Ethnic Diversity and the Quality of Exports: Evidence from Chinese firm-level data *

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Abstract

In this paper, we investigate the impact of ethnic diversity on the quality of export in China. We employ the recent firm-level Chinese export data together with the National Population Census in 2000. We find that ethnically homogeneous provinces export products of 24% higher quality on average than ethnically hetereogeneous provinces. More interestingly, this impact depends on the characteristics of the products. In particular, ethnic diversity has a negative impact on differentiated products but positive impact on homogeneous products.

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1 Introduction

Quality of a product plays an important role in economics and more particularly in international trade. For instance, this variable can be used to determine the pattern of trade of a country. Indeed, according to the Linder (1961) hypothesis, the value of a product is proportional to the income of the buyer. This hypothesis is supported by Hallak (2006) when he documents that rich countries tend to import expensive goods. Also, an implication of the Linder hypothesis is that rich countries have a large domestic market for high quality goods. As a result, these countries possess the comparative advantage in producing high-quality goods. It is then not surprising that the quality of the exported good increases with the income of the exporter. According to some estimates by Hummels and Klenow (2005) or Schott (2004), the quality of exports increase by up to 23% when the GDP per capita doubles.

Upgrading the quality of products is seen as an indicator of export and growth success. The workhorse trade model predicts that only large and productive firms can survive trade liberalization (Melitz, 2003). This prediction is widely supported in many studies. Moreover, they are more likely to upgrade their product quality. Indeed, Verhoogen (2008) document that firms in Mexico are more likely to train their workers and pass the quality control (an indicator that they upgraded their product quality) when they are large. Hence, observing better exported products indicates a more liberalized market. Moreover, better quality products bring more added value, which boosts the income of the country.

The quality of products has not received enough attention in the literature because unlike other economic variables such as GDP, it is not directly observed from the data. Only recently have sufficient metrics for this variable been discovered, thus the literature on quality has started growing. Unit value was the first natural candidate (Schott, 2004): expensive products are often of high quality. This measure, however, could be noisy especially

for certain products, in particular the ones with a narrow range of quality (Khandelwal, 2010). Since then, improved measures of quality based on the demand function have been found. The idea is that conditional on prices, the products with better sale values are of higher quality (see for instance, Hallak and Schott, 2011; Khandelwal, 2010).

These new measures of quality allow economists to understand this variable. On the macro level, country-specific factors can play a role here. Krishna and Maloney (2011) show that controlling for the product mix, OECD countries exported products that were of better quality and with a faster growth rate in quality than non-OCED countries. Hidalgo et al. (2007) also show that the pattern of the country's specialization depends on the "position" of this country. In particular, it can only specialize in and develop products that are close or "related" to its core products. Natural variables, such as the distance between the exporter and the importer, could also influence the quality of export, a phenomenon known as The Washington Apple Effect: countries tend to export higher quality goods to more distant locations (Bastos and Silva, 2010). On the micro level, firms export high quality goods because of their superior productivity (Johnson, 2012) and their better inputs (Manova and Zhang, 2012).

The novelty of our paper is to propose a new factor that has significant impact on the production of better products. This new factor is ethnic diversity, which is already used to explain the rate of economic growth. According to Easterly and Levine (1997), ethnic diversity is one of the reasons for the Africa's growth tragedy. They find that the most fractionalized countries in Africa were also the poorest countries. Also, Africa lagged behind East Asia as the former was more fractionalized than the latter. In an excellent survey Alesina and Ferrara (2005) provide the "pros" and "cons" of ethnic diversity. On the one hand, the skills of individuals from different ethnic groups are complementary in the production process; therefore more diversity implies improved efficiency. On the other hand, different ethnic groups have different preferences over the consumption of the public goods, leading to conflicts. The intersection of these two forces determines the impact of ethnic diversity on the economic performance of a region. In the spirit of these studies, we pose ourselves a different question: Does ethnic diversity have a statistically and economically significant impact on the quality of exports?

