

Article

Judicial Independence and Domestic Supply Chain: Evidence from a Quasi-Natural Experiment

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Abstract: How to effectively break down market segmentation and build a sustainable and unified domestic market has become critical to achieving high-quality development in the Chinese economy nowadays. This study examines the effects and mechanisms of improved judicial independence on the development of larger and more sustainable domestic supply chains, using a sample of Chinese enterprises from 2011 to 2016 and a quasi-natural experiment of local judicial reforms. We find that, after the establishment of local circuit courts, the distribution distance of a firm's supply chain increases significantly. The mechanism analysis suggests that the increase in distribution distance in the domestic supply chain is due to the breakdown of market segmentation resulting from the reduction in local judicial protectionism and the improvement in the quality of local justice after the establishment of circuit courts. Further tests show that the impact of improved judicial independence on the domestic supply chain is most pronounced among small and manufacturing non-state-owned enterprises and those from less competitive industries. Overall, the findings of this paper provide important insights into developing large and sustainable supply chains via breaking down market segmentation, thereby promoting long-term economic growth.



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1. Introduction

Domestic market segmentation is pervasive in many countries around the world. In order to protect local interests, local governments provide judicial protection via means such as administrative restriction to limit the inflow and outflow of local resources [1]. Although market segmentation motivates local trade activities, helps maintain socio-economic stability, and maximizes fiscal revenues in the short run [2], prior studies show that market segmentation has negative impacts on renewable energy technology innovation [3], firms' ability to create added value and operation efficiency [4,5], resource allocation efficiency [6], supply chain efficiency [7], and long-term economic development [8].

A good legal environment is crucial to breaking down domestic market segmentation and promoting sustainable economic development. Strong legal institutions restrict government exploitation on firms, protect firms' rights and interests [9], and bring better creditor protection [10]. Legal environment enhancement can reduce firms' litigation risk [11], improve judicial quality [12], and enhance anti-monopoly supervision [13]. Transparent and effective judiciary can reduce the likelihood of local governments implementing market segmentation strategies in pursuit of political promotion. Theoretical and empirical evidence suggests that a good legal environment is crucial to breaking down local judicial protectionism and market segmentation.

In this paper, we utilize the establishment of the Circuit Courts of the Supreme People's Court in China as a quasi-natural experiment to examine the impact of improved judicial independence on the development of larger and sustainable domestic supply chains. To

tackle local judicial protection and to optimize the distribution of judicial resources, the Supreme People's Court established two circuit courts in 2015 and four in 2016. So far, the establishment of circuit courts has improved judicial justice and partially alleviated the issue of localism [14]. The advantage of our setting is that it allows us to study exogenous and staggered change in legal institutions and to empirically examine its impact on supply chain distribution.

The development of reliable and sustainable domestic supply chains is crucial for corporations. Firms consider the costs and the benefits carefully when they select suppliers. Existing studies on supply chain selection have mainly focused on how transportation cost [15,16], information rents [17], and transportation accessibility [18] influence the supply chain distribution network. This paper aims to fill this gap and focuses on one important dimension of legal institutions: the establishment of circuit courts.

Although different provinces in China have different focuses on economy development, market segmentation is prevalent across provinces [19]. In fact, China's economic growth has been trapped in the dilemma of domestic market segmentation [8]. The segmentation of production resources across the country has seriously hindered the formation of a unified, open, and competitive market system in China, preventing the capital market from functioning effectively. Firms can obtain more favorable product prices and more reliable product quality by choosing suppliers that are further away and thus improve the overall quality of the supply chain. However, as market segmentation restricts the flow of resources across provinces, local firms face significant difficulties of obtaining resources directly from distant locations [20]. As a result, firms are more likely to choose suppliers located more closely. Meanwhile, the issue of local protectionism is ubiquitous in China's judicial system. Local governments can interfere with the outcome of commercial cases, thereby indirectly influencing business operation decisions.

The establishment of circuit courts in China has at least led to important changes in the legal institutions, thereby improving legal independence in local regions. First, the judges of the circuit courts are appointed directly by the Supreme People's Court, therefore are less likely to be captured by local governments and related parties. Second, circuit courts are funded by the Supreme People's Court and thus financially independent from local governments. In contrast, local courts are established and supported by local governments. Therefore, circuit courts are expected to effectively reduce interference from local governments and to improve judicial independence and justice [21]. By breaking down localism, circuit courts can reduce the level of domestic market segmentation, which accordingly reduces the costs and difficulties of acquiring resources from distant suppliers and litigation risks these suppliers face. Consistent with this argument, Yu et al. show that stronger law enforcement can increase the degree of trade credits between upstream and downstream firms in supply chains [22]. Therefore, we expect that firms are more likely to expand their supply chain network after the establishment of circuit courts.

