Agglomeration by Source of Import, Uncertainty and Enterprise Import Behavior

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ABSTRACT

According to the phenomenon of concentration in importing countries, the enterprises in the same region are referred to as agglomeration by import sources. According to single importing country and diversified importing countries, the enterprises are referred to as specialized agglomeration by import sources and diversified agglomeration by import sources respectively. In this paper, it reveals the influence mechanism of agglomeration by import sources on the enterprises import volume and the number of importing countries under the uncertain environment, which is carried out on the basis of the perspective of signal effect. At the same time, it carries out the empirical test by using the data from the transaction level of micro-enterprises in China. After the study, it is found that agglomeration by import sources has a positive impact on the import of enterprises from specific countries, while specialized agglomeration by import sources has a negative impact on the number of import origin countries of enterprises. However, the increase in the level of specialized agglomeration by import sources will increase the uncertainty impact of importing countries on the import volume of enterprises. In addition, diversified agglomeration by import sources have a positive impact on the number of enterprise importing countries, and the increase in the level of diversified agglomeration by import sources will increase the uncertainty impact of importing countries on the number of enterprises importing countries. However, it will reduce the uncertainty impact of the importing country on enterprise import volume. As a result, it can be seen the conclusion in this paper is helpful to guide enterprises to expand and diversify imports.

Keywords: *Importers' agglomeration by source of import; Signal effect; Uncertainty; Import*

INTRODUCTION

Many papers have paid attention to the uncertainties in the import and export trade (Greenland et al., 2017; Feng et al., 2017).Before importing, it is difficult for enterprises to fully understand the economic environment of the import market or the reputation of suppliers, and the information asymmetry brings a lot of uncertainties to importing enterprises. So, enterprises can obtain information about the importing countries through their own research or the surrounding enterprises. Bisztray (2017), Hu and Tan (2017) paid attention to the influence of neighborhood effect on enterprises' import behavior, but neglected the uncertainties in enterprises' import activities. Whether there is a link between agglomeration by source of import and uncertainty, and how does agglomeration by source of import affect enterprises 'import behavior under uncertain environment?

Based on the existing theory of agglomeration

and heterogeneous enterprise trade, the analysis of the relationship between agglomeration by source of import and enterprise import behavior under uncertainties. From the perspective of the signal effect, this paper shows that unlike the traditional mechanism of industrial agglomeration, agglomeration by source of import does not create noticeable productivity, but has significant signal effects. Specialized agglomeration by source of import and diversified agglomeration by source of import have positive impacts on the import volume of enterprises from specific country. Accompanied by the increase of specialized agglomeration by source of import, the uncertainty of the source country of import has a greater effect on the promotion of the import volume of enterprises. With the increase of diversified agglomeration by source of import, the effect of importing countries' uncertainties on the enterprise' import volume is weakened. At the same time, the higher the diversified agglomeration by source of import is, the more the number of importing

countries will be, and the greater the effect of the uncertainty of on the number of enterprises importing countries will be. The economic logic which is contained in the cited conclusion is more candid. The productivity effects of agglomeration by source of import is not obvious enough due to the absence of strong intermediate input sharing effect and technology spillover effect, but this agglomeration is conducive to the firms in the same region to exchange and obtain information, reduce communication costs, improve information accuracy, and then change their import behaviors.

The literature related mainly includes two categories: The first is the study of the relationship between economic policy uncertainty and trade. Greenland et al. (2014) pointed out that the uncertainty of economic policy would increase the production cost of enterprises and the sunk cost of enterprises. It was also concluded that the increased uncertainty of economic policy had a restraining effect on the expansion margin of exports, but had no obvious effect on the intensive margin. Greenland et al.(2017)show that the effect of uncertainty on trade is increasing in the importance of sunk trade costs. Feng et al (2017) argued that the uncertainty of trade policy reduced the expected value of export profits of enterprises, raised the cutoff productivity level of export enterprises, made it difficult for inefficient enterprises to pay the fixed cost of export, and thus inhibited export trade. Carballo et al.2018）find that uncertainty played an significant role in explaining the trade collapse in the 2008 financial crisis and the subsequent partial recovery .

The second category is related to information spillover and import. Leda（2016）indicates that the agglomeration of importers in a certain region/industry may generate important information that can be accessible by other enterprises in the region, thereby reducing the fixed costs related to sourcing inputs from abroad and thus facilitating their decision to follow suit. Hu and Tan (2017) pointed out that information spillovers from neighboring importers would effectively reduce uncertainty in foreign markets, while positive price signals from neighboring importers increase the likelihood that new importers import from this country and increase initial import volumes from the same country. Bisztray（2017）points out that the there are significant knowledge

spillovers in both spatial and managerial networks. Having a peer which has imported from a particular country is more than twice as likely to import from that country, but the effect diminishes rapidly as the distance increases, and spillovers are heterogeneous: when firms or peers are larger or more productive, spillovers are stronger.