In order to answer this question, we take China as our case study. Over

the last decade the value of Chinese exports has risen substantially with an annual growth rate of more than 20 percent. In 2010, China surpassed Germany to become the largest exporter in the world by value. However, Chinese export cannot be fully explained by traditional economic models. The Chinese export basket is more sophisticated and complicated than can be accounted for by its income level (Rodrik, 2006) alone. Their export profile overlaps with those from the OCED countries (Schott, 2008). Moreover, the Chinese government is shifting their export base from "quantity" to "quality". Chinese exports have been pegged as low in both cost and quality, with "Made in China" seen as a pejorative label. To understand how exports could be upgraded in terms of quality is therefore important for policy makers.

China is also an ethnically diverse country with 56 ethnic groups the in mainland, with 19 of the groups having more than 1 million members each. They occupy several autonomous regions such as the Inner Mongolia , Guangxi Zhuang, Tibet, Ningxia Hui and Xingjian Uygur Autonomous Regions. There are also sub-provincial autonomous prefectures, as well as autonomous prefectures, counties, townships and villages scattered in all parts of China (see Figure 1). Therefore China is a good case to study the impact of diversity on their growing export.

Using our custom data from China' custom bureau, we find evidence that ethnic diversity does have a significant impact on the quality of products. Export from a hypothetical, completely ethnically heterogeneous province (i.e. where everyone belongs to a different ethnic group) in general shows greater than 30% lower quality as compared to a completely homogenous province (where everyone belongs to the same ethnic group). Additionally, we find that the impact depends on the characteristics of the product. In particular, while ethnic diversity lowers the quality the differentiated products, it can raise the quality of homogeneous goods. This result helps us to shed light on how ethnic diversity affects the quality of products in the region.

We can explain our findings by the following argument: people from different ethnic groups have different qualifications such as knowledge, experience, etc. that potentially improve the quality of exports. As Lazear (1999) points out, these qualifications have to be relevant and easily exchanged or learned. It is possible that different experiences and cultures are more relevant in homogenous agriculture than in differentiated manufacturing. For