Existing research focuses on the impact of judicial independence on local judicial protectionism but ignores its effect on market segmentation. At the same time, there is a paucity of research on the impact of judicial independence on business decisions. This paper uses a difference-in-differences approach. We find that, after the establishment of local circuit courts, the distribution distance of a firm's supply chain increases significantly. The mechanism analysis suggests that the increase in distribution distance in the domestic supply chain is due to the breakdown of market segmentation resulting from the reduction in local judicial protectionism and the improvement in the quality of local justice after the establishment of circuit courts. Further tests show that the impact of improved judicial independence on the domestic supply chain is most pronounced among small and manufacturing non-state-owned enterprises and those from less competitive industries. Overall, the findings of this paper provide important insights into developing large and sustainable supply chains via breaking down market segmentation, thereby promoting long-term economic growth.

This paper makes two contributions. First, our study explores firms' supplier selection decisions from the perspective of the legal institution and contributions to the literature that explore the relationships between suppliers and customers. Existing studies have examined supplier selection strategies mainly through constructing models around the factors affecting supplier selection [23–26]. An increasing number of studies have also emphasized the importance of a rational distribution of corporate suppliers. Therefore, we provide novel evidence that an enhancement in legal enforcement positively influences the distance to suppliers to this stream of the literature.

Second, this paper adds to the vast literature on law and finance that has examined the impact of legal institutions on corporate debt financing [27], trade credit [28], and supply chain finance [29]. Our results show that legal enforcement influences firms' supplier selection decisions and stronger enforcement expands the supply chain network.

The remainder of this paper is structured as follows. Section 2 reviews the relevant literature and develops our research hypothesis. Section 3 specifies the empirical research design. Section 4 presents the results. Section 5 concludes.

2. Institutional Background and Hypothesis Development

2.1. Institutional Background

The traditional circuit court system first originated in England in the 12th century. The establishment of the circuit court system is to strengthen centralized power and to change the phenomenon of judicial power being divided by local lords and judicial injustice [30], in which different types of cases were heard by different circuit courts, which made the judicial specialization greatly enhanced. In common law countries, some countries still maintain the tradition of circuit courts. For example, the High Court of Australia hears some cases in the capital cities of Queensland, South Australia, Western Australia, and Tasmania, respectively, when there are enough local cases [31]. In contrast, civil law countries generally do not have the tradition of setting up circuit courts, but some courts in Japan and South Korea set up the court branch court system in which the court headquarters can send judges to handle cases during a specific period of time; this shares some aspects with the circuit courts.

Since the reform and opening up, China's judicial system has been improved, but there is still a tendency of judicial localism that increases the difficulty of achieving judicial justice in administrative trials [32]. The court system does not have the relationship between the upper and lower levels of leadership in the prosecution system and the effect of trial-level supervision is difficult to overcome judicial localism [33]. At the same time, under the tax-sharing reform in China, local courts rely heavily on the funds allocated by local government. As a result, local courts are reluctant to make profitable enterprises suffer economic losses due to adjudication [34].

In order to reduce judicial local protectionism, the Decision of the Central Committee of the Communist Party of China on Several Major Issues of Comprehensively Promoting the Rule of Law, adopted at the Fourth Plenary Session of the 18th CPC Central Committee in October 2014, proposed the idea of establishing "circuit courts of the Supreme People's Court". On 1 November 2016, the Central Leading Group for Comprehensively Deepening Reform agreed to set up four additional circuit courts in Nanjing, Zhengzhou, Chongqing, and Xi'an on the basis of the first and second circuit courts and, in early 2017, the four newly established circuit courts were officially inaugurated, thus precisely implementing the new layout of China's judiciary and further enhancing the quality of justice.

The function of the circuit courts is positioned with the objective of "removing judicial local protectionism". The effects of its implementation are mainly reflected in the following aspects. First of all, the circuit courts are directly under the Supreme People's Court. Accordingly, the trial judges are selected and dispatched by the Supreme People's Court and the funding for their cases is also provided by the Supreme People's Court, which fundamentally prevents the localization of justice caused by the localization of the judiciary in terms of people, materials, and money [21]. Secondly, the circuit court adheres to the principle of "let the judge decide and be responsible", and the judges are responsible for the

cases they hear for life, which encourages judges to consciously resist and overcome local judicial protection. Finally, the Regulations of the Supreme People's Court on Several Issues Concerning the Hearing of Cases in Circuit Courts clearly state that the rulings made by the judges handling cases in circuit courts are the decisions of the Supreme People's Court. The ruling made by the circuit court judges is the ruling of the Supreme People's Court, which has the effect of final adjudication and guarantees the fairness of the circuit court judges in hearing cases, which can effectively avoid the interference of local factors [35].

2.2. Literature Review and Research Hypothesis

Supplier selection strategy is a key issue in business operations. The quality of firms' supplier selection directly impacts their development and profitability. Generally speaking, it is easier for firms to communicate with suppliers that are closely located to them, while communications with suppliers that are farther away often face a higher level of information asymmetry due to the lag in information exchange. However, Thomas and Griffin find that suppliers located further away can increase firms' input–output efficiency [36]. Firms' supplier selection strategies do not depend solely on operating costs but also relate to factors such as the availability of a high-speed train line [18], personal connections [37], logistics quality, product quality, and supplier reputation. Market segmentation is another important factor and firms under local judicial protection are prone to choose closely located suppliers and are unwilling to choose suppliers from a different region as they may face the risk of judicial disputes [38,39]. In this case, improved judicial independence can influence firms' supply chain networks via curbing improper relationships between local governments and firms and by reducing local protectionism.

