions used, morality and self-enforcing contracting clearly stand out, while third-party personal and impersonal institutions have little weight. This suggests the existence of a *bilateral governance* strategy in the economy.

Graph 1. Latent classes characterised by probability distributions of reliance on six contract-enforcement institutions.







Class 2 is characterised by the greatest reliance on institutional support overall. Bilateral mechanisms (morality and self-enforcement) are even more important than in class 1 but are complemented by increased reliance on each third-party institution: personal reputation, community norms, impersonal reputation, and law. This suggests the existence of a *comprehensive governance* strategy, relying on all institutions.

Relationships in class 3 are less likely to have a strongly bilateral character. Reliance on morality and self-enforcing contracts is less pronounced. Instead, both personal and impersonal third-party institutions are used to a greater extent than in class 1 (but less than in class 3). This implies a third distinct strategy of *third-party governance*. We should bear in mind, however, that bilateral aspects are also likely to be important for these relationships, only less so than in the other two classes.

How large are the classes identified? The estimated population shares of each governance class are given in Table 8. We also estimated, for every relationship, the posterior probability of its belonging to each class. We assigned every relationship to the class with the modal class membership probability. In such a way, we can provide a picture about the distribution of the actual relationships in the sample across latent classes. Both calculations show that comprehensive governance dominates, followed by third-party and bilateral governance.

Table 8. Population shares of governance classes

	Bilateral governance	Comprehensive governance	Third-party governance
Estimated population shares	16%	59.5%	24.5%
Predicted class memberships (by modal posterior probability)	13%	64.5%	22.5%

5.3. Factors affecting latent class membership

Having identified the main types of governance strategy, we turn to the question what factors affect a firm's choice of strategy in a given transaction. Their choice is likely to be influenced by features of the transactions between the parties, characteristics of the firms involved and the sectors and markets in which they operate. We extend latent class analysis to account for these factors. We augment the basic model with multinomial logit regressions in order to estimate the prior probabilities of belonging to classes. The poLCA package used employs the "one-step" technique which estimates the effects of covariates as part of the latent class model, since the separate application of a regression model would result in biased coefficient estimates (Linzer & Lewis 2011). The estimation of the augmented model allows us to check the robustness of the simple model. It also enables us to identify the factors that influence governance choice.

Two regression models were defined. The first model included all transactional characteristics as explanatory variables. The second model added data about the firms and their environment. In addition to firm size, sector and regional location (reflecting different levels of economic development), membership in local associations and national professional associations were included. We also considered whether the interviewed firm's business partner was a multinational or a foreign-based company.

With both latent class regression models, the classes identified closely resembled those of the basic latent class model. Both the Akaike and the Bayesian Information Criteria selected 3 classes (see Tables 18 and 19 in the Appendix). The three classes identified also had roughly similar shares in the population. This suggests the robustness of the basic model in identifying three distinct governance strategies.

What factors influenced the choice among bilateral, comprehensive and third-party governance? Both regression models (Tables 9 and 10) show that comprehensive governance is more likely than bilateral governance for relationships with transaction features that increase exchange hazards. Greater specific investment by the interviewed firm or by its business partner, lack of alternatives for the firm and transactional uncertainty all increase this likelihood. Recurring transactions are also more likely to be supported by comprehensive governance. Third-party governance is more likely than bilateral governance for transactions with specific investment and lack of alternatives (on the partner's side), but the regression shows no difference between these two forms of governance in terms of recurrence or transactional uncertainty.

We propose the following interpretation. Bilateral governance is pursued for relationships with transactions that involve low exchange hazards and limited room for opportunism. As the parties' dependence increases, they must rely on third-party institutions to support contract enforcement. For recurring transactions with a high degree of mutual dependence and uncertainty, comprehensive governance is needed. That is, parties look upon various contract-enforcement institutions as complements in their efforts to secure challenging relationships. However, there is a third class of relationships involving transactions that are less uncertain and less likely to recur. These are supported by a mixture of impersonal and personal third-party institutions, while bilateralism is subdued. In other words, we observe a substitution between bilateral and third-party institutions. We must bear in mind that causation does not run simply from transaction features to governance choice but also the other way around. For example, comprehensive institutional support may encourage parties to undertake highly specific

investments. What regressions show is that relationships with certain transaction features are supported by certain combinations of institutions.

