Firm boundaries in Transition countries. The influence of technological and institutional links

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Firm boundaries in transition countries. 
The influence of technological and institutional links*

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Abstract

Using BEEPS cross-section data for one of the world largest markets among developing economies, transition countries, this paper aims to identify the impact of technology intensity and contracting institutions on firms’ organizational forms, specifically vertical integration. Using the theoretical predictions about organizational choices drawn from incomplete contracting models, we test the impacts of technological and institutional determinants.

The results show that technological and institutional forces have contrasting, even opposite, effect. The improvement of contracting institutions weakens the propensity for vertical integration while the influence of technological complexity tends to increase it. Moreover, technology-intensive countries and industries show the prevalence of vertically integrated organizational modes, a result magnified by poorly functioning contracting institutions. Different impacts are also found for European and non-European transition countries. When these results are examined in light of the increasing exposure to international trade, they show that this has reinforced rather than weakened the historical tendency towards vertical integration in transition countries.

Keywords: Integration, Transition Countries, Contracting Institutions, Technology, Trust
JEL Classification Numbers: F14, F23, L22, L23, P52.

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1 Introduction

Firms are choosing to trade within their boundaries more and more often. Almost one-third of the world trade of goods represents trade within the boundaries of the same firm. Most of the growth of intra-firm trade in developed countries is attributed to the technological progress and higher complexity of production. However, little is known about what drives this process in one of the biggest world markets, namely transition countries.

In order to answer this question we take the perspectives of property rights theory and new institutional economics and analyze whether or not the organizational choices of firms in transition countries have been affected by technological and institutional developments, as well as by the increase in international openness.

The focus on transition countries has two main motivations: The first is related to the historical tendency towards excessive vertical integration during the Soviet era. In the period of planned economy, firms in modern transition countries were mainly locked into highly specific supply relationships with a small number of firms or even with a single supplier. In the last 25 years transition countries have gone through significant political and economic changes. Such changes entailed institutional transformations, trade liberalization, and changes in the organization of industries, business practices and firm interactions. However, a systematic view on the production links of firms in transition countries is still to evolve. Neither national nor international production links in transition countries have been extensively discussed in the literature. The boundaries of the firm in these countries have rarely been analyzed, even if the boundary extension is one of the key decisions for a firm’s economic performance and a firm’s adjustment to national and international changes.

The second motivation lies in the persistent weakness of institutions and slow technological advancement in transition countries, considering their possible influence on the issues of boundaries extension and vertical integration.

Being interested in changes in the organization of production, we focus on the strand of literature that examines firm boundaries as a key decision for a firm’s organization, and thus the relationship between a firm and its supplier. It has already been demonstrated that vertical integration influences a firm’s learning ability (Sorenson, 2003), performance improvements (Novak and Stern, 2008), resource allocation and technology transfer (Seru, 2014), as well as its productivity (Schoar, 2002; Broedner et al., 2009). However, it has also been shown that the
choice of integration versus arm’s length trade does not guarantee a better performance, unless it is an optimal response to institutional hazards (Leiblein et al., 2002).

Since the seminal work of Coase (1937), theoretical models have been developed in order to frame the choices of a firm’s boundaries according to both “transaction cost” and “property rights” theories (McLaren, 2000; Grossman and Helpman, 2002; Antràs, 2003; Antràs and Helpman, 2004, 2008). They focus on the specificity and complexity of inter-firm relationships and on contractual incompleteness, linking vertical integration with the hold-up problem. Whenever the firm considers whether to vertically integrate its supplier or outsource to a supplier, the difference between organizational forms, typically vertical integration and outsourcing, originates with the Antràs (2003) model in a context of contractual incompleteness. It is extended in Antràs and Helpman (2004) with the global sourcing model where firms organize production on a global scale. It is generalized in Antràs and Helpman (2008) to analyze the impact of varying degrees of contractual frictions.

The results of the first two papers (Antràs, 2003; Antràs and Helpman, 2004) are twofold. First is the development of organizational models explaining any make or buy decision, the choice sometimes called integration procurement versus market procurement or vertical integration versus outsourcing. The main assumption behind this is that vertical integration allows the firm to partially control the customized intermediate inputs produced by its supplier. The central implication is that we should see vertical integration in industries that intensively use the headquarter inputs produced by the firm. Second is the development of organizational models treating the drivers of the make-or-buy decision in a global context where the choice of how to source goes hand in hand with the choice of where to source.

Both these papers identify the influence of technological complexity on organizational forms. But the main message of the third paper (Antràs and Helpman, 2008) is that the relative prevalence of alternative organizational forms depends not only on technological complexity, but also on varying degrees of contractual frictions, across countries and across inputs, i.e. the quality of contracting institutions plays a role in both organization of production and supplier location. On this basis, the technological intensity and institutional quality highlighted by the Antràs and Helpman (2008) paper, as well as participation in international trade make them good candidates for an empirical analysis of the relative prevalence of alternative organizational forms in the context of the increasing openness to international markets of transition countries.

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1Models are summarized elsewhere (Helpman, 2006; Nunn and Trefler, 2008)
There exist substantial variations of both forces - technology intensity and institutional quality - across transition countries as a result of substantial disparities in economic and institutional development. Consequently, these countries offer suitable settings in which to study the impacts of these forces on organizational choices.

However, there are not many empirical tests of the model (Kohler and Smolka, 2014) because of the multiplicity of outcomes on firms’ sorting into different sourcing strategies (Nunn and Trefler, 2008). The combination of input cost advantages (related to location and organizational forms) and the fixed cost disadvantages, together with the variability of contracting institutions, generates many ambiguities, at least with respect to the available data.

Moving to the level of data is not an easy task, especially in the case of transition countries. Hence, the empirical analysis uses the EBRD firm-level survey data aggregated to the industry level in transition countries. Such an approach allows us to bring to light two main results.

First, we partially utilize the theoretical predictions of Antrás’ approach. Our empirical results show that both technological (capital) intensity and institutional quality can play a role in the relative prevalence of alternative organizational forms (decision about how) in transition countries. But the empirical extension of this approach to the decisions about where to source was constrained by data.

Our contribution is the evaluation of two forces (technological and institutional) simultaneously. We show that these forces have opposite effect. Moreover, our results illustrate that the economic influence of the institutional quality on vertical integration tends to be higher than the influence of production complexity. Consequently, in countries with poorly functioning contracting institutions, higher levels of vertical integration mostly reflects contracting inefficiencies. Thus, an improvement in institutional quality in transition countries would decrease vertical integration and increase the efficiency of the production organization.

Second, we make room for an empirical analysis of the determinants of organizational choices in transition countries in a context of increasing international openness. Our results show that globalization in transition countries has enhanced rather than weakened the historical tendency towards excessive vertical integration or integrated procurement. This evidence constitutes one of our contributions to the literature. Such results are in contrast with McLaren (2000) predictions of a close and negative relationship between international openness and the vertically

\(^{2}\)The BEEPS, survey organized by the EBRD and The World Bank. This paper is based on wave of this survey that took place in 2005, the unique release through which questions on vertical boundaries are clearly identified.
integrated organization of production, as a result of the increasing variety of suppliers entering the market.

The rest of the paper is structured in the following way. Section 2 discusses the characteristics of transition countries, both in terms of their technological and institutional development. In section 3 we present the theoretical background and empirical hypotheses for further analysis. Section 4 explains the specifications of our empirical model and methodology adopted. Section 5 describes the data used in the analysis. Section 6 presents empirical findings, and the paper is concluded by the final remarks in section 7.

2 Stylized facts

2.1 Technological complexity and organization of production

The modern economies of transition countries are inevitably connected with the historic development of these countries, in particular with the model of production implemented in the Soviet era. Although these countries have seen rapid development in the last two decades, some of the weaknesses inherited from the Soviet system still have to be addressed. One of these weaknesses is the technological backwardness of production.

After the break-up of the Soviet Union, technology was lagging significantly behind in all transition countries (Campos and Coricelli, 2002). Such a uniform lag may be explained by the policies implemented in the Soviet Union long before the break-up. Most of the economic policies in the Soviet Union were aimed at the stimulation of economic growth through extensive industrialization, unlike the growth policies in Western economies which fostered productivity growth. The Soviet Union’s strategy resulted in higher accumulation at the cost of technological and organizational changes (Ofer, 1987). When the growth could no longer be maintained by increasing labour and capital inputs, the leadership opted for the development of military technology as a core for economic growth, instead of promoting the diffusion of technological advancements equally among all industries. This choice resulted in the lack of technological progress in the rest of the economy. In the literature, this lack of progress is sometimes associated with the absence of organizational innovation, as there was no entry of new firms and no competition (Ofer, 1987; Campos and Coricelli, 2002).

The results of this historical tendency toward extensive growth, unbalanced technological progress and little experience in innovation may still be observed in many transition countries.
It is true both in terms of the concentration of production in low value-added industries and the lower diffusion of high-level innovations.

In terms of the focus of production on higher value-added industries, transition countries are lagging behind. However, there are significant differences between both countries and groups of countries. Transition countries may be divided into several groups: Central Europe and Baltics (CEB), South-Eastern Europe (SEE) and Commonwealth of Independent States (CIS) countries that include some countries of Eastern Europe and the Caucasus (EEC) and Central Asia (CA). These groups may be ranked by their technological development in terms of specialization of their production.