Judicial independence can reduce the cost of litigation for small businesses and can increase the likelihood of judicial review, thereby breaking down local judicial protectionism [1]. Qian uses inter-provincial data from China to find that judicial independence can break down local judicial protection and attract foreign direct investment [40]. In summary, the existing research focuses on the impact of judicial independence at the macro level and lacks research at the firm level. Secondly, the literature does not explore the impact of judicial independence on market segmentation from the perspective of the distribution of corporate suppliers.

The circuit court adopts the rule of geographical avoidance of judges, that is, the judges of the circuit courts are appointed directly by the Supreme People's Court. In addition, unlike local courts, that are established and supported by local governments, circuit courts are funded by the Supreme People's Court. In other words, circuit courts are not constrained to local governments in terms of personnel, resources, and fundings. Therefore, circuit courts can effectively reduce the improper interference of local governments and improve judicial efficiency and justice [21]. By breaking down localism, circuit courts are expected to reduce the level of domestic market segmentation, thereby reducing the litigation risks and difficulty of acquiring resources from distant suppliers. Therefore, we expect that firms are more willing to expand their supply chain network (the mechanism analysis is shown in Figure 1). Based on the above analysis, we formulate the below hypothesis:

Hypothesis 1 (H1). *All else being equal, the establishment of a circuit court will increase the distribution distance of corporate suppliers.*

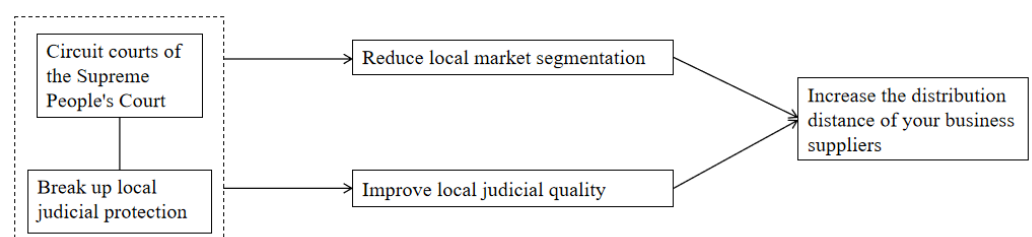


Figure 1. Mechanistic analysis diagram.

3. Research Design

3.1. Sample and Data

The first and second circuit courts were established in January 2015 and the remaining four circuit courts were established about two years later in December 2016. Therefore, we utilize the time difference in the establishment of circuit courts to construct our treatment and control groups. The initial sample consists of A-share listed firms on the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE) in China from 2011 to 2016. The following observations are excluded from the sample: (1) financial services and insurance firms; (2) Special Treatment (ST or *ST) firms; (3) observations with missing variables. Our final sample contains 6036 firm–year observations. The treatment group includes firms that are located in provinces covered by the first and second circuit court and the control group consists of the remaining firms in the sample. We obtain province-level data from the *China City Statistical Yearbook* and firm-level data from the CSMAR and CCER databases. To mitigate the possible impact of outliers, all continuous variables are winsorized at 1% level at both tails of the distribution.

3.2. Dependent Variable

Our main dependent variable is the distance to suppliers, measured by the average distance to suppliers (Dis). We obtained registration information (e.g., company address) of the top five suppliers of the sample firms from China's National Enterprise Credit Information Publicity System website. We then obtained the coordinates of the suppliers and calculated the average distance between sample firms and their top five suppliers (Dis). We also re-weighted each supplier according to the purchasing ratio of the top five suppliers, so that the sum of the weights of the top five suppliers actually disclosed by the listed company was one. Finally, we used this weight to calculate the weighted average distance between firms and their top five suppliers (Disw).

3.3. Model Design

Following Yu et al. [22], we used the establishment of the first circuit and the second circuit as an exogenous shock and constructed the following difference-in-differences (DID) model to empirically estimate the impact of the circuit court on supply chain distribution:

$$D_{it} = \beta_0 + \beta_1 \text{Treat} \times \text{Post}_{it} + \beta_2 X_{it} + \mu_t + \delta_i + \theta_v + \varepsilon_{it} \quad (1)$$

where the subscripts *i* and *t* represent the firm and year, respectively. D_{it} is distance to supplier of firm *i* in year *t*. $\text{Treat} \times \text{Post}_{it}$ is the core explanatory variable. Treat is an indicator variable that takes the value of one for firms located in the regions covered by the first and second circuit courts. Post is an indicator variable that takes the value of one for observations in the year of and post circuit court establishment, i.e., in and after 2015. X_{it} represents the group of control variables included. Following Huang et al. [14], we controlled for capital structure (*Lev*), firm size (*Size*), profitability measured by return on total assets (*Roa*), firm age (*Age*), accounts receivable ratio (*Rec*), inventory ratio (*Inv*), cash ratio (*Cash*), and tangibility ratio (*Fix*). We also controlled for the growth rate of the provincial Gross Domestic Product (*Gdp*). All variables are defined in Table 1. We employed year, industry, and province fixed effects.

Table 1. Variable definitions.