Different from the above cited studies, this paper mainly analyses the import behaviors of firms in uncertain environment from the perspective of agglomeration by source of import, and further divides agglomeration into two forms: Specialized agglomeration and diversified agglomeration, investigating the influence mechanism of signal effect. In work that is similar to this paper, Bisztray (2017) argued that the promotion effect of "neighborhood" on enterprise imports is based on knowledge spillover from spatial and managerial network, but we consider the fact that the importers are facing uncertainty.

The following structure of this paper is as follows: the second part is the mechanism and theoretical hypothesis; the third part is data; the fourth part is empirical research; the fifth part is conclusions.

MECHANISMS AND THEORETICAL HYPOTHESIS

Like exporters, importers are faced with serious information barriers in import activities. In order to observe the price and quality of products in remote import markets, enterprises need to pay higher information search costs to avoid market uncertainties which are caused by the information frictions. For the first-time importers, they can deal with the import uncertainties through their own research, but they need to pay a high cost of information search.

In fact, firms can obtain import information from nearby firms in the same region (Bisztray,2017). Unlike traditional industrial agglomeration, agglomeration by source of import can enhance the exchanges between firms, and then get information about import countries. Moreover, the more firms with the similar country are, the larger the import volume will be, and the greater the possibility for firms to obtain accurate information about import market, which is conducive to reducing the cost of information search for importing enterprises, thereby increasing the import volume from specific markets. Since most enterprises have

more than one importing countries, the importing countries of the surrounding enterprises are not the same. For enterprises with high levels of diversified agglomeration, firm can obtain information of multiple import markets, and the level of diversified agglomeration is higher. The richer the information in the different import markets that are integrated in the local market. However, enterprises with higher levels of diversified agglomeration receive relatively scattered information on the import market and are the decentralized signals. Compared with the export market, it is easier for the importer to find the supplier than the exporter to find the customer. At the same time, the enterprise needs relatively little information, therefore, it can be concluded that the signal effect of diversified agglomeration is also conducive to increasing the imports of enterprises from specific markets.

For exporters, when the local market is more uncertain, enterprises will comprehensively measure the uncertainties which are faced by the domestic sales and exports respectively. In order to maximize the profits, enterprises will actively explore the export markets with relatively stable economic environment to compensate for the shrinkage of domestic market by the means of expanding export markets. From the point of view of the operation, the loss of profits in domestic market and potential profit margin in foreign market will promote enterprises' export enthusiasm and willingness to export. Then, for importers with low uncertainty level, it is easier to grasp the right voice at this time, so that they can be in a favorable position in the transaction, thus increasing the import volume of markets with high uncertainty level. Under the condition of information asymmetry between domestic import enterprises and foreign markets, specialized agglomeration can help enterprises to accurately capture the uncertain signal of import market. By reducing fixed costs and other channels, the impact of uncertainty can be amplified, and then the import volume of enterprises from specific countries can be increased. Diversified agglomeration provides relatively dispersed signals, which is conducive to the uniformity of import volume for each import country. Although the uncertainty of specific import country has a positive effect on enterprise import volume, when the number of import countries in the region increases and the import volume tends to be uniform, the signals about other import markets which are generated by diversified agglomeration will weaken the

effect of the uncertainties on the enterprise imports.

In addition, for the regions which have high level of diversified agglomeration, diversified import markets make it easier for enterprises to understand the import situation of different markets. When promoting the import volume of the enterprises from specific markets, the more countries of import origin that enterprises can choose, the higher the level of diversified agglomeration in the region will be, and the greater the role of uncertainty of specific import country in enhancing the number of enterprise importing countries. Specialized agglomeration mainly promotes enterprises to obtain the signals of specific import countries, which is for that for the single import market in the region, it is difficult for enterprises to understand the import information of other countries. As a result, the enterprises with high level of specialized agglomeration concentrate on importing from specific markets. Based on the above mechanism analysis, hypothesis 1 and hypothesis 2 are proposed in this paper.

Hypothesis 1: Specialized agglomeration by source of import and diversified agglomeration by source of import have positive impacts on the import volume of enterprises from specific countries. With the increase of specialized agglomeration, the uncertainty of the importing country has a greater effect on the promotion of the enterprises importing volume, with the increase of diversified agglomeration; the effect of the uncertainty on the import volume of enterprises is weakened.

