Institutions and Participation in Global Value Chains

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Abstract

Value chains break up the production process into different stages that globally distributed. In general, activities that are more skill, capital, and technology intensive take place in advanced economies while the less-skilled, more labor-intensive activities move to developing countries to benefit from lower wages there. However, participation in global value chains (GVCs) is quite unbalanced in the developing world. The ones deeply involving in value chains are mostly in East and Southeast Asia, whereas there are few in South Asia or Africa. Furthermore, within large countries such as China there are also great variations in the extent to which different locations participate in global value chains. This paper examines this variation and attempts to explain it in terms of national level institutions as well as local investment climates. Cross country analysis shows that variations in national institutions, such as the rule of law, political stability play important roles in determining the involvement in GVCs. Firm level evidences of China suggest that the quality of local institutions is positively linked to firms' decision on participation in GVCs.

Key Words:

Institutional Quality, Global Value Chains (GVCs)

1. Introduction

It has been long recognized that institutions play important roles in economic development (North, 1990, Knack and Keefer, 1997; Acemoglu et al., 2001, 2005). Previous studies also suggest that institutions are important sources of comparative advantage and have long-standing impacts on international trade (see survey in Nunn and Trefler, 2013). Recent trend in globalization shows rapid expansion of global value chains (GVCs), especially that many developing and emerging economies actively participate into GVCs as one of major development strategies. The extensions of GVCs across regional borders will face the significant discontinuity in the institution quality, and it's important to understand how regional institutions affect the patterns of GVCs. This paper contributes to the literature by examining the linkage between institutions and participation in GVCs.

In this paper we provide both macro level and micro level evidences that institutions play important roles in GVC participations. In cross-country analysis, first, we adopt new method in Koopman et al. (2015), Wang et al. (2015) and Wang et al. (2016) to measure the country-level GVC participation. They provide new accounting framework to quantify the extent of GVC involvement at the country/bilateral-sector level from both forward and backward-linkage perspectives.

Second, we link the GVCs participation index with various indictors of institutions using the standard empirical framework in trade-institution literature (e.g., Romalis, 2004, Levchenko, 2007, and Nunn, 2007). For the forward linkage based GVC participation index, we find that the countries with better institutional quality have a higher level of GVC participation in institutionally intensive sectors and experience a more rapid increase in GVC participation. However, this positive correlation between GVC participation and institutions become less significant if we use backward linkage GVC participation.

We further use the gravity framework to investigate the effects of institutional quality on bilateral GVC linkage development. The results suggest that the countries with weak institutions are "favored" by upstream countries in the development of bilateral GVC production linkages, and thus they tend to have a high backward linkage GVC participation ratio.

In micro level study, we focus on the case of China and investigate how local institutions affect the firm-level decision on GVC participation. China provides a good setup to study this question because of substantial regional disparity within China. Recent studies have emphasized the important role of regional decentralization and regional competition in China's rapid growth (Xu, 2011, Dollar, 2014). Local institution (or local investment climates) may significantly affect the location and unbalanced distributions of GVCs across regions.

To measure GVC participations, we define the four choices faced by Chinese firms: (1) to use domestic inputs to produce for domestic market (D2P); (2) to use domestic inputs to export (D2E); (3) to import foreign inputs for producing (I2P); (4) to import foreign inputs for exporting (I2E). We use the World Bank enterprise survey 2005 to investigate the determinants of GVC participation. The results suggest that better local institutions, including less government intervention, higher custom efficiency, better contract enforcement and more access to bank loan, significantly promote the firms' participation in GVCs. Moreover, these effects are only significant for non-state enterprises.

The remainder of this paper is organized as follows: Section 2 provides country level evidences of close link between institutions and GVC participations. Section 3 examines the impact of local institutions on the firm-level decision on GVC participation, and Section 4 concludes the paper.

2. The Impact of Institutions on GVCs: Country-Level Evidences

The relationship between institutional quality, international trade and development has received considerable attention in the literature. For example, the quality of institutions was identified as an important determinant of trade flows in Levchenko (2007) and significant effects of institutional quality on economic development has also been found in Acemoglu et al. (2001). Other related literature includes Dollar and Kraay (2003), Rodrik et al. (2002), Jansen and Nordas (2004).

However, due to the limitations of data and methodology, there are few studies that focus on the perspective of GVC involvement. But in recent few years, the advent of new statistical methodology and International Input-Output Database has allowed us to precisely quantify the degree of GVC participation. On this basis, we will empirically investigate the determinants of GVC participation and its growth rate in this section.

2.1. Determinants of GVC participation

To answer the first question, we modify the empirical model developed by Romalis (2004) to investigate the determinants of GVC participation. Follow Levchenko (2007), we introduce an institution factor into the model and control for skill and capital factors as Romalis (2004) did. Specifically, we estimate the following regression model:

$$\begin{aligned} GVCP_{ict} = \beta_0 + \beta_1 insdep_{ict} \times ins_{ct} + \beta_2 k\text{-}ratio_{ict} \times \ln\left(k\text{-}endow_{ct}\right) \\ + \beta_3 skill\text{-}ratio_{ict} \times skill\text{-}endow_{ct} + \alpha_i + \gamma_c + \delta_t + \varepsilon_{ict} \end{aligned} \tag{1}$$

where i stands for industry, c for country and t for year. a_i, γ_c and δ_t are industry, country, and year dummies. The dependent variable $GVCP_{ict}$ is the country-sector level GVC participation index (forward linkage based) developed in WWYZ (2016). To identify the GVC related production activities, they decompose the value-added generated from each

country-sector pair into three main components (as shown in equation (1)) to reflect different types of production activities.

$$
\begin{aligned}
Va^s &= \hat{V}^s X^s = \hat{V}^s L^{ss} Y^{ss} + \hat{V}^s L^{ss} \sum_{r \neq s}^{M} Y^{sr} + \hat{V}^s L^{ss} \sum_{r \neq s}^{M} A^{sr} X^r \\
&= \underbrace{\hat{V}^s L^{ss} Y^{ss}}_{(1-DVA\_D)} + \underbrace{\hat{V}^s L^{ss} \sum_{r \neq s}^{M} (Y^{sr} + A^{sr} L^{rr} Y^{rr})}_{(2-DVA\_RT)} + \underbrace{\hat{V}^s L^{ss} \sum_{r \neq s}^{M} A^{sr} \sum_{u}^{M} B^{ru} \sum_{t}^{M} Y^{ut} - \hat{V}^s L^{ss} \sum_{r \neq s}^{M} A^{sr} L^{rr} Y^{rr}}_{(3-DVA\_GVC)} \\
&= \underbrace{\hat{V}^s L^{ss} Y^{ss}}_{(1-DVA\_D)} + \underbrace{\hat{V}^s L^{ss} \sum_{r \neq s}^{M} (Y^{sr} + A^{sr} L^{rr} Y^{rr})}_{(2-DVA\_RT)} + \underbrace{\hat{V}^s L^{ss} \sum_{r \neq s}^{M} A^{sr} (\sum_{u}^{M} B^{ru} Y^{ur} - L^{rr} Y^{rr})}_{(3a-DVA\_GVC\_r)} \\
&+ \underbrace{\hat{V}^s L^{ss} \sum_{r \neq s}^{M} A^{sr} \sum_{u}^{M} B^{ru} Y^{us}}_{(3b-DVA\_GVC\_s=RDV\_F)} + \underbrace{\hat{V}^s L^{ss} \sum_{r \neq s}^{M} A^{sr} \sum_{u}^{M} B^{ru} \sum_{t \neq s,r}^{M} Y^{ut}}_{(3c-DVA\_GVC\_t)}
\end{aligned}
\tag{2}
$$

This decomposition method can be illustrated as Figure 1.