First, the more developed of the transition countries, CEB, are slightly ahead in terms of the higher value-added of their production. In most of the CEB, production was already shifting away from low-tech towards medium-tech or high-tech industries during the first years of transition (table 1). However, they are still far behind their Western European counterparts and the degree of restructuring is not uniform. For example, restructuring away from low value-added production in Slovenia is comparatively slow with respect to other new members of the EU, and is accepted to be a serious problem for its international competitiveness (Van den Bulcke et al., 2009).

Second, the sectoral specialization of the SEE countries is more concentrated in low value-added activities than in the CEB (Handjiski, 2009; Inotai, 2007). It is also reflected in the relatively lower capital and skill intensity of their exports. The skill intensity has also shown little change between 1997 and 2007 (Mitra, 2008). Such an absence of change shows there has been little development in terms of the restructuring of economic production towards a higher technology of production and higher value-added.

Third, the private sector of low-income countries within transition countries, such as in numerous countries in the CIS group, is mostly concentrated in low value-added industries (Shiells and Sattar, 2004). However, one of the main reasons for lower value-added in all the

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3 As it is often highlighted in the literature, the technological advancement and higher value added of industrial production is often associated with the capital and skill-intensity of countries' production and international trade. In spite of the fact that, as mentioned by Campos and Coricelli (2002), it is difficult to separate accumulation and reallocation from the technological progress in transition countries, the pattern of capital-intensity distribution within the transition countries is similar to the described above situation of different degrees of technological backwardness. Recent data on capital-intensity for transition countries is not easily available in common data sources (World Penn Table database, OECD or EBRD databases), however the results of the Izyumov and Vahaly (2006) work point out that in 2003 the average capital-intensity in the more advanced of TE, the eight CEB countries (EU members since 2004) was less than a half of the level of EU-15. For the SEE countries, it was less than one fourth and for the CIS countries it was about one eighth of EU-15 average.
transition countries is the technological gap between the transition countries and their more developed counterparts. (Bastic, 2004)

Table 1: Changes in the distribution of manufacturing value added by technology intensity in several CEB countries, 1993-2001

<table>
<thead>
<tr>
<th></th>
<th>CZ</th>
<th>ES</th>
<th>HU</th>
<th>PL</th>
<th>SL</th>
<th>SK</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-tech</td>
<td>1.1</td>
<td>2.7</td>
<td>11.8</td>
<td>1.7</td>
<td>0.7</td>
<td>-0.3</td>
</tr>
<tr>
<td>Medium-high-tech</td>
<td>2.7</td>
<td>-12.1</td>
<td>8.2</td>
<td>1.5</td>
<td>1.3</td>
<td>-1.2</td>
</tr>
<tr>
<td>Medium-low-tech</td>
<td>-0.9</td>
<td>8.0</td>
<td>-5.1</td>
<td>-3.1</td>
<td>3.4</td>
<td>8.0</td>
</tr>
<tr>
<td>Low-tech</td>
<td>-2.9</td>
<td>1.5</td>
<td>-14.9</td>
<td>-0.1</td>
<td>-5.4</td>
<td>-6.5</td>
</tr>
<tr>
<td>Absolute-change¹</td>
<td>7.6</td>
<td>24.2</td>
<td>40.0</td>
<td>6.3</td>
<td>10.9</td>
<td>15.9</td>
</tr>
<tr>
<td>Weighted-change²</td>
<td>2.6</td>
<td>-2.7</td>
<td>15.6</td>
<td>1.6</td>
<td>2.7</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Notes:
¹ For Hungary and Poland sales data have been used.
⁴ Sum of absolute changes: \( \Delta S = \sum |S_i - S_i^{w}| \) over i technology groups.
⁵ Weighted change: \( \Delta S_{\text{tech}} = \sum (S_i - S_i^{w}) w_i \), where \( w_1 = 1 \), \( w_{\text{sect}} = 0.67 \), \( w_{\text{lab}} = 0.33 \), and \( w_i = 0 \).

Moving away from concentration on higher value-added industries, transition countries are lagging in terms of innovation activity as well. Most of them are weakly connected with the world technological frontier (Mitra, 2008). Despite growth of internationally competitive high-technology firms in CEB countries, the share of innovations new to international markets is equivalent to only around 0.4% in transition countries (EBRD, 2014).

Another example of the technological gap may be drawn from the patents granted. The dynamics of internationally cited patents in transition countries also shows a comparatively low quality of technological development in transition countries. According to a report of the EBRD (EBRD, 2014) only around 6% of patents held by transition countries are cited at least once, compared to 44% in the United States. Such a small share highlights either backwardness or the incremental nature of the majority of the patented technologies.

Furthermore, if we look closer at the differences in technological development within the region, both in terms of technologies patented and innovations of international scope, we can see that there are significant differences between both countries and country groups. In particular, the CEB countries, followed by the SEE countries, are closer to the technological frontier, while EEC are a long way behind.

Such differences highlight how technological levels of production in transition countries are
Figure 1: Innovations in transition countries and the technological frontier

Source: Transition Report, EBRD (2014)
Note: Data represent unweighted cross-country averages and indicate the percentage of surveyed firms that have introduced new products in the last three years. Figures for the transition region include data for the CEB, SEE, and EEC regions, as well as Russia and Central Asia interviewed for BEEPS V, MENA E8.

Figure 2: Patents cited at least once

Source: Transition Report, EBRD (2014)
Note: This figure shows the percentage of patents that are cited in at least one other patent application. It is based on data for the period 1999-2011
not just significantly lower than those in developed countries, but also how they vary between transition countries. As the level of technological advancement has been widely accepted as being connected with the organization of production, we will consider such differences in our empirical analysis to be an important factor of organizational forms’ prevalence in transition countries.

2.2 Contract enforcement and external economic institutions

As highlighted in a wide stream of economic literature, stronger external economic institutions are able to encourage a better investment climate, higher participation in international trade and a more efficient use of physical and human capital (North, 1990; Aron, 2000; Rodrik et al., 2004; Acemoglu and Johnson, 2005; EBRD, 2013; Acemoglu et al., 2014). The positive connection between better institutions and economic performance is not in doubt. However, little is known about the interconnection between stronger institutions and firms’ organizational choices.

Transition countries have been widely recognized as having comparatively low quality of economic institutions in general, and of contracting institutions in particular (Berglöf et al., 2012; Svejnar and Commander, 2007; Dvoracek, 2009; Gelbuda et al., 2008; Mitra and Schaffer, 2009). However, these countries not only differ from developed countries in terms of their institutions, but also to a great degree from each other. As underlined in the EBRD Transition report (EBRD, 2013), there is a notable heterogeneity in the quality of institutions within the group of transition countries. Consequently, a lot of research focuses on the significant institutional differences in these countries with broadly similar starting points of transition, but such different results.

One peculiarity of transition countries after the break-up of the Soviet Union was their simultaneous economic transition and political democratization. This meant not only that an economic framework needed to be created, but also that the rules of the political game had to change. Thus, the enforcement of the rules of the game remained difficult as long as the state was redefining its role, resulting in a credibility problem. Not only was it difficult during the early stages, but it is still an obstacle nowadays. Two decades after the beginning of transition only a small number of transition countries have become relatively successful in terms of law.

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4Following the approach of the Hendley et al. (1999) paper we consider external economic institutions as economic institutions connected with the external to firms environment, such as contracting institutions depending on the efficiency of the country law-enforcement system.
enforcement. In fact, from figure 2.2 it is possible to see that the efficiency of law enforcement ("rule of law" indicator) and regulatory quality are significantly different between different country groups. In particular, it is evident that law enforcement is significantly better in the CEB countries (right-hand side of the figure) than in the CIS and SEE groups. The same tendency is characteristic of the other measures for the economic institutions.

Figure 3: Measures of economic institutions among transition countries

![Figure 3: Measures of economic institutions among transition countries](image)

Source: Transition Report, EBRD (2013)

Note: Countries are shown in ascending order of their "rule of law" score.

Such evidence highlights the difficulties contract enforcement firms may face in countries with weak law enforcement and low government efficiency. Not only does it show that the firms in transition countries are still facing weak contract enforcement, it also highlights how firms in different groups of transition countries face different degrees of contractual frictions (failure to have fully enforceable contracts) due to the inefficient institutional setting. Such differences in the institutional environment and contract frictions may trigger different reactions from firms in different regions of transition countries. As a consequence, special production relationships may be formed to adapt to the institutional environment.

2.3 Contract enforcement and internal enforcement mechanisms

In a situation in which external economic institutions have a doubtful effectiveness, however, economic agents have to make an effort to compensate for inadequate legal regulations. In this way, they build up supplementary insurance. One possibility for such additional insurance is to maintain traditions, such as economic exchange within the family, or to retain those business relationships which rely on personal contacts. Therefore, enterprises create their own
mechanisms to enforce contracts. One of the enforcement mechanisms most often applied in transition countries is relational contracting (Hendley et al., 1999). Relational contracting implies that business contacts rely on the mutual trust built-up with their trading partners, based on their common trading history. Such contacts are usually long-term.