Hypothesis 2: Diversified agglomeration by source of import is conducive to increasing the total number of the enterprises importing countries, and the higher the diversified agglomeration is, the greater the effect of the uncertainties on the number of enterprises importing countries will be.

Marshall (1920) holds that firms can obtain external economic effects such as labor force pooling, shared intermediate input and knowledge spillover from the agglomeration economy. Agglomeration by source of import does not necessarily improve the correlation between industries, which may weaken the traditional industrial agglomeration effect. Hypothesis 1 and 2 are still based on the spillover effect of agglomeration. However, dissimilar to traditional industrial agglomeration which focuses on domestic markets and product markets, the spillover effect of agglomeration by

source of import is the spillover of import markets information, it is signal effect. At the same time, specialized and diversified agglomeration provide firms with two different signal effects respectively, with the increase of agglomeration degree, the former signal becomes more accurate, while the latter becomes more extensive.

DATA

Data Sources

The firstly-used source is China Customs Database between the years 2000 and 2006. It contains detailed information including firm identifiers, product codes, origin country, trade regime (ordinary trade or processing trade), and transaction value. In order to get the data reflecting the characteristics of firms, National Bureau of Statistics of China from 2000 to 2006 has also been adopted. The sample includes all state owned enterprises and non-state owned enterprises with annual sales of more than five million Yuan. Following the practices of Dai Mi et al. (2016), we drop observations which meet one of the following conditions: firstly, the number of employees in firms is less than eight; secondly, any main financial metrics, including the industrial sales volume, business income, export delivery value, employment number and total fixed assets is negative or missing. We combine the two datasets following Yu (2015). The initial merger is conducted once according to the firm's Chinese name and year. To increase the number of qualified matching firms we rely on two other common variables to identify the firms: postal code and the last seven digits of the firm's telephone number. Considering the import trade of firms at the core, only the import trade data in the emerged data is retained, and the final data is 52,425 firms after adding the Year-Enterprise-Product-Source of Import model to the Year-Enterprise-Source of Import level.

The BBD monthly index compiled by Baker et al. (2016) is also adopted to measure country's economic policy uncertainty (EPU), a long-term traceable index based on newspaper coverage index, which currently covers 19 countries, namely, India, Japan, Singapore, Korea, the United Kingdom, Germany, France, Italy, the Netherlands, Spain, Sweden, Russia, Brazil, Chile, Mexico, Canada, the United States and Australia. We convert EPU monthly data into annual data by simple count, and matched to the merged database of China Customs Database and National Bureau of Statistics of China.

Besides, GDP per capita and population of source of imports in this paper are provided by the World Bank database, and the data of gravity approach taken from CEPII between China and source of imports incorporate contiguity, a common language and geographic distance, among other valuables.

Variable Selection

Enterprises S' Import

The firms' import value includes the following two levels: one is enterprise-import country-year level of import volume (lnvaluefct), and the number of enterprises importing countries (num country).

Agglomeration Level

The indicators to measure level of agglomeration include Herfindahl index, EG index, location quotient and DO index based on enterprise distance measurement. Location quotient is chosen to assess the level of specialized agglomeration, after taking into account that location entropy can eliminate the difference of regional scale, and can truly reflect the spatial distribution of geographical elements. In this paper, the ratio of the total import from the country c (except enterprise f) to the total import from the region (with the basic unit of city) is divided into the proportion of the total import from the country c of all enterprises in the country to the total import of enterprises in the country, which is the spefct of specialized agglomeration, spefct is shown in formula (1) .The diversified agglomeration divut represents the reciprocal of absolute deviation between the proportion of total imports from importing country c' (c' is the other importing country) and that from importing country c', divutis shown in formula (1). The data for calculating agglomeration indicators come from China Customs database. In actual regression, both specialized country agglomeration and diversified country agglomeration indicators are lagged by one period, which are expressed as spefc,t-1、divu,t-1, respectively.

Economic Policy Uncertainty (EPU)

EPU compiled by Baker et al. (2016) is a monthly frequency index, which is converted into annual data averagely by simple arithmetic; EPU's arithmetic average expression is shown in formula (3), where the subscript m represents the month. In addition, according to the second part of the mechanism analysis, the import behavior of enterprises is related to the

uncertainty of both local and foreign markets. Therefore, the explanatory variable used in this empirical analysis is the ratio of EPU in importing countries to EPU in China. Taking into account the lag effect of EPU on imports, we lag the EPU index in actual regression one period and present it as EPUrc,t-1.