Variable	Description
Dis	Average distance between firms and their top five suppliers.
Disw	Weighted average distance between firms and their top five suppliers.
Size	Natural logarithm of total assets.
Lev	Total liabilities divided by total assets.
Roa	Net profit divided by total assets.
Age	Natural logarithm of firm age in years plus one.
Rec	Accounts receivables divided by total assets.
Invt	Inventory divided by total assets.
Cash	Cash holdings divided by total asset.
Fix	Tangible assets divided by total assets.
Gdp	Growth rate of the provincial gross domestic product.

3.4. Descriptive Statistics

Table 2 presents the descriptive statistics of the main variables. The mean values of Dis and Disw are 5.171 and 3.685, respectively. In other words, the absolute and weighted average distances to the top five suppliers are 175.1 ($e^{5.171} - 1$) km and 38.85 ($e^{3.685} - 1$) km, respectively. The mean (median) value of the log of total assets is 21.09 (20.91), which is the equivalent of a book value of total assets of CNY 1.44 (1.21) billion. The average (median) firm has a leverage ratio of 4.24% (4.20%), accounts receivable ratio of 15.5% (13.1%), inventory ratio of 19.7% (15.6%), cash ratio of 14.9% (12.8%), and tangibility ratio of 22.8% (20.1%). The mean (median) value of the local GDP is 8.737 (8.200).

Table 2. Descriptive statistics.

Var	N	Mean	P50	Sd	Min	Max
Dis	6036	5.171	5.240	1.278	1.910	7.569
Disw	6036	3.685	3.670	1.254	0.936	7.040
Size	6036	21.09	20.91	1.274	18.60	25.02
Lev	6036	0.424	0.420	0.174	0.165	0.696
Roa	6036	0.040	0.036	0.025	0.007	0.081
Age	6036	2.637	2.708	0.406	1.386	3.401
Rec	6036	0.155	0.131	0.124	0.001	0.561
Invt	6036	0.197	0.156	0.144	0.014	0.726
Cash	6036	0.149	0.128	0.112	0.000	0.573
Fix	6036	0.228	0.201	0.160	0.004	0.699
Gdp	6036	8.737	8.200	1.775	2.500	16.40

Note: This table presents the descriptive statistics of the variables used in the analysis. The definitions of the variables are provided in Table 1.

4. Empirical Analysis

4.1. Baseline Regression

Table 3 presents the regression results from the benchmark regressions, with column (1) controlling for the regression of industry and the regression coefficient of $Treat \times Post$ being significantly positive for the absolute mean distance (Dis) of the firm's suppliers. Column (2) further adds the relevant control variables, and the regression coefficient for $Treat \times Post$ is 0.2059 and is significantly positive at the 1% level. This indicates that

the establishment of the circuit court significantly increases the supplier distance of firms within the jurisdiction of the court and, therefore, the establishment of the circuit court expands the distribution of firms' major suppliers, validating the research Hypothesis H1 of this paper.

Table 3. Baseline regression results.

	(1)	(2)
	Dis	Dis
Treat $\times$ Post	0.2065 ***	0.2059 ***
	(2.65)	(2.64)
Size		0.0163
		(0.54)
Lev		0.0068
		(0.04)
Roa		1.1019
		(1.09)
Age		−0.1085
		(−1.50)
Rec		0.0975
		(0.37)
Cash		−0.1227
		(−0.55)
Invt		0.9659 ***
		(3.66)
Fix		−0.4118 *
		(−1.87)
Gdp		−0.0119
		(−0.61)
Constant	4.6026 ***	4.4712 ***
	(16.92)	(6.07)
Industry fixed effects	Yes	Yes
Province fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
N	6036	6036
R ²	0.073	0.085

Note: This table reports regression results on the impact of circuit court establishment on the absolute distance (Dis) to business suppliers. The standard errors are clustered at the firm level. *t*-statistics are in parentheses. * and *** denote significance at the 10% and 1% levels, respectively.

4.2. Robustness Tests

4.2.1. Parallel Trend Test

A prerequisite for the validity of the estimation of the double difference model is that the experimental and control groups need to satisfy the assumption of parallel trends, i.e., without the impact of the circuit court, the distance to suppliers of the treatment and the

control group would have no significant difference over time. Following Campello and Larrain [41], we constructed the following regression model:

$$D_{it} = \beta_0 + \beta_t \text{Treat} \times \sum_{2011}^{2016} \text{Year} + \beta_1 X_{it} + \mu_t + \delta_i + \theta_v + \varepsilon_{it} \quad (2)$$

where β_t is the estimated coefficient on Treat in 2011, 2012, 2013, 2014, 2015 (i.e., the year of establishment), and 2016, respectively. X_{it} represents the group of control variables. We controlled for year, province, and industry fixed effects.

The results presented in Column (1) of Table 4 show that the coefficients on Treat are insignificant prior to the establishment of the circuit court, while those in the year of establishment and the year after are significantly positive at the 10% and 5% levels, respectively. We also plotted the parallel trend test results in Figure 2. The coefficients on Treat are not significantly different from zero before the establishment of the circuit court. These results indicate that there is no significant difference in the distance to suppliers between the treatment and control groups before the establishment of the circuit court and support the parallel trend assumption.