The partners, who have traded with one another for a long time, stick to the contract because they fear that if they did not, they would lose the trust of their partners. The threat of one partner ceasing to trade is effective because in transition countries, with underdeveloped markets and an unstable economic framework, information on alternative trading partners is still limited and a change of partner might be highly risky. Relational contracting is based on a kind of self commitment that is not based on any form of private or state enforcement. It represents one of the mechanisms used by enterprises to compensate for inefficient state-enforcement system.

By 2000 in Russia, enterprises relied first and foremost on business contacts established in the Soviet era. Among the enterprises surveyed in 1999, almost half were still trading with the old partners. Furthermore, a survey conducted by Johnson et al. (2002) into Russian, Ukrainian, Polish, and Romanian enterprises shows that firms will stick to old trading partners even if new suppliers offer better conditions. They will change supplier only if courts, or external institutions, in general are considered as a credible means of contract enforcement. Such statements highlight the rigidity of the procurement system in transition countries as a mechanism to compensate for the inefficiency of a state contract enforcement system.

This rigidity has its roots in the long tradition of relying on highly relationship-specific procurement. In the era of central planning, procurement systems were extremely rigid, firms were locked into relationships with a small number of suppliers, in many cases only one supplier (Hare and Turley, 2013). The management of such procurement systems at the time was guaranteed by the state, and led to excessively integrated organizational structures of production and inflexible and inefficient procurement management.

More up to date information on the procurement systems in transition countries shows that it has also been fairly rigid in 2002. The system of contracts between firms and their suppliers is characterized by long-term relationships, which underlines the prevalence of relational contracting. More than 80% of the firms in the BEEPS 2002 survey buy more than 20% of their inputs from long-term suppliers. Only around 30-40% of the surveyed firms would consider changing their main supplier if faced the 10% increase of the input price. The rest would continue to purchase from the same supplier in either the same, slightly lower or much lower quantities
of the input. This illustrates that relational contracting prevails in the majority of cases and that supply relationships in transition countries continue to have a locked-up nature. This can be further demonstrated by the fact that in 2002 around 70% of the firms surveyed have not changed their suppliers in the previous 3 years.

However, when new firms start to source from mature markets without pre-existent contacts with suppliers, the level of riskiness in making the wrong choice of supplier increase and enterprises may opt for the internal mechanisms of trust formations (for more details see Appendix section A.4) or ensure their supply contracts through acquiring property rights over their suppliers.

Finally, we need to admit that transition countries have gone through dramatic transformations in terms of the firms’ organization, their input supply and the ways to guarantee it. In the planned economy, networks of enterprises were built up by the state in order to secure a supply of necessary inputs, through state ownership and control, and to achieve maximum plan fulfillment. Nowadays, enterprises join together with the aim of contract enforcement, and in case it is impossible due to weak institutions they do it via property rights control. However, many features and obstacles in modern supply relationships in these countries have their roots in the locked-up nature of the Soviet production system.

3 Towards empirical testing

3.1 Antrás and Helpman (2008) in a nutshell

In order to analyze the influence of contractual frictions, due to both technological and institutional reasons, we base our empirical analysis on the extended model of global sourcing presented in the work of Antrás and Helpman (2008). This mode defines optimal sourcing strategy in a context where contractual imperfections exist.

This model considers a bargaining process between a firm (headquarters) and its supplier within the following set-up. Production of final goods requires two inputs: an intermediate input and a headquarter input, provided by the final-good producer. It is assumed that the final-good producer is unable to produce the intermediate input, and therefore she has to rely on its supplier. There is a differentiation in the final goods, which leads to final-good producers having market power. Differentiated goods also imply tailor-made inputs, with two important consequences.
First, writing enforceable contracts that specify the entire set of input features is impossible (incomplete contracts). Second, both types of input have no value outside of this particular sourcing relationship (relationship specificity). Consequently, both the supplier and the firm are locked up in a relationship characterized by opportunistic behavior from their contracting partner, and bargaining over the final surplus of the production relationship. Due to insufficient incentives, both inputs are provided in a less than optimal amount and in an inefficient input mix, with the outcome depending on the ex post outside options that the agents have.

By choosing vertical integration the final-good producer may opt for higher outside option relative to the other organizational form, called outsourcing, which implies relying upon an independent supplier. For either of the two organizational forms, final-good producers may decide to turn to domestic or foreign input suppliers. They choose their sourcing strategy, in other words, a combination of location and organizational form to obtain the intermediate input, so as to maximize expected profits from the production relationship. This choice is driven by two types of advantages: A location advantage of obtaining the input in the domestic or the foreign economy; in addition, there is an incentive advantage in favor of either vertical integration or outsourcing, depending on the bargaining details of the hold-up problem and the importance of the headquarter input (headquarter-intensity) for the relationship. Importantly, the advantage of one organizational mode or location, respectively, over the other in sourcing is magnified by a firm’s productivity.

The optimal sourcing strategy is then determined, then, by comparing this advantage with a specific structure of fixed cost disadvantage associated with different organizational forms and locations of sourcing.\textsuperscript{5}

Using the theoretical approach discussed, we make two simplified predictions of the model about the role of contractual frictions and a firm’s productivity in the form of propositions. Later, we will bring these propositions to data by elaborating empirical hypotheses.

The first proposition concerns the influence of headquarter-intensity or technological complexity. Proposition 2 of the Antràs and Helpman (2008) study states that there exists a unique value of the headquarter-intensity ($\nu_{hs}$) such that it is more profitable for a firm to integrate when its headquarter-intensity $\nu$ is greater than $\nu_{hs}$ and to outsource when $\nu$ is lower than $\nu_{hs}$. Assumed that a firm will seek to maximize its profits, it is expected that a firm will integrate if $\nu > \nu_{hs}$ and source from an independent supplier when $\nu < \nu_{hs}$.

\textsuperscript{5}The industry equilibrium is structured as a productivity based self-selection of firms into sourcing modes.
Consequently, we will base our empirical analysis on the following proposition:

Proposition 1  The incidence of vertical integration with suppliers is positively connected with the average industry headquarter-intensity.

The same Proposition of the Antràs and Helpman (2008) study also states that the cut-off $\nu_{hs}$ increases in the degree of contractibility of the supplier’s inputs.

Considering cases where the quality of contracting institutions affecting the supplier’s input varies between countries and industries the higher quality of these institutions is positively connected with the higher input contractibility. Consequently, we should expect less integrated firms in industries and countries with stronger contracting institutions. This underpins the second proposition, on which we base our analysis.

Proposition 2  A higher quality of contracting institutions is associated with a lower attractiveness of integration. Consequently, in industries with a higher quality of contracting institutions less vertical integration should be observed.

The Antràs and Helpman (2008) paper also demonstrates that the productivity of firms plays a role in the sorting into different organizational modes of procurement. Assuming (as in Antràs and Helpman (2004)) that the fixed costs of outsourcing are lower than the fixed costs of integration, the model illustrates that in the sectors with a higher headquarter-intensity, outsourcing is optimal only for low productivity firms. Proposition 4 of the same study states that there exists a productivity cut-off $\theta_O$, such that in an industry with headquarter-intensity $\nu_h > \nu_{hs}$ all firms with productivity greater than $\theta_O$ integrate and firms with productivity less than $\theta_O$ outsource. However, in order to understand the validity of assumptions beneath such results, and possible empirical framework for transitional countries, additional analysis is required. Although such an analysis is possible in our future research, in this paper we are not focusing on productivity sorting.

3.2 Empirical hypotheses

The empirical hypotheses tested in this paper are based on the propositions described in the previous section. The first hypothesis is related to the first proposition and focuses on the degree of capital-intensity. Following the approach of Antràs (2003) and previous empirical literature

\[^6\text{Nevertheless, we are going to control for possible differences in productivity.}\]
on the topic (Nunn and Trefler, 2008; Kohler and Smolka, 2014), we use capital intensity as a proxy for headquarter-intensity.

The evaluation of this hypothesis allows us to analyze whether the choice to source within the firm is driven by the complexity and technological advancement of production in transition countries, and to what degree.

**Hypothesis 1** In industries with higher average capital-intensity the integration with suppliers takes place more often than in industries with a lower capital-intensity

If our results prove that this hypothesis is correct it would also demonstrate that, with a higher participation in trade of more complex and relationship-specific intermediate inputs, there is a natural tendency for integration and enlargement of a firm’s boundaries in transition countries. Consequently, more production groups and big corporations may be observed. Such phenomena should not be considered by policy makers as damaging for the economy when it takes place in industries with complex production, requiring highly specific inputs. However, integration driven by other forces, such as institutional weakness, may become excessive and hinder the increase of productivity.

Several previous empirical works have illustrated that excessive integration is often connected with the quality of contracting institutions (Du et al., 2012; Acemoglu et al., 2009). Also, a number of theoretical works have demonstrated that differences in contracting institutions can trigger deviations in integration decisions. As we have discussed previously, the Antrás and Helpman (2008) paper demonstrated that a higher quality of domestic contracting institutions may decrease the prevalence of integration.

Our second hypothesis is related to the second proposition, discussed in the previous section. In testing our second hypothesis we evaluate how the differences in the quality of contracting institutions in different countries and industries are connected with the prevalence of integration. In order to analyze such an influence we rely on the connection between the quality of contracting institutions and trust between contractors.