$$spe_{fct} = \frac{\dfrac{imp_{uct} - imp_{fct}}{\sum_c imp_{uct}}}{\dfrac{\sum_u imp_{uct}}{\sum_c \sum_u imp_{uct}}} \qquad (1)$$

$$div_{ut} = \frac{1}{\sum_{c'} \left| \dfrac{imp_{uc't}}{\sum_c imp_{uct}} - \dfrac{\sum_u imp_{uc't}}{\sum_u \sum_c imp_{uct}} \right|} \qquad (2)$$

$$EPU_{ct} = \frac{\sum_{m=1}^{12} EPU_{cm}}{12} \qquad (3)$$

Other Control Variables

$$\ln value_{fct} = \gamma_0 + \gamma_1 AGG_{t-1} + \gamma_2 AGG_{t-1} \times EPUr_{c,t-1} + \gamma_3 EPU_{c,t-1} + \gamma_4 Z + \varepsilon_{fct} \qquad (6)$$

$$numcountry_{ft} = \lambda_0 + \lambda_1 AGG_{t-1} + \lambda_2 AGG_{t-1} \times EPUr_{c,t-1} + \lambda_3 EPU_{c,t-1} + \lambda_4 Z + \varepsilon_{ft} \qquad (7)$$

In equation (4), the dependent variable lnvaluefct is import volume from specific market, productivity, AGGt-1is the level of agglomeration by source of import, including specialized one speuc,t-1 and diversified one divu,t-1.Z represents control variable, ε represents a random disturbance term, subscript f represents enterprise, t represents year, c represents country and u represents city. In

Benchmark Regression

The control variables at source of imports level cover log per capita GDP (gdpper) and population (population), log distance（dist）, and the dummy variables with respect to China include contiguity(contig) and a common language (comlang). The control variables at firm level include the log enterprise productivity（tfp）, log capital-labor ratio（klratio）, and log employment（scale）.

EMPIRICAL RESEARCHES

Model Setting

To test Hypothesis 1 and 2 in mechanism analysis, the following three models are estimated in this paper:

$$\ln value_{fct} = \beta_0 + \beta_1 AGG_{t-1} + \beta_2 Z + \varepsilon_{fct} \qquad (4)$$

$$numcountry_{ft} = \delta_0 + \delta_1 AGG_{t-1} + \delta_2 Z + \varepsilon_{ft} \qquad (5)$$

equation (5), numcountryft represents the total number of enterprise importing countries. AGGt-1×EPUrc,t-1 represents the interaction term between agglomeration level and ratio of EPU in importing country to EPU in China, which include speuc,t-1× EPUrc,t-1 and divu,t-1× EPUrc,t-1 .The regression results of Hypothesis 1 are shown in table 1.

Table1. Test for Hypothesis 1

	(1)	(2)	(4)	(5)
	lnvalue	lnvalue	lnvalue	lnvalue
$spe_{fc,t-1}$	0.0187***	0.0176***		
	(0.0056)	(0.0051)		
$div_{u,t-1}$			0.0313**	0.0261*
			(0.0150)	(0.0143)
scale	0.3152***	0.3046***	0.3138***	0.3035***
	(0.0105)	(0.0098)	(0.0105)	(0.0098)
klratio	0.4609***	0.4009***	0.4598***	0.3991***
	(0.0094)	(0.0096)	(0.0094)	(0.0096)
tfp	0.1548***	0.1683***	0.1540***	0.1675***
	(0.0099)	(0.0090)	(0.0099)	(0.0090)
population	0.2450***	0.2733***	0.2412***	0.2700***
	(0.0071)	(0.0064)	(0.0070)	(0.0064)
contig	-0.3768***	-0.3762***	-0.3707***	-0.3713***
	(0.0250)	(0.0243)	(0.0249)	(0.0242)
comlang	0.4088***	0.4782***	0.4001***	0.4717***

	(0.0285)	(0.0271)	(0.0283)	(0.0270)
dist	-0.6997***	-0.7282***	-0.6973***	-0.7264***
	(0.0103)	(0.0097)	(0.0103)	(0.0097)
gdpper	0.0989***	0.1493***	0.0949***	0.1466***
	(0.0080)	(0.0073)	(0.0079)	(0.0072)
City	YES	YES	YES	YES
Year	YES	NO	YES	NO
Industry-Year	NO	YES	NO	YES
observations	327893	327840	329569	329521
R-squared	0.116	0.156	0.116	0.156

Note: *The standard error of robustness is in parentheses. * The levels of ** and *** are 10%, 5% and 1% respectively, which are the same below.*

As for regression in Table1, all dependent variables are the import volume of firms from specific market. The explanatory variable in first two columns is level of specialized agglomeration: the first one contains the control variables at country and enterprise level, and controls fixed year and city. The resulting coefficient is significantly positive. Column (2) further controls fixed industry-year, considering that factors such as industrial policies affect imports as well. The resulting coefficient $spe_{fc,t-1}$ is still significantly positive, it shows that specialized agglomeration has a positive impact on the import volume of enterprises. The explanatory variable in last two columns is level of diversified agglomeration, and the regression mode is the same as the first two columns. The results show that the $div_{u,t-1}$ coefficients are significantly positive, indicating that diversified agglomeration also has a positive impact on the import volume of enterprises .