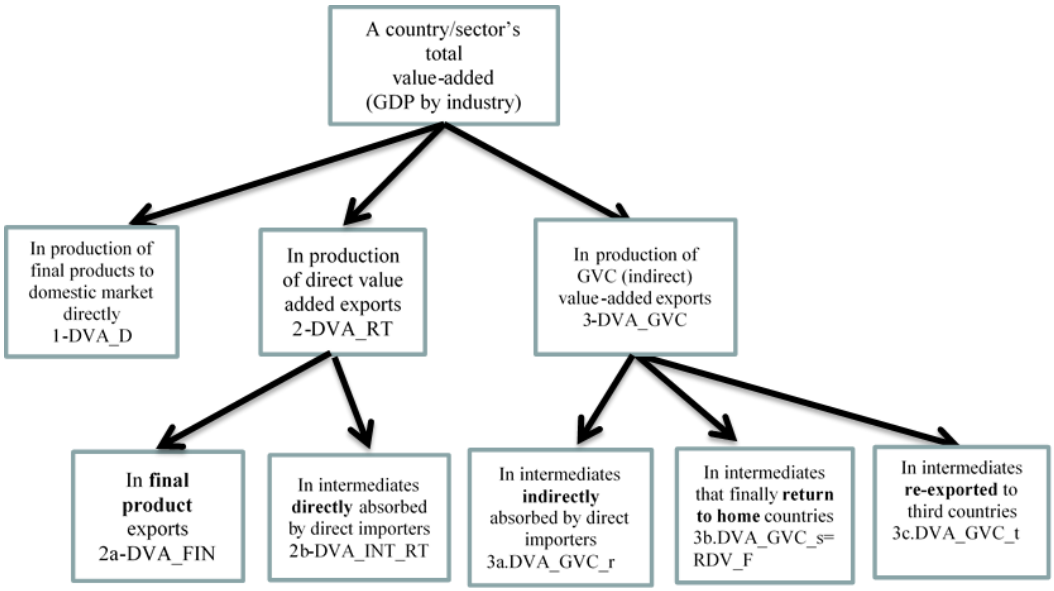

Figure 1 Decomposition of GDP by industry

Source: WWYZ (2016), Figure 1

where the first term DVA_D denotes value added generated from pure domestic production activities, which is domestically produced and consumed and there is no border crossing activity involved. The second term DVA_RT is the value added embodied in final or intermediate goods exports that are directly absorbed by trading partners, which crosses the border only once. Value added embodied in the last term DVA_GVC is generated from GVC

related production activities, which reflects deeper cross country production sharing (with at least two border crossings) and can be further decomposed into three sub-terms according to the final destinations of absorption. Then the GVC participation index for country s, industry i can be defined as

$$\text{GVC participation index} = \frac{DVA\_GVC_{\text{i}}^{\text{s}}}{GDP_{\text{i}}^{\text{s}}}$$

This participation index can be understood as the percentage of GDP that flows into the GVC production network and would experience at least two border crossings.

Three interaction terms in the right hand side of equation (1) are included to control for the effects of skill, capital and institution factors on GVC participation.

$K\text{-}ratio_{ict}$ is computed at the industry level as the ratio of capital compensation to value added (capital expenditure ratio) and $K\text{-}endow_{ct}$ is the capital endowment at the country level, measured as real fixed capital stock per worker (capital-labor ratio). $Skill\text{-}ratio_{ict}$ and $Skill\text{-}endow_{ct}$ are industry and country-level measures of skill intensity, measured as share of hours worked by high/Medium-skilled persons engaged. All these four indexes are computed from the WIOD socio-economic accounts.

In the institutional quality interaction term, $Insdep_{ict}$ is the industry-level institutional dependence. Following Blanchard and Kremer (1997), Cowan and Neut (2002) and Levchenko (2007), we use the Herfindahl-Hirschman Index (HHI) of intermediate input use as a proxy for institutional dependence, which was computed from the WIOD database as

$$insdep_{ict} = -HHI_{ict} = -\sum_{j=1}^{35}\sum_{m=1}^{41}(a_{mjt}^{cit})^2$$

where j stands for industry and m for country. a_{mjt}^{cit} is the dollar amount of country m, industry j's output needed to produce one dollar worth of country c, industry j's output. If large variety of sporadic intermediate inputs is used in production (a lower *HHI*), then the institutional quality will be important to the producers (a higher *insdep*).

Country-level measures of intuitional quality ins_{ct} (Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality and Rule of Law) are adopt from the Worldwide Governance Indicators (WGI) dataset developed by Kaufmann, Kraay and Mastruzzi. This dataset provides yearly data for 1996, 1998, 2000, and 2002 to 2014. In the baseline specification, we estimate equation (2) over the period 2002 to 2011 (WIOD data ends in year 2011), and use the other three years (1996, 1998 and 2000) in the robustness check.

The benchmark regression results are shown in Table 1. The coefficients on the institutional interaction terms, in which we are most interested, are significantly positive for all four institutional quality measures. These results indicate that countries with better institutions have higher GVC participation ratio in institutionally intensive sectors. In other words, institutional quality acts as an important determinant of GVC participation. Besides that, the coefficients on the other two interaction terms are also positive and significant in all regressions, which confirms the well-known fact that capital and skilled labor endowments are important sources of comparative advantage in global production sharing.

[Table 1 about here]

To ensure the validity of our initial results, we now conduct several robustness checks. First of all, to control for the potential effects of financial crisis, we split the sample period into two sub-samples, and add year 1996, 1998 and 2002 to the first sub-sample. As shown in Table 2, the positive analogous effect in institutional quality and institutional dependence is still significant for both pre- and post-crisis periods.

[Table 2 about here]

Then we consider an alternative measure of GVC participation, which is defined as the percentage of sectoral GDP that directly or indirectly embodied in intermediate input exports.

$$\text{GVC participation index 2} = \frac{DVA\_GVC_i^s + DVA\_INT\_RT_i^s}{GDP_i^s}$$

In other words, Term 2b in Figure 1, domestic value added that directly absorb by direct importers as intermediate inputs (with only one border crossing),is added back. Regression results shown in Table 3 indicate that our previous findings still hold true for the first two regressions, but are not significant if we use Government Effectiveness or Rule of Law as proxy for country-level institutional quality.

[Table 3 about here]

For robustness check, we also use an alternative measure of industry level institutional dependence. Instead of HHI, now the institutional dependence is measured as the share of top 30 intermediate inputs in total intermediate input use. Table 4 presents the results using alternative institutional dependence measure, again, we find significant and positive coefficients on the institutional interaction terms for all regressions.

[Table 4 about here]

However, it is worth noting that the above findings are no longer significant when measuring the level of GVC participation from the backward linkage perspective (Table 5). In fact, as we will show in section 2.3, countries with weaker institutional quality are actually more favored by upstream suppliers.