According to Raiser et al. (2008), the quality of country institutions in transition countries is highly correlated with trust between firms. The institutions, such as court and legal enforcement system, that affect contracting and contract enforcement are of particular interest. The empirical evidence presented by Raiser et al. (2008) shows that a higher confidence of firms in courts as being fair and efficient enforcement mechanisms, as well as information-sharing
through non-governmental networks, are associated with a higher level of trust between firms.

Following Raiser et al. (2008), we evaluate the influence of contracting institutions on integration decisions through the influence of trust between firms. By using such a channel we are able to separate the direct influence of contracting institutions that affect a firm’s relationships with its suppliers from the influence of other institutional settings. Taking into account the connection between inter-firm trust and contracting institutions, we expect that higher levels of trust between the supplier and the final-good producer are negatively connected with the incidence of integration.

**Hypothesis 2** Higher trust between a firm and its suppliers, reflecting a higher quality of contracting institutions, is associated with a lower attractiveness of integration. Consequently, in the industries with higher trust, less integration can be observed.

Support for this hypothesis would underline the importance of facilitating the establishment of trust between firms, and improving the quality of contracting institutions in transition countries. Better contracting institutions and contractual enforcement would thus be shown to allow transition countries to avoid excessive vertical integration and inefficiencies in the organization of input supply.

4 Empirical strategy

While testing our hypotheses we focus on the incidence of integration decisions within different industries. In contrast to most of the previous industry-level empirical studies which considered the volume of aggregate trade between integrated parties, we study the dissemination of integration decisions within and between industries. Such a choice brings us closer to the micro foundations of all three of the theoretical models: Antràs (2003); Antràs and Helpman (2004, 2008).

The models also distinguish between the decisions about how and where to source. However, due to the data constraints it is impossible to differentiate between domestic and foreign suppliers in our work. Consequently, we do not specifically analyze the location (where) decisions, but focus only on the choice of organizational forms (how), taking into consideration the degree of openness to trade.

In order to test first two hypotheses we analyze the following model using Poisson regres-
\[ \log \left( \frac{N_{int}}{N_i} \right) = \beta_0 + \beta_1 K_i + \beta_2 T_i + \beta_3 \bar{W}_i. \]  

(1)

Where \( \frac{N_{int}}{N_i} \) is the incidence of integration in industry \( i \), \( K_i \) is the mean capital-intensity of firms in industry \( i \) and \( T_i \) is the measure of trust in supply relationships in industry \( i \).  

The vector \( \bar{W}_i \) is the vector of control variables.

In order to test the sensibility of the empirical model we use several sets of the control variables. In the first specification of the model, the vector \( \bar{W}_i \) includes the measures of export, industry population characteristics and the competitive situation within industry \( i \).

The openness to international trade is an important issue to control for, as different transition countries are exposed to international trade to different extents. Consequently, we control for the influence of export participation and competition from imports. Similar to the dependent variable, the export control variable is represented by the share of exporting firms in the total population of firms in the industry. Such a measure allows us to control for the dissemination of the decision to export in different industries. In order to analyze the influence of the import inflows, we include the share of firms signaling that competition from foreign firms is of high importance (Import Competition) and those signaling that there is an absence of the competition from imports (Without import competition).

We also control for demand elasticity as the measure of the overall level of competition in the industry, the share of small and medium enterprises (SME), and the share of multi-establishment firms.

In the second specification the vector \( \bar{W}_i \) also includes the variables describing financial obstacles and inclusion in the financial system. In order to evaluate the sensitivity of our results to country unobserved characteristics we control for the country and region (European versus non-European transition countries) fixed effects in the third and fourth specifications.

The coefficient \( \beta_1 \) allows us to test the first hypothesis, while the coefficient \( \beta_2 \) illustrates the influence stated in the second hypothesis.

In order to understand the difference between the European and non-European transition countries in terms of the incidence of integration decisions, we further run the fullest specification.

---

7 All the specifications are performed with the correction for the exposure (the number of firms interviewed in an industry), as the population of firms differs between industries. We also use the model with robust standard errors to control for mild violations of underlying Poisson model assumptions.

8 A more detailed description may be available on request.
of the above model on the two subsamples of countries. The first subsample includes the countries that at the moment of the survey were a part of the EU, and second the countries that did not belong to the EU in 2005.

In order to evaluate the robustness of our results we also perform additional checks, using another approach to measure capital-intensity. Instead of the replacement value of capital per employee, we use the ratio of the spending on new buildings, machinery and equipment per employee.

5 Data

The data used in this work is selected from the firm-level Business Environment and Enterprise Performance Survey (BEEPS), jointly gathered by the EBRD and the World Bank on transition countries in 2005. The data on more than 8000 firms is then aggregated to the industry level by constructing the incidence of certain firm-level answers or by the averaging of firm characteristics. For performing the analysis, we aggregated the firm-level data to the industry level based on the 3-digit codes for the main product of each firm.

The analysis presented in this study is undertaken for 128 industries\(^9\) belonging to 6 activity sectors (construction; manufacturing; transport storage and communication; wholesale and retail trade; real estate, renting and business services; other services) of 23 transition countries. We excluded from the main regression analysis two developed countries available in the dataset (Ireland and Spain) because as baseline countries they are very different from the countries on which this paper is focused. But we do use them for comparison of our results. Country and industry distributions of firm-level data that was aggregated are presented in Tables 4 and 5. Country and industry distributions of the aggregated data are presented in Tables 6 and 7.

6 Results

6.1 Technological intensity and institutional quality

With respect to our first hypothesis the results support the stated connection between capital-intensity and the incidence of integration (Table 2). As can be seen from the table, capital-intensity is associated positively and statistically significantly with integration. The

\(^9\)The number of industries differs between countries due to the industry profiles of these countries
association remains positive and is of approximately the same magnitude when the first two specifications are used (column 1 and 2).

However, the magnitude of the connection decreases and becomes statistically insignificant when we control for country fixed effects. Such results may be explained by country differences in the upstreamness of production. It has been illustrated that countries may specialize in more or less upstream production. Consequently, it has been shown that upstreamness is highly country-specific in low-income countries (Antràs et al., 2012)\(^\text{10}\). In our data, the number of industries for each country varies depending on the industries in which a particular transition country is specialized. As upstreamness is highly correlated with capital intensity, by introducing country dummies we smooth the variation of capital-intensity and the influence of capital intensity becomes invisible. Such results illustrate that capital-intensity is not only industry-, but also country-specific in transition countries.

The economic significance of the capital-intensity influence (when it is statistically significant) is comparatively low as well. The increase in capital intensity by one standard deviation is associated with a 22% increase in vertical integration on average. If we take into consideration the size of the standard deviation and the previous growth of capital-intensity in transition countries, for vertical integration to increase by 20% capital-intensity should increase on average by almost three times more than it increased between 2002 and 2005. Nevertheless, the link between capital-intensity and integration is significant and positive on average for transition countries. These results confirm the expectations expressed in hypothesis 1.

The analysis of the influence of institutional frictions, stated in hypothesis 2, is based on the coefficient of trust variable presented in table 2. The results support the hypothesis and illustrate that higher levels of trust are associated with a lower incidence of integration. The association of the same negative sign and approximately the same magnitude can be observed in all the specifications used. According to the fullest specification presented in column 4 of table 2, the average increase in trust by one standard deviation would decrease the integration incidence by around 22.5%. It would mean an increase in the integration rate of around 20% in around 3 years if trust continued to grow as it did between 2002 and 2005. The coefficient of trust is robust to accounting of the accessibility of financial systems and the degree of inclusion in international trade.

\(^{10}\)In particular it is correlated not with the actual level of development but with the choice of industries where the production is concentrated.
## Table 2: Integration drivers