Different from the traditional mechanism of industrial agglomeration, agglomeration by source of import mainly affects enterprises import behavior through signal effect. In order to verify the existence of signal effect, this paper introduces $EPUr_{c,t-1}$ and $spe_{fc,t-1} \times EPUr_{c,t-1}$, $div_{u,t-1} \times EPUr_{c,t-1}$,The regression results are shown in table 2.Table 2 considers the impact of agglomeration by source of import on enterprise imports under uncertain conditions.

Table2. *Test for Hypothesis 1*

	(1) lnvalue	(2) lnvalue	(3) lnvalue	(4) lnvalue
$spe_{fc,t-1}$	0.0545**	0.0528**		
	(0.0253)	(0.0261)		
$spe_{fc,t-1} \times EPUr_{c,t-1}$	0.0569**	0.0568**		
	(0.0235)	(0.0241)		
$div_{u,t-1}$			0.0673**	0.0713***
			(0.0282)	(0.0276)
$div_{u,t-1} \times EPUr_{c,t-1}$			-0.0345	-0.0405*
			(0.0226)	(0.0221)
$EPUr_{c,t-1}$	-0.0238	-0.0058	0.1337**	0.1680***
	(0.0414)	(0.0416)	(0.0622)	(0.0615)
scale	0.3474***	0.3307***	0.3441***	0.3279***
	(0.0105)	(0.0105)	(0.0105)	(0.0105)
klratio	0.5247***	0.4626***	0.5224***	0.4599***
	(0.0098)	(0.0107)	(0.0098)	(0.0107)
tfp	0.1732***	0.1839***	0.1732***	0.1837***
	(0.0100)	(0.0097)	(0.0100)	(0.0097)
population	0.3595***	0.3904***	0.3536***	0.3849***
	(0.0099)	(0.0097)	(0.0099)	(0.0097)
contig	-0.3669***	-0.4285***	-0.3534***	-0.4175***
	(0.0880)	(0.0835)	(0.0882)	(0.0836)
comlang	0.7160***	0.7954***	0.6970***	0.7780***
	(0.0477)	(0.0468)	(0.0477)	(0.0468)
dist	-0.7747***	-0.7924***	-0.7768***	-0.7947***
	(0.0107)	(0.0105)	(0.0107)	(0.0105)
gdpper	0.1581***	0.2036***	0.1504***	0.1968***

	(0.0210)	(0.0203)	(0.0210)	(0.0202)
City	YES	YES	YES	YES
Year	YES	NO	YES	NO
Industry-Year	NO	YES	NO	YES
observations	211429	211351	208316	211725
R-squared	0.144	0.177	0.322	0.175

The first two regressions shows that the interaction coefficients $spe_{fc,t-1} \times EPU_{rc,t-1}$ are positive and statistically significant, and the marginal coefficients of $EPU_{rc,t-1}$ are positive and significant, Taking Table 2 (1) as an example, the estimated coefficient of $EPU_{rc,t-1}$ is determined by $(-0.0238+0.0569 spe_{fc,t-1})$, but because one of the coefficient (-0.0238) has not passed the significance test, the estimated coefficient of $EPU_{rc,t-1}$ should be determined by $(0+0.0569 spe_{fc,t-1})$.

Meanwhile, the mean of $spe_{fc,t-1}$ is positive, and pass the significance test at the level of 1%. Finally, the coefficients of $EPU_{rc,t-1}$ are 0.0569 and greater than zero, this indicates that when the level of economic policy uncertainty in the importing country is higher than China, it will promote the import volume of domestic enterprises from the importing country, and specialized agglomeration can enhance the import promotion effect. In column (3), the interaction coefficient $div_{u,t-1} \times EPU_{rc,t-1}$ is negative, but it is not statistically significant, after adding the fixed effect of industry-year, it becomes negative and significant.

The results of the latter two columns regressions show that: when the level of diversified agglomeration is high, the uncertainty of economic policy of import country will have less effect on promoting enterprises' import from specific country.