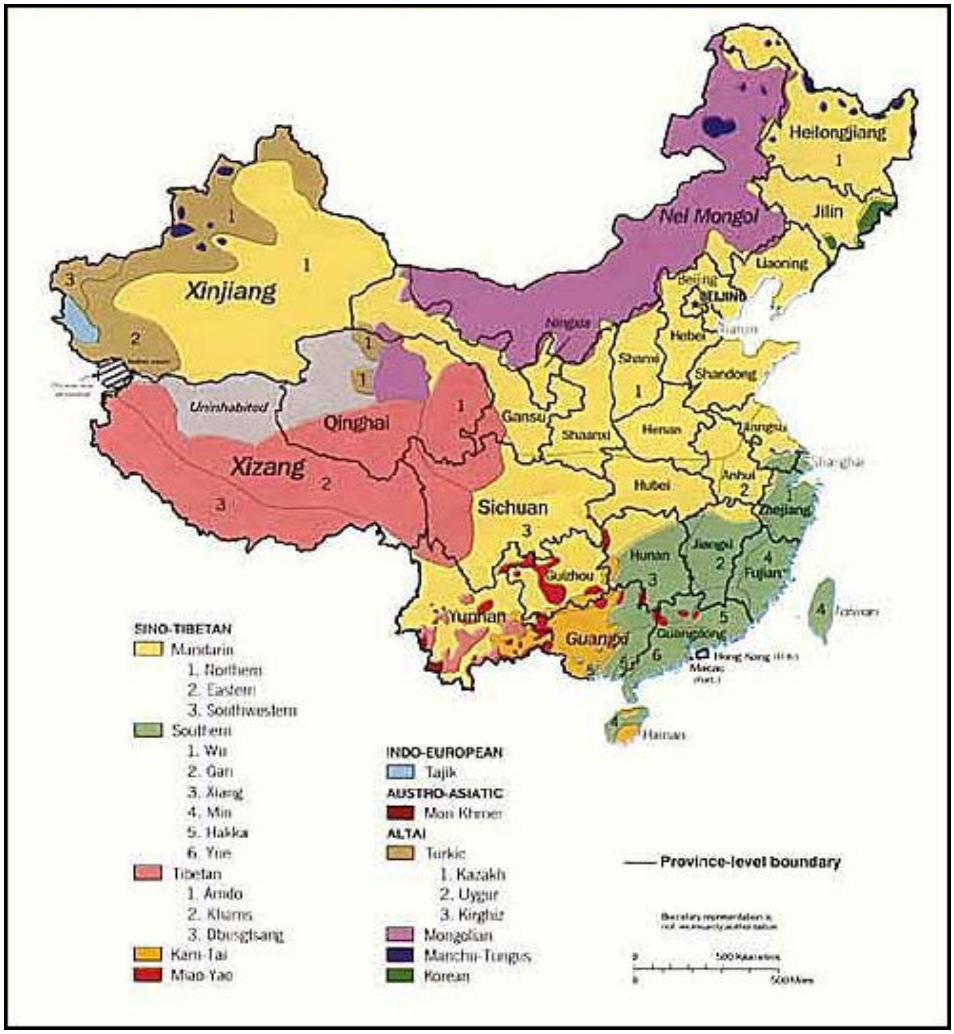

Figure 1: The minorities distribution in China. Source: University of Texas Perry-Castañeda Library Map Collection, 1990.

instance, knowledge and experience from his ancestors help the farmer to have a successful crop. However, people from different ethnic groups have difficulty communicating. With different background, they could interpret the same object or notion by different ways. Indeed, according to the linguistic relativity principle, or the Sapir–Whorf hypothesis, speakers of different languages tend to think and behave differently depending on the language they use. A common object is therefore interpreted in different ways across different groups. This divergence is greatly exaggerated by the complexity of the ideas. In our context, heterogeneous goods are more complex than homogeneous goods because they have different varieties, thus more characteristics than the latter.

Another way to explain our result is the following: on the one hand, a diversified team helps to internationalize the products and the firm. As a result, the firm can fare better in foreign market. A recent study by Parrotta, Pozzoli and Sala (2014) shows that the firms with a diversified workforce tend to have better export performance than their counterparts. On the other hand, our data shows that workers in differentiated sectors are complementary rather than substitutable. As a result, they have to collaborate closely to produce differentiated goods. In this case, miscommunication because of fractionalization can be a hindrance to the success of the firm.

Our paper can fit in well in the comparative advantage in trade literature. The conventional sources of comparative advantage are productivity as in the Ricardian model and factor endowment as in the Heckscher-Ohlin model. Recently Grossman and Maggi (2000) showed that the distribution of factor endowment also play a role. In particular, the country with a relatively homogenous population exports the goods produced by a technology with a higher degree of complementarity tasks while the country with a more diverse workforce exports the goods for which individual success is more important. Matching between workers and firms is also another source (Grossman, Helpman and Kircher, 2013). Empirically, Bombardini et al. (2012) provide evidence that countries with dispersed skill distribution specialize in sectors with a lower degree of complementarity in workers' skill. Our paper is in line with these studies: our results suggest that heterogeneous provinces or countries have the comparative advantage in producing differentiated goods with high quality.

The organization of the paper is as follows. Our data will be presented in

Section 2. Section 3 lays out the empirical strategy and presents our results. We will show some robustness checks in Section 3.2 and Section 4 concludes

2 Data

2.1 The case of China export

For the past thirty years, China economic growth has been the result of generally well-thought out five-year economic plans. A major part of this success is driven by fast growing exports in most sectors. China now trades with more than 200 nations and territories, making it the largest exporter in the world.

One of the more difficult problems for a developing country to solve is how to change the perception that their exports are both low in price and quality (see Midler, 2009). In order to broaden their export base, some countries work to upgrade the quality of products.

In this project we will employ customs data which records all types of trade, including processing trade, exchanges between international organizations, required materials and machines in an oversea contract, etc. However, as Dai, Maitra and Yu (2011) suggested, it is crucial to separate the processing trade away from other exporters in China. Indeed, they documented that, unlike other countries processing trade exporters, China is less productive and creates less value add per worker than other industries. For this reason, we eliminated processing trade from our study. In particular, we focus on general trade as the quality of the goods in other forms of trade such as gifts and exchanges are less likely to be decided by the production source. This type of general trade accounted for 55% of the total export from China in 2000.