Table 4. Robustness tests.

	(1)	(2)	(3)	(4)
	Dis	Dis	Dis	Disw
Treat × Post		0.1829 **	0.2048 ***	0.1759 **
		(2.22)	(2.61)	(2.31)
Treat × Y2011–2013	0.5096			
	(1.33)			
Treat × Y2014	0.5062			
	(1.32)			
Treat × Y2015	0.6434 *			
	(1.68)			
Treat × Y2016	0.8162 **			
	(2.10)			
Size	0.0212	−0.0024	0.0189	0.0631 **
	(0.70)	(−0.07)	(0.62)	(2.20)
Lev	−0.0335	0.1084	−0.0097	−0.0293
	(−0.19)	(0.57)	(−0.05)	(−0.17)
Roa	1.1876	1.5359	1.0521	0.8697
	(1.17)	(1.39)	(1.04)	(0.89)
Age	−0.1066	−0.0788	−0.1082	−0.1431 **
	(−1.48)	(−0.99)	(−1.49)	(−2.05)
Rec	0.2884	−0.0287	0.1505	0.3506
	(1.18)	(−0.11)	(0.59)	(1.48)
Cash	0.0702	−0.0937	−0.0806	0.2327
	(0.36)	(−0.41)	(−0.38)	(1.23)

Table 4. Cont.

	(1)	(2)	(3)	(4)
	Dis	Dis	Dis	Disw
Invt	1.1526 *** (4.57)	0.9563 *** (3.44)	1.0016 *** (3.85)	1.1879 *** (4.74)
Fix	0.0001 *** (2.74)	−0.2406 (−1.56)	−0.2932 * (−1.80)	0.0001 * (1.82)
Gdp	−0.0093 (−0.47)	−0.0077 (−0.29)	−0.0099 (−0.45)	−0.0042 (−0.22)
Constant	4.1765 *** (5.82)	4.7573 *** (5.79)	4.3634 *** (5.91)	2.0966 *** (3.04)
Industry fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	6036	4603	5999	6036
R ²	0.084	0.081	0.084	0.088

Note: This table reports the regression results of the robustness test of the circuit court on the distance of the firm's supplier distribution. Column (1) shows the regression results of the dynamic effect of the circuit court policy on the firm's supplier distribution; Y2011–2013 is an indicator variable with the year 2011, 2012, 2013 then 1, otherwise 0. Y2014, Y2015, and Y2016 are defined similarly. Columns (2) and (3) show the results of the PSM-DID regressions for caliper one-to-four matching and radius matching, respectively. Column (4) reports the regression results for the circuit court's weighted distance to the firm's suppliers with reference to Disw, our indicator of supplier distribution distance calculated following the Petersen and Rajan (2002) approach [42]. The definitions of all other variables are provided in Table 1. The standard errors are clustered at the firm level. *t*-statistics are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

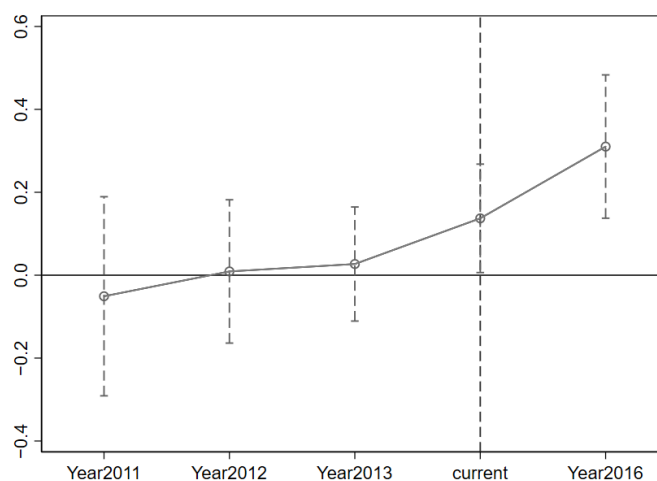


Figure 2. Parallel trend graph. The graph reports the trends in the regression coefficients of the dummy variable cross-multiplication terms for the treatment groups in each period.

4.2.2. PSM-DID

In order to deal with the possible selection bias, we followed Lian et al. and performed a Propensity Score Matching (PSM) DID analysis [43]. Matching of experimental and control groups using caliper matching and radius matching in Propensity Score Matching (PSM) to construct a sample where firms in the treated and control groups have similar characteristics. The results of the PSM-DID regression for the caliper-matched sample and radius-matched sample are presented in Columns (2) and (3) of Table 4, respectively. The coefficients on $Treat \times Post$ are significantly positive at the 5% and 1% levels, respectively,

consistent with the baseline results. This result supports the view that the establishment of circuit courts expands supply chain distribution.

4.2.3. Alternative Measure of Distance to Suppliers

We adopted an alternative measure of distance to suppliers for robustness testing in this section. Following Petersen and Rajan [42], we calculated weighted average distance to suppliers (Disw) by assigning different weights to the top five suppliers. Results presented in Column (4) of Table 4 show that the coefficient on $Treat \times Post$ is significantly positive at the 5% level, further verifying our baseline results.