[Table 5 about here]

2.2. Institutional Quality and the Increase of GVC participation ratio

Now we consider the second question: Does GVC participation ratio increase more rapidly in countries with better institutions? To answer this, we adopt the following cross-country regression model:

$$\begin{aligned} GVCP_{ic,T} = {} & \beta_0 + \beta_1 GVCP_{ic,T-k} + \beta_2 ins_{c,T\sim T-k} + \beta_3 GDP_{c,T\sim T-k} \\ & + \beta_4 X_{ic,T\sim T-k} + \beta_5 Z_{c,T\sim T-k} + \alpha_i + \varepsilon_{ic} \end{aligned} \quad (3)$$

where $GVCP_{ic,T}$ is country c, industry i's GVC participation index as we defined before, and $GVCP_{ic,T-k}$ denotes the k-year lag of $GVCP_{ic,T}$, where T equals 2011 and T-k equals 2002 in our benchmark regressions. Other control variables, $Inst_{c,T\sim T-k}$, $Gov_{c,T\sim T-k}$, $X_{ic,T\sim T-k}$ and $Z_{c,T\sim T-k}$ are measured as averages over the period between T and T-k.$X_{ic,T\sim T-k}$ and $Z_{c,T\sim T-k}$ denote other country-sector level and country-level control variables as we have already defined in equation (2). We also control for the industry fixed effects by adding a dummy variable α_i.

[Table 6 about here]

The benchmark regression results presented in Table 6 show that "good institutions" are associated with faster growth in GVC participation, as coefficients on all four institutional indicators are positive and highly significant. In addition, we have noticed that the growth rate of GVC participation is negatively related with countries' economic size, which reflects the facts that many developing countries are rising rapidly in the global production network.

[Table 7 about here]

As we did in section 4.1.1, we test the robustness of the above findings by excluding the after-crisis sample period and using alternative measure of GVC participation. As shown in Table 7, the previous regression results are still robust.

2.3. Institutional Quality and the Development of Bilateral GVC linkages

The GVC participation index we use has another advantage: It can be estimated at the bilateral-sector level, which enables us to empirically test the effects of institutional quality on bilateral GVC linkage development.

On the basis of equation (3), we replace the dependent variable with bilateral GVC participation indexes and add partner countries' institutional quality indicators, economic size and fixed effects γ_m into the regression model.

$$GVCP_{icm,T} = \beta_0 + \beta_1 GVCP_{icm,T-k} + \beta_2 ins_{c,T\sim T-k} + \beta_3 ins_{m,T\sim T-k} + \beta_3 GDP_{c,T\sim T-k} + \beta_3 GDP_{m,T\sim T-k} + \beta_4 X_{ic,T\sim T-k} + \beta_5 Z_{c,T\sim T-k} + \alpha_i + \gamma_m + \varepsilon_{icm} \quad (4)$$

where *c* refers to the value added source country and m refers to the direct importer. $GVCP_{icm,T}$ is the percentage of country *c*'s GDP that flows into the GVC production network via country *c*'s exports to direct importer *m*. So in the bilateral GVC relationship between *c* and *m*, *c* is located relatively upstream and m is located relatively downstream.

[Table 8 about here]

As shown in Table 8, an interesting finding is that the effects of institutional quality on bilateral GVC linkage development are totally opposite in upstream source countries and downstream direct importers. Direct importers with weaker intuitional quality show a faster growth in bilateral GVC production linkages with their upstream suppliers. Moreover, as shown in Table 9, this finding is also robust when using the backward linkage participation index.

[Table 9 about here]

To make the regression coefficients comparable across source countries and industries, we normalize the bilateral GVC participation index as

$$Normalized\ GVCP_{icm,T} = \frac{GVCP_{icm,T}}{\sum_{m\neq c}^{41} GVCP_{icm,T}}\ or\ \frac{GVCP_{icm,T}}{GVCP_{ic,T}} \quad (5)$$

This normalized index can better reflect the relative importance of country m among all partner countries in country c's forward linkage GVC participation. The regression results in Table 10 again show that the coefficients on direct importers' institutional indicators are significantly negative, which indicates that the downstream direct importers with weaker institutional quality are "favored" by upstream suppliers in the bilateral GVC linkage development. In the meanwhile, the effects of source countries' institutional quality are no longer significant when use normalized dependent variable $GVCP_{icm,T}$.

[Table 10 about here]

3. Local Institutions and GVCs Participation: Firm-level Evidences

3.1. Local Institutions and Firm Level Decision

There are a few studies examine the impact of regional institutions on firm level decision. For example, Long (2011) find that a more active court system is associated with more investment, more adoption of technology, more innovation, and more complex transactions. Ang, Cheng and Wu (2014) found that the effective enforcement of intellectual property rights at the provincial level is critical in encouraging financing and investing in R&D. Ma, Qu and Zhang (2012) use firm-level data from 22 developing and transition countries to examine the linkage between institution and export. They found that a poor legal system, weak contractual enforcement, and corruption significantly reduce the exports of complex goods, but this effect is ambiguous for simple goods.

3.2. Data and Estimation Strategy

We use World Bank Investment Climate Survey data 2005 to investigate firms' decision on participation in GVCs in response to regional institutions. The survey covers 12,400 firms in 30 manufacturing industries and 120 cities in China.[1] To measure firm-level GVCs participation, we define the following four choices: to use domestic inputs to produce for domestic market (D2P), to use domestic inputs to export (D2E), to import foreign inputs for producing (I2P), and to import foreign inputs for exporting (I2E). To identify each firm's importing/exporting status, we use the information obtained from two survey questions. In

[1]For additional details of this dataset, please see www.enterprisesuveys.org/Data. We exclude observations that meet the following criteria: (a) the sum of the shares of sales in different markets is greater than 100%; (b) the sum of the shares of different wage components is greater than 100%; and (c) the share of workers educated to college level and above is greater than 100%. Omitting the outliers reduces our sample to 11,709 firms.

response to question A2, firms report their percentages of sales in different markets. We define a firm as an exporter if the firm sells to a foreign market. Survey question G3 asks firms to specify the average number of days necessary for customs clearance if they import raw materials or components. We define a firm as an importer of foreign inputs if the firm answers this question. In our sample, D2P accounts for about 54% of the firms, D2E accounts for 11%, I2P accounts for 8%, and I2E accounts for 27% of firms.

We adopt a multinomial Logit model to test the determinants of GVCs participation decision. We denote the strategic choice of firm *i* as $Y_i = j$, where j is equal to 0, 1, 2 and 3, and indicates D2P, D2E, I2P and I2E, respectively. A firm i will choose mode j if the profit in mode j is higher than that in other modes. We assume that the profit from mode j for firm i, $\pi_{ij} = \beta_j' X_i + \varepsilon_{ij}$. The profit is composed of two parts: a deterministic termthat is affected X_i, including both firm attributes and regional attributes, and an unobserved idiosyncratic term, ε_{ij}, that is distributed independently and according to a Weibull distribution. The probability of firm i choose the mode j is given by:

$$\Pr(Y_i = j) = \frac{\exp(\beta_j' X_i)}{\sum_{k=0}^{3} \exp(\beta_k' X_i)}. \qquad (6)$$

where X_i is a vector of firm attributes and regional attributes which do not vary across the different choices. β_j is the vector of corresponding coefficients. We use the case of D2P as the base category and normalize the corresponding coefficient $\beta_0 = 0$ .The maximum likelihood method is applied to estimate this model. The exponential value of the estimated coefficient β_j for an independent variable should be interpreted as the change in the probability of choice j (D2E, I2P, I2E) relative to the probability of D2P, for one unit change in the independent variable.

