UNNC School of Economics Working Paper Series

Series G Globalisation and Economic Policy

China's Great Migration:

The impact of the reduction in trade policy uncertainty

Giovanni Facchini, Maggie Y. Liu, Anna Maria Mayda, Minghai Zhou

School Economics Working Paper – GEP Series 2019.7G

China's "Great Migration": The impact of the reduction in trade policy uncertainty*

Giovanni Facchini†, Maggie Y. Liu‡, Anna Maria Mayda§, Minghai Zhou¶

December 5, 2017

Abstract

We analyze the effect of China's integration into the world economy on workers in the country and show that one important channel of impact has been internal migration. Specifically, we study the changes in internal migration rates triggered by the reduction in trade policy uncertainty faced by Chinese exporters in the U.S. This reduction is characterized by plausibly exogenous variation across sectors, which we use to construct a local measure of treatment, at the level of a Chinese prefecture, following Bartik (1991). This allows us to estimate a difference-in-difference empirical specification based on variation across Chinese prefectures before and after 2001. We find that prefectures facing the average decline in trade policy uncertainty experience an 18 percent increase in their internal in-migration rate – this result is driven by migrants who are "non-*hukou*", skilled, and in their prime working age. Finally, in those prefectures, working hours of "native" unskilled workers significantly increase – while the employment rates of neither native workers nor internal migrants change.

JEL classification: F22, F63, J61, O15. *Keywords*: hukou, immigration, internal migration, trade policy uncertainty.

*First draft: May 2015. This draft: November 2017. The authors would like to thank, for useful comments, Lorenzo Caliendo, John Giles, Xin Meng, Giammarco Ottaviano, Shang-Jing Wei, Yuan Zi, seminar participants at the LdA Conference on "Value Added in Motion" (Milan 2015), at the eight "Migration and Development Conference" (Washington, 2015), at the "MARCO workshop" (Nottingham, 2017), at the "ELSNIT 2017" workshop (London School of Economics), at the Georgetown International Economics lunch and at IDB International Economics Workshop. This paper is prepared within the "Marco P" project funded by the ESRC.

†University of Nottingham, Universita' degli Studi di Milano, CEPR, CES-Ifo, CReAM, GEP, IZA and LdA; giovanni.facchini@nottingham.ac.uk.

‡Smith College; yliu77@smith.edu.

§Georgetown University, CEPR, IZA and LdA; amm223@georgetown.edu.

¶University of Nottingham, Ningbo China; Minghai.Zhou@nottingham.edu.cn.

" ...The last three decades have witnessed the world's 'Great Migration' – an estimated 200-250 million rural residents have moved to cities and towns within China (Chan 2012a). To put this in perspective, the volume of the Great Migration of Europeans to North America from 1800 to World War I was only a fraction of China's, 'on the order of fifty million persons' (Tilly 1976, p.58)." (Chan 2012b, page 187).

1 Introduction

China's accession to the World Trade Organization (WTO) in 2001 is one of the major economic changes of the new century. Much has been written about the impact of this event on the economies of China's trading partners, for example the United States.[1] In particular, the literature provides evidence on how U.S. workers have been affected by greater Chinese competition, for example through changes in employment rates.

In this paper we analyze the effect on workers in China.[2] Our main contribution is to show empirically that one important channel of impact on these workers has been internal migration. Our paper is the first to do so using an identification strategy based on plausibly exogenous variation. We investigate the implications of a specific consequence of WTO membership – namely the reduction in trade policy uncertainty faced by Chinese exporters to the U.S. – on internal migration in China. We study whether we can identify a link between reduction in trade policy uncertainty, changes in trade patterns and local labor demand, and the induced relocation of workers across Chinese prefectures.

Understanding China's "Great Migration" (Scheineson 2009) is important both because of the sheer size of the phenomenon, and because of the impact it has had on China's economy and society. As of 2014, China's National Bureau of Statistics estimated that 278 million individuals – or 20 percent of the country's total population – lived outside their home towns for at least 6 months each year. To gain a perspective, if Chinese internal migrants were a separate country, they would make up the fourth largest one in the world. Several papers have highlighted the key role played by the geographic relocation of "surplus

[1] See for example Autor, Dorn, and Hanson (2013), Handley and Limao (2017), Pierce and Schott (2016)

[2] Other papers focus on China as well, highlighting the important adjustments undergone by the Chinese economy as a result of WTO accession. See for example Brambilla, Khandelwal, and Schott (2010), Brandt and Morrow (2013), Cheng and Potlogea (2015), Fan (2015), Kee and Tang (2016), Tombe and Zhu (2015), Yu (2015), Wang (2015) and Zi (2016).

labor" (Lewis 1954) in explaining productivity – and more generally – economic growth in China (Tombe and Zhu 2015, Bond, Riezman, and Wang 2016, Li, Seok, and You 2015). Other contributions have emphasized instead the social challenges brought about by migration: unskilled migrant workers do not enjoy even basic labor rights, lack welfare coverage and are systematically exposed to discrimination in the urban areas towards which they typically move (Scheineson 2009). Little instead is known on the link between changes in the trade policy environment, and in particular trade policy uncertainty, and the relocation of workers across different regions within China. The goal of this paper is to shed light on this important question.

To carry out our analysis, we combine data from several sources. We construct internal migration rates using information from, respectively, China's 2000 population Census and 2005 "mini" Census. Taking advantage of the detailed information in the data, we focus on individuals who have moved from their usual residence and identify those who have acquired the *hukou* (registration) in the locality where they currently reside, and those who instead have not.[3] We follow the literature and define the former as "*hukou* migrants" and the latter as "non-*hukou* migrants". We measure trade policy uncertainty – faced by Chinese exporters to the U.S. – using the product-specific normal-trade-relations (NTR) gap measure developed by Handley and Limao (2017) and Pierce and Schott (2016). This measure is built by calculating the gap between the Most Favorite Nation (MFN) tariffs applied by the United States to WTO members and the threat tariffs that would have been implemented if MFN status was not renewed to China by the U.S. Congress (the so called column 2 tariffs of the Smoot-Hawley Trade Act). To determine *local* exposure to uncertainty, at the level of a Chinese prefecture, we follow Bartik (1991). Specifically, we draw on export data at the firm level between 1997–1999 – i.e. before our period of investigation – which we use to construct a weighted average of the NTR gap across products for each Chinese prefecture. Importantly, we assess the robustness of our results using weights which are based on employment distribution in 1990.

Our analysis delivers several interesting results. First, we show that Chinese prefectures facing a larger decline in trade policy uncertainty experience larger inflows of migrant

[3] *Hukou* is a permit issued by the Chinese government. It determines the location of registration and work of each individual living in China, as well as access to local public services. Before the "Opening-up" reforms in 1978, people were required to reside in their *hukou* registration place. But as the *hukou* policy was relaxed, people were allowed to reside and work outside of their *hukou* registration place.

workers. When we look at different types of migrants – *hukou* vs. non-*hukou* migrants – we find that it is the latter who drive the changes in internal migration rates. This implies that the labor flows triggered by the reduction in trade policy uncertainty have been characterized by a limited access of migrants to local public goods and services. Second, we investigate the role played by one natural mechanism that could explain this finding, namely changes in trade flows. Our results indicate that industries and prefectures facing a larger decline in trade policy uncertainty vis a vis the United States in 2001 experienced a larger increase in exports towards that country. Next, we investigate the heterogeneity of our main results with respect to several dimensions. In particular, we separately estimate the impact of trade policy uncertainty reduction on skilled and unskilled migrants, migrants of different age groups and gender. We find that the trade shock had a larger impact on male rather than female migrants; it affected mainly migrants in prime working age and skilled rather than unskilled migrants. At the same time we find that the main adjustment – in prefectures facing a larger decline in trade policy uncertainty – in the case of unskilled labor has involved an increase in the number of hours worked by local ("native") unskilled workers. Finally, our data shows no impact of the reduction in trade policy uncertainty on the employment rate of either migrants or native workers (neither skilled nor unskilled).

To summarize, the greater the reduction in trade policy uncertainty in a prefecture, the higher the increase in migration rate to that prefecture – of non-*hukou* migrants and of skilled migrants – and the higher the increase in number of hours worked by unskilled native workers. Hence the adjustment has taken place through changes in migration, for skilled labor, and through changes in the number of hours worked for unskilled labor. In general, the main contribution of our paper is to provide new results on the labor-market adjustment of local economies to trade policy changes, in particular highlighting the importance of internal migration. Our results suggest that one way China has been able to reap the benefits of trade openness has been through a more efficient geographic allocation of (skilled) workers. Hence this is yet another example of how migration facilitates economic development and growth.

The remainder of the paper is organized as follows. Section 2 explains how our paper fits into the existing literature. In Section 3 we provide additional context for our analysis, focusing on internal labor mobility in China and the change in the trade policy environment after 2001. Section 4 describes our data, whereas Section 5 presents the empirical strategy

and main findings. Section 6 presents additional results and robustness checks, and Section 7 examines the effect of the trade shock on alternative labor market adjustment mechanisms. Section 8 concludes.

2 Related literature

Our paper is related to three areas of research. First, it contributes to the growing literature on the regional economic impact of trade-induced shocks (for example, for poverty, see Edmonds and Pavcnik 2005, Topalova 2007, Topalova 2010, Edmonds, Pavcnik, and Topalova 2010; for labor market outcomes, see Goldberg and Pavcnik 2005, Hasan, Mitra, Ranjan, and Ahsan 2012, Kovak 2013, Monte 2016 etc.; see Goldberg and Pavcnik 2007 for a review of the literature). These studies typically quantify the size of the shock by using a weighted average of changes in trade policy, with weights based on the industrial or factor endowments distribution in each region within a country, and explore the spatial consequences of the trade policy changes. Most of the studies mentioned above focus on the relaxation of a country's own aggregate trade policy (such as a decrease in import tariff rates). In order to achieve identification of the causal effect of trade liberalization on the outcome of interest, these studies rely on the assumption the changes in protection constructed at the local level are exogenous. This assumption might be satisfied in some specific circumstances but, as the literature on the political economy of trade policy has argued, domestic forces do play an important role in shaping the cross–sectional distribution of trade protection and these forces may have a geographical component. Compared to this literature, our paper has the advantage of exploiting variation in trade policy of some other country and not of the country of interest – in our case, the United States rather than China itself – hence the variation we exploit is arguably (more) exogenous.

In addition, our work is closely related to two recent papers that focus on China's accession to the WTO as a source of reduction in trade policy uncertainty. In the first contribution, Handley and Limao (2017) develop and calibrate a dynamic general equilibrium model in which policy uncertainty crucially affects the incentives to undertake a costly export investment decision. Their quantitative assessment using U.S. data shows that the reduction in the threat of a trade war explains 22% of the growth in Chinese exports to the U.S. In a related paper, Pierce and Schott (2016) use a difference in difference empiri-

cal design to examine the link between the sharp drop in U.S. manufacturing employment beginning in 2001 and China's accession to the WTO. They find that industries where the threat of tariff hikes declines the most experience larger increases in the value of imports from China and more severe employment losses.

Similar to Handley and Limao (2017) and Pierce and Schott (2016), our analysis takes advantage of the reduction in trade policy uncertainty faced by Chinese exporters in the U.S., derived from the change in MFN status – from temporary to permanent – granted by the U.S. to China in 2001. Hence the variation across products exploited in the empirical analysis – which is driven by differences between non-MFN and MFN tariff rates – is most likely exogenous since non-MFN tariff rates were set by the United States in the 1930's. Note that another recent contribution to the literature, Autor, Dorn and Hanson (2013), examines the same set of issues but uses a different source of exogenous variation.[4] To conclude, while Handley and Limao (2017), Pierce and Schott (2016) and Autor, Dorn and Hanson (2013) consider impacts on the U.S. economy and specifically on U.S. workers, our analysis focuses on the effect that the reduction in trade policy uncertainty had on workers in China, mainly through the internal migration channel.

More directly related to our work are a few recent papers that investigate the link between trade liberalization and factor market adjustments in China. Using the same identification strategy as in this paper, Cheng and Potlogea (2015) carries out a thorough investigation of the impact, on multiple outcome variables, of the elimination of the threat of MFN non-renewal by the U.S. to China. The authors find that improved market access to the U.S. has brought economic development to Chinese cities as evidenced by increases in urbanization, output, employment, investment and FDI flows, but no impact on wages. There are a few differences between Cheng and Potlogea (2015) and this paper. First, the authors use a different data source, focusing particularly on cities, i.e. only urban areas. Moreover due to lack of data, they cannot analyze the full universe of cities, and thus their study cannot capture the full extent of internal migration in China. Finally, the authors only provide indirect evidence on internal migration, based on population growth

[4]The authors analyze the impact of rising Chinese import competition (per worker) between 1990 and 2007 (three years of data, two first-difference cross sections) on U.S. local labor markets (defined at the commuting zone (CZ) level). The empirical analysis exploits variation across CZs and over time in exposure to Chinese import competition driven by, respectively, initial differences in industry specialization across CZs and changes in U.S. imports from China by industry, instrumented with changes in imports from China to other high-income countries.

regressions. However, changes in population are affected not only by migration, but also by other factors such as fertility and mortality. Thus, we see our paper as complementing their analysis, since we use individual level data taken from the Chinese population census to construct direct measures of migration, covering all of China. On the other hand, another recent contribution by Wang (2015), directly analyzes the impact on internal migration patterns within China of greater Chinese exports abroad – however, the identification is different from ours and potentially more vulnerable to endogeneity concerns. Focusing on trade in intermediate products, Zi (2016) studies instead the effect of a reduction in tariffs on the spatial allocation of labor across China and finds a larger effect for those regions with less *hukou* frictions.

Tombe and Zhu (2015) develop and calibrate a two–sector, multiple–region general equilibrium model with interregional trade and labor mobility distortions to study the effect of changes in trade and internal migration costs on total factor productivity growth in China around its entry into the WTO. Based on a growth accounting exercise, the authors conclude that about half of the observed total labor productivity growth can be attributed to the decline in trade and migration costs observed in the period. Moreover, the observed more efficient allocation of labor across Chinese prefectures explains about twenty percent of total TFP growth. In a related paper, Fan (2015) develops and calibrates a multi-factor general equilibrium model to investigate the relationship between changes in trade and internal migration costs and income inequality both between and within regions in China. Lower trade costs increase inequality both across different regions and across different skill groups, with the former playing a role that is twice as big as the latter. At the same time, labor mobility plays an important role in shaping the geography of inequality within China. In particular, skill related differences in mobility costs make it comparatively easier for skilled workers than unskilled workers to relocate across prefectures, hence they tend to reduce inequality within coastal areas receiving large inflows of migrants, while making inequality more severe in the interior regions. Compared to Tombe and Zhu (2015) and Fan (2015), we focus on similar issues but use a different methodological approach – since we estimate an empirical model and provide evidence on a causal effect.

To conclude, while some papers provide some evidence on the same topic, our *direct* investigation of migration using an established identification strategy and taking into account the entire Chinese population, sets our paper apart from existing work. In addition, our

results provide evidence on many dimensions through which the effects are heterogenous, for example by differentiating between *hukou* vs. *non-hukou* migrants, skilled vs. unskilled migrants, male vs. female migrants as well as old vs. young migrants.

3 Background and Context

3.1 *Hukou* and internal migration

While in most countries citizens are free to move internally, the Chinese Household Registration System – known as the *hukou* system – has introduced substantial limits to internal migration. In other words, China has carried out an active and restrictive internal migration policy. *Hukou* is a permit issued by the Chinese government, which determines the location of registration (permanent residence) and work of each individual living in China. In addition, *hukou* entitles its holder to local social welfare programs, such as public education and healthcare, as well as pensions. Importantly, *hukou* is given on a family basis and in particular newborns inherit *hukou* location and type from their mother. Hence *hukou* is akin to *jus sanguinis* in Western countries' citizenship laws as it links the right to live, work and access public services in a given location to blood relationships.

The *hukou* system was modeled after the Soviet *propiska* (internal passport system) and has roots in restrictions to internal mobility applied by imperial China. The People's Republic officially introduced the system in the early 1950s to control the movement of citizens between urban and rural areas, as part of the "Big Push" industrialization strategy pursued by the early five–year plans. The goal was to set up a two-tier economic system, with an industrial sector, based in the urban areas, as the core for the big push, and an agricultural sector, as the source of food and cheap raw materials. Two attributes characterize the *hukou* system: the type (*leibie*) and the location (*suozaidi*). The *leibie* broadly categorizes individuals as "rural" or "urban" residents, identifying the two-tier welfare system available to them.[5]

In our analysis the dimension of the *hukou* system we focus on is the location of registra-

[5]In the early period of the system (1960s-1980s), the "urban" (non-agricultural) *hukou* entitled the holder to a wide array of state-provided services (housing, employment, grain rations, education and medical care), while the "rural" (agricultural *hukou*) population was expected to be mainly self sufficient, receiving very limited, if any, state transfers. Afterwards, the population with rural *hukou* began receiving very limited welfare benefits in their *hukou* location.

tion (*suozaidi*).[6] When the system was strictly applied (until 1978), it prohibited Chinese individuals to move to and work in locations other than the one's *hukou* registration place. In that period any change in *hukou* status required approval by the central government. Approval rates were very low and almost all Chinese citizens remained in their *de jure* location of registration. In fact, in the early 1980s, individuals not residing in their *de jure* place of registration represented only 0.6% of the total population (Chan 2009). With the beginning of Deng Xiaoping's "Opening Up" reforms in 1978, demand for labor in the rapidly growing industries in the cities started to pick up. Since then policy makers have become increasingly aware that the system is an impediment to economic development, hence the extent to which the *hukou* system is enforced has significantly declined. First, individuals can now move to and work in locations which are different from their *hukou* registration place as long as they can support themselves, since they do not have access to local public services. In addition, State Council directives were issued in 1992 and 1998 which gave city authorities the power to grant local *hukou* to selected groups of individuals – typically investors and highly educated workers.[7] In general, though, restrictions on long-term migration remain, limiting the ability of migrants to relocate and significantly affecting their behavior (Meng and Xue 2017).

3.2 Trade liberalization

After fifteen years of intense negotiations, China joined the WTO in December 2001, heralding a golden decade of rapid economic growth. Membership in the institution involved significant trade policy changes and, in particular, the introduction of a more predictable trade policy environment. In fact, while Japan and the EU had already granted China permanent MFN status in respectively 1974 and 1980, the 1980 U.S. decision to grant the country MFN status was subject to yearly renewal. The latter was far from certain, and was subject to a contentious political process which created substantial uncertainty in the tariff rates Chinese exporters would face in the US market.[8] In fact, in the 1990s, a bill was put before Congress every year to revoke MFN status to China. If enacted, these bills

[6] Our estimation does not differentiate according to the type of *hukou* since both rural and urban non-*hukou* migrants have no access to local public services, while *hukou* migrants typically hold urban type.

[7] The directives also allowed the elimination of the distinction between rural and urban *hukou*. Still, the take up rate varied significantly and only a few provincial administrative units (e.g. Guangdong, Zhejiang, Shanghai, Hebei, Henan and Jiangsu) announced in the early 2000s that they would eliminate this distinction within some towns/county level cities.

[8] For a more detailed description, see Handley and Limao (2017), and Pierce and Schott (2016).

would have led to the application of the Smoot Hawley tariffs – i.e., they would have led to a significant increase in trade costs for Chinese exporters. In fact, by 2000 the average MFN tariff was only 4%, whereas if China had lost MFN status, it would have faced a 35% average tariff on its exports to the United States. While China's normal trade relation status with the U.S. has never been revoked, and Chinese exports have enjoyed MFN tariff rates in the U.S. between 1980 and 2000, the uncertainty induced by China's conditional MFN status was substantial, and the existing literature has shown that its elimination had a significant impact on the US economy (Handley and Limao 2017, Pierce and Schott 2016). More specifically, there is evidence that China's entry into the WTO had an effect on subsequent employment growth in the U.S. manufacturing sector, and that this effect varied with the extent to which tariff uncertainty was affected. In particular, Pierce and Schott (2016) find that China's accession to the WTO led to a 3 – 4 percentage points decline in employment growth in U.S. manufacturing in the short run, and to a 12 –16 percentage points decline in the medium run.

4 Data and Descriptive Statistics

To carry out the empirical analysis, we combine data from a variety of different sources. In particular, we use 1) individual-level data from China's population census to construct measures of internal migration, and 2) transaction-level trade data to construct measures of exports and imports at the industry and prefecture levels. To capture the overall trade policy stance, we use tariff data from the World Integrated Trading System database, combining it with information on trade policy uncertainty vis a vis the United States, the pervasiveness of barriers to investment, the incidence of the U.S. Multi Fiber Agreement (MFA) quota, and the availability of production subsidies for Chinese firms. We aggregate these detailed micro–data to construct a prefecture–level panel dataset. The remainder of this section outlines the main steps we follow to construct our dependent variable and our key explanatory variables. The Data Appendix contains more detailed information on the data sources.

4.1 Migration measures

Prior to defining the relevant migration measures used in this paper, it is important to have a clear understanding of the organization of local government structures in China. There are 31 provincial level units, including 27 provinces and 4 provincial-level municipalities. The tree graph in Figure A.1 illustrate the administrative structure of a province. Each province can be additionally divided into prefectures.[9] Including the provincial municipalities mentioned above, there are 345 prefecture-level units in China.[10] Each prefecture consists of a prefecture-level city (PLC), i.e. a municipality with governing rights, and of a group of subordinate counties.

The *hukou* system mandates that all citizens of China are registered at a specific address detailed to the street number. For example, a person's *hukou* registration place can be "No. 100 City Rd., Apt 222, Old town District, Nanjing City, Jiangsu Province, China". When the *hukou* system was introduced, it was designed to keep track of population movements. Since *hukou* registrations are detailed to street numbers, even simple address changes within a county require altering one's registration record. Changing *hukou* location within a county is usually a simple procedural step, and is much easier than changing *hukou* location across counties and larger administrative units (such as prefectures and provinces), which is instead subject to the destination in-migration policies. Our analysis of internal migration in this paper hinges on information on individual *hukou* registration, as reported in Census data.[11]

For the purpose of our analysis, we focus on prefectures as the unit of observation.[12] We focus on cross-prefecture migration and ignore within-prefecture moves. As a result, in our study an internal migrant is an individual who moves across prefectures. Depending on

[9]The 4 provincial-level municipalities include Beijing, Tianjin, Shanghai, and Chongqing. Even though they correspond to the same administrative level as provinces, they resemble expanded metropolitan area, thus are treated as collections of prefectures in our analysis. For example, Shanghai consists of 2 "prefectures": Shanghai Municipal District and Shanghai Counties.

[10]The number of prefectures in China varied over time due to splits and merges. We use the administrative boundaries of 2000, which identify 345 prefectures. Our final sample includes 336 of them. 3 "prefectures" are dropped from the analysis because they are groups of non-contiguous counties under direct provincial administration (Xinjiang province, Hainan province, and Hubei province have such areas). Another 6 prefectures are dropped after running our test for outliers. They include Yunnan - Yuxi, Xinjiang - Yili, Xinjiang - Yilidiqu, Xinjiang - Bo'ertala, Xinjiang - Aletai, Neimenggu - Wulanchabu. Including these outliers in the analysis does not affect our results.

[11]In the Census only people who stayed in a location longer than six months report their *hukou* status, thus temporary visitors are not included in our measure.

[12]Other works in the literature use prefectures as the unit of observation. See Cheng and Potlogea (2015), Fan (2015), and Wang (2013). As the Chinese National Bureau of Statistics does not define commuting zones, we approximate them with prefectures, which similarly to U.S. commuting zones, include multiple counties (see Figure A.1). Note also that internal migration policies are set at the prefecture level.

whether or not an internal migrant gains permanent residence in the destination prefecture, we will distinguish between "*hukou*" and "non-*hukou*" migrants.[13] In addition, we focus on the population of working age (16-65 years old) employed male migrant workers. More precisely:

1. A "non-*hukou*" migrant is an individual who resides in a prefecture without the local *hukou*. They can be identified from the census data using information under "Registration Status"; anyone, in any location, whose registration status appears to be "registered elsewhere", is a non-*hukou* in-migrant in their current location. Note that we can further distinguish *within–province* non-*hukou* migration and *cross-province* non-*hukou* migration. Within-province non-*hukou* migration happens as individuals move to another prefecture within a province. Cross-province non-*hukou* migration occurs if the migrant crosses the provincial borders.

2. A "*hukou*" migrant is an individual who relocated to a different prefecture and transferred *hukou* registration to the destination residence. Since information on location of previous *hukou* is not available in the census, the identification of *hukou* migrants requires a set of plausible assumptions. In particular, we can observe only individuals' current *hukou* registration place and where they lived previously, but not where their *hukou* was registered previously. As a result, we assume those locally registered residents who report a different residence 5 years ago to have transferred their *hukou* to the current locality; in other words, *hukou* migrants are currently registered residents who moved and changed their registration in the last 5 years.[14] If the new residence is in the same province or in another province, respectively, then the corresponding migration is denoted as *within–province* or *cross–province hukou* migration. However, note that we only have data for *cross–province hukou* migration due to changes in the 2005 census questionnaire.

Table 1 reports summary statistics on the national-level stocks and rates of total (*hukou* plus non-*hukou*) internal migration in 1990, 2000 and 2005,[15] where we focus on 16-65

[13] A more detailed explanation of migrant definitions can be found in Appendix A.

[14] We use residence five years ago since it is a question consistently used across census waves.

[15] The 1990, 2000 and 2005 population census of China document detailed individual-level information on gender, age, education level, migration history, employment status, as well as other labor market attributes. We concord prefectures across 3 census waves, and aggregate the individual level data to prefecture cells using migration and locality information.

year-old employed workers. Total migration includes cross-prefecture non-*hukou* migration plus cross-province *hukou* migration. We restrict our attention to internal migrants who have arrived in their destination in the previous five years. The first three rows in each panel present the total counts of recent migrants, whereas the last three rows in each panel present the shares of migrants in the employed population.

Only about 17.8 million employed individuals migrated across prefectures between 1985 and 1990, and representing 2.7 percent of the employed population aged 16-65. Migration in this period is gender biased, as about 57 percent of the migrants are males, and 43 percent are females. Not surprisingly, as China relaxed its internal migration policy in the 1990's, internal migration nearly quadrupled in the next 15 years. Figure 1 offer a clear visualization of the magnitude of the increase. Between 1995 and 2000, approximately 51.7 million employed individuals changed their prefecture of residence. Migration in this period is still gender biased. Five year mobility rates hover around 7.8 percent, a figure that is lower than in the United States (Molloy, Smith, and Wozniak 2011) in the same period. Interestingly, mobility increased even more over the following five years, when approximately 66.7 million employed individuals changed prefecture of residence. The gender bias appear to be stable, while the five year mobility rate has increased to approximately 9.9 percent. Note that, although in Table 1, we present summary statistics for both male and female migrants, in the empirical analysis we will mainly focus on male migrants, since this is a more homogeneous group. In addition, males are less likely to exit the labor force for family reasons. Still, in Section 6.4, we also investigate the impact of the decline in trade policy uncertainty on female migrant workers.

Using educational attainment from the population census, we can also distinguish between skilled and unskilled migrants. Following the literature (Ge and Yang 2014), we divide the sample into two skill groups, and identify as skilled workers those who have at least a high school degree. Comparing across three panels, even though unskilled migration was always larger in volume, unskilled workers were increasingly likely to move compared to skilled ones overtime. More specifically, in 1985-1990, skilled workers were 2.16 times more likely to move across prefectures than unskilled ones, while in 1995-2000 and 200-2005 respectively, skilled workers were only 1.22 times and 1.65 times more likely to move across prefectures than unskilled ones.

Figures 3a – 3b illustrate the geographic distribution of migration flows. The maps

delineate China's prefectures and color code each of them using the share of recent total (non-*hukou* plus *hukou*) migrants among the employed population. Several interesting patterns emerge. First, the coastal prefectures of South–Eastern China are major destinations of migration flows. Among these destinations, two major economic zones (Yangtze River Delta region, and Pearl River Delta region) have the highest migration rates. In particular, very high internal migration rates are observed for instance in the prefectures surrounding Hangzhou Bay in the Yangtze River Delta region. In 2005, Shanghai had a total migration rate of 35.20%, Hangzhou and Ningbo had total migration rates of 20.20% and 37.61%, respectively. Prefectures in the Pearl River Delta region also have high migration rates. In 2000, Dongguan's total migration rate was 80.37%, Guangzhou's and Shenzhen's were 36.78% and 81.03%, respectively.[16] Second, migration flows are high also in several prefectures in the North East and in a few prefectures in the West.[17] Beijing and Tianjin are major migration destinations in the Bohai Bay Region and so are a few prefectures in the three Northeastern Provinces (Heilongjiang, Jilin and Liaoning), such as Dalian (in 2005 recent in-migrants represented 13.52% of the total population) and Daqing (8.15%). Third, central China does not appear to be a major migrant destination, with the exception of a few urban prefectures, such as Chengdu in Sichuan province (10.44% in 2005) and Xi'an in Shaanxi province (13.04% in 2005).

Comparing migration patterns over time, we can see some interesting changes. Figure 4a color-codes the increase in in-migration rates from 2000 to 2005. The lighter regions experienced a decline in in-migration rates, whereas the darker regions experienced an increase in in-migrant rates over time. For instance, in-migration increased in the South Eastern part of the country, and in particular several additional prefectures became destinations of large new migrant arrivals. The total migration rate in Huainan (Anhui province) increased from 4.77% in 2000 to 14.90% in 2005, and that of Zhoushan (Zhejiang province) from 5.42% in 2000 to 16.45% in 2005. The same holds true also for several prefectures in the North East of the country. For example, Tianjin's total migration rate increased from 7.63% in 2000 to 14.78% in 2005, and that of Shenyang (Liaoning province) from 6% in 2000 to 11.05% in

[16] As one of the major manufacturing hubs in Guangdong province, Dongguan is considered progressive in seeking foreign direct investment and is also known for migrant-labor-fueled factories. According to Dongguan city's estimate, at the end of 2008, there were 5.2 millions of migrants in its population of 6.9 million.

[17] The high migration prefectures in the Northwest are mainly oil-producing desert cities (Fan 2015) and prefecture-level jurisdictions in Xinjiang Production and Construction Corps.

2005.

4.2 NTR gap

Our key explanatory variable captures the reduction in the trade policy uncertainty vis a vis the United States faced by Chinese exporters as a result of China's entry in the WTO. Following Pierce and Schott (2016), we measure it using the Normal Trade Relations (NTR) gap. The latter is defined as the difference between the Normal Trade Relations (NTR) tariffs, reserved to WTO members and applied to China's exports to the US since the early eighties, and the non–NTR rate, which is instead the higher tariff rate assigned to non-market economies and originally established under the Smoot-Hawley Tariff introduced in 1930. The latter would have been applied to China if Congress failed to extend MFN status to China in any year before China's entry in the WTO. More precisely, the NTR gap for product type i is defined as:

$$\text{NTR gap}_i = \text{non NTR rate}_i - \text{NTR rate}_i$$

Table 2 shows that the average NTR gap right before China's WTO accession (in 1999) was substantial, at over 30 percentage points. Furthermore, it was higher for unskilled-labor intensive goods (35 percentage points) than for skilled-labor intensive goods (27 percentage points).[18] Figure 2 illustrates the distribution of NTR gaps across product types in 1999, and shows substantial variation. For example, "Binoculars" (product 900510) are characterized by an NTR gap of 60%, whereas "Other woven fabrics of silk" (product 500720) exhibit an NTR gap of 90%. At the same time, "Ginseng roots" (product 121120) is among the 448 products for which China's entry in the WTO did not have an impact, i.e. it is characterized by a zero NTR gap.

To carry out our empirical analysis, we aggregate our product-level NTR gap measure at the prefecture-level using as weights the product share in the export basket of each Chinese prefecture, as observed over the period 1997-1999, i.e. before China's accession to the WTO. In other words we follow Bartik (1991) to construct a local measure, at the prefecture level,

[18] Skilled labor intensive goods are those characterized by a higher than average skill intensity as based on the Chinese Annual Survey of Industrial Firms.

of the NTR gap.[19] As a result, the NTR gap in prefecture j is defined as:

$$\text{NTR gap}_j = \sum_i \frac{Exp_{ij}}{Exp_j} * \text{NTR gap}_i$$

where Exp_{ij} are the exports of good i from prefecture j and Exp_j are total exports of the prefecture.

Figure 4b offers a snapshot of the NTR gap by prefecture in 1999, constructed using exports to the U.S. as weights. As it can be immediately seen, NTR gaps are higher in the South-Eastern coastal region (Shaoxing in Zhejiang province has an NTR gap of 49.4%, whereas Chaozhou in Guangdong province has an NTR gap of 47.3%), but several prefectures in Central China do also exhibit very high NTR gaps (for example, Nanchong and Neijiang located in Sichuan province have NTR gaps of 44% and 50%, respectively).

4.3 Other controls

Between 2000 and 2005 China experienced other changes in trade and other policies, both at home and abroad, which might have contributed to the increase in demand for labor and internal mobility. Since these other changes might be correlated with our main explanatory variable, we investigate whether accounting for their impact affects the estimated effect of the reduction in trade policy uncertainty. Moreover, we also want to explore whether these other policy changes are additional important drivers of internal migration within China in this period. Following the literature, and in particular Pierce and Schott (2016), the additional policy controls include tariffs abroad, import tariffs, barriers to investment, MFA quota restrictions and production subsidies. We aggregate these measures from product/industry/firm level to the prefecture level, as described below. Descriptive statistics for these variables are reported in Table 2.

The most direct way that trade policy affects the labor demand in a prefecture is through tariff rates. To account for the effect of tariff restrictions faced by Chinese exporters abroad, we construct two measures. The first, the *NTR rate* is the weighted average – across products – of the tariff rates applied by the United States to countries granted MFN status. The second, *Tariff Abroad*, is the weighted average of tariff rates across products and export des-

[19] Note that it is not possible to construct export baskets at the prefecture level for years before 1997 since data are not available before then at a disaggregate level. However we assess the robustness of our results using employment weights based on the 1990 Census.

tinations. For both measures, we use as weights the export shares in the *prefecture*'s export basket in 1997-1999, respectively, to the United States and to the other top destinations of Chinese exports at the national level (Hong Kong, Japan, European Union, South Korea, Singapore, Taiwan, Australia, Canada, and Russia).[20] We also want to control for changes in a prefecture's demand for labor due to China's own tariffs. We construct the variable *Import tariff*, which is the weighted average of tariff rates across products and imports' origin countries, where the weights are the import shares in the *prefecture*'s import basket, which we construct using the 1997 - 1999 transaction-level custom data.

China is a major destination of foreign direct investment (FDI) which, according to several studies, has played an important role in promoting local development (Chen, Chang, and Zhang 1995). To account for the increase in labor demand through this channel, we use a proxy for barriers to investment based on the *Contract Intensity* measure proposed by Nunn (2007). The latter describes the share of intermediate inputs used by a firm that requires relationship-specific investments by the supplier. The higher the contract intensity of firms, the more difficult it was for foreign firms to deal with imperfect contract enforcement in China before 2001. As China joined the WTO, some of these contract enforcement problems could be resolved with within the GATT/WTO system (for example, through the dispute settlement mechanism). As a result, after 2001, prefectures characterized by firms with higher contract intensity disproportionately benefited. Our measure of *Contract Intensity* at the prefecture level is equal to the weighted average across products exported by the prefecture.

From 2000 to 2005, an additional potential driver of increased labor demand was represented by the phasing out of quota restrictions on U.S. apparel and textile imports under the Multi-Fiber Agreement (MFA) and the Agreement on Textile and Clothing (ATC). Upon joining the WTO at the end of 2000, China became eligible for the elimination of these non-tariff barriers. Following Brambilla, Khandelwal, and Schott (2010), we calculate the share of China's clothing and textile exports which faced binding MFA quotas in the U.S. at the HS 6-digit level.[21] To measure the extent to which each Chinese prefecture was affected by the relaxation of MFA quotas, we aggregate the HS level MFA Quota Bound to the prefecture level using each prefecture's export basket. The resulting prefecture-level

[20] Exports to these countries represents 77% of Chinese exports between 1997-1999.

[21] Brambilla, Khandelwal, and Schott (2010) provide a crosswalk between149 three-digit MFA product groups and HS codes.

variable *MFA Quota Bound* measures the share of textile exports that would have faced binding MFA quotas after 2001, were not for China's WTO accession. Prefectures with a larger textile export sector, which faced more stringent MFA quotas before 2001, saw bigger non-tariff-barrier reductions through this channel as China joined the WTO.

Last but not least, several Chinese exporters benefit from a series of government subsidies which again are likely to affect the level of economic activity and demand for labor in a prefecture. For example, Defever and Riaño (2017) document that until 2008, foreign-owned firms in China that exported over 70% of their production enjoyed a 50% reduction in the corporate income tax rate. By locating in one of the numerous special economic zones, firms could benefit from an even lower tax rate.[22] China's Annual Survey of Industrial Firms (CASIF) reports the subsidy-per-sales ratio of each firm. We aggregate the geocoded firm-level data to calculate the average subsidy-per-sales ratio for each prefecture. Hence the prefecture-level time-varying *Production Subsidy* variable measures the share of prefecture-level production which is subsidized.

5 Empirical Analysis

5.1 Empirical specification

We are interested in studying the effect of the reduction in trade policy uncertainty faced by a prefecture on that prefecture's migrant inflows. In particular, we ask whether prefectures with bigger NTR gaps (and thus bigger uncertainty reduction in tariff rates due to WTO accession) experienced larger migrant inflows after China's WTO accession, compared to prefectures with smaller NTR gaps. To answer this question, we implement a difference-in-difference estimation strategy. The first difference exploits variation over time, that is, pre- and post-WTO accession, as China's WTO accession provides variation (reduction) in NTR gaps over time. In addition, Chinese prefectures differ in their exposure to tariff uncertainty reduction according to the composition of their export baskets prior to China's WTO accession. Thus the second difference we exploit is cross-sectional, specifically between the high NTR-gap prefectures (more intensely treated) and the low-NTR gap prefectures

[22] Additional benefits included VAT rebates and lower tariffs on imported machinery and intermediate inputs, direct cash subsidies, discounted utility and land rental rates and easier access to finance. Defever and Riaño (2017) find that, as a direct consequence of these subsidies, over a third of Chinese manufacturing exporters sell more than 90% of their produce abroad.

(less intensely treated). Note that the treatment is a continuous variables. We model the impact of changes in other policies in a similar way within a difference-in-difference framework. The prefecture-level panel data set described in the previous section provides the variation used to identify the effects. Our baseline specification is given by:

$$M_{jt} = \alpha + \beta_1 \cdot \text{PostPNTR}_t \cdot \text{NTR Gap}_j + \beta_2 \cdot \text{PostPNTR}_t \cdot \mathbf{X}_j + \beta_3 \cdot \text{PostPNTR}_t + \delta_j + \epsilon_{jt} \quad (1)$$

where M_{jt} is our measure of migrant inflows, specifically the share of (employed) migrants in the total (employed) population of prefecture j at year t ($t = \{2000, 2005\}$). *NTR Gap*$_j$ measures the time-invariant uncertainty in trade barriers with the U.S. faced by each prefecture before WTO accession. $\mathbf{X}_j$ is a vector that contains reductions between 2000 and 2005 in tariff rates faced by Chinese exporters abroad (Δ*NTR rate* and Δ*Tariff Abroad*) and in Chinese import tariff rates (Δ*Import tariff*). We also include in $\mathbf{X}_j$ other time-invariant measures of barriers to trade and investment that were relaxed as China acceded to the WTO, namely *Contract Intensity* and the *MFA Quota Bound*. Note that $\mathbf{X}_j$ also includes the reduction between 2000 and 2005 of Chinese production subsidies, i.e. Δ*Production Subsidy*. The direct effect of the PostPNTR$_t$ dummy controls for changes in migrant inflows between 2000 and 2005, which are common across all prefectures. We also net out the (direct) effect of time-invariant prefecture characteristics with a set of prefecture fixed effects denoted as δ_j. β_1 is the main coefficient of interest. Everything else equal, a positive value of β_1 in Equation (1) suggests that the reduction in uncertainty on U.S. tariff rates is associated with an increase in migrant inflows relative to the common time trend. Similarly for the other coefficients, a positive value suggests that – for example – the reduction in tariffs abroad or in Chinese tariffs is associated with higher migrant inflows.

Since the prefecture-level trade barriers are constructed using prefecture-specific trade baskets *prior to the WTO accession*, the estimating equation (1) allows us to answer the following question: how would migrant inflows to each prefecture change if export patterns of each prefecture remained constant and there was a reduction in trade policy uncertainty? In other words, the specification isolates the impact of the reduction in trade barriers, independent of changes in export baskets which might have occurred. The key identifying assumption is that, conditional on the common time trend and prefecture fixed effects, pre-

WTO local export baskets did not change in anticipation of the trade liberalization to come – which we think is reasonable, given the high level of uncertainty.

As explained in Section 4, NTR gaps are measured as the difference between Smoot-Hawley tariff rates and U.S. MFN tariff rates. As a consequence, since NTR gaps are a function of U.S. trade policy, in particular both past and present U.S. policy, they are not likely to be endogenous. In particular, it is reasonable to assume that current Chinese political-economy drivers could not have affected Smoot-Hawley tariff rates, which were set by the U.S. Congress in the 1930's. In addition, U.S. MFN tariff rates are the result of U.S. multilateral negotiations with all WTO countries, therefore they are unlikely to have been impacted by *local* conditions in China – especially given that China was not part of the WTO at the time the MFN rates were set by the U.S. (the end of the Uruguay Round). The same type of argument makes us confident that changes in tariffs abroad are not endogenous. Finally, stronger but plausible assumptions are required to justify the exogeneity of changes in Chinese import tariffs.[23] In this case, one important concern is that unobserved time-varying shocks might at the same time affect migrant inflows and be correlated with changes in Chinese import tariffs over time. Note however that the latter are set at the *national* level while migrant inflows are measured at the *local* level, making this concern less severe.

5.2 The impact on internal migration

We turn next to examine the impact of trade liberalization on internal migration flows. Our results are presented in Table 3.

Table 3 shows the baseline OLS difference-in-difference (DID) results using, as dependent variable, the share of (employed) migrants out of the local (employed) population. We focus on employed migrants and local population because we want to isolate the labor-demand channel. Columns (1)–(3) consider all migrants (both "non-*hukou*" and "*hukou*" migrants, and both across and within provinces), whereas columns (4)–(6) consider specific subgroups. Regression (1) only includes the impact of uncertainty reduction while regression (2) adds the reduction in tariff rates abroad and in China. Finally, regression (3) presents the full specification where reductions of investment barriers, the elimination of the MFA quota

[23]Note however that Chinese import tariffs are not the main focus of our analysis, as they are simply a control variable. Also, they are not always included in the specification - in which case the results on our main variable are unaffected.

and production subsidies are also accounted for. All specifications include prefecture and time fixed effects, and robust standard errors are reported in parentheses. All estimates suggest that a larger reduction in uncertainty is associated with an increase in the share of in-migrants in the population (relative to the common time trend). Focusing on our benchmark specification in column (3), everything else equal, a ten percentage points reduction in tariff uncertainty with the U.S., as measured by the NTR gap, is associated with a 0.48 percentage point increase in the total migration rate. With the prefecture-level NTR gap averaging at 31%, the estimate of β_1 translates into a 1.49 percentage point increase in the migration rate relative to the national baseline. Hence prefectures facing the average decline in trade policy uncertainty experience an 18 percent increase in their internal in-migration rate.

It is worth noting that also the tariff variables have the expected signs, although they are insignificant (probably because of little variation in those variables in this period). Reductions in tariffs abroad have a positive (insignificant) impact on migration rates: That is, the larger the reduction in tariff rates faced by exporters of a Chinese prefecture abroad, the higher the increase in migrant shares to this prefecture. This is consistent with the fact that international prices of exported goods are likely to increase when tariff rates abroad decrease (terms-of-trade effect of tariff reductions); moreover, prefectures demand more migrant labor as international prices of exported goods increase, since production also increases.[24] Moreover, the negative (insignificant) sign on import tariffs suggests that, the larger the reductions in a prefecture's import tariff rates, the smaller the increase in in-migrant shares to that prefecture. This suggests that prefectures might replace migrant labor with cheaper imported inputs.

In columns (4)-(6) of Table 3 we study whether the reduction in trade policy uncertainty had a differential effect, depending on the type of migrants considered. This type of analysis will shed light on whether the changes in internal migration we observe were driven in part by internal migration policy changes, and if so, of which type. If we found significant effects when we only consider *hukou* migrants, then we could conclude that the reduction in uncertainty triggered major *hukou* policy changes, of the type involving access of migrants to the welfare state of the prefecture of destination (through the acquisition of the *hukou*

[24]Since we constructed average tariff rates using pre-WTO accession export baskets (1997-1999), these results are not driven by the compositional changes in exports from 2000 to 2005. Thus, in our regressions, trade liberalization increases migrant inflows by raising the demand for labor through product price changes only.

of the new residence). The reason is that this aspect of *hukou* policy was definitely binding before the period of our analysis, i.e. any change in the number of *hukou* migrants could only take place if policy was relaxed. If on the other hand we found that our results are completely driven by non-*hukou* migrants, then we would not be able to separately identify changes in policy. The reason is that non-*hukou* migration had already been partially liberalized before our period of analysis, and so the results could be consistent with either a policy-unconstrained world or with policy changes.

We restrict our attention to migration across provinces – as data for *hukou* migration are only available at this level. As a benchmark, column (4) presents the estimated impact of uncertainty reduction on total cross-province migrants (non-*hukou* plus *hukou* migrants); column (5) focuses instead on non-*hukou* cross-province migrants, and column (6) on *hukou* cross-province migrants. Our results for total cross–province migration (column 4) and for non-*hukou* migration (column 5) are broadly comparable to the findings in column (3). At the same time, we do not find evidence of a significant impact of the reduction in trade policy uncertainty on "*hukou*" migration (column 6). These results suggest that there was no liberalization of migration policy of the type involving full access of migrants to the public goods and services associated with the acquisition of the local *hukou* status. At the same time, as mentioned above, the significant results in the regressions for non-*hukou* migrants do not allow us to identify an independent role played by changes in *hukou* policy. Those results could be driven by pure economic factors in prefectures where migrants could already move to, without acquiring the local *hukou*.

There are two caveats in the last set of results. First, data limitations imply that *hukou* migrants can only be observed across provinces and not within provinces. It might be that some major *hukou* policy changes did in fact take place as a consequence of China's WTO accession – of the type involving acquisition of the local *hukou* in the prefecture of destination – but only within each province. Second, it is possible that, among *hukou* migrants, we include return migrants who go back to the prefecture where they were born, and for which they enjoy local *hukou*, after having lived and worked in another location. Since the latter type of move is not driven by economic factors but most likely by life-cycle considerations (for example the desire to live close to family during retirement), it may bias the estimates in the *hukou* regressions towards zero and in part explain why we do not find significant results in these models. To investigate this point, we carry out robustness checks

where we break down the sample by age groups (see Section 6.4).

Our basic identification strategy relies on a difference in difference methodology. For our estimates to be plausible, we need to rule out the presence of any difference in time trends in the pre-treatment period between the treatment and control groups (note that, by treatment and control groups, we mean prefectures which were, respectively, highly treated and lightly treated, since our treatment variable is not dichotomous but continuous). To this end, we re-estimate the difference-in-differences model over the pre-treatment period. For the pre-treatment parallel trend to be satisfied, we should find that the difference-in-difference estimate for the earlier period is statistically insignificant and close to zero.

The analysis of the trends in the pre-treatment period is based on using migrant inflows that took place between 1990 and 2000 and determines whether they were affected differentially for prefectures in the treatment vs. control groups. The results are reported in Table 4. Since the sample of prefectures we can observe in 1990-2000 is different from the sample of the main analysis, we first show that our main findings for 2000-2005 hold in the restricted sample of prefectures (see the first column).[25] Next we analyze the data in 1990-2000. As the last four columns in the table show, there was no differential change in internal migration rates in the treatment vs. control groups in the pre-treatment period.

6 Additional Results

In this section, we provide several additional results that show: 1) the robustness of our main findings; 2) the main channel through which the reduction in trade policy uncertainty affects internal migration, i.e. changes in exports to the U.S.; 3) the absence of the effect in a falsification exercise and finally 4) how the findings vary across different migrant groups.

6.1 Robustness

In our benchmark estimates we used a measure of the weighted NTR gap where the weights were calculated using the prefecture's basket of exports to the United States in 1997-1999. There are two types of concerns with this measure. First, using exports as weights might understate the policy uncertainty prefectures face since, as we will show, exports tend to

[25]The prefecture number decreased from 336 in the main specification to 322 in the pre-trend analysis due to prefecture splitting between the 1990 census and the 2000 census. Since we use both censuses in Table 4, we retain the 1990 prefecture classification when we re-estimate the 2000 and 2005 regression, resulting in 322 consistent prefectures in 2000-2005 and 1990-2000.

be lower when uncertainty is higher and to increase when this uncertainty is reduced (see Table 6). Second, although we think it is highly unlikely that prefectures could have predicted the changes to come, exactly because of all the uncertainty, we worry that export baskets to the United States in 1997-1999 could be driven by prefectures adjusting beforehand how much they export. We address these concerns in several ways. First, we start by using an unweighted measure of the NTR gap based only on whether a given product was exported to the United States (see column (1) of Table 5). Second, we construct an alternative weighted NTR gap using the basket of exports *to the entire world*, rather than only to the United States (see column (2)). Third, we use an unweighted measure based only on whether a given product was exported to the entire world (see column (3)). Finally, we replace our export-based weights with employment shares in 1990 (see column (4)).[26] Our results are unaffected, indicating that the possible endogeneity of export shares to the United States is not a major concern.

6.2 Channel: the impact on exports to the U.S.

The focus of this paper is on the impact – on internal migration within China – of the reduction in trade policy uncertainty faced by Chinese exporters in U.S. markets. The main channel through which this effect is likely to operate is exports from China to the United States. The intuition is that, as a consequence of the elimination of the threat of MFN non-renewal by the U.S. government, both Chinese firms and U.S. and multinational firms producing in China should be more willing to invest in large projects in China to produce and export to the U.S.. If Chinese exports indeed increase, this is likely to impact the demand for labor at the local level, which in turn will affect internal labor mobility.

To investigate this channel, we estimate a specification which is very similar to the one presented in Equation 1, the main difference being that we focus on Chinese exports to the U.S. market as the dependent variable (see Table 6).[27] We consider variation both across 6-digit HS product codes (columns (1)-(3)) and across prefectures (columns (4)-(6)). Data on product-level exports are available at higher frequency than data for internal migration. Therefore, in these regressions we exploit variation for a higher number of years around the

[26] In this specification we only have 644 observations because we rely on the 1990 census for the employment distribution. As a result, we use a consistent prefecture classification across 1990, 2000, and 2005, which consists of 322 prefectures.

[27] To address concerns of tariff evasion through Hong Kong (Fisman and Wei (2004)), we also examine Chinese exports to the U.S. and Hong Kong in Table C1.

time of the WTO accession. In particular, in columns (1)-(3), for exports and tariffs, we use data from 1997, 1998, and 1999 as pre–treatment periods, and from 2002, 2003, and 2004 as post–treatment periods.[28] In columns (4)-(6), we confirm the impact of the reduction in trade policy uncertainty on exports to the U.S. at the prefecture level. Constrained by the availability of other control variables such as population and GDP,[29] we aggregate the annual export data from 1997 – 1999 to a pre–treatment average, and from 2002 – 2004 to a post–treatment average.

We start with a parsimonious specification (columns 1 and 4), in which we only include the change in trade policy uncertainty, while in the second specification (columns 2 and 5) we also account for changes in tariff rates, and in the third specification (columns 3 and 6) we present a more complete specification in which we include all the other controls. Our results indicate that the reduction in U.S. trade policy uncertainty brought about by China's WTO accession had a positive impact on exports to the U.S., both at the 6-digit HS product level and at the prefecture level. Focusing on our specification of product-level exports in column (3), everything else equal, a ten percentage points reduction in tariff uncertainty with the U.S., as measured by the NTR gap, is associated with a 23.3 percent increase in the total exports of that HS product to the U.S. Similarly for prefecture-level exports in columns (6), everything else equal, a ten percentage points reduction in tariff uncertainty with the U.S. is associated with a 23.3 % increase in the prefecture's total exports to the U.S. With the prefecture-level NTR gap averaging at 31%, the estimated effect of PNTR translates into a 72.1% increase in the total export value relative to the national baseline.

6.3 Falsification Test

In Table 7, we carry out a falsification exercise by showing that the estimated effect of the NTR gap is zero exactly when we expect that there should be no effect. In particular we consider a different time period and, using values from this period, we construct the same

[28] In other words, instead of using tariff changes from 2000 to 2005 as in the main specification, we use each year's level of tariffs (i.e. we use the level of NTR rate, Tariff Abroad and Import Tariff) and explore their effect on exports over time. The interpretation of the coefficients on the NTR gap is the same as in the main specification. Everything else equal, a positive coefficient suggests that the reduction in trade policy uncertainty is associated with increases in exports to the U.S. from China, relative to the common time trend. However, negative coefficients on either NTR rate, Tariff Abroad or Import Tariff suggest that lower tariff rates are associated with higher export volumes to the US.. Finally, the interpretation of all other coefficients is the same as in the main specification.

[29] We follow the standard gravity framework and account for the impact of these variables in the prefecture-level analysis.

variables as in our main table: Compared to what we find for 2000-2005 (see column 1), we expect to find similar effects for all variables except for the main regressor of interest since in this other period there was no reduction in trade policy uncertainty associated with the NTR gap. In particular we use data from 1990-2000 to measure the migration rate (dependent variable) and the NTR gap as well as the other variables for which nineties' values can be used (the NTR rate, the Tariff Abroad, the Import Tariff). Although the NTR gap can be defined exactly as in the main analysis, we do not expect it to have a significant impact. Our results confirm this prediction, as shown in columns (2)-(5) of Table 7.[30]

6.4 Heterogeneous Effects

We carry out three exercises to investigate whether the migration response to trade policy uncertainty reduction is heterogenous across prefectures and demographic groups. In Table 8 we allow for non-linear effects of the reduction in trade policy uncertainty. In particular we assign prefectures to 5 quintiles based on the size of their trade policy uncertainty reduction and estimate the impact of the NTR gap after China's WTO accession *separately* for each quintile. We find that the positive impact of the NTR gap is not driven, only, by prefectures in the highest quintile. If that was the case, it would be worrisome, as those prefectures might have other characteristics that pull migrants from other parts of China. We find that, as long as the reduction in trade policy uncertainty in a given prefecture was above the second quintile of the distribution of the NTR gap, then the impact of the NTR gap is positive, significant and quite stable (approximately equal to the average effect in our main table).

Next we explore whether our results hold when we consider in-migration rates of female workers as well as of both male and female workers (see Table 9 where we control for the usual right-hand-side variables, although we do not show the estimates for these other regressors). The estimates of the impact of the reduction in trade policy uncertainty are quite similar across gender groups. In addition, we find again that non-*hukou* migration is not significantly affected. Table 10 shows the estimates in a similar format as in Table 9 (i.e. omitting the coefficients of the other regressors) for different age groups (16-25 years

[30] Note that this falsification exercise differs from the test of pre-treatment parallel trends since in the latter we use the same values as in the main specification for the NTR gap while in the falsification exercise we use the nineties' values of the NTR gap.

old, 26-40 years old, 41-55 years-old, 56-65 years old). Consistent with our expectations, we find that the strongest and more significant results hold in the sample of 26-40 year old migrant workers. For the oldest age group, none of the effects are significant. For the 16-25 and 41-55 years old, we find evidence of a significant effect, but only when we consider total migration (both across-province and across-prefectures).

Finally, we extend our analysis of internal migration within China by exploring heterogeneous effects based on skill. As explained in section 4, for the purpose of our analysis a skilled worker is an individual who has completed at least a high school degree, whereas someone with less than a high school education will be considered unskilled. In Table 11 we follow the same specification as in Equation (1) and estimate the impact of a reduction in trade policy uncertainty on the migration rates of unskilled and skilled workers, respectively. In columns (1)-(2) we use the same measure of uncertainty reduction for both skill groups (NTR gap) while in columns (3)-(4) we construct a skill-specific measure of the NTR gap (by dividing products in each prefecture's trade basket into two groups, skilled-labor-intensive products and an unskilled-labor-intensive products). Our results indicate that a reduction in trade policy uncertainty has a strong and significant impact on skilled migration rates, but no effect on unskilled migration rates. We can think of two possible explanations for this finding. First, the reduction in trade policy uncertainty increased the demand for skilled labor but not for unskilled labor. Second, given the same increase in labor demand for the two skill groups, skilled labor is more mobile.[31] We further explore the role played by these two mechanisms by looking at other labor-market outcomes of these two groups in the next subsection.

7 The impact on other labor market outcomes

To better understand how Chinese local labor markets adjust to the trade shock, we carry out a series of additional exercises, which are reported in Tables 12 and 13. Our point of departure is that, in addition to hiring migrants, local labor markets can accommodate an increase in demand in other ways, such as by employing more local workers, or by extending the number of working hours of the employed workers.[32]

[31] We further divide the sample into 4 educational groups and similarly examine the heterogeneous effects in Table C2. The results are consistent.

[32] Note that our census data do not provide information on the other potential margin of labor market adjustment, namely wages.

We start by exploring the impact of trade shocks on employment rates (see Table 12).[33] In columns (1)-(3) we consider the effect on all workers, without distinguishing by skill level. In column (1) the dependent variable is the total employment rate of both natives and migrants, whereas in column (2) and (3) we focus, respectively, on migrants and natives. As we can immediately see, the decline in trade policy uncertainty did not have any effect on employment rates, both in the aggregate and for each subgroup of the population. In columns (4)–(6) we repeat the same exercise focusing on unskilled workers, i.e. workers who did not complete a high–school degree, whereas in columns (7)–(9) we consider skilled workers. Also in these cases we do not uncover any significant effect of a reduction in trade policy uncertainty. One possible explanation for these results is that, with average employment rates at around 97%, the Chinese labor market was quite saturated during this period, and thus there was little room to adjust to the increased demand for labor through changed in the number of employed workers.

Even though employment did not adjust – i.e. there was no change on the extensive margin in the labor market – we could still observe an adjustment on the intensive margin, i.e. a change in the number of hours worked. In particular, local labor markets might adjust to increased demand by raising the working hours of already employed workers. To explore this possibility, in Table 13 we turn to consider the impact of the reduction in trade policy uncertainty on the number of weekly working hours, following the same structure as in Table 12.

Several interesting results emerge, First, as it can be seen in column (1), the reduction in trade policy uncertainty increased the overall number of hours worked disproportionately in more intensively treated prefectures. Interestingly though, this result is driven by natives spending more time at work, whereas migrants hours worked did not change. Looking at different effects by skill group, the findings in columns (4)–(6) indicate that the adjustment involved unskilled workers, rather than skilled workers, and once again the effect applied only to natives and not to migrant workers.

From Table 11, Table 12 and Table 13, we can see that while a reduction in trade policy uncertainty led to an increase in demand for *both* skilled and unskilled labor. While the adjustment to increased demand for unskilled labor took place through longer working

[33]The employment rate of natives (migrants) equals the number of employed native (migrant) workers divided by the total number of natives (migrants) in the labor force.

hours of unskilled native workers, the adjustment to increased demand for skilled labor was accommodated by admitting and employing more skilled migrants.

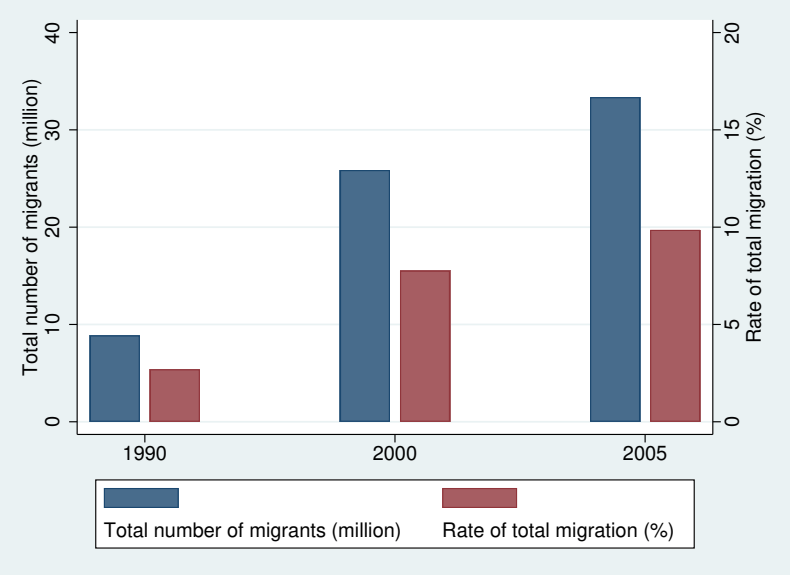
8 Conclusion

In this paper we carried out a systematic analysis of the effects of China's entry in the WTO on the internal mobility of Chinese workers. Building on the recent work by Pierce and Schott (2016) and Handley and Limao (2017), we focused on the role played by the reduction in trade policy uncertainty in U.S. markets due to the granting by the U.S. of permanent MFN status to China. Our analysis delivered several interesting results. First, we have shown that Chinese prefectures facing a larger decline in trade policy uncertainty experienced larger inflows of migrant workers. When we looked at different types of migrants – *hukou* vs. non-*hukou* migrants – we found that it is the latter who drove the changes in internal migration rates. In other words, we found that the labor flows triggered by the reduction in trade policy uncertainty have been characterized by a limited access of migrants to local public goods and services. Second, we have investigated one natural mechanism that could explain this finding, namely the changes in labor demand brought about by changes in trade flows. Our results show that this mechanism was in fact at work: industries and prefectures facing a larger decline in trade policy uncertainty vis a vis the United States in 2001 experienced a larger increase in exports towards that country. Third, we have explored how the decline in trade policy uncertainty affected different subgroups of the population. Our results indicate that the effect of the trade shock was driven by skilled rather than unskilled migrant workers and by prime working age migrant workers. Interestingly, while the bulk of the results are for the sample of male migrant workers, we also find significant results for the sample of female migrant workers. Finally, we have explored the role played by other potential labor market adjustment mechanisms. Our results indicate that the main adjustment – in prefectures facing a larger decline in trade policy uncertainty – in the case of unskilled labor has involved an increase in the number of hours worked by local ("native") unskilled workers. We found instead no effect on the employment rate of either migrants or native workers (neither skilled nor unskilled).

One of the main contributions of our paper is to have considered the institutional details of the internal migration framework within China, by distinguishing *hukou* vs. *non-hukou*

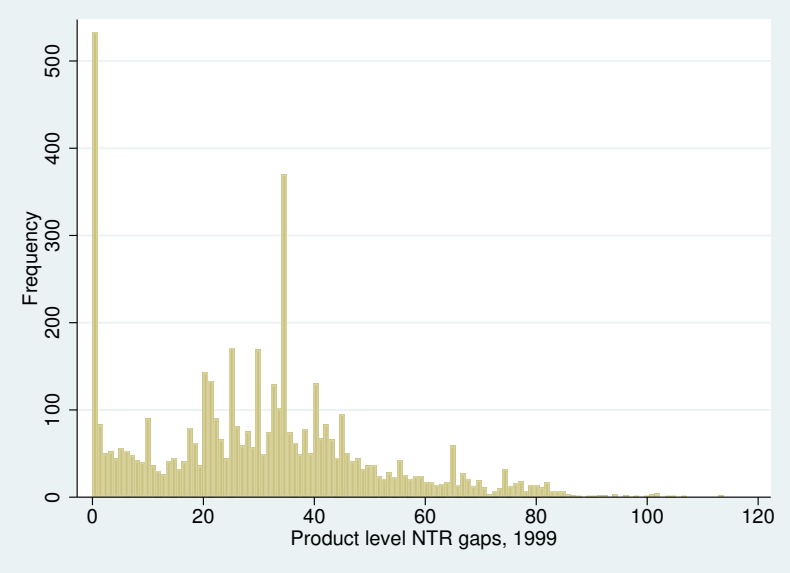
migration. Our results show no evidence that the trade shock we have examined in our paper led to a liberalization of the *hukou* system associated with changes in the registration location and access to local public services. This might explain why we find significant results only for skilled migrants, since the latter are better able to overcome the lack of access to public services. Hence, we can derive important policy implications from our analysis. Our results suggest that one way China has been able to reap the benefits of trade openness, and further its economic development, has been through increased skilled migration. To achieve an even more efficient geographic allocation of workers – and facilitate unskilled migration – in response to the growing opportunities brought up by trade, a liberalization of the *hukou* system of the type mentioned above should be further pursued.

Figure 1: National-level internal migration of employed population