4.2.4. Placebo Test

In order to address the concern that other coinciding factors may have biased our results, we conducted a placebo test by randomly assigning the establishment of circuit court to provinces and re-estimating the DID model. We repeated this simulation process 1000 times. Results presented in Table 5 show that the average coefficients on $Treat \times Post$ is statistically insignificant and close to zero. This result suggests that our main results are unlikely to be driven by unobserved factors.

Table 5. Placebo test.

	Dis
$Treat \times Post$	0.2059 ***
	(2.64)
The mean value of the coefficient	0.00000626
	(0.0034)
Average <i>p</i> -value	0.9973
Minimum value of the coefficient	−0.1795
Maximum value of the coefficient	0.1823

Note: This table reports the result of placebo tests for the regression coefficient on the interaction term for the 1000 pseudo samples. The standard errors are clustered at the firm level. *t*-statistics are in parentheses. *** denote significance at the 1% levels, respectively.

4.3. Possible Mechanisms

In this section, we explored two possible mechanisms through which the establishment of circuit courts positively impacts supply chain distribution. We argued that circuit court coverage increases distance to suppliers via (1) alleviating local judicial protectionism and reducing market segmentation; (2) improving local judicial quality and enhancing judicial justice.

4.3.1. Local Market Segmentation and Distance to Suppliers

When a local government implements policies to protect local interests, it is very likely for other local government to imitate this behavior to protect their own interests [1]. The spread of local protectionism across regions leads to market segmentation and severely impedes the flow of resources [7]. As a result, firms are prone to choose suppliers closely located to them. We measured a region's market segmentation by market segmentation index by province in China and divided sample firms into two groups based on the median value of the market segmentation index. We re-estimated the DID model for the two subsamples and present the results in Columns (1) and (2) of Table 6. The coefficient on $Treat \times Post$ is insignificant in low market segmentation regions but significantly positive at the 5% level in high market segmentation regions. This result is consistent with the view that the establishment of the circuit court reduces market segmentation and motivates firms to choose suppliers with further locations.

Table 6. Mechanism tests.

	(1)	(2)	(3)	(4)
	Strong Market Segmentation	Weak Market Segmentation	Strong Legal Environment	Weak Legal Environment
Treat × Post	0.2477 ** (2.07)	0.2323 (1.23)	0.2528 (0.98)	0.2917 *** (3.15)
Size	0.0435 (1.15)	0.0076 (0.20)	0.0179 (0.51)	0.0141 (0.40)
Lev	−0.0199 (−0.09)	−0.0510 (−0.23)	0.1364 (0.63)	−0.0860 (−0.41)
Roa	1.2212 (0.95)	1.1042 (0.85)	1.1315 (0.90)	1.3703 (1.16)
Age	−0.1202 (−1.34)	−0.0916 (−1.04)	−0.0680 (−0.77)	−0.1472 * (−1.78)
Rec	0.3173 (1.04)	0.2165 (0.67)	0.4776 * (1.65)	−0.0337 (−0.11)
Cash	0.0681 (0.27)	−0.0324 (−0.12)	0.5489 ** (2.16)	−0.4205 * (−1.71)
Invt	1.3404 *** (4.24)	0.9457 *** (2.87)	1.6272 *** (5.41)	0.6330 ** (2.05)
Fix	0.0001 ** (2.33)	−0.1296 (−0.48)	0.0002 *** (2.89)	−0.3303 * (−1.86)
Gdp	0.0085 (0.27)	−0.0315 (−1.08)	0.0024 (0.08)	−0.0284 (−0.79)
Constant	3.5472 *** (3.93)	4.7246 *** (4.91)	3.8487 *** (4.37)	4.7405 *** (5.30)
Industry fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	3038	2998	2667	3369
R ²	0.091	0.101	0.104	0.088
Chow test	T-value = 2.22 ***		T-value = 2.06 **	

Note: This table reports the regression results of the potential mechanism of the establishment of circuit courts on the distribution distance of business suppliers. Columns (1) and (2) compare the impact of regional market segmentation on the establishment of circuit courts. If a region's market segmentation index is higher than the median of the index of all regions in the year, it is a region with strong market segmentation, otherwise it is a region with weak market segmentation. Columns (3) and (4) compare the effect of the strength of the legal environment of the issuing region on the establishment of circuit courts and we define a region with a strong legal environment as one where the rating of the development of market intermediary organizations and the legal institutional environment is higher than the median of the ratings of the regions in that year, otherwise it is a region with a weak legal environment. Chow test is the t-value of the test for differences in coefficients between groups. The standard errors are clustered at the firm level. *t*-statistics are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

4.3.2. Local Judicial Quality and Distance to Suppliers

Local judicial quality can have a significant impact on a firm's business decisions. The judges of the circuit courts are directly dispatched by the Supreme People's Court and the trial power of the circuit courts are the same as that of the Supreme People's Court. The establishment of circuit courts therefore can improve the judicial quality at the local

level [44]. We measured local judicial quality by the rating of the development of market intermediary organizations and the legal institutional environment in China's sub-provincial marketization index report. We defined a region with a strong legal environment if the rating of the development of market intermediary organizations and the legal institutional environment was higher than the median ratings in that year and divided sample firms into two groups. We then re-estimated the DID model and reported results in Columns (3) and (4) of Table 6. The coefficient on $Treat \times Post$ is insignificant for firms in regions with a strong legal environment but significantly positive at the 1% level in regions with a weak legal environment, indicating that the establishment of circuit courts increases the distance to suppliers via improving judicial quality and justice.