Quality of Local Institutions

The key determinants in our study are the quality of local institutions. We use several measures of local institutions: (1) *Government Intervention*, defined as time spent on bureaucratic interactions with four government departments - taxation, public security, environment, labor and social security; (2) *Customs Efficiency*, defined as the number of days for custom clearance; (3) *Contract Enforcement*, defined as the percent of cases in commercial or other legal disputes were the company's legal contracts or properties protected (a favorable verdict was passed and enforced); (4) *Access to Loan*, defined as the proportion of firms with access to bank loan in total firms.

Other Determinants

For other determinants of GVC participation, the city attributes include: (1) the logarithms of city per capita GDP; (2) city competition, defined as the Herfindahl-Hirschman Index (HHI) of firms' sale within same city and same industry; (3) labor cost, measured by the logarithms of city average wage; (4) R&D share, measured by the proportion of firms which invest in Research & Development (R&D) in total firms; (5) Transportation cost, measured by the logarithms of the cost of trucking a 20-foot container to a seaport.

The firm attributes include: (1) five ownership dummies, representing state-owned enterprises, collectively-owned enterprises, private firms, HMT-invested firms, foreign firms. The reference category is the share joint-owned firms; (2) Capital labor ratio, measured by total fixed asset divided by the total number of employees; (3) Firm size, measured by the logarithms of total number of employees. (4) Firm age, which is the number of years that the firm has been established. (5) Productivity, which is measured by total factor productivity (TFP). We use Levinsohn and Petrin's (2003) approach to estimate TFP separately for each industry. Finally, industrial dummies are included to control for fixed industrial variations in GVC participation.

[Table 11 about here]

The summary statistics for the city and firm characteristics are reported in Table 11. Column 1, 2 and 3 reports the statistics for total sample, the firms involving in GVCs (including D2E, I2P and I2E) and domestic firms (D2P), respectively. For firm attributes, the firms involving in GVCs are older, larger, more capital-intensive and more productive than domestic counterparts.

3.3. Estimation Results

The baseline results are reported in Table 12. The results suggest that the quality of local institutions is significantly linked to the firm-level decision on GVC participation. Columns 1-3 in Table 12 show that the estimated coefficients on *Government Intervention* are negative and significant (at the 5% level) for I2E, I2P and D2E, indicating that less government intervention is correlated with higher probability of GVC participation. Column 4-6 in Table 12 show that the estimated coefficients on *Custom Efficiency* are negative and significant for I2P and I2E, indicating that less time for customs clearance increase the probability of GVC participation. Column 7-9 in Table 12 show that the estimated coefficients on *Contract Enforcement* are positive and significant for D2E and I2E, indicating that property institution is positively correlated with the probability of GVCs participation. Column 10-12 in Table 12 show that the estimated coefficients on *Access to Loan* are positive and significant for D2E and I2E, indicating that access to external finance is one determinant of GVC participation.

[Table 12 about here]

For ownership structure, the highest probability of GVC participation is found in the firms with foreign and HMT ownership, followed by those with private and corporate ownership. The state-owned and collectively-owned firms have the lowest probability of GVCs participation. With regard to other firm attributes, the larger firms, more capital intensive, and more productive firms have higher probability of GVC participation. These findings are consistent with those of previous studies. For other city attributes, the

probability of GVCs participation is positively correlated with economic development level and innovation, but negatively associated with labor cost and transport cost. The impact of city competition on GVC participation is insignificant.

3.4. Robustness Check

For robustness check, first, we include all four indicators of local institutions in the regression and report the estimation results in Columns 1-3 of Table 13. The results are consistent with the ones in Table 12, suggesting that less government intervention, higher custom efficiency, better contract enforcement and more access to bank loan significantly increase the probability for the firms to involve in GVCs.

[Table 13 about here]

Second, we split total sample into the state-owned and the non-state enterprises and re-estimate the model. The concern is that non-state enterprises are more likely to be constrained by local institutions than SOEs. The results for two samples are reported in Column 4 – 9 in Table 13. For the non-state enterprises, the results are similar to the ones of full sample. However, for the SOEs, the coefficients of institutional variables are not statistically significant. These findings suggest that the impacts of local institutions on GVC participation decision are stronger for non-state enterprise than SOEs.

4. Conclusion

This study examines the linkage between quality of institutions and GVC participation. We contribute to the literature by providing both macro level and micro level evidences supporting the important role of institutions in GVC participation.

In cross country analysis, we show that the cross-country variations in institutions are closely related to different level of GVC participation (with forward and backward linkage).

For forward GVC participation, we find that the countries with better institutional quality have a higher level of GVC participation in institutionally intensive sectors and experience a more rapid increase in GVC participation. However, the countries with weak institutions tend to have high backward GVC participation because they are "favored" by upstream countries in the development of bilateral GVC production linkages.

In firm-level analysis, we link local institutions (or local investment climates) to firm level decision on GVCs participation. We find that less government intervention, higher custom efficiency, better contract enforcement and more access to bank loan significantly increase the probability for the firms to involve in GVCs, and these impacts of local institutions are stronger for non-state enterprises than state-owned enterprises.

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Table 1 Benchmark Regression Results: Determinants of GVC participation

LHS variable:	2002-2011			
$GVCP_{ict}$	(1)	(2)	(3)	(4)
$Insdep_{ict} \times Regulatory_{ct}$	0.0400***			
	(0.0102)			
$Insdep_{ict} \times Stability_{ct}$		0.0417***		
		(0.00842)		
$Insdep_{ict} \times Gov_{ct}$			0.0337***	
			(0.00999)	
$Insdep_{ict} \times Law_{ct}$				0.0261***
				(0.00899)
$K\text{-}ratio_{ict} \times \ln(K\text{-}endow_{ct})$	0.00239***	0.00229***	0.00257***	0.00250***
	(0.000849)	(0.000843)	(0.000852)	(0.000850)
$Skill\text{-}ratio_{ict} \times Skill\text{-}endow_{ct}$	0.0660***	0.0656***	0.0647***	0.0654***
	(0.0122)	(0.0122)	(0.0122)	(0.0122)
Constant	0.00801*	0.00601	0.00744*	0.00580
	(0.00445)	(0.00418)	(0.00452)	(0.00438)
Country fixed effects	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Observations	8,995	8,995	8,995	8,995
R-squared	0.716	0.716	0.716	0.716

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 2 Robustness Check: Financial Crisis