This is because diversified agglomeration brings relatively scattered signals to enterprises, which is beneficial to the uniformity of import volume of each country of import source. When the import volume of enterprises from a specific country increases, the import signals of other countries weaken the effect of uncertainty on import promotion.

Table3. *Test for Hypothesis 2*

	(1) numcountry	(2) numcountry	(3) numcountry	(4) numcountry
$spe_{fc,t-1}$	-0.0025**	-0.0017**		
	(0.0011)	(0.0008)		
$div_{u,t-1}$			0.1639***	0.1431***
			(0.0261)	(0.0263)
scale	2.3432***	2.3058***	1.3417***	1.3479***
	(0.0890)	(0.0782)	(0.0264)	(0.0258)
klratio	1.4376***	1.4558***	0.7927***	0.9055***
	(0.0627)	(0.0572)	(0.0201)	(0.0219)
tfp	0.7371***	0.7268***	0.3598***	0.4121***
	(0.0726)	(0.0597)	(0.0209)	(0.0203)
City	YES	YES	YES	YES
Year	YES	NO	YES	NO
Industry-Year	NO	YES	NO	YES
observations	382905	382854	91592	91456
R-squared	0.367	0.471	0.252	0.315

All the regression variables in table 3 are the total number of enterprise importing countries, and the control variables include enterprise size, capital-labor ratio and enterprise productivity. The first two explanatory variables are specialized agglomeration, and the fixed effect is more stringent from left to right. The regression results show that the $spe_{fc,t-1}$ regression coefficients are negative after adding different fixed effects, this suggests that specialized agglomeration has a negative effect on the number of export markets of enterprises.It may be explained that specialized agglomeration makes enterprises concentrate on imports from specific country and reduces imports from other countries. The latter two explanatory variables are diversified agglomeration.

The regression mode is the same as the first two columns. After controlling the industry-year

fixed effect, the estimated coefficients of divu,t-1 is decreasing, but it is significantly positive. This shows that diversified agglomeration has a promoting effect on the total number of enterprises importing countries.

Table4. *Test for Hypothesis 2*

	(1)	(2)	(3)	(4)
	numcountry	numcountry	numcountry	numcountry
$spe_{fc,t-1}$	-0.0757	-0.0658		
	(0.0461)	(0.0409)		
$spe_{fc,t-1} \times EPUr_{c,t-1}$	-0.0443	-0.0465		
	(0.0403)	(0.0369)		
$div_{u,t-1}$			-0.4171***	-0.4599***
			(0.0769)	(0.0722)
$div_{u,t-1} \times EPUr_{c,t-1}$			0.5399***	0.5297***
			(0.0512)	(0.0469)
$EPUr_{c,t-1}$	0.2137***	0.1635***	-1.1914***	-1.2237***
	(0.0680)	(0.0633)	(0.1328)	(0.1206)
scale	2.0835***	2.0731***	2.0837***	2.0724***
	(0.0657)	(0.0615)	(0.0656)	(0.0614)
klratio	1.2167***	1.3341***	1.2167***	1.3329***
	(0.0513)	(0.0516)	(0.0513)	(0.0516)
tfp	0.6885***	0.6940***	0.6882***	0.6941***
	(0.0580)	(0.0500)	(0.0579)	(0.0500)
City	YES	YES	YES	YES
Year	YES	NO	YES	NO
Industry-Year	NO	YES	NO	YES
observations	211429	211351	211803	211725
R-squared	0.355	0.456	0.355	0.457

Table 4 considers the impact of agglomeration by source of import on the total number of enterprises' importing countries under economic policy uncertainty. The estimated coefficients of spefc,t-1×EPUrc,t-1 in the first two columns are negative, but they are not statistically significant. This shows that under the uncertainty of the import countries, the specialized agglomeration can not affect the total number of enterprises' importing countries through the signal effect. This is because the specialized agglomeration makes enterprises focus on importing from specific country. After controlling the industry-year fixed effect, the divu,t-1×EPUrc,t-1 estimated coefficients become smaller, but still significant. The results show that the economic policy uncertainty of is beneficial to the increase of the number of the enterprises' importing countries (calculated by the marginal coefficient), and the higher the level of diversified agglomeration, the more obvious the effect of economic policy uncertainty on the number of the enterprises' importing countries. As there are some large-scale importers in the same region, their existence will lead to overestimation of the impact of specialized agglomeration, and then influence the interaction between firms' import and agglomeration by source of import. In order to alleviate the endogenous problems caused by reciprocal causality, the regression samples in table 5 exclude the large-scale importers, and the results are as follows.