4.4. Heterogeneity Analysis

4.4.1. State-Owned Enterprises

Previous studies document that State-Owned Enterprises (SOEs), compared with non-SOEs, behave differently in corporate policies and decision making such as dividend payment [45], tax aggressiveness [46,47], working capital management [48,49], financial reporting [50], and auditing [51]. Due to their close relationship with local governments, SOEs are likely to receive stronger judicial protection, while private firms are relatively more vulnerable to litigation risks. Therefore, SOEs have significant advantages over private firms in supplier selection process. As the establishment of circuit court enhances legal institutions, we predict it is expected to be more beneficial to the non-SOEs. Thus, in this section, we divided sample firms into two groups: SOEs and non-SOEs. Results presented in Columns (1) and (2) of Table 7 show that the coefficient on $Treat \times Post$ is insignificant for SOEs but significantly positive at 1% for non-SOEs, suggesting that the impact of the establishment of circuit courts on the distribution of suppliers is more pronounced among non-SOEs.

Table 7. Analysis of heterogeneity(1).

	(1)	(2)	(5)	(6)
	State-Owned Enterprises	Non-State Enterprises	Non-Manufacturing	Manufacturing
$Treat \times Post$	0.0863 (0.54)	0.2672 *** (3.04)	0.1996 (1.35)	0.2098 ** (2.36)
Size	−0.0167 (−0.26)	0.0623 * (1.88)	0.0265 (0.52)	0.0139 (0.38)
Lev	0.3139 (0.72)	−0.0736 (−0.38)	0.0446 (0.14)	−0.0282 (−0.14)
Roa	−4.3264 * (−1.94)	2.3920 ** (2.17)	−1.5291 (−0.81)	2.1589 * (1.79)
Age	−0.0755 (−0.37)	−0.0284 (−0.38)	−0.3054 ** (−2.32)	0.0006 (0.01)
Rec	0.9800 (1.40)	−0.0251 (−0.10)	0.4206 (1.08)	0.0519 (0.17)

Table 7. Cont.

	(1)	(2)	(5)	(6)
	State-Owned Enterprises	Non-State Enterprises	Non-Manufacturing	Manufacturing
Cash	0.0977 (0.21)	−0.0968 (−0.46)	0.3342 (0.96)	−0.2198 (−0.94)
Invt	1.7581 *** (3.05)	0.7953 *** (2.87)	1.1391 *** (2.93)	0.9138 *** (2.86)
Fix	−0.1187 (−0.87)	0.0001 (0.83)	−0.2383 (−1.30)	0.0001 ** (2.45)
Gdp	0.0005 (0.02)	−0.0186 (−0.81)	−0.0041 (−0.11)	−0.0208 (−0.96)
Constant	3.6501 ** (2.31)	3.6259 *** (4.47)	4.8691 *** (4.07)	4.1144 *** (4.53)
Industry fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	1340	4696	2073	3963
R ²	0.184	0.101	0.107	0.118
Chow test	T-value = 13.72 ***		T-value = 8.57 ***	

Note: This table reports the regression results of the heterogeneity test for the effect of circuit court establishment on the distance of distribution of suppliers to firms. Columns (1) and (2) compare the impact of circuit court establishment between SOEs and non-SOE firms. Columns (3) and (4) compare the impact of circuit court establishment between non-manufacturing and manufacturing firms, where a firm is considered to be manufacturing if its industry code begins with ‘C’ and vice versa. Chow test is the t-value of the test for differences in coefficients between groups. The standard errors are clustered at the firm level. *t*-statistics are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

4.4.2. Manufacturing Industry

Previous research suggests that judicial quality effectively enhances the enforcement of contracts, which in turn influences firms’ purchasing decisions and productivity [52]. Manufacturing is a contract-intensive industry and therefore we predict that the establishment of circuit courts may be more beneficial to firms in the manufacturing industry. We re-ran the DID analysis for firms in the manufacturing industry and firms in other industries and the results are presented in Columns (3) and (4) of Table 7. The coefficient on *Treat × Post* is only significantly positive at the 5% level in the manufacturing industry sub-sample, indicating that the effect of circuit courts on distance to suppliers is concentrated in firms in the manufacturing industry.

4.4.3. Firm Size

Small and Medium-Sized Enterprises (SMEs) have a smaller number of suppliers, are able to communicate more adequately with their suppliers, and have lower marginal costs of changing suppliers [53]. We divided sample firms into two groups based on the median value of firm size and re-estimated the DID model. Results in Columns (1) and (2) of Table 8 show that the coefficient on *Treat × Post* is significant at the 1% level for smaller firms but insignificant for larger firms, implying that the impact of the establishment of circuit courts on distance to suppliers is more evident among SMEs.

Table 8. Analysis of heterogeneity(2).