LHS variable:	1996, 1998, 2000, 2002-2008				2009-2011			
$GVCP_{ict}$	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Insdep_{ict} \times Regulatory_{ct}$	0.0368***				0.0925***			
	(0.00818)				(0.0275)			
$Insdep_{ict} \times Stability_{ct}$		0.0365***				0.0522**		
		(0.00674)				(0.0211)		
$Insdep_{ict} \times Gov_{ct}$			0.0326***				0.0921***	
			(0.00776)				(0.0282)	
$Insdep_{ict} \times Law_{ct}$				0.0272***				0.0551**
				(0.00734)				(0.0246)
$K\text{-}ratio_{ict} \times \ln(K\text{-}endow_{ct})$	0.00238***	0.00222***	0.00250***	0.00248***	0.000151	-3.76e-05	0.000650	0.000309
	(0.000728)	(0.000723)	(0.000729)	(0.000728)	(0.00210)	(0.00209)	(0.00211)	(0.00210)
$Skill\text{-}ratio_{ict} \times Skill\text{-}endow_{ct}$	0.0443***	0.0433***	0.0429***	0.0429***	0.0169	0.0163	0.0139	0.0157
	(0.00972)	(0.00974)	(0.00972)	(0.00974)	(0.0414)	(0.0418)	(0.0414)	(0.0417)
Constant	-0.000255	-0.00187	-0.000444	-0.00137	0.0397***	0.0257*	0.0383**	0.0316**
	(0.00360)	(0.00342)	(0.00362)	(0.00360)	(0.0152)	(0.0141)	(0.0152)	(0.0148)
Country fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Observations	12,023	12,023	12,023	12,023	709	709	709	709
R-squared	0.711	0.711	0.711	0.711	0.697	0.694	0.696	0.694

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 3Robustness Check: Alternative Measures of GVC Participation

LHS variable:	2002-2011			
$GVCP2_{ict}$	(1)	(2)	(3)	(4)
$Insdep_{ict} \times Regulatory_{ct}$	0.0508**			
	(0.0229)			
$Insdep_{ict} \times Stability_{ct}$		0.0646***		
		(0.0220)		
$Insdep_{ict} \times Gov_{ct}$			0.0354	
			(0.0222)	
$Insdep_{ict} \times Law_{ct}$				0.0169
				(0.0209)
$K\text{-}ratio_{ict} \times \ln(K\text{-}endow_{ct})$	0.00930***	0.00916***	0.00947***	0.00933***
	(0.00195)	(0.00193)	(0.00196)	(0.00196)
$Skill\text{-}ratio_{ict} \times Skill\text{-}endow_{ct}$	0.207***	0.206***	0.205***	0.206***
	(0.0263)	(0.0263)	(0.0263)	(0.0263)
Constant	0.0727***	0.0714***	0.0706***	0.0671***
	(0.0109)	(0.0104)	(0.0110)	(0.0107)
Country fixed effects	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Observations	8,995	8,995	8,995	8,995
R-squared	0.708	0.708	0.708	0.708

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 4Robustness Check: Alternative Measures of Institutional Dependence

LHS variable:	2002-2011			
$GVCP_{ict}$	(1)	(2)	(3)	(4)
$Insdep\_T30_{ict} \times Regulatory_{ct}$	0.0320***			
	(0.00486)			
$Insdep_{ict} \times Stability_{ct}$		0.0290***		
		(0.00511)		
$Insdep_{ict} \times Gov_{ct}$			0.0278***	
			(0.00460)	
$Insdep_{ict} \times Law_{ct}$				0.0231***
				(0.00462)
$K\text{-}ratio_{ict} \times \ln(K\text{-}endow_{ct})$	0.00244***	0.00225***	0.00264***	0.00254***
	(0.000850)	(0.000843)	(0.000849)	(0.000847)
$Skill\text{-}ratio_{ict} \times Skill\text{-}endow_{ct}$	0.0653***	0.0644***	0.0637***	0.0647***
	(0.0122)	(0.0122)	(0.0122)	(0.0122)
Constant	0.0136***	0.00888**	0.0129***	0.0104**
	(0.00459)	(0.00431)	(0.00465)	(0.00457)
Country fixed effects	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Observations	8,995	8,995	8,995	8,995
R-squared	0.717	0.716	0.716	0.716

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 5 Determinants of GVC participation

(Backward Linkage GVC participation Index)

LHS variable:	2002-2011			
Backward GVCP$_{ict}$	(1)	(2)	(3)	(4)
Insdep_T30$_{ict}$×*Regulatory$_{ct}$*	0.0643			
	(0.0677)			
Insdep$_{ict}$×*Stability$_{ct}$*		0.0331		
		(0.0407)		
Insdep$_{ict}$×*Gov$_{ct}$*			0.0360	
			(0.0682)	
Insdep$_{ict}$×*Law$_{ct}$*				0.00205
				(0.0573)
K-ratio$_{ict}$×ln(*K-endow$_{ct}$*)	-0.000966	-0.00111	-0.000819	-0.00107
	(0.00226)	(0.00222)	(0.00242)	(0.00238)
Skill-ratio$_{ict}$×*Skill-endow$_{ct}$*	0.141	0.140	0.139	0.140
	(0.0954)	(0.0953)	(0.0950)	(0.0953)
Constant	-0.0278	-0.0347**	-0.0319	-0.0380**
	(0.0196)	(0.0173)	(0.0205)	(0.0190)
Country fixed effects	YES	YES	YES	YES
Industry fixed effects	YES	YES	YES	YES
Year fixed effects	YES	YES	YES	YES
Observations	8,995	8,995	8,995	8,995
R-squared	0.262	0.262	0.262	0.262

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 6Benchmark Regression Results:
Institutional Quality and the Increase of GVC participation ratio

LHS variable:	2002-2011			
$GVCP_{ic,T}$	(1)	(2)	(3)	(4)
$Regulatory_{c,T\sim T-k}$	0.00556***			
	(0.00148)			
$Stability_{c,T\sim T-k}$		0.00488***		
		(0.00128)		
$Gov_{c,T\sim T-k}$			0.00348***	
			(0.00126)	
$Law_{c,T\sim T-k}$				0.00292***
				(0.00110)
$GVCP_{ic,T-k}$	0.952***	0.952***	0.955***	0.957***
	(0.0339)	(0.0338)	(0.0343)	(0.0339)
$GDP_{c,T\sim T-k}$	-0.00129*	-0.000896	-0.00157**	-0.00146**
	(0.000711)	(0.000727)	(0.000731)	(0.000722)
$Skill\text{-}Endow_{c,T\sim T-k}$	-0.00268	-0.00332	-0.000989	-7.74e-05
	(0.00876)	(0.00880)	(0.00876)	(0.00877)
$ln(K\text{-}Endow_{c,T\sim T-k})$	0.00152***	0.00142***	0.00129***	0.00126***
	(0.000458)	(0.000455)	(0.000456)	(0.000456)
$Skill\text{-}ratio_{ic,T\sim T-k}$	0.0117	0.0123	0.0120	0.0118
	(0.00768)	(0.00766)	(0.00770)	(0.00771)
$K\text{-}ratio_{ic,T\sim T-k}$	-0.00292	-0.00478	-0.00548	-0.00546
	(0.00674)	(0.00654)	(0.00667)	(0.00669)
Constant	0.0192**	0.0199**	0.0239***	0.0234***
	(0.00887)	(0.00900)	(0.00885)	(0.00891)
Industry Fixed Effects	YES	YES	YES	YES
Observations	1,291	1,291	1,291	1,291
R-squared	0.898	0.898	0.898	0.898

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 7 Robustness Check:
Exclude the Period of Financial Crisis& Alternative Measures of GVC Participation