Unlike transaction features, characteristics of the firms involved and their operating environment do not influence the choice of governance strategy in significant ways. The coefficients are also highly dependent on the specification of the model, which means that we were unable to grasp important real associations between these factors and governance choice. One exception is firm membership in local associations, which makes bilateral governance more likely in all specifications. This is a curious result, for which we have no explanation yet. We expected association membership to decrease the costs of relying on reputation and perhaps also other community norms or personal reputation and thereby make third-party or comprehensive governance more likely.

Table 9. Regression results for the augmented latent class model with transactional variables as covariates

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Fit for 3 latent classes:				
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Comprehensive governance (class 2) vs. Bilateral governance (class 1, default)				
	Coefficient	Std. error	t value	Pr(>|t|)
(Intercept)	-11.59658	2.48998	-4.657	0.000
specific investment by partner	**1.01939**	**0.27073**	**3.765**	**0.000**
own specific investment	**0.56635**	**0.25245**	**2.243**	**0.026**
lack of alternatives for oneself	**0.67279**	**0.24065**	**2.796**	**0.005**
lack of alternatives for partner	0.05111	0.26566	0.192	0.848
recurrence of transactions	**1.12285**	**0.44536**	**2.521**	**0.012**
transactional uncertainty	**0.43387**	**0.25637**	**1.692**	**0.092**
economic value of relationship	0.00973	0.00657	1.482	0.139
partner outside locality	0.69467	0.73716	0.942	0.347
partner outside county	0.08810	0.56026	0.157	0.875
age of relationship (3-4 years)	1.08289	1.09562	0.988	0.324
age of relationship (5-6 years)	0.82446	1.07966	0.764	0.446
age of relationship (7-8 years)	0.83191	1.06261	0.783	0.434
age of relationship (9-10 years)	0.59627	1.15101	0.518	0.605
age of relationship (over 10 years)	1.59061	0.99329	1.601	0.110
==========				
Third-party governance (class 3) vs. Bilateral governance (class 1, default)				
	Coefficient	Std. error	t value	Pr(>|t|)
(Intercept)	-3.43382	1.90929	-1.798	0.073
specific investment by partner	**0.78242**	**0.29495**	**2.653**	**0.008**
own specific investment	0.39168	0.26032	1.505	0.133
lack of alternatives for oneself	**0.67240**	**0.28629**	**2.349**	**0.019**
lack of alternatives for partner	0.29512	0.31016	0.952	0.342
recurrence of transactions	-0.45770	0.37188	-1.231	0.219

transactional uncertainty	-0.02905	0.32021	-0.091	0.928
economic value of relationship	0.00799	0.00645	1.239	0.216
partner outside locality	0.10784	0.78289	0.138	0.891
partner outside county	0.44274	0.58244	0.760	0.448
age of relationship (3-4 years)	-0.16887	0.98029	-0.172	0.863
age of relationship (5-6 years)	-0.15830	0.95830	-0.165	0.869
age of relationship (7-8 years)	-1.11115	1.03178	-1.077	0.282
age of relationship (9-10 years)	-0.85358	1.02395	-0.834	0.405
age of relationship (over 10 years)	-0.35348	0.85355	-0.414	0.679

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number of observations: 411, number of estimated parameters: 84

residual degrees of freedom: 327

maximum log-likelihood: -2507.074

Table 10. Regression results for the augmented latent class model with transactional, firm and environment characteristics as covariates

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Fit for 3 latent classes:

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Comprehensive governance (class 2) vs. Bilateral governance (class 1, default)

	Coefficient	Std. error	t value	Pr(>|t|)
(Intercept)	-11.70006	2.64805	-4.418	0.000
specific investment by partner	**1.00362**	**0.27281**	**3.679**	**0.000**
own specific investment	**0.49439**	**0.25628**	**1.929**	**0.055**
lack of alternatives for oneself	**0.85513**	**0.33423**	**2.558**	**0.011**
lack of alternatives for partner	0.01573	0.26500	0.059	0.953
recurrence of transactions	**0.96511**	**0.43506**	**2.218**	**0.027**
transactional uncertainty	**0.46953**	**0.25625**	**1.832**	**0.068**
number of employees	0.46843	0.49761	0.941	0.347
partner: Hungarian multinational	1.15662	0.78824	1.467	0.143
partner: foreign ownership	-1.51998	1.35153	-1.125	0.262
membership in professional organization	0.06061	0.53580	0.113	0.910
membership in local organization	**-1.40602**	**0.69356**	**-2.027**	**0.043**
sector: commerce	-0.84788	0.63937	-1.326	0.186
sector: services	-0.27739	0.65525	-0.423	0.672
site in Budapest	0.67027	0.65338	1.026	0.306
site in West Hungary	**1.83591**	**0.72836**	**2.521**	**0.012**
(default: site in East Hungary)				
economic value of relationship	0.00506	0.00425	1.191	0.235

partner outside locality	0.76433	0.85555	0.893	0.372
partner outside county	0.01421	0.58915	0.024	0.981
age of relationship (3-4 years)	1.48340	1.12387	1.320	0.188
age of relationship (5-6 years)	0.40098	1.23432	0.325	0.746
age of relationship (7-8 years)	0.46033	1.26204	0.365	0.716
age of relationship (9-10 years)	0.88147	1.18867	0.742	0.459
age of relationship (over 10 years)	1.25726	1.10888	1.134	0.258

==========

Third-party governance (class 3) vs. Bilateral governance (class 1, default)

	Coefficient	Std. error	t value	Pr(>|t|)
(Intercept)	-6.93280	2.58470	-2.682	0.008
specific investment by partner	**0.80079**	**0.33585**	**2.384**	**0.018**
own specific investment	0.41123	0.31241	1.316	0.189
lack of alternatives for oneself	**0.97991**	**0.43832**	**2.236**	**0.026**
lack of alternatives for partner	0.35334	0.38440	0.919	0.359
recurrence of transactions	-0.57040	0.49505	-1.152	0.250
transactional uncertainty	0.03053	0.39048	0.078	0.938
number of employees	**1.43399**	**0.67942**	**2.111**	**0.036**
partner: Hungarian multinational	0.61589	1.01620	0.606	0.545
partner: foreign ownership	0.25288	1.61642	0.156	0.876
membership in professional organization	0.20391	0.67349	0.303	0.762
membership in local organization	**-2.97786**	**1.34282**	**-2.218**	**0.027**
sector: commerce	-0.52893	0.83944	-0.630	0.529
sector: services	0.73198	0.79042	0.926	0.355
site in Budapest	0.37465	0.81399	0.460	0.646
site in West Hungary	1.17581	0.89998	1.306	0.192
(default: site in East Hungary)				
economic value of relationship	0.00276	0.00532	0.519	0.604
partner outside locality	0.22167	1.03414	0.214	0.830
partner outside county	0.05487	0.70971	0.077	0.938
age of relationship (3-4 years)	0.25425	1.26285	0.201	0.841
age of relationship (5-6 years)	-0.17069	1.31184	-0.130	0.897
age of relationship (7-8 years)	-1.11115	1.33622	-0.832	0.406
age of relationship (9-10 years)	-0.23810	1.17194	-0.203	0.839
age of relationship (over 10 years)	-0.13428	1.15613	-0.116	0.908