	(1)	(2)	(3)	(4)
	Large Firms	Small Firms	Strong Market Competition	Weak Market Competition
Treat $\times$ Post	0.1077 (0.91)	0.2963 *** (2.86)	0.0773 (0.78)	0.3089 ** (2.54)
Size	0.0438 (0.86)	0.0706 (1.11)	0.0116 (0.27)	0.0250 (0.63)
Lev	−0.0150 (−0.06)	−0.0448 (−0.20)	−0.1172 (−0.51)	0.1427 (0.54)
Roa	0.1769 (0.12)	2.4608 * (1.79)	1.9824 (1.50)	1.0056 (0.69)
Age	−0.2520 ** (−2.26)	0.0296 (0.34)	−0.0491 (−0.48)	−0.1829 * (−1.89)
Rec	0.2724 (0.68)	0.1560 (0.52)	0.5775 * (1.79)	0.1447 (0.38)
Cash	0.2310 (0.70)	−0.1122 (−0.47)	0.2502 (0.95)	−0.0060 (−0.02)
Invt	1.2591 *** (3.51)	0.9407 *** (2.89)	1.0269 *** (2.79)	1.3900 *** (3.86)
Fix	−0.3501 * (−1.74)	0.0001 (0.97)	0.0002 ** (2.54)	−0.0333 (−0.12)
Gdp	−0.0100 (−0.41)	−0.0158 (−0.50)	−0.0114 (−0.44)	−0.0107 (−0.38)
Constant	4.1860 *** (3.46)	2.8702 ** (1.99)	5.0663 *** (4.93)	4.1768 *** (4.38)
Industry fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	3047	2989	3009	3027
R ²	0.084	0.160	0.125	0.113
Chow test	T-value = 5.74 ***		T-value = 5.30 ***	

Note: This table reports the regression results of the heterogeneity test for the effect of circuit court establishment on the distance of distribution of suppliers to firms. Columns (1) and (2) compare the impact of circuit court establishment on large and small firms, where we define a firm as large when its total assets are greater than the median of the total assets of other firms in the year, otherwise as small. Columns (3) and (4) compare the impact of intense and moderate market competition on circuit court establishment, where we use the HHI index as a classification if the HHI index of the industry in which the firm is greater than the median of the HHI index of all industries in the year, the firm is in a mildly competitive market environment, otherwise it is in a highly competitive market environment. Chow test is the t-value of the test for differences in coefficients between groups. The standard errors are clustered at the firm level. *t*-statistics are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

4.4.4. Product Market Competition

Firms are reluctant to adjust their operating strategies and to take on unknown risks when faced with high levels of market competition [54]. These firms are more likely to maintain their original operating strategies when new policies are implemented. In contrast, when firms face less external competition pressures, they are more able to afford to change suppliers, bear the risks, and actively adjust their operating strategies. We measured the

degree of product market competition by the Herfindahl–Hirschman Index (HHI) and divided firms into two groups based on the median value of HHI of all industries in a year. A higher HHI indicates a higher level of market competition. We re-ran the DID analysis in the two subsamples and present the results in Columns (3) and (4) of Table 8. The results show that the establishment of a circuit court has a significant and positive effect on distance to suppliers at the 5% level for firms from industries with low market competition, while no significant effect is found for firms from industries with high market competition.

5. Conclusions

This paper utilizes the establishment of circuit courts in China as a quasi-natural experiment to investigate the impact of enhancement in legal institutions on the distribution of suppliers. The results of the difference-in-differences analysis document a significant increase in the distance to suppliers of firms after the establishment of circuit courts. Our results hold after a series of robustness tests. Further analyses indicate that the establishment of circuit courts increases distance to suppliers by improving local judicial quality and reducing domestic market segmentation. The impact of circuit courts is more pronounced for non-SOEs, SMEs, firms from the manufacturing industry, and those from industries with low market competition.

Our paper has important policy implications. Market segmentation is a critical issue in global economy development. Our results provide novel evidence on how the enhancement in legal institutions motivates a unified market and more sustainable supply chain network. Legal reforms may be an important way for developing capital markets to promote trading across regions, break market segmentation, and promote economic growth in the long run. In addition to this, this paper not only adds to the literature on judicial independence on market segmentation but also completes the research on the impact of judicial independence on firms' business decisions.

However, this paper still has the following limitations: First, the supplier distribution distance data used in this paper are based on the top five suppliers' distribution data. Such a measurement method has a certain degree of bias and its accuracy needs to be improved. Secondly, limited by the way of obtaining data in this paper, only the data samples from 2011 to 2016 were obtained. Therefore, this paper only selected the first and second circuit courts as the research objects and cannot comprehensively evaluate the effect of the establishment of the circuit courts.

Future research needs to explore the impact of legal strengthening on market segmentation in more detail. For example, the customer distribution of enterprises can be used as another important dimension of market segmentation to explore the impact of legal strengthening on market segmentation. Future research can also focus on international comparisons, such as the comparison between China and other emerging market countries and the comparison between emerging market countries and developed countries, in order to reveal the general law of the impact of legal strengthening on market segmentation and to enrich and develop existing theories.

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