In order to limit our study to manufacturing firms, and also to include the enterprises' characteristics into our project, therefore, we merged this dataset with data from an industrial survey on manufacturing firms in China

conducted by the National Bureau of Statistics. This survey covers all enterprises with annual revenue greater than CNY 5 million (or equivalently USD 800,000). This merged data accounts for 31% of the total export in 2000 and 10% of the companies in the industrial data. This is our main dataset used in the project.

2.2 Ethnic diversity in China

As we argue above, China is a country with many ethnical groups. In order to measure the fractionalization across provinces, we follow Easterly and Levine (1997) and the literature to compute the ethno-linguistic fractionalization:

$$Div_p = 1 - \sum_k n_{pk}^2$$

where n_{pk} is the population share of group j in province p. This index represents the probability that two randomly selected individuals in the same region belong to different ethnic groups. In other words, a high Div_p index indicates that province p is ethnically diverse. This variable takes the value 1 when the province is completely heterogeneous and 0 when the province is completely homogeneous.

The population distribution is taken from the China National Population Census Data in 2000. We show the ethnic distribution across provinces in Table 3. Using kernel density technique , we are able to draw Figure 2 that shows that there is a large distribution of ethnic groups across provinces, which we utilize in our study

2.3 The quality of Exports in China

As quality is not observable, we have to estimate this variable. We follow Berry (1994) suggestion that quality can be estimated as the excess sales after controlling for price, an idea that has been used widely (for instance, Hallak and Schott, 2011; Khandelwal, 2010).

In particular, we build the utility in the sector from the CES framework:

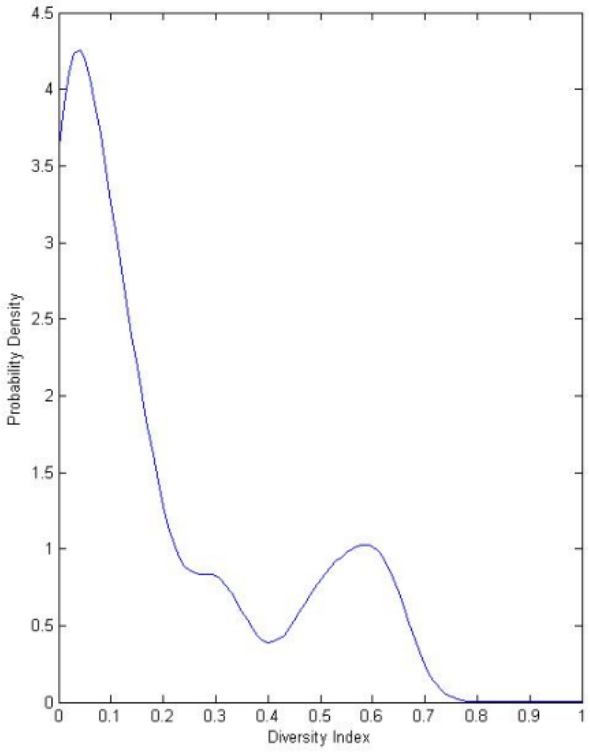

Figure 2: Probability Density of the Diversity Index, calculated by the Kernel density technique.

$$U = \left[\int_{i \in \Omega} \theta_i^{\frac{1}{\sigma}} (q_i)^{\frac{\sigma-1}{\sigma}} di \right]^{\frac{\sigma}{\sigma-1}}$$

where θ_i and q_i are the quality and quantity of variety i that is available in the market. This utility framework implies the following demand function:

$$q_i = \theta_i \left(\frac{p_i}{P} \right)^{-\sigma} \frac{E}{P}$$

where P and E are the price index and the market size in the industry. Rewrite this demand function as:

$$q_{ijc} = \alpha + \beta p_{ijc} + \gamma pop_c + I_j + u_{ijc} \tag{1}$$

Sales of product j by company i to country c depends on its price p_{ijc}, the market size (controlled by the country population pop_c) and the price index (controlled by the industry fixed effect I_j) which represents the business condition and of course its quality which is not observable and treated as the error term.