<table>
<thead>
<tr>
<th>Specifications</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital-intensity</strong></td>
<td>0.195***</td>
<td>0.196***</td>
<td>0.068</td>
<td>0.064</td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
<td>(0.064)</td>
<td>(0.063)</td>
<td>(0.062)</td>
</tr>
<tr>
<td><strong>Trust</strong></td>
<td>-0.621***</td>
<td>-0.625***</td>
<td>-0.833***</td>
<td>-0.812***</td>
</tr>
<tr>
<td></td>
<td>(0.201)</td>
<td>(0.200)</td>
<td>(0.192)</td>
<td>(0.192)</td>
</tr>
<tr>
<td><strong>International trade and competition</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Export</td>
<td>0.402*</td>
<td>0.380*</td>
<td>0.166</td>
<td>0.159</td>
</tr>
<tr>
<td></td>
<td>(0.209)</td>
<td>(0.208)</td>
<td>(0.192)</td>
<td>(0.192)</td>
</tr>
<tr>
<td>Import competition</td>
<td>0.620**</td>
<td>0.506*</td>
<td>0.426</td>
<td>0.311</td>
</tr>
<tr>
<td></td>
<td>(0.256)</td>
<td>(0.265)</td>
<td>(0.264)</td>
<td>(0.264)</td>
</tr>
<tr>
<td>Without import competition</td>
<td>-0.407</td>
<td>-0.346</td>
<td>-0.690</td>
<td>-0.694</td>
</tr>
<tr>
<td></td>
<td>(1.703)</td>
<td>(1.660)</td>
<td>(1.487)</td>
<td>(1.449)</td>
</tr>
<tr>
<td>High competition</td>
<td>-0.831***</td>
<td>-0.900***</td>
<td>-0.730***</td>
<td>-0.751***</td>
</tr>
<tr>
<td></td>
<td>(0.297)</td>
<td>(0.299)</td>
<td>(0.282)</td>
<td>(0.278)</td>
</tr>
<tr>
<td><strong>Other controls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EU transition countries</td>
<td>-0.341*</td>
<td>-0.343*</td>
<td>-0.947</td>
<td>-0.614</td>
</tr>
<tr>
<td></td>
<td>(0.178)</td>
<td>(0.180)</td>
<td>(2.515)</td>
<td>(2.497)</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>-0.318***</td>
<td>-0.306***</td>
<td>-0.036</td>
<td>-0.186</td>
</tr>
<tr>
<td></td>
<td>(0.072)</td>
<td>(0.072)</td>
<td>(1.163)</td>
<td>(1.155)</td>
</tr>
<tr>
<td>Labour productivity (sd)</td>
<td>0.218</td>
<td>0.246</td>
<td>0.272**</td>
<td>0.283**</td>
</tr>
<tr>
<td></td>
<td>(0.193)</td>
<td>(0.191)</td>
<td>(0.132)</td>
<td>(0.134)</td>
</tr>
<tr>
<td>SME&lt;sup&gt;2&lt;/sup&gt;</td>
<td>-0.500</td>
<td>-0.465</td>
<td>-0.596**</td>
<td>-0.537*</td>
</tr>
<tr>
<td></td>
<td>(0.312)</td>
<td>(0.319)</td>
<td>(0.276)</td>
<td>(0.280)</td>
</tr>
<tr>
<td>MES&lt;sup&gt;3&lt;/sup&gt;</td>
<td>0.375</td>
<td>0.357</td>
<td>0.119</td>
<td>0.060</td>
</tr>
<tr>
<td></td>
<td>(0.229)</td>
<td>(0.233)</td>
<td>(0.240)</td>
<td>(0.247)</td>
</tr>
<tr>
<td>Finance acc. difficulty (major)</td>
<td>0.499*</td>
<td>0.134</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.287)</td>
<td>(0.316)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borrowing from local banks</td>
<td>0.010**</td>
<td>0.013***</td>
<td>0.013***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.005)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borrowing from foreign banks</td>
<td>-0.017</td>
<td>-0.012</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.015)</td>
<td>(0.013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Country dummies</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Constant</td>
<td>0.330</td>
<td>0.076</td>
<td>-0.982</td>
<td>0.022</td>
</tr>
<tr>
<td></td>
<td>(0.648)</td>
<td>(0.665)</td>
<td>(8.714)</td>
<td>(8.647)</td>
</tr>
<tr>
<td>Likelihood</td>
<td>-842.116</td>
<td>-837.533</td>
<td>-750.014</td>
<td>-746.090</td>
</tr>
<tr>
<td>Likelihood&lt;sup&gt;C&lt;/sup&gt;</td>
<td>-922.6763</td>
<td>-922.6763</td>
<td>-922.6763</td>
<td>-922.6763</td>
</tr>
<tr>
<td>Pseudo-R2</td>
<td>0.0873113</td>
<td>0.0922789</td>
<td>0.1871322</td>
<td>0.1913854</td>
</tr>
<tr>
<td>Chi&lt;sup&gt;2&lt;/sup&gt;</td>
<td>134.188</td>
<td>146.6588</td>
<td>346.6422</td>
<td>356.1442</td>
</tr>
<tr>
<td>P-value</td>
<td>2.47e-23</td>
<td>3.34e-24</td>
<td>8.00e-55</td>
<td>2.48e-55</td>
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<tr>
<td>N</td>
<td>834</td>
<td>834</td>
<td>834</td>
<td>834</td>
</tr>
</tbody>
</table>

1 Dependent variable is integration incidence, corrected for the exposure (number of firms surveyed)
2 SME is the share of small and medium enterprises within population (firms with 2-49 employees and firms with 50-249 employees)
3 MES is the share of firms with multiple establishments in the country
* p<0.10, ** p<0.05, *** p<0.01
6.2 Control variables

6.2.1 International trade and competition

Analysing the influence of control variables based on table 2, we can see several important factors characterizing a higher incidence of integration.

A very important result is associated with the inclusion of transition countries in international trade. From columns 1 and 2 of table 2 we can see that a higher participation in international trade through exports is associated with a higher integration incidence. The effect, however, disappears when we control for country fixed effects (column 3 and 4). In fact, such a pattern manifests itself due to the presence of countries like Armenia, Hungary, Russia and Kazakhstan in the data, which are countries characterized by export-led growth.

Exports, however, are not the only way for a country to be linked to international trade. As mentioned in the variables’ description, we control for the influence of import competition pressure on integration decisions. Based on the results presented in table 2 we can see that import competition pressure is positively associated with a higher integration incidence (column 1) when we do not control for country fixed effects. A clearer pattern arises when we separate two main country groups in further analysis (see section 6.3).

As we also control for the general level of competition (through the elasticity of demand), we can see that in industries with a higher level of competition, less integration is observed. Such a result shows that a pro-competitive economic policy and well-functioning market mechanisms induce firms to operate through the market rather than integrate. One standard deviation increase in the measure of competition in an industry is associated with a 41% decrease in the incidence of integration. Such result is robust to the inclusion of country dummies as well as financial constraints’ measures.

6.2.2 Other control variables

There are several minor factors connected to integration decisions that require mentioning. In particular, we can see from the results in columns 1 and 2 of table 2 that firms in European countries (both transition and developed) are integrating, on average, less than firms in non-European transition countries, as well as in the countries with a higher GDP per capita. Such results may be explained by the higher level of economic development in European countries, which is usually accompanied by a lower level of information asymmetries and unobserved
contractual frictions.

The results also show that small and medium enterprises are less predisposed to integrate than their bigger counterparts (columns 3 and 4) when country fixed effects are captured by the country dummies. It is also obvious from the results that a higher inclusion of firms in the financial system is positively connected with vertical integration. In particular, a higher share of borrowing from local banks is associated with a higher integration incidence. The drawing of any causal inference from this connection, however, is ambiguous and is not allowed by the data at hand.

As can be seen from columns 3-4, labour productivity heterogeneity is positively associated with integration when country fixed effects are taken into consideration. This result is robust to different sets of control variables. Consequently, we can state that these results confirm the proposition of the Antrás and Helpman (2008) paper about the positive connection between productivity heterogeneity and the incidence of integration. However, as the discussion of such results is not the aim of this work, and would be more appropriately explored at the firm level, we leave this for further research.

6.3 Differences between country groups

In order to deepen our analysis we check if different patterns in two main groups of transition countries (European and non-European) can be observed.

By dividing the countries into two subsets (table 3) we can see that the supporting evidence for our first hypothesis is mostly due to the pattern observed in non-European transition countries. The absence of this effect in European transition countries is mostly due to the fact that these countries are considerably more homogeneous. If we include other European countries such as Ireland and Spain in this group, as comparison countries, the coefficients become significant for the group of European countries as well (see table 9). The connection between capital-intensity and integration in the more heterogeneous group of non-European transition countries is statistically significant (column 3), but as shown in our previous analysis it is also country-specific.

At the same time, we see supporting evidence for our second hypothesis in both groups. However, the statistical significance of the coefficient drops when no country fixed effects are considered. Such behaviour is connected with the presence of several very different (in terms of trust) Polish industries. Introducing country fixed effects allows us to compensate for such data
characteristics and highlight the effect of trust variable in this country group. This conclusion is also supported by the results for the enlarged group of European countries (European transition countries, supplemented by Ireland and Spain as comparison countries).

Dividing the sample into two subsamples also gives us a clearer picture in terms of the influence of competition and international trade. The connection between export participation and integration is not significant when we divide the data into two subsamples. This result shows that the positive connection described in section 6.2.1 results from the difference in export participation between European and non-European transition countries. In fact, the average difference between the two groups is significant. Participation in international trade through exports is, on average, almost 30% higher in the group of European transition countries.

We also can see from table 3 that import competition pressure forces firms to integrate more often in non-European countries, the countries with, on average, a comparatively lower level of import competition. At the same time in European transition countries, where import competition is higher on average and homogeneous among all countries in the group, the results show that more integration is present in industries protected from import penetration. This pattern highlights how pressure from import competition is associated with a higher degree of integration among firms.

The results also show that the negative connection between the level of competition and integration (previously underlined in section 6.2.1) is driven by non-European transition countries. In a big number of these countries, lack of competitive markets has been well-documented in the literature. As a result, the low average level of competition stimulates more vertical integration in these countries.

The analysis of the influence of other control variables allows us to identify three more characteristic features of the country groups. First, the results illustrate that the heterogeneity of labour productivity is positively and significantly connected with the integration incidence in European transition countries, but not in the non-European transition countries. Second, the higher level of development in terms of income is associated with a higher level of integration in European transition countries, and a lower integration in non-European transition countries. Third, a positive correlation between integration and the higher possibilities for borrowing from local banks, previously discussed, is driven by European transition countries, but is absent in non-European transition countries.

The robustness check shows similar results (presented in table 8). The major difference is
in terms of the degree of statistical significance of capital-intensity.