LHS variable:	2002-2008				2002-2011			
$GVCP_{ic,T}$ / $GVCP2_{ic,T}$	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
$Regulatory_{c,T\sim T-k}$	0.00406***				0.0236***			
	(0.00142)				(0.00330)			
$Stability_{c,T\sim T-k}$		0.00428***				0.0187***		
		(0.00128)				(0.00297)		
$Gov_{c,T\sim T-k}$			0.00294***				0.0159***	
			(0.00113)				(0.00285)	
$Law_{c,T\sim T-k}$				0.00243**				0.0154***
				(0.00103)				(0.00251)
$GVCP_{ic,T-k}$	1.036***	1.035***	1.037***	1.038***	0.878***	0.881***	0.882***	0.882***
	(0.0310)	(0.0311)	(0.0312)	(0.0310)	(0.0245)	(0.0243)	(0.0249)	(0.0245)
$GDP_{c,T\sim T-k}$	-0.000508	-0.000113	-0.000716	-0.000585	-0.00699***	-0.00552***	-0.00826***	-0.00776***
	(0.000551)	(0.000570)	(0.000566)	(0.000555)	(0.00146)	(0.00153)	(0.00151)	(0.00148)
$Skill\text{-}Endow_{c,T\sim T-k}$	-0.00375	-0.00487	-0.000974	-3.88e-06	-0.0108	-0.0119	-0.00431	-0.000739
	(0.00770)	(0.00745)	(0.00723)	(0.00720)	(0.0194)	(0.0195)	(0.0194)	(0.0194)
$ln(K\text{-}Endow_{c,T\sim T-k})$	0.00107***	0.00103***	0.000915**	0.000872**	0.00533***	0.00484***	0.00440***	0.00431***
	(0.000400)	(0.000389)	(0.000393)	(0.000391)	(0.00102)	(0.00102)	(0.00103)	(0.00102)
$Skill\text{-}ratio_{ic,T\sim T-k}$	0.00420	0.00483	0.00268	0.00236	0.0187	0.0208	0.0200	0.0190
	(0.00743)	(0.00724)	(0.00719)	(0.00724)	(0.0165)	(0.0164)	(0.0165)	(0.0165)
$K\text{-}ratio_{ic,T\sim T-k}$	0.00461	0.00391	0.00372	0.00375	0.0118	0.00182	0.00233	0.00547
	(0.00600)	(0.00588)	(0.00595)	(0.00597)	(0.0138)	(0.0135)	(0.0137)	(0.0137)
Constant	0.0123	0.0116	0.0147*	0.0140*	0.0778***	0.0828***	0.0969***	0.0924***
	(0.00758)	(0.00763)	(0.00765)	(0.00762)	(0.0193)	(0.0198)	(0.0194)	(0.0196)
Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,294	1,294	1,294	1,294	1,291	1,291	1,291	1,291
R-squared	0.921	0.921	0.921	0.921	0.908	0.907	0.906	0.907

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 8 Benchmark Regression Results:
Institutional Quality and the Development of Bilateral GVC linkages

LHS variable:	2002-2011			
$GVCP_{icm,T}$	(1)	(2)	(3)	(4)
$Regulatory_{c,T\sim T-k}$	0.000178***			
	(3.72e-05)			
$Regulatory_{m,T\sim T-k}$	-0.00170***			
	(0.000412)			
$Stability_{c,T\sim T-k}$		0.000169***		
		(3.45e-05)		
$Stability_{m,T\sim T-k}$		-0.00251***		
		(0.000608)		
$Gov_{c,T\sim T-k}$			0.000123***	
			(3.12e-05)	
$Gov_{m,T\sim T-k}$			-0.00152***	
			(0.000368)	
$Law_{c,T\sim T-k}$				0.000105***
				(2.83e-05)
$Law_{m,T\sim T-k}$				-0.00124***
				(0.000300)
$GVCP_{icm,T-k}$	0.885***	0.885***	0.885***	0.885***
	(0.0329)	(0.0330)	(0.0330)	(0.0330)
$GDP_{c,T\sim T-k}$	-3.40e-05*	-1.95e-05	-4.44e-05**	-4.10e-05**
	(1.79e-05)	(1.84e-05)	(1.77e-05)	(1.77e-05)
$GDP_{m,T\sim T-k}$	0.000657***	0.000165	0.000648***	0.000655***
	(0.000191)	(0.000112)	(0.000189)	(0.000190)
$Skill\text{-}Endow_{c,T\sim T-k}$	-0.000116	-0.000142	-7.32e-05	-3.65e-05
	(0.000235)	(0.000236)	(0.000233)	(0.000231)
$ln(K\text{-}Endow_{c,T\sim T-k})$	3.42e-05***	3.25e-05***	2.67e-05**	2.60e-05**
	(1.16e-05)	(1.16e-05)	(1.13e-05)	(1.13e-05)
$Skill\text{-}ratio_{ic,T\sim T-k}$	0.000380*	0.000404*	0.000391*	0.000391*
	(0.000222)	(0.000222)	(0.000222)	(0.000222)
$K\text{-}ratio_{ic,T\sim T-k}$	-2.31e-05	-6.52e-05	-9.02e-05	-8.60e-05
	(0.000194)	(0.000185)	(0.000189)	(0.000191)
Constant	-0.00375***	0.000658	-0.00364***	-0.00427***
	(0.00137)	(0.00105)	(0.00137)	(0.00148)
Industry Fixed Effects	YES	YES	YES	YES
Partner Country Fixed Effects	YES	YES	YES	YES
Observations	50,640	50,640	50,640	50,640
R-squared	0.694	0.694	0.694	0.694

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 9 Robustness Check:
Normalized Bilateral GVC Participation Index

LHS variable:	2002-2011			
Normalized $GVCP_{icm,T}$	(1)	(2)	(3)	(4)
$Regulatory_{m,T\sim T-k}$	-0.0301***			
	(0.00263)			
$Stability_{m,T\sim T-k}$		-0.0444***		
		(0.00388)		
$Gov_{m,T\sim T-k}$			-0.0269***	
			(0.00235)	
$Law_{m,T\sim T-k}$				-0.0219***
				(0.00192)
$Regulatory_{c,T\sim T-k}$	-6.75e-05			
	(0.000256)			
$Stability_{c,T\sim T-k}$		-5.80e-05		
		(0.000239)		
$Gov_{c,T\sim T-k}$			-2.94e-05	
			(0.000201)	
$Law_{c,T\sim T-k}$				-3.02e-05
				(0.000187)
$GVCP_{icm,T-k}$	0.739***	0.739***	0.739***	0.739***
	(0.0151)	(0.0151)	(0.0151)	(0.0151)
$GDP_{c,T\sim T-k}$	6.69e-05	6.23e-05	7.08e-05	6.99e-05
	(0.000105)	(0.000109)	(0.000105)	(0.000105)
$GDP_{m,T\sim T-k}$	0.0126***	0.00389***	0.0124***	0.0126***
	(0.00121)	(0.000906)	(0.00120)	(0.00121)
$Skill\text{-}Endow_{c,T\sim T-k}$	0.000350	0.000354	0.000321	0.000315
	(0.00178)	(0.00178)	(0.00179)	(0.00180)
$ln(K\text{-}Endow_{c,T\sim T-k})$	-3.79e-05	-3.69e-05	-3.46e-05	-3.45e-05
	(7.42e-05)	(7.39e-05)	(7.38e-05)	(7.37e-05)
$Skill\text{-}ratio_{ic,T\sim T-k}$	3.05e-05	2.14e-05	2.41e-05	2.49e-05
	(0.00156)	(0.00155)	(0.00155)	(0.00155)
$K\text{-}ratio_{ic,T\sim T-k}$	-5.24e-06	1.75e-05	4.19e-05	3.34e-05
	(0.00115)	(0.00112)	(0.00113)	(0.00114)
Constant	-0.0761***	0.00205	-0.0772***	-0.0879***
	(0.00983)	(0.00952)	(0.00985)	(0.0103)
Industry Fixed Effects	YES	YES	YES	YES
Partner Country Fixed Effects	YES	YES	YES	YES
Observations	50,640	50,640	50,640	50,640
R-squared	0.708	0.708	0.708	0.708