Table5. *Excluding Large Firms' Effects on Regression Result*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	lnvalue 50%	lnvalue 50%	lnvalue 50%	lnvalue 50%	lnvalue 30%	lnvalue 30%	lnvalue 30%	lnvalue 30%
$spe_{fc,t-1}$	0.0001	0.0667**			0.0001	0.0689**		
	(0.0001)	(0.0301)			(0.0001)	(0.0303)		
$spe_{fc,t-1} \times EPUr_{c,t-1}$		0.0570**				0.0553**		
		(0.0274)				(0.0276)		
$div_{u,t-1}$			0.0301***	0.1003***			0.0309***	0.0976***
			(0.0059)	(0.0244)			(0.0059)	(0.0244)
$div_{u,t-1} \times EPUr_{c,t-1}$				-0.0578***				-0.0545**

				(0.0223)			(0.0223)
$EPUr_{c,t-1}$		-0.0440		0.1737***		-0.0432		0.1637***
		(0.0438)		(0.0620)		(0.0439)		(0.0619)
scale	0.3992***	0.4306***	0.3947***	0.4283***	0.3994***	0.4310***	0.3949***	0.4288***
	(0.0230)	(0.0272)	(0.0229)	(0.0272)	(0.0230)	(0.0272)	(0.0229)	(0.0272)
klratio	0.2718***	0.3085***	0.2685***	0.3070***	0.2714***	0.3080***	0.2679***	0.3064***
	(0.0198)	(0.0232)	(0.0198)	(0.0233)	(0.0198)	(0.0232)	(0.0198)	(0.0233)
tfp	0.0635***	0.0567***	0.0624***	0.0552***	0.0635***	0.0567***	0.0624***	0.0553***
	(0.0094)	(0.0109)	(0.0093)	(0.0108)	(0.0094)	(0.0109)	(0.0093)	(0.0108)
population	0.3502***	0.5017***	0.3497***	0.4973***	0.3501***	0.5015***	0.3497***	0.4970***
	(0.0065)	(0.0103)	(0.0065)	(0.0103)	(0.0065)	(0.0103)	(0.0065)	(0.0103)
contig	-0.4156***	-0.5005***	-0.4175***	-0.4939***	-0.4158***	-0.4934***	-0.4175***	-0.4891***
	(0.0253)	(0.0857)	(0.0252)	(0.0862)	(0.0253)	(0.0855)	(0.0252)	(0.0859)
comlang	0.6229***	1.0771***	0.6225***	1.0643***	0.6235***	1.0774***	0.6233***	1.0645***
	(0.0282)	(0.0489)	(0.0281)	(0.0490)	(0.0282)	(0.0489)	(0.0281)	(0.0490)
dist	-0.7358***	-0.8112***	-0.7340***	-0.8135***	-0.7359***	-0.8116***	-0.7341***	-0.8138***
	(0.0108)	(0.0119)	(0.0107)	(0.0120)	(0.0108)	(0.0119)	(0.0107)	(0.0120)
gdpper	0.2501***	0.3431***	0.2497***	0.3377***	0.2502***	0.3451***	0.2498***	0.3392***
	(0.0074)	(0.0208)	(0.0073)	(0.0208)	(0.0074)	(0.0208)	(0.0073)	(0.0207)
City	YES	YES	YES	YES	YES	YES	YES	YES
Industry-Year	YES	YES	YES	YES	YES	YES	YES	YES
Observations	330831	207878	332488	208224	330710	207787	332355	208131
R-squared	0.287	0.324	0.287	0.322	0.287	0.324	0.287	0.321

The first four columns in table 5 exclude enterprises whose imports (enterprises-importing countries-year level) account for more than 50% of the total urban imports, while the last four columns exclude enterprises whose imports (enterprises-importing countries-year level) account for more than 30% of the total urban imports. The results are shown in table 5 $spe_{fc,t-1} \times EPUr_{c,t-1}$ estimation coefficients are significantly positive in statistics, $div_{u,t-1} \times EPUr_{c,t-1}$ estimation coefficients are negative and significant, which are consistent with the results of baseline regression. It shows that the above mechanism will not have a significant impact on the results. Considering that most of the imports from Hong Kong and Singapore are mainly transit trade, which can not directly reflect the import information from

Hong Kong and Singapore, enterprises' imports from these two sources may overestimate their specialized agglomeration level and underestimate the diversified agglomeration level of a region, thus affecting the benchmark regression results. Therefore, this section alleviates this problem by joining the interaction between the agglomeration level and the import share of Hong Kong and Singapore (the ratio of the import of city u from Hong Kong and Singapore to the total import of city u, expressed as ratio). The regression results are shown in Table 6. The results show that the $spe_{fc,t-1} \times ratio$ and $div_{u,t-1} \times ratio$ coefficients are all zero, indicating that the benchmark regression results are not affected by the size of imports from Hong Kong and Singapore within the city.