Table 3: Group differences

<table>
<thead>
<tr>
<th>Specifications(^1)</th>
<th>All (2)</th>
<th>EU (4)</th>
<th>non-EU (2)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital-intensity</td>
<td>0.196***</td>
<td>0.064</td>
<td>0.140</td>
<td>0.041</td>
</tr>
<tr>
<td></td>
<td>(0.064)</td>
<td>(0.062)</td>
<td>(0.135)</td>
<td>(0.140)</td>
</tr>
<tr>
<td>Trust</td>
<td>-0.625***</td>
<td>-0.812***</td>
<td>-0.562</td>
<td>-0.755*</td>
</tr>
<tr>
<td></td>
<td>(0.200)</td>
<td>(0.192)</td>
<td>(0.434)</td>
<td>(0.406)</td>
</tr>
</tbody>
</table>

International trade and competition

<table>
<thead>
<tr>
<th></th>
<th>All (2)</th>
<th>EU (4)</th>
<th>non-EU (2)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export</td>
<td>0.380*</td>
<td>0.159</td>
<td>0.468</td>
<td>0.292</td>
</tr>
<tr>
<td></td>
<td>(0.208)</td>
<td>(0.192)</td>
<td>(0.430)</td>
<td>(0.375)</td>
</tr>
<tr>
<td>Import competition</td>
<td>0.506*</td>
<td>0.311</td>
<td>-0.297</td>
<td>-0.092</td>
</tr>
<tr>
<td></td>
<td>(0.265)</td>
<td>(0.264)</td>
<td>(0.498)</td>
<td>(0.472)</td>
</tr>
<tr>
<td>Without import competition</td>
<td>-0.346</td>
<td>-0.694</td>
<td>-11.721***</td>
<td>-12.552***</td>
</tr>
<tr>
<td></td>
<td>(1.660)</td>
<td>(1.449)</td>
<td>(3.670)</td>
<td>(3.511)</td>
</tr>
<tr>
<td>High competition</td>
<td>-0.900***</td>
<td>-0.751***</td>
<td>-0.772*</td>
<td>0.537</td>
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<td>(0.299)</td>
<td>(0.278)</td>
<td>(0.446)</td>
<td>(0.383)</td>
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Other controls

<table>
<thead>
<tr>
<th></th>
<th>EU transition countries</th>
<th>(2)</th>
<th>(4)</th>
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</thead>
<tbody>
<tr>
<td>Labour productivity (sd)</td>
<td>0.246</td>
<td>0.283**</td>
<td>0.968***</td>
</tr>
<tr>
<td></td>
<td>(0.191)</td>
<td>(0.134)</td>
<td>(0.313)</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>-0.306***</td>
<td>-0.186</td>
<td>1.287***</td>
</tr>
<tr>
<td></td>
<td>(0.072)</td>
<td>(1.155)</td>
<td>(0.402)</td>
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<td>SME(^2)</td>
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<td>-0.611</td>
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<td>(0.319)</td>
<td>(0.280)</td>
<td>(0.595)</td>
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<td>0.499*</td>
<td>0.134</td>
<td>0.095</td>
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<td></td>
<td>(0.287)</td>
<td>(0.316)</td>
<td>(0.619)</td>
</tr>
<tr>
<td>Borrowing from local banks</td>
<td>0.010**</td>
<td>0.013***</td>
<td>0.021**</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.005)</td>
<td>(0.009)</td>
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<td>Borrowing from foreign banks</td>
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<td>-0.012</td>
<td>0.023</td>
</tr>
<tr>
<td>Country dummies</td>
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<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Constant</td>
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<td>0.022</td>
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<td>(8.647)</td>
<td>(3.995)</td>
</tr>
<tr>
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<td>Chi(^2)</td>
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<td>2.48e-55</td>
<td>7.69e-10</td>
</tr>
<tr>
<td>N</td>
<td>834</td>
<td>834</td>
<td>286</td>
</tr>
</tbody>
</table>

\(^1\) Dependent variable is integration incidence, corrected for the exposure (number of firms surveyed)

\(^2\) SME is the share of small and medium enterprises within population (firms with 2-49 employees and firms with 50-249 employees)

\(^3\) MES is the share of firms with multiple establishments in the country

* \(p<0.10\), ** \(p<0.05\), *** \(p<0.01\)

7 Conclusions

Today, transition countries are lagging behind in terms of technological upgrading and the quality of their contracting institutions. The empirical literature has established some stylized facts, especially at the country level, but not their effects on the organizational choices of industries and firms and thus on industrial organization in that part of the world. The historical tendency towards excessive vertical integration during the Soviet era, and firms’ increasing
participation in international trade today and, in particular, international sourcing, puts the spotlight on the question of organizational choices for sourcing in transition countries.

Organizational choices are examined by using the global sourcing model because it assumes that both technological (capital) intensity and the quality of contractual institutional can play a role in the relative prevalence of alternative organizational forms of sourcing. But applying this model to the data available for transition countries has required some significant simplifications. On the one hand, given the data constraints that do not allow us to measure the specific location choices of sourcing strategies, we analyze the effect of trade openness on sourcing choices.

The results of the empirical analysis show, first, that the changes in the production organization in transition economies are significantly affected by contractual frictions but the main forces have contrasting, even opposite, effects, with technological (institutional) intensity increasing (diminishing) the relative prevalence of vertical integration. These results are consistent with vertical integration in industries that intensively use headquarter inputs (technological intensity) produced by the firms because it allows those firms to partially control the customized intermediate input sourcing (Nunn and Treffer, 2008). They are also consistent with empirical evidence, drawing a connection between weaker institutions and higher vertical integration (Acemoglu et al., 2009; Du et al., 2012; Fan et al., 2014). But these results also embody a major message: cross-country differences in contractability matters, and matters differently, as shown by differential impacts on European versus non-European transition countries.

Second, the results show that increasing openness to trade positively affected the incidence of integration choices in transition countries, and this happens on both sides, imports and exports. The import (export) side shows that the more options there are in the procurement strategy (market diversification strategy) increase (decrease) the incidence of integration. This result is not in line with the theoretical predictions of the literature, as what is usually expected is a diminishing incidence of vertical integration, due to increasing trade participation (McLaren, 2000).

One concluding comment is in order. Usually, more options in sourcing strategies, caused by greater openness, reduces opportunism problems, makes a more efficient organization form possible, and makes virtual arm’s-length arrangements more attractive which are unambiguously efficiency enhancing. They provide an avenue for the efficiency benefits of open trade which are completely separate from the traditionally understood avenues of increased specialization and competition. But in the case of transition countries, we find that greater openness is associated
with a substantial increase in integrated organizational forms. Globalization in these countries seems to have enhanced rather than weakened the historical tendency towards excessive vertical integration or integrated procurement. Hence, the predicted efficiency benefits related to industrial organizational features have not been grasped yet.

In transition economies, the role of the contractual and legal environment, and the changes in industrial structure and of the internal organization of firms on a global scale, surely needs further investigation. At least because, from a macroeconomic perspective, contractual imperfections impact economic growth and the comparative advantage of these virtually new players in the international arena.
References


## A Appendix

### A.1 Data description

Table 4: Firm-level data distribution by country

<table>
<thead>
<tr>
<th>Country</th>
<th>N</th>
<th>Percent</th>
<th>Cum</th>
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</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>258</td>
<td>3.47</td>
<td>3.47</td>
</tr>
<tr>
<td>Albania</td>
<td>185</td>
<td>2.49</td>
<td>5.96</td>
</tr>
<tr>
<td>Croatia</td>
<td>217</td>
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<td>8.88</td>
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<td>Belarus</td>
<td>307</td>
<td>4.13</td>
<td>13.01</td>
</tr>
<tr>
<td>Georgia</td>
<td>178</td>
<td>2.39</td>
<td>15.40</td>
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<td>Ukraine</td>
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<td>7.10</td>
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<td>Russia</td>
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<tr>
<td>Poland</td>
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<td>12.58</td>
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<td>7.45</td>
<td>49.62</td>
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<td>Kazakhstan</td>
<td>534</td>
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<td>Moldova</td>
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<td>4.56</td>
<td>61.36</td>
</tr>
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<td>Bosnia and Herzegovina</td>
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<td>2.39</td>
<td>63.75</td>
</tr>
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<td>66.13</td>
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<td>4.01</td>
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<td>Hungary</td>
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<td>96.45</td>
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<td>Serbia and Montenegro</td>
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<tr>
<td>Total</td>
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Table 5: Firm-level data distribution by activity

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<th>Activity</th>
<th>N</th>
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<th>Cum</th>
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<tbody>
<tr>
<td>Construction</td>
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<td>10.71</td>
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<td>Manufacturing</td>
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<td>43.78</td>
<td>54.49</td>
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<td>Transport storage and communication</td>
<td>534</td>
<td>7.18</td>
<td>61.67</td>
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<td>Wholesale and retail trade</td>
<td>1967</td>
<td>26.46</td>
<td>88.12</td>
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Table 6: Aggregated data distribution by country

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<th>Country</th>
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<th>Percent</th>
<th>Cum</th>
</tr>
</thead>
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<td>3.51</td>
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<td>30.36</td>
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<tr>
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<td>100.00</td>
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Table 7: Aggregated data distribution by activity