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

Table 10 Institutional Quality and the Increase of GVC participation ratio

(Backward Linkage GVC participation Index)

LHS variable:	2002-2011			
$GVCP_{ic,T}$	(1)	(2)	(3)	(4)
$Regulatory_{c,T\sim T-k}$	0.0235**			
	(0.00918)			
$Stability_{c,T\sim T-k}$		0.0193***		
		(0.00728)		
$Gov_{c,T\sim T-k}$			0.0184**	
			(0.00745)	
$Law_{c,T\sim T-k}$				0.0165**
				(0.00673)
$GVCP_{ic,T-k}$	0.927***	0.931***	0.930***	0.934***
	(0.0583)	(0.0574)	(0.0588)	(0.0580)
$GDP_{c,T\sim T-k}$	-0.00590	-0.00434	-0.00721*	-0.00660*
	(0.00371)	(0.00331)	(0.00415)	(0.00394)
$Skill\text{-}Endow_{c,T\sim T-k}$	0.121	0.120	0.126	0.131
	(0.131)	(0.131)	(0.133)	(0.135)
$ln(K\text{-}Endow_{c,T\sim T-k})$	0.00240**	0.00192*	0.00155	0.00139
	(0.00113)	(0.00105)	(0.00100)	(0.000988)
$Skill\text{-}ratio_{ic,T\sim T-k}$	-0.145	-0.143	-0.144	-0.145
	(0.145)	(0.144)	(0.144)	(0.145)
$K\text{-}ratio_{ic,T\sim T-k}$	-0.00809	-0.0172	-0.0141	-0.0125
	(0.0147)	(0.0134)	(0.0139)	(0.0143)
Constant	0.0532**	0.0574**	0.0701***	0.0660**
	(0.0240)	(0.0257)	(0.0269)	(0.0263)
Industry Fixed Effects	YES	YES	YES	YES
Observations	1,291	1,291	1,291	1,291
R-squared	0.393	0.393	0.393	0.393

Note: Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

TABLE 11 SUMMARY STATISTICS

Variables	Total	GVCs	No GVCs
	Local Institutions		
Government intervention	61.24	60.91	61.53
	(21.56)	(21.66)	(21.46)
Custom efficiency	2.39	2.24	2.52
	(0.49)	(0.52)	(0.42)
Contract enforcement	0.64	0.66	0.62
	(0.17)	(0.17)	(0.17)
Access to loan	0.60	0.62	0.58
	(0.14)	(0.14)	(0.14)
	City Attributes		
Log of city GDP per capita	8.99	9.20	8.81
	(0.65)	(0.65)	(0.59)
City competition	0.33	0.32	0.34
	(0.22)	(0.22)	(0.22)
Log of city average wage	9.59	9.67	9.52
	(0.31)	(0.32)	(0.27)
R&D share	0.58	0.60	0.56
	(0.12)	(0.12)	(0.12)
Transport cost	5.71	5.35	6.02
	(1.09)	(1.09)	(0.99)
	Firm Attributes		
Log (Labor)	5.57	6.19	5.03
	(1.48)	(1.45)	(1.29)
Log (Firm age)	2.13	2.19	2.09
	(0.88)	(0.85)	(0.91)
Log (Capital labor ratio)	3.79	4.06	3.56
	(1.43)	(1.44)	(1.39)
Log(TFP)	4.32	4.65	4.03
	(1.46)	(1.50)	(1.36)
Observations	11709	5398	6811

Note: This table displays the mean statistics for the city and firm characteristics. The standard deviations are reported in brackets. The data source is the Investment Climate Survey conducted by the World Bank in China in 2005.

Table 12 GVC Participation and Local Institutions

VARIABLES	(1) D2E	(2) I2P	(3) I2E	(4) D2E	(5) I2P	(6) I2E	(7) D2E	(8) I2P	(9) I2E	(10) D2E	(11) I2P	(12) I2E
Government intervention	-0.0037**	-0.004**	-0.008***									
	(-2.284)	(-2.269)	(-5.846)									
Custom efficiency				-0.124	-0.346***	-0.630***						
				(-1.456)	(-3.340)	(-8.211)						
Contract Enforcement							1.056***	0.403	0.976***			
							(4.968)	(1.550)	(4.891)			
Access to Loan										2.198***	0.172	0.440*
										(7.587)	(0.525)	(1.738)
SOEs	-0.499***	-0.209	-0.572***	-0.509***	-0.210	-0.570***	-0.490***	-0.215	-0.586***	-0.424***	-0.213	-0.585***
	(-3.892)	(-1.545)	(-5.370)	(-3.963)	(-1.551)	(-5.352)	(-3.816)	(-1.589)	(-5.493)	(-3.285)	(-1.569)	(-5.485)
COEs	-0.769***	-0.714***	-0.928***	-0.778***	-0.732***	-0.973***	-0.775***	-0.716***	-0.933***	-0.756***	-0.710***	-0.921***
	(-4.784)	(-3.351)	(-5.948)	(-4.841)	(-3.449)	(-6.131)	(-4.833)	(-3.370)	(-5.967)	(-4.732)	(-3.342)	(-5.925)
Private firms	0.0415	-0.0676	-0.0970	0.0504	-0.0653	-0.0845	0.0190	-0.0719	-0.105	0.00165	-0.0621	-0.0839
	(0.432)	(-0.498)	(-0.929)	(0.524)	(-0.482)	(-0.801)	(0.198)	(-0.531)	(-0.996)	(0.0171)	(-0.456)	(-0.802)
HMT-invested firms	0.437***	1.359***	1.638***	0.428***	1.318***	1.563***	0.406***	1.347***	1.622***	0.487***	1.360***	1.655***
	(2.918)	(9.697)	(14.69)	(2.853)	(9.308)	(13.90)	(2.706)	(9.539)	(14.53)	(3.275)	(9.685)	(14.86)
Foreign firms	1.046***	1.621***	2.322***	1.030***	1.599***	2.281***	1.026***	1.605***	2.296***	1.070***	1.611***	2.310***
	(7.429)	(12.08)	(20.79)	(7.317)	(11.92)	(20.52)	(7.306)	(11.98)	(20.74)	(7.594)	(12.04)	(20.77)
Lagged firm size	0.431***	0.434***	0.814***	0.424***	0.426***	0.801***	0.424***	0.426***	0.803***	0.407***	0.423***	0.797***
	(15.73)	(13.34)	(31.23)	(15.62)	(13.13)	(30.86)	(15.60)	(13.14)	(30.99)	(14.79)	(13.00)	(30.85)
Firm age	0.0114	-0.00347	0.0211	0.0102	-0.00691	0.00761	0.00831	-0.00563	0.0123	-0.000288	-0.00677	0.0108
	(0.277)	(-0.0715)	(0.586)	(0.249)	(-0.143)	(0.211)	(0.202)	(-0.116)	(0.343)	(-0.007)	(-0.140)	(0.302)
Lagged capital	-0.0536**	0.334***	0.194***	-0.0534**	0.336***	0.197***	-0.0583**	0.332***	0.190***	-0.0610**	0.334***	0.192***