Table6. *Consider the Impact of Transit Trade on Enterprise Imports*

	(1)	(2)
	lnvalue	lnvalue
$spe_{fc,t-1}$	0.0001	
	(0.0001)	
$spe_{fc,t-1} \times ratio$	-0.0000***	
	(0.0000)	
$div_{u,t-1}$		0.0424***
		(0.0062)
$div_{u,t-1} \times ratio$		-0.0000***
		(0.0000)
ratio	1.0210***	0.9848***
	(0.2698)	(0.2726)
scale	0.4031***	0.3959***
	(0.0229)	(0.0229)

klratio	0.2733^{***}	0.2688^{***}
	(0.0197)	(0.0197)
tfp	0.0634^{***}	0.0624^{***}
	(0.0093)	(0.0093)
population	0.3456^{***}	0.3471^{***}
	(0.0065)	(0.0065)
contig	-0.4124^{***}	-0.4162^{***}
	(0.0251)	(0.0251)
comlang	0.6085^{***}	0.6128^{***}
	(0.0280)	(0.0280)
dist	-0.7304^{***}	-0.7302^{***}
	(0.0107)	(0.0107)
gdpper	0.2472^{***}	0.2488^{***}
	(0.0073)	(0.0073)
city	YES	YES
Industry-Year	YES	YES
observations	330928	332599
R-squared	0.298	0.295

In addition, the mode of enterprise trade (mainly processing trade) also affects the import of enterprises. This section alleviates this problem by joining the interaction between country agglomeration and the share of enterprises' processing trade import (the ratio of processing trade import at the enterprise-source country-year level to total import at the enterprise-source country-year level, expressed as pro). The regression results are shown in Table 7. It shows that the $spe_{fc,t-1} \times pro$ coefficients are significantly positive, indicating that the greater the proportion of enterprises engaged in processing trade in imports from specific countries of origin, the more obvious the role of specialized agglomeration in promoting the imports of enterprises. This is because most of the enterprises in processing trade are located in the processing trade area, and they have geographical agglomeration, when the level of specialized agglomeration is raised, it is beneficial to strengthen the original agglomeration spillover effect. In addition, the $div_{u,t-1} \times pro$ estimation coefficient is not statistically significant, because diversified agglomeration brings more dispersed signals to enterprises, and enterprises import more evenly, therefore, the higher proportion of processing trade in specific import source country will not promote the increase of enterprises 'imports.

Table7. *Consider the Impact of Processing Trade Patterns on Imports*

	(1)	(2)
	lnvalue	lnvalue
$spe_{fc,t-1}$	0.0000	
	(0.0000)	
$spe_{fc,t-1} \times pro$	0.0539^{***}	
	(0.0081)	
$div_{u,t-1}$		0.0156^{*}
		(0.0085)
$div_{u,t-1} \times pro$		0.0031
		(0.0126)
pro	1.7016^{***}	1.7572^{***}
	(0.0313)	(0.0470)
scale	0.3710^{***}	0.3696^{***}
	(0.0233)	(0.0232)
klratio	0.2654^{***}	0.2650^{***}
	(0.0198)	(0.0197)
tfp	0.0527^{***}	0.0520^{***}
	(0.0094)	(0.0094)
population	0.3654^{***}	0.3595^{***}
	(0.0064)	(0.0063)
contig	-0.4370^{***}	-0.4271^{***}
	(0.0244)	(0.0243)
comlang	0.5660^{***}	0.5573^{***}

	(0.0276)	(0.0275)
dist	-0.6794[***]	-0.6794[***]
	(0.0104)	(0.0104)
gdpper	0.3014[***]	0.2980[***]
	(0.0072)	(0.0072)
City	YES	YES
Industry-Year	YES	YES
Observations	330928	332599
R-squared	0.317	0.317

CONCLUSIONS

From the perspective of signal effect, this paper analyzes the relationship between importers' agglomeration by import-destination and enterprise import behavior under uncertainty, and makes an empirical analysis by using China's customs database and industrial enterprise database. It is found that specialized agglomeration by source of import and diversified agglomeration by source of import have positive impact on the import volume of enterprises from specific countries. With the increase of specialized agglomeration the uncertainty of the importing country has a greater effect on the promotion of the enterprises importing volume. With the increase of diversified agglomeration, the effect of uncertainty on the enterprises importing volume is weakened. At the same time, the higher the diversified agglomeration, the more the number of the enterprises importing countries and the greater the effect of the uncertainty on the number of enterprises importing countries.

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