<table>
<thead>
<tr>
<th>Activity</th>
<th>N</th>
<th>Percent</th>
<th>Cum</th>
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</thead>
<tbody>
<tr>
<td>Construction</td>
<td>60</td>
<td>6.51</td>
<td>6.51</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>372</td>
<td>40.39</td>
<td>46.91</td>
</tr>
<tr>
<td>Transport storage and communication</td>
<td>73</td>
<td>7.93</td>
<td>54.83</td>
</tr>
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<td>257</td>
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<td>82.74</td>
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<td>Real estate, renting and business services</td>
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### A.2 Robustness check

#### Table 8: Robustness check

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<th>(4)</th>
<th>(2)</th>
<th>(4)</th>
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</thead>
<tbody>
<tr>
<td>Capital-intensity (investments)</td>
<td>0.302(^\ast\ast\ast)</td>
<td>0.101(^*)</td>
<td>0.248(^*)</td>
<td>0.237(^\ast\ast)</td>
<td>0.255(^\ast\ast\ast)</td>
<td>0.079</td>
</tr>
<tr>
<td></td>
<td>(0.058)</td>
<td>(0.052)</td>
<td>(0.141)</td>
<td>(0.117)</td>
<td>(0.063)</td>
<td>(0.056)</td>
</tr>
<tr>
<td>Trust</td>
<td>-0.584(^\ast\ast\ast)</td>
<td>-0.779(^\ast\ast\ast)</td>
<td>-0.565</td>
<td>-0.805(^\ast\ast\ast)</td>
<td>-0.641(^\ast\ast\ast)</td>
<td>-0.815(^\ast\ast\ast)</td>
</tr>
<tr>
<td></td>
<td>(0.204)</td>
<td>(0.195)</td>
<td>(0.434)</td>
<td>(0.402)</td>
<td>(0.219)</td>
<td>(0.214)</td>
</tr>
</tbody>
</table>

#### International trade and competition

| Export             | 0.543\(^\ast\ast\ast\) | 0.260 | 0.525 | 0.461 | 0.325 | 0.065 |
|                   | (0.206) | (0.195) | (0.421) | (0.362) | (0.218) | (0.216) |
| Import competition | 0.585\(^\ast\ast\) | 0.503\(^\ast\ast\) | -0.135 | -0.045 | 0.850\(^\ast\ast\) | 0.764\(^\ast\ast\) |
|                   | (0.255) | (0.255) | (0.475) | (0.458) | (0.271) | (0.298) |
| Without import competition | -0.253 | -0.212 | -12.513\(^\ast\ast\ast\) | -14.052\(^\ast\ast\ast\) | 1.428 | 1.862 |
|                   | (1.812) | (1.587) | (3.940) | (3.764) | (1.902) | (1.487) |
| High competition   | -0.861\(^\ast\ast\ast\) | -0.862\(^\ast\ast\ast\) | 0.797 | 0.710\(^*\) | -1.378\(^\ast\ast\ast\) | -1.478\(^\ast\ast\ast\) |
|                   | (0.297) | (0.284) | (0.487) | (0.413) | (0.323) | (0.321) |

#### Other controls

| EU transition countries | -0.200 | 0.275 |
|                        | (0.176) | (2.484) |
| Labour productivity (sd) | 0.294\(^*\) | 0.302\(^\ast\) | 1.063\(^\ast\ast\ast\) | 1.020\(^\ast\ast\) | 0.132 | 0.151 |
|                       | (0.171) | (0.130) | (0.301) | (0.301) | (0.200) | (0.144) |
| GDP per capita        | -0.421\(^\ast\ast\ast\) | -0.652 | 0.777\(^*\) | -0.639 | -0.412\(^\ast\ast\ast\) | -0.569 |
|                       | (0.075) | (1.157) | (0.466) | (1.098) | (0.076) | (0.430) |
| SME\(^2\)            | -0.437 | -0.332 | -0.715 | -1.131\(^*\) | -0.383 | -0.244 |
|                       | (0.310) | (0.282) | (0.619) | (0.629) | (0.347) | (0.300) |
| MES\(^3\)            | 0.373 | 0.056 | -0.056 | -0.718 | 0.446 | 0.319 |
|                       | (0.249) | (0.260) | (0.543) | (0.554) | (0.285) | (0.291) |
| Finance acc. difficulty (major) | 0.669\(^\ast\ast\) | 0.266 | 0.109 | 0.449 | 0.728\(^\ast\) | 0.101 |
|                       | (0.281) | (0.305) | (0.613) | (0.592) | (0.302) | (0.336) |
| Borrowing from local banks | 0.008 | 0.011\(^*\) | 0.022\(^*\) | 0.018\(^*\) | 0.002 | 0.007 |
|                       | (0.005) | (0.005) | (0.009) | (0.009) | (0.005) | (0.006) |
| Borrowing from foreign banks | -0.027 | -0.015 | 0.022 | 0.023 | -0.024 | -0.014 |
|                       | (0.017) | (0.014) | (0.056) | (0.034) | (0.018) | (0.015) |

#### Country dummies

| Constant | No | Yes | No | Yes | No | Yes |
|          | 1.277* | 3.398 | -10.340\(^\ast\ast\) | 3.541 | 1.353* | 2.909 |
|          | (0.709) | (8.670) | (4.544) | (10.526) | (0.741) | (3.224) |

Likelihood

| Pseudo-R\(^2\)    | 0.1103114 | 0.1932594 | 0.1516268 | 0.217972 | 0.1131085 | 0.1913083 |
| Chi\(^2\)         | 173.3432 | 341.9192 | 71.30324 | 95.1459 | 136.9589 | 271.7571 |
| P-value           | 1.44e-29 | 1.59e-52 | 4.62e-10 | 4.01e-12 | 8.55e-23 | 8.83e-43 |
| N                 | 807 | 807 | 279 | 279 | 528 | 528 |

\(^1\) Dependent variable is integration incidence, corrected for the exposure (number of firms surveyed).
\(^2\) SME is the share of small and medium enterprises within population (firms with 2-49 employees and firms with 50-249 employees).
\(^3\) MES is the share of firms with multiple establishments in the country.
### A.3 Analysis including Ireland and Spain

Table 9: Group differences

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<th>EU</th>
<th>non-EU</th>
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</thead>
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<td>(2)</td>
<td>(1)</td>
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<tr>
<td>Integration incidence</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital-intensity</td>
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<td>0.110*</td>
<td>0.184*</td>
</tr>
<tr>
<td></td>
<td>(0.059)</td>
<td>(0.059)</td>
<td>(0.104)</td>
</tr>
<tr>
<td>Trust</td>
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<td>-0.790***</td>
<td>-0.802**</td>
</tr>
<tr>
<td></td>
<td>(0.183)</td>
<td>(0.180)</td>
<td>(0.349)</td>
</tr>
<tr>
<td>Export</td>
<td>0.394**</td>
<td>0.199</td>
<td>0.626*</td>
</tr>
<tr>
<td></td>
<td>(0.190)</td>
<td>(0.176)</td>
<td>(0.323)</td>
</tr>
<tr>
<td>EU</td>
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<td>-2.823</td>
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</tr>
<tr>
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<td>(0.169)</td>
<td>(2.426)</td>
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<tr>
<td>Labour productivity (sd)</td>
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</tr>
<tr>
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<td>(0.152)</td>
<td>(0.122)</td>
<td>(0.201)</td>
</tr>
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<td>GDP per capita</td>
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<td>0.251</td>
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<td>(0.072)</td>
<td>(0.947)</td>
<td>(0.186)</td>
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<td>SME</td>
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<td>-0.654**</td>
<td>-0.750</td>
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<td>(0.292)</td>
<td>(0.262)</td>
<td>(0.463)</td>
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<td>MES</td>
<td>0.269</td>
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</tr>
<tr>
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<td>(0.215)</td>
<td>(0.230)</td>
<td>(0.359)</td>
</tr>
<tr>
<td>Import competition</td>
<td>0.394</td>
<td>0.188</td>
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</tr>
<tr>
<td></td>
<td>(0.248)</td>
<td>(0.243)</td>
<td>(0.391)</td>
</tr>
<tr>
<td>High competition</td>
<td>-0.767***</td>
<td>-0.627**</td>
<td>0.361</td>
</tr>
<tr>
<td></td>
<td>(0.258)</td>
<td>(0.245)</td>
<td>(0.359)</td>
</tr>
<tr>
<td>Without import competition</td>
<td>-0.415</td>
<td>-0.783</td>
<td>-7.810*</td>
</tr>
<tr>
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<td>(1.619)</td>
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<td>Finance access difficulty (major)</td>
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<td>(0.283)</td>
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<td>0.013***</td>
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<td>(0.004)</td>
<td>(0.008)</td>
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<tr>
<td>Borrowing from foreign banks</td>
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<td>-0.011</td>
<td>0.047</td>
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</tr>
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<td></td>
<td>(0.625)</td>
<td>(7.118)</td>
<td>(1.593)</td>
</tr>
<tr>
<td>Likelihood</td>
<td>-955</td>
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<td>-1036.2</td>
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</tr>
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<tr>
<td>N</td>
<td>949</td>
<td>949</td>
<td>401</td>
</tr>
</tbody>
</table>

* SME is the share of small and medium enterprises within population (firms with 2-49 employees and firms with 50-249 employees);