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number of observations: 411, number of estimated parameters: 102

residual degrees of freedom: 309

maximum log-likelihood: -2485.824

5.4. Efficiency of governance strategies

Are the three identified governance strategies equally efficient? Perhaps, one or more of the strategies identified exist not because they better suit some transactions but because some firms have no access to certain institutions. For example, firms might choose bilateral governance and transaction features that can be supported by such governance because they might have limited access to third-party institutions. If this were so, we would expect that governance strategies would not be equally efficient. Although we cannot measure efficiency directly, we have data about (1) the perceived success of the business relationship, (2) the self-reported entrepreneurial success of the manager, and (3) the estimated annual increase in firm revenue (current year over past year). We examined if the three latent classes differ significantly in their average levels of these proxy measures for efficiency. As Table 11 summarises, there are no significant differences between any two classes by any measure. (Classes that share the same letter in the rightmost column have means that do not differ on the 5 percent level.[9])

Although this analysis is certainly very crude, it suggests at least that efficiency differences are not outstanding. The latent class regressions and the similarity of latent classes in terms of success combine to give the overall impression that the choice among bilateral, comprehensive and third-party governance is an optimising response to transaction characteristics rather than a response to constraints in a firm's institutional environment.

Table 11. Comparison of governance strategies in terms of business success[10]

Success of the relationship (subjective evaluation)			
Latent class	Average value (on scale 1 to 4)	Standard error	Groups of classes
Bilateral (1)	3.48	.0674	A
Comprehensive (2)	3.76	.0301	
Third-party (3)	3.50	.0507	A
Increase in revenue			
Latent class	Average value (revenue in current year over last year, %)	Standard error	Groups of classes
Bilateral (1)	1.03	.0687	B
Comprehensive (2)	1.09	.0300	B
Third-party (3)	1.01	.0561	B
Self-reported entrepreneurial success (principal component)[11]			
Latent class	Average value (on scale 1 to 4)	Standard error	Groups of classes
Bilateral (1)	3.19	.0634	C
Comprehensive (2)	3.20	.0285	C
Third-party (3)	3.12	.0489	C

[9] The comparisons were based on simple t-tests, assuming equal variance.
[10] The table present results for the basic latent class model. Estimations for the latent classes identified by latent class regression analyses yielded similar results.
[11] Principal component based on answers to four questions about perceived success.

6. Conclusions

Our results confirm the general conjecture of new institutional economics that enterprises rely on a broad range of contract-enforcement institutions in modern economies. We were also able to identify distinct strategies of combining these institutions for the governance of interfirm relationships. A powerful theory of economic development stresses the difference between personal and impersonal exchange and the distinct institutions supporting them. In a middle-income, European country with a developed legal system, both personal and impersonal institutions are widely used in contractual relationships between firms. However, the crucial choice is not between personal and impersonal institutions. It seems more appropriate to draw the dividing line between bilateral mechanisms (morality and self-enforcing contracts) and third-party institutions (personal reputation, impersonal market reputation, community norms and the legal system).

Bilateral governance is used for exchanges with low hazards. For more challenging transactions, firms shift to one of two strategies. As the threat of opportunism increases due to specific assets and lack alternatives, some relationships shift to third-party governance. This is characterised by an increased reliance on a combination of personal and impersonal third-party institutions and a lesser – though still significant – use of bilateralism. In these cases, we see a substitution between bilateral and third-party institutions.

For recurrent transactions with even greater hazards (due to asset specificity, lack of alternatives and transactional uncertainty), firms use a third strategy that we termed comprehensive governance. This is characterised by relatively high reliance on all types of contract-enforcement institutions. Here, bilateral and third-party institutions are used as complements. Morality and self-enforcement are even more important than under bilateral governance and they are complemented by a mixture of personal and impersonal third-party institutions.