A problem with this estimation is the endogeneity of the unit price p_{ijc}. Indeed, unit price are often positively correlated with unobserved quality components creating an upward bias. To correct for this problem, we need to determine causality with an instrumental variable (IV). Khandelwal (2010) suggests transportation costs should be included in the IV but unfortunately they are not available in China. We must then use two dummy variables: the country of destination dummy and another dummy which indicates whether the province where the firm is located in has a major port. Our idea is that these two dummies capture the costs of shipping the good from the factory to the port and from there to the country of destination. In other words, they can be used as proxy for transport costs.

With these instruments at our disposal, we run the regression (1) for 94 of the total 98 HS two-digit level categories [1]. Out of the remaining 94

[1] There are 4 sectors that have no observations or less than 10 observations. These sectors are Live Animals; Pulp of Wood, Waste and Scrap of Paper; Aircraft, Spacecraft and Parts Thereof; Business services, Health, Financial/Insurance Legal/Real Estate, Hotels, and Misc repair Business services.

sectors, 9 have positive own-price elasticity[2].

We then only consider categories with negative own-price elasticity β. In order to confirm our quality estimation, we compared our own-price elasticity statistics with other studies, in particular Khandelwal (2010) using U.S. data. Table 1 shows that our statistics do not vary significantly from Khandelwal's (2010) findings. The statistics of our quality estimation are reported in Table 2.

3 The impact of ethnic diversity on the quality of exports

To investigate the impact of ethnic diversity on the quality of exports, we run the following test:

$$Quality_{ijpc} = \alpha + \beta Div_p + \varsigma X_i + \delta_{ijpc} \tag{2}$$

The coefficient β indicates how ethnic diversity in province p influences the quality of the product j exported to country c produced by firm i in this province.

3.1 The firm characteristics

We accounted for characteristics of the business that could impact the product quality such as the number of years in operation, the amount of materials used during production, if any foreign investment, their productivity and ownership status. To allow for the possibility that δ_{ijp} can be correlated at the industry-level, we will use the random effect estimator. The Hausman test confirms that the estimator is consistent. Column 1 in Table 4 shows

[2]These sectors are Sugars and Sugar Confectionery; Cocoa and Cocoa preparations; Photographic or Cinematographic goods; Cork and Articles of Cork; Silk, Inc.Yarns and Woven Fabrics Thereof; Carpets and other Textile Floor Coverings; Zinc and Articles Thereof; Tin and Articles Thereof; Ships, Boats, and Floating Structures.

that the coefficient β is statistically significant and negative. This suggests that the quality of products in heterogeneous provinces is lower than in homogeneous provinces.

3.2 Provincial factors

One could argue that the impact of ethnic diversity on the quality of products could come from the economic growth in the regions. Indeed, it is well documented that ethnic diversity leads to slow economic growth (Easterly and Levine, 1997; Alesina and Ferrara, 2005; Dincer and Wang, 2011) which in turn implies low quality (Hidalgo et al., 2007; Krishna and Maloney, 2011). In order to account for this possibility and isolate our diversity effect, we then add the GDP per capita of the province in the regression. The natural conditions such as climate and geography of a province could also boost production quality. In order to control for this, we use the number of billions of tons transported per kilometer in the province. Our implicit assumption is that a province where the weather is consistently conducive for transportation would benefit from an improvement in the quality of products. Another province-specific factor that could influence the quality are investments. We then add the number of investment projects in the regression:

$$Quality_{ijpc} = \alpha + \beta Div_p + \varsigma X_i + \upsilon X_p + \delta_{ijpc}$$

The coefficient of interest β remains negative with this specification. Indeed, Column 2 in Table 4 shows $\beta = -0.354$. This estimate is much larger (in absolute value) than the previous one ($\beta = -0.204$) when we do not control for the province's characteristics. It confirms our expectation that the multi-ethnic provinces are more likely to be poor and have unfavorable conditions. As a result, not controlling these characteristics will attenuate the coefficient of the diversity index.

The number of projects control for government policy

Coastal dummy controls for the geography issue.

The size of the city controls for the urbanization effect.

3.3 The destination impact

Besides the enterprise- and province-specific factors, we still have to be aware of the destination-specific factors. Indeed, according to the Washington Apple Effect, where you export to determines the quality of your products (Bastos and Silva, 2010). To account for this effect, we use the country of destination fixed effect:

$$Quality_{ijpc} = \alpha + \beta Div_p + \varsigma X_i + \upsilon X_p + I_c + \delta_{ijpc}$$

Again our result is robust with this specification. Column 3 in Table 4 shows that $\beta = -0.359$. One way to interpret this number is that a completely homogeneous province exports goods with quality of more than 30% higher than a completely heterogeneous province. This gap in quality is economically significant. It is also consistent with other results in the literature. For instance, using the same measure of ethnic diversity, Dincer and Wang (2011) shows that ethnic diversity has a negative impact on economic growth. We then can make the following claim:

Claim 1 *In multi-ethnic provinces the average quality of exports is lower.*

3.4 The heterogenous impact of ethnic diversity

The previous section shows that on average, more ethnically diverse regions export goods of lower quality. We have explored how several channels such as economic growth, natural condition and investments could lead to a change in the quality of products and our result still remains. In order to have a better understanding of how ethnic diversity impacts quality, we investigate how the impact changes with the product characteristics. In particular, we interact the diversity index with the degree of differentiation

$$Quality_{ijpc} = \alpha + \beta Div_p + \delta Div_p * Diff_j + \varsigma X_i + \upsilon X_p + \delta_{ijpc}$$

Here we use the dispersion of quality within the industry as a measure of product differentiation. Column 1 in Table 5 shows that while ethnic diversity lowers the quality of exports in general, the impact changes with the degree of differentiation. Indeed, the positive sign of β suggests that ethnic diversity could have a positive impact on homogeneous products. The interaction between the diversity index and the degree of differentiation has a negative coefficient, indicating that the more differentiated the product, the more ethnic diversity reduces its quality. Indeed, when we limit our data to products with the quality dispersion lower than 4.18 (10th percentile) the impact of ethnic diversity is positive. However, when the products are differentiated, the impact will become negative. We then have our second finding:

Claim 2 *The impact of ethnic diversity varies across products: the more differentiated the product, the more ethnic diversity reduces quality.*

3.5 Robustness check

In the previous section, our regression results suggest that the negative impact of diversity on quality is robust to various specifications. In this section, we will check for robustness with other methods. Firstly in the benchmark regression, we apply the random effects estimator. While this estimator is more efficient, one could worry about its inconsistency. Being aware of this concern, we will cross-reference with the fixed effects model. Column 4 in Table 4 shows that our results are still robust with this estimator, although the coefficient is slightly smaller in absolute term. Indeed, provinces that are ethnically homogeneous export products of quality 21% higher than multi-ethnic provinces. We can also use the fixed effects estimator when we check the impact of diversity across different products. Results reported in Column 2 in Table 5 confirm that ethnic diversity could have a positive impact on homogeneous products but its impact becomes negative with differentiated products.

Another concern is the measure of our independent variables, in particular the diversity index. Beside the group fragmentation as the Div index provides us, we can also look at the polarization of the group. We then

borrow the polarization index (PI) suggested by Reynal-Querol (1998), calculated as:

$$PI_i = 1 - \sum_j \left(\frac{0.5 - n_{ij}}{0.5} \right)^2 n_{ij}$$

This index measures how polarized the group is. In other words, PI reaches its maximum value when there are two or more ethnic groups of equal size. The corresponding values of this index across provinces are shown in Table 3. Column 5 in Table 4 and Column 3 in Table 5 suggest that our results are robust with this measure of diversity[3].

Finally, we want to test if our results are robust to a different measure of differentiation. Instead of the quality dispersion, we use two alternative measures, the price dispersion and the elasticity of substitution taken from Broda, Greenfield and Weinstein (2006). While the dispersion of quality (and price) represent the vertical differentiation, the elasticity of substitution represents the horizontal differentiation. Column 4 and 5 in Table 5 confirm that our results survive this test.

3.6 Discussion

The finding that diversity has different impact across products helps us to understand how the mechanism works. Indeed, according to Lazear (1999), people from different groups have disjoint information sets which are possibly relevant to the job. People from different ethnic races, especially local people can bring their knowledge and experience to the group. This is what Lazear (1999) calls "knowing the ropes". For instance, a company might want to hire local people because of their understanding of the local weather and natural resources. Also people from a particular ethnic group possess the

[3]One could raise the concern of migration which could influence our measures of diversity. But as Dincer and Wang (2011) reported, the index does not change significantly over the period of 1978 to 2002. This guarantees us that the index is exogenous. Since this is a cross sectional data, we can rule out the impact of migration: in any case, this is a snapshot of the impact of the distribution of ethnic diversity on quality of exports

required skill for certain tasks, a phenomenon called "best practices" by Lazear (1999). A diverse team is more likely to have the necessary person than a homogenous team.

To realize the gains of diversity, the information from different groups must be relevant and easily learned or transferred. "Knowing the ropes" and "best practices" are more likely to be relevant in homogenous sectors such as agriculture. Western provinces such as Sichuan where many ethnic groups live are well known for their traditional food. In differentiated sectors such as manufacturing, local experience and culture are of less importance. Whether the disjoint information can be easily learned or transferred depends on how people communicate. People with different background and culture face more difficulty when they engage in conversation and discussion. This problem is more serious when workers are complementary rather than substitutable. This complementarity among workers requires all of them to perform their task well, which is more difficult when they cannot communicate efficiently. Another point we can make here is that people from different groups have less sympathy towards each other than if they belong to the same ethnic group. Again, if the workers are substitutable, this causes little problem to the team. But when they are complementary, the disharmony problem becomes more serious.

We then can check if our hypothesis is correct, that when the workers are complementary ethnic heterogeneity affects negatively the quality of products produced by the firm. We measure the degree of substitutability among workers by the wage dispersion across industries: the lower the wage dispersion the more substitutable the workers are or the less complementary the workers are. We then run the following regression:

$$Quality_{ijpc} = \alpha + \beta Div_p + \delta Div_p * Comp_j + \varsigma X_i + \upsilon X_p + \delta_{ijpc}$$

Column 5 in Table 5 shows that the interaction term is negative, confirming our hypothesis. This result is consistent with Bombardini et al. (2012) when they show that countries with a dispersed skill distribution specialize in products with less worker skill complementarity. Moreover, our data

shows that wage dispersion is positively correlated with our two measures of differentiation, namely quality dispersion and price dispersion. Indeed the correlations are 0.07 and 0.09 respectively. These results then explain the heterogeneous impact of ethnic diversity on quality as we find in the previous section.

4 Conclusion

Ethnic diversity is claimed to have a significant impact on economic growth. In this study we investigate the impact of ethnic diversity on another dimension, or the depth of economic growth: the quality of products. We use customs data and the manufacturing survey in China to estimate the quality of exported goods from China in 2000. Our finding is that products from a completely homogeneous province are more than 30% higher quality than those from a completely heterogeneous province. While the impact of ethnic diversity is negative for differentiated sectors, it could be positive for homogeneous sectors. This result allows us to propose a channel for which diversity influences quality. Indeed, workers in differentiated sectors are complementary, which means they need to work in tandem and communication is very important. That explains why diverse provinces where people might have difficulty in communication do not produce differentiated goods of high quality in our data. However, in homogeneous goods where experience and knowledge from ancestors can be relevant, diverse provinces can have an advantage in producing high quality. Our paper contributes therefore to the understanding of the impact of diversity. It is exciting to follow this road as others have shown that diversity can be a new source of comparative advantage

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Table 1: Own Price Elasticity

	Mean	Median	First quartile	Third quartile
Without IV	-0.74	-0.71	-0.87	-0.49
With IV	-1.04	-0.94	-1.30	-0.48
Khandelwal estimates	-1.28	-0.58	-1.44	-0.20

Note: Our estimates are taken from equation (1). To be consistent with Khandelwal (2010), the statistics are calculated conditional on negative own price elasticity

Table 2: Quality estimation

	Mean	Median	10 percentile	90 percentile
Our estimates	6.38	6.99	1.54	10.09

Note: We calculate the mean as the simple average of quality.

Table 3: Ethnic Diversity

Province	Div	PI	Province	Div	PI
Jiangxi	0.00621	0.01434	Heilongjiang	0.09447	0.18254
Shanxi	0.00633	0.01269	Sichuan	0.09661	0.18814
Jiangsu	0.00710	0.01428	Tibet	0.13568	0.26943
Shaanxi	0.00993	0.01986	Gansu	0.16486	0.32206
Shanghai	0.01260	0.02522	Jilin	0.17143	0.31489
Anhui	0.01340	0.02680	Hunan	0.18939	0.33890
Shandong	0.01398	0.02799	Liaoning	0.27855	0.51502
Zhejiang	0.01713	0.03782	Hainan	0.29322	0.55650
Henan	0.02480	0.04939	Inner Mongolia	0.34329	0.62663
Guangdong	0.02950	0.05865	Ningxia	0.45643	0.89708
Fujian	0.03393	0.07733	Guangxi	0.51400	0.87828
Tianjin	0.05313	0.10413	Yunnan	0.53971	0.70491
Beijing	0.08378	0.16103	Guizhou	0.58795	0.72694
Hubei	0.08401	0.16496	Xinjiang	0.62428	0.88224
Hebei	0.08408	0.16358	Qinghai	0.63254	0.83549

Div: the ethno-linguistic fractionalization index.

PI: the polarization index.

Table 4: The impact of Diversity

VARIABLES	(1) quality	(2) quality	(3) quality	(4) quality	(5) quality
Diversity	-0.204**	-0.345***	-0.359***	-0.282***	-0.349***
	(0.0813)	(0.0866)	(0.0898)	(0.0869)	(0.0530)
Firms' characteristics	x	x	x	x	x
Provinces' characteristics		x	x	x	x
Country of destination fixed effect			x	x	x
Constant	9.076***	7.448***	5.031***	7.610	4.874***
	(0.415)	(0.533)	(1.248)	(12,674)	(1.248)
Observations	147,245	147,245	147,245	147,245	147,245
R-squared	0.014	0.013	0.015	0.014	0.016

Note: The firms' characteristics included are the firm's age, the firm's status (foreign invested, State-owned), input expenses and productivity.

The provinces' characteristics included are the GDP per capita, the amount of transported goods per kilometers,the number of investment projects.

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5: The impact of Diversity across products

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	quality	quality	quality	quality	quality	quality
Div	0.994***	0.904***	0.495***	-0.00851	0.0136	0.603**
	(0.316)	(0.311)	(0.186)	(0.130)	(0.122)	(0.238)
Div*Diff	-0.238***	-0.200***	-0.148***	-0.0972***	-0.0562***	
	(0.0509)	(0.0502)	(0.0299)	(0.0340)	(0.0172)	
Diff	0.124***		0.127***	-0.0288***	0.00897***	
	(0.00479)		(0.00493)	(0.00310)	(0.00125)	
Div*WorkSubs						-1.191***
						(0.308)
WorkSubs						-0.958***
						(0.0324)
Observations	147,245	147,245	147,245	147,245	146,327	147,245
R-squared	0.014	0.014	0.013	0.02	0.02	0.01

NOTE: Standard errors in parentheses. In all specifications, we include the firm characteristics such as the firm's age, the firm's status (foreign invested, State-owned) input expenses and productivity. The province characteristics such as the GDP per capita, the amount of transported goods per kilometers,the number of investment projects are also included.

*** p<0.01, ** p<0.05, * p<0.1