** MES is the share of firms with multiple establishments in the country;

*p<0.10, ** p<0.05, *** p<0.01
### Table 10: Robustness check

<table>
<thead>
<tr>
<th>Integration incidence</th>
<th>All</th>
<th>EU</th>
<th>non-EU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(1)</td>
</tr>
<tr>
<td>Capital-intensity</td>
<td>0.312***</td>
<td>0.106**</td>
<td>0.215**</td>
</tr>
<tr>
<td>(investments)</td>
<td>(0.051)</td>
<td>(0.047)</td>
<td>(0.088)</td>
</tr>
<tr>
<td>Trust</td>
<td>-0.512***</td>
<td>-0.764***</td>
<td>-0.727**</td>
</tr>
<tr>
<td>(0.187)</td>
<td>(0.184)</td>
<td>(0.351)</td>
<td>(0.351)</td>
</tr>
<tr>
<td>Export</td>
<td>0.591***</td>
<td>0.336*</td>
<td>0.771**</td>
</tr>
<tr>
<td>(0.188)</td>
<td>(0.179)</td>
<td>(0.340)</td>
<td>(0.305)</td>
</tr>
<tr>
<td>EU</td>
<td>-0.239</td>
<td>-4.228*</td>
<td>0.129</td>
</tr>
<tr>
<td>(0.159)</td>
<td>(2.446)</td>
<td>(0.129)</td>
<td>(0.193)</td>
</tr>
<tr>
<td>Labour productivity</td>
<td>0.320**</td>
<td>0.238**</td>
<td>0.338</td>
</tr>
<tr>
<td>(sd)</td>
<td>(0.144)</td>
<td>(0.120)</td>
<td>(0.213)</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>-0.297***</td>
<td>1.288</td>
<td>0.123</td>
</tr>
<tr>
<td>(0.076)</td>
<td>(0.949)</td>
<td>(0.296)</td>
<td>(1.015)</td>
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<tr>
<td>SME</td>
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<td>-0.440*</td>
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<td>(0.293)</td>
<td>(0.267)</td>
<td>(0.470)</td>
<td>(0.486)</td>
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<td>-0.166</td>
</tr>
<tr>
<td>(0.226)</td>
<td>(0.240)</td>
<td>(0.357)</td>
<td>(0.387)</td>
</tr>
<tr>
<td>Import competition</td>
<td>0.502**</td>
<td>0.378</td>
<td>-0.301</td>
</tr>
<tr>
<td>(0.237)</td>
<td>(0.237)</td>
<td>(0.382)</td>
<td>(0.369)</td>
</tr>
<tr>
<td>High competition</td>
<td>-0.707***</td>
<td>-0.707***</td>
<td>0.477</td>
</tr>
<tr>
<td>(0.250)</td>
<td>(0.250)</td>
<td>(0.375)</td>
<td>(0.339)</td>
</tr>
<tr>
<td>Without import</td>
<td>-0.383</td>
<td>-0.318</td>
<td>-8.211*</td>
</tr>
<tr>
<td>competition</td>
<td>(1.814)</td>
<td>(1.605)</td>
<td>(4.470)</td>
</tr>
<tr>
<td>Finance access difficulty (major)</td>
<td>0.483*</td>
<td>0.128</td>
<td>-0.236</td>
</tr>
<tr>
<td>(0.275)</td>
<td>(0.288)</td>
<td>(0.536)</td>
<td>(0.524)</td>
</tr>
<tr>
<td>Borrowing from local</td>
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<td>0.010**</td>
<td>0.016**</td>
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<tr>
<td>banks</td>
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<td>(0.005)</td>
<td>(0.008)</td>
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<tr>
<td>Borrowing from foreign banks</td>
<td>-0.027*</td>
<td>-0.014</td>
<td>0.043</td>
</tr>
<tr>
<td>(0.016)</td>
<td>(0.013)</td>
<td>(0.039)</td>
<td>(0.030)</td>
</tr>
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<td>Country dummies</td>
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<td>Yes</td>
<td>No</td>
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<tr>
<td>Constant</td>
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<td>-11.031</td>
<td>-3.559*</td>
</tr>
<tr>
<td>(0.695)</td>
<td>(7.138)</td>
<td>(1.854)</td>
<td>(10.195)</td>
</tr>
<tr>
<td>Likelihood</td>
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<td>Likelihood, C</td>
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<td>-1022.8</td>
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<td>P-value</td>
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<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>(1)</th>
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<th>EU</th>
<th>(1)</th>
<th>(2)</th>
<th>non-EU</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SME</td>
<td>0.483*</td>
<td>0.128</td>
<td>-0.236</td>
<td>-0.110</td>
<td>0.728**</td>
<td>0.101</td>
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<tr>
<td>(0.275)</td>
<td>(0.288)</td>
<td>(0.536)</td>
<td>(0.524)</td>
<td>(0.302)</td>
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<tr>
<td>MES</td>
<td>0.296</td>
<td>0.064</td>
<td>-0.166</td>
<td>-0.481</td>
<td>0.446</td>
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<tr>
<td>(0.226)</td>
<td>(0.240)</td>
<td>(0.357)</td>
<td>(0.387)</td>
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</tr>
<tr>
<td>Import competition</td>
<td>0.502**</td>
<td>0.378</td>
<td>-0.301</td>
<td>-0.243</td>
<td>0.850***</td>
<td>0.764**</td>
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<tr>
<td>(0.237)</td>
<td>(0.237)</td>
<td>(0.382)</td>
<td>(0.369)</td>
<td>(0.271)</td>
<td>(0.298)</td>
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</tr>
<tr>
<td>High competition</td>
<td>-0.707***</td>
<td>-0.707***</td>
<td>0.477</td>
<td>0.471</td>
<td>-1.478***</td>
<td>-1.478***</td>
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<tr>
<td>(0.250)</td>
<td>(0.250)</td>
<td>(0.375)</td>
<td>(0.339)</td>
<td>(0.323)</td>
<td>(0.321)</td>
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</tr>
<tr>
<td>Without import competition</td>
<td>-0.383</td>
<td>-0.318</td>
<td>-8.211*</td>
<td>-9.267**</td>
<td>1.428</td>
<td>1.862</td>
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<tr>
<td>(1.814)</td>
<td>(1.605)</td>
<td>(4.470)</td>
<td>(4.671)</td>
<td>(1.902)</td>
<td>(1.487)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 SME is the share of small and medium enterprises within population (firms with 2-49 employees and firms with 50-249 employees).
2 MES is the share of firms with multiple establishments in the country.

*p<0.10, **p<0.05, ***p<0.01
A.4 Institutional frictions, trust and prepayment

As we have briefly discussed in the section 2.2 contracting friction in transition countries may be caused by the weak institutions in a significant degree. However, it is difficult to have any precise measure of the influence of contracting institutions on the firm behaviour. In order to analyze the contracting institutions we switch in our analysis to the concept of trust between firms guaranteed by the institutional environment.

Trust is an important factor for the formation of a new economic structure based on new networks of enterprises (Johnson et al., 2000). In the environment where the level of trust is extremely low, such as transition countries, initial industrial structures and systems of exchange tended to be perpetuated. Given that in transition countries the initial industrial structure inherited from the Soviet Union was characterized by extreme inefficiency, the difficulty in building new institutions constitutes an important obstacle for further development.

At the beginning of the transition period one of the obstacles for the entry of new firms and for the creation of new networks of production has been the presence of generalized default on payments and barter trade. These phenomena have been often considered in the literature as forms of dysfunctional institutions, reflecting an endemic lack of trust (Alesina and La Ferrara, 2002). In an environment where trust is extremely low (Van Ees and Bachmann, 2006) and nonpayment is widespread, firms often are forced to require prepayment, i.e. opt for the transactions on the "cash-in-advance" terms. The choice of prepayment in the described environment compensates for the difficulties of assessing the customer’s ability to pay in the relationships with customers and compensates for the lack of their partners’ trust in their supply relationships (Raiser et al., 2008). Thus, prepayment can be considered a direct reflection of trust between firms.

According to Raiser et al. (2008), the quality of country institutions in transition countries is highly correlated with the trust between firms measured as prepayment levels. In particular, the correlation concerns the institutions affecting contracting and contract enforcement (courts and legal systems). The empirical evidence presented by Raiser et al. (2008) shows that higher court’ fairness and legal efficiency as well as information-sharing through non-governmental networks are associated with higher levels of trust. Theoretically the model developed by Teraji (2008) also support this connection stating that low levels of trust are the result of equilibrium with the weak property rights institutions. In fact, from the table 4 we can see that the higher levels of prepayment are observed in the country groups with weaker contracting institutions.
Empirical studies focusing on the use of prepayment by firms in more developed countries (Mateut, 2014; Antras and Foley, 2015) also document positive connection between the weakness of contracting institutions and levels of prepayment. Mateut (2014) argues that higher transaction risks connected with weaker contracting enforcement drive higher prepayment levels in the transactions of French firms. Antras and Foley (2015) show that also in the international trade the US firms’ choice of prepayment is positively connected with how weak are the contracting institutions of the country where importer is located. Taking into account previously discussed connection between prepayment and level of trust in transition countries, it is evident that lower trust (higher levels of prepayment) is connected with the weaker contracting institutions.