The clear and strong influence of transaction features on governance choice suggests that our findings are not specific to Hungary or East-Central Europe but to a broader range of countries. This, of course, remains to be proven. On the level of governance strategies for business relationships, scholars have focussed on the distinction between formal and informal enforcement of contracts. Our results suggest that the crucial choice may be between the institutions of bilateral governance (i.e. morality and self-enforcing contracts) on the hand, and institutions relying on formal or informal third-party enforcement on the other hand. The latter can either partly (but never fully) substitute for the former in some relationships, or – more often – complement them in order to tackle increased contractual hazards. On the level of the economy, we can safely conclude that impersonal institutions do not supersede personal ones but complement them. A tentative policy implication is that economic development requires not so much supporting a shift from personal towards impersonal forms of exchange but the building up of a more comprehensive set of contract-supporting institutions.

Appendix

Table 12. Lack of alternatives for the partner *('If you unexpectedly broke your relationship, it would be difficult for your business partner to find another enterprise that could replace you'*: 1 – not true at all; 4 – completely true)

Evaluation	Frequency	Percent
1	227	37,8
2	154	25,7
3	114	19,0
4	69	11,5
N/A	36	6,0
Total	600	100,0

Table 13. Lack of alternatives for the firm *('If your business partner unexpectedly broke your relationship, it would be difficult for you to find another enterprise that could replace him'*: 1 – not true at all; 4 – completely true)

Evaluation	Frequency	Percent
1	140	23,3
2	152	25,3
3	158	26,3
4	129	21,5
N/A	21	3,5
Total	600	100,0

Table 14. Specific investment by the firm (*'You made significant investment so that you could use your business partner's product or service'* (in relationship with supplier) and *'Your product or service is tailored to your partner's expectations'* (in relationship with buyer)*:* 1 – not true at all; 4 – completely true)

Evaluation	Frequency	Percent
1	101	16,8
2	91	15,2
3	123	20,5
4	263	43,8
N/A	22	3,7
Total	600	100,0

Table 15. Specific investment by the partner (*'Your supplier's product or service is tailored to your expectations'* (in relationship with supplier) and *'Your customer made significant investment so that he could use your product or service'* (in relationship with buyer)*:* 1 – not true at all; 4 – completely true)

Evaluation	Frequency	Percent
1	169	28,2
2	100	16,7
3	134	22,3
4	167	27,8
N/A	30	5,0
Total	600	100,0

Table 16. Recurrence of transactions ('*You will need your supplier's product or service in the near future [in 2-3 years] as well*' (in relationship with supplier) and '*Your business partner will need your product or service in the near future [in 2-3 years] as well*' (in relationship with buyer): 1 – not true at all; 4 – completely true)

Evaluation	Frequency	Percent
1	12	2,0
2	30	5,0
3	144	24,0
4	388	64,7
N/A	26	4,3
Total	600	100,0

Table 17. Transactional uncertainty ('*In your relationship, you frequently need to adapt to changing circumstances and make changes to initial plans*': 1 – not true at all; 4 – completely true)

Evaluation	Frequency	Percent
1	64	10,7
2	88	14,7
3	210	35,0
4	213	35,5
N/A	25	4,2
Total	600	100,0

Table 18. Evaluation of latent class regression models (transaction characteristics) with 2, 3 and 4 classes

Criterion	2 classes	3 classes	4 classes
maximum log-likelihood:	-2687.178	-2507.074	-2451.221
AIC	5472.356	5182.148	5136.443
BIC	5670.793	5519.71	5606.618
X^2 (Chi-square goodness of fit)	8603.886	4612.51	3257.112

Table 19. Evaluation of latent class regression models (transaction, firm and environment characteristics) with 2, 3 and 4 classes

Criterion	2 classes	3 classes	4 classes
maximum log-likelihood:	-2593.829	-2485.824	-2696.608
AIC	5307.659	5175.648	5681.216
BIC	5548.774	5585.545	5707.725
X^2 (Chi-square goodness of fit)	10880.62	4417.595	14329.45

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