labor ratio	(-2.149)	(9.647)	(7.830)	(-2.130)	(9.667)	(7.923)	(-2.320)	(9.566)	(7.665)	(-2.412)	(9.653)	(7.757)
Lagged TFP	0.0359	0.260***	0.213***	0.0328	0.255***	0.208***	0.0344	0.259***	0.212***	0.0235	0.259***	0.213***
	(1.144)	(6.690)	(7.189)	(1.048)	(6.565)	(7.019)	(1.096)	(6.664)	(7.166)	(0.742)	(6.679)	(7.196)
Log(city GDP per capita)	-0.0329	0.628***	0.448***	-0.0801	0.554***	0.303***	-0.0903	0.574***	0.350***	-0.0282	0.587***	0.380***
	(-0.357)	(5.843)	(5.464)	(-0.881)	(5.218)	(3.700)	(-0.977)	(5.473)	(4.310)	(-0.306)	(5.549)	(4.691)
City competition	-0.309*	-0.0764	-0.0616	-0.295*	-0.0425	-0.0160	-0.281*	-0.0619	-0.0661	-0.280*	-0.0792	-0.0689
	(-1.882)	(-0.416)	(-0.414)	(-1.796)	(-0.231)	(-0.108)	(-1.714)	(-0.338)	(-0.446)	(-1.703)	(-0.433)	(-0.465)
Log(city wage)	0.348*	-0.420**	0.0876	0.309*	-0.471**	0.0367	0.540***	-0.339	0.277*	0.126	-0.444**	0.0493
	(1.936)	(-2.031)	(0.550)	(1.726)	(-2.242)	(0.225)	(2.870)	(-1.629)	(1.684)	(0.697)	(-2.129)	(0.308)
RD share	1.202***	1.176***	-0.166	1.188***	1.193***	-0.0522	0.852***	1.045***	-0.512*	0.158	1.069***	-0.415
	(4.327)	(3.520)	(-0.639)	(4.274)	(3.591)	(-0.200)	(2.910)	(3.006)	(-1.914)	(0.511)	(2.851)	(-1.423)
Transport cost	-0.253***	-0.138***	-0.363***	-0.257***	-0.106**	-0.294***	-0.237***	-0.148***	-0.370***	-0.269***	-0.163***	-0.405***
	(-6.371)	(-3.230)	(-10.83)	(-6.066)	(-2.447)	(-8.417)	(-5.983)	(-3.541)	(-11.02)	(-6.860)	(-3.892)	(-12.32)
Industry dummies		Yes			Yes			Yes			Yes	
Pseudo R2		0.24			0.24			0.24			0.24	
Observations		11481			11481			11481			11481	

Table 13 GVC Participation and Local Institutions, Robustness Check

	Full Sample			SOE			Non-SOEs		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	D2E	I2P	I2E	D2E	I2P	I2E	D2E	I2P	I2E
Government intervention	-0.00220	-0.00309	-0.00614***	0.00162	-0.00787	-0.00926*	-0.00191	-0.000855	-0.00355**
	(-1.195)	(-1.593)	(-3.997)	(0.224)	(-1.216)	(-1.711)	(-0.986)	(-0.424)	(-2.284)
Custom efficiency	-0.0175	-0.318***	-0.554***	-0.367	-0.276	0.102	-0.00774	-0.411***	-0.655***
	(-0.183)	(-2.864)	(-6.400)	(-0.939)	(-0.623)	(0.310)	(-0.0785)	(-3.621)	(-7.672)
Contract Enforcement	0.566**	-0.0847	-0.0244	0.269	1.120	-1.006	0.660**	-0.0141	0.276
	(2.088)	(-0.280)	(-0.101)	(0.265)	(1.076)	(-1.193)	(2.337)	(-0.0448)	(1.141)
Access to Loan	1.978***	0.225	0.549**	0.859	-1.038	2.182*	1.969***	0.0157	-0.0618
	(6.423)	(0.644)	(2.008)	(0.660)	(-0.745)	(1.835)	(6.234)	(0.0441)	(-0.233)
SOEs	-0.419***	-0.193	-0.531***						
	(-3.244)	(-1.420)	(-4.965)						
COEs	-0.754***	-0.726***	-0.969***						
	(-4.723)	(-3.417)	(-6.090)						
Private firms	-0.0147	-0.0722	-0.112						
	(-0.151)	(-0.532)	(-1.055)						
HMT-invested firms	0.461***	1.323***	1.571***						
	(3.090)	(9.335)	(13.96)						
Foreign firms	1.067***	1.609***	2.304***						
	(7.547)	(11.95)	(20.54)						
Lagged firm size	0.415***	0.429***	0.806***	0.505***	0.826***	0.997***	0.409***	0.378***	0.745***
	(14.87)	(13.14)	(30.85)	(5.498)	(7.313)	(9.818)	(14.38)	(11.44)	(29.20)
Firm age	0.00175	-0.00704	0.00935	-0.0363	-0.0187	0.0859	-0.0491	-0.0530	-0.0833**
	(0.0423)	(-0.145)	(0.259)	(-0.261)	(-0.136)	(0.709)	(-1.154)	(-1.039)	(-2.285)

Lagged capital labor ratio	-0.0623**	0.334***	0.195***	0.241*	0.296*	0.317**	-0.0341	0.413***	0.295***
	(-2.451)	(9.639)	(7.853)	(1.959)	(1.766)	(2.512)	(-1.338)	(11.58)	(11.89)
Lagged TFP	0.0246	0.256***	0.207***	0.156	0.238	0.520***	0.0363	0.291***	0.238***
	(0.776)	(6.590)	(6.927)	(1.329)	(1.640)	(4.459)	(1.092)	(7.315)	(7.985)
Log(city GDP per capita)	-0.00725	0.612***	0.397***	-0.344	0.652*	0.137	-0.0164	0.576***	0.419***
	(-0.0756)	(5.577)	(4.720)	(-1.046)	(1.802)	(0.521)	(-0.163)	(5.053)	(4.890)
City Competition	-0.251	-0.0330	0.00558	-0.317	-0.941	0.0953	-0.225	0.0407	-0.0559
	(-1.520)	(-0.180)	(0.0375)	(-0.525)	(-1.323)	(0.175)	(-1.310)	(0.213)	(-0.370)
Log(city wage)	0.211	-0.544**	-0.0287	0.472	-0.729	-0.155	0.253	-0.428*	0.0659
	(1.101)	(-2.510)	(-0.168)	(0.711)	(-0.932)	(-0.303)	(1.268)	(-1.901)	(0.378)
RD share	0.0795	1.136***	-0.311	1.448	1.187	-0.552	0.0352	1.268***	-0.264
	(0.251)	(2.970)	(-1.051)	(1.285)	(0.896)	(-0.550)	(0.107)	(3.177)	(-0.884)
Transport cost	-0.235***	-0.0940**	-0.272***	-0.191	-0.252*	-0.361***	-0.264***	-0.149***	-0.385***
	(-5.377)	(-2.153)	(-7.675)	(-1.195)	(-1.692)	(-2.683)	(-5.776)	(-3.321)	(-10.88)
Industry dummies		Yes			Yes			Yes	
Pseudo R2		0.24			0.24			0.22	
Observations		11481			1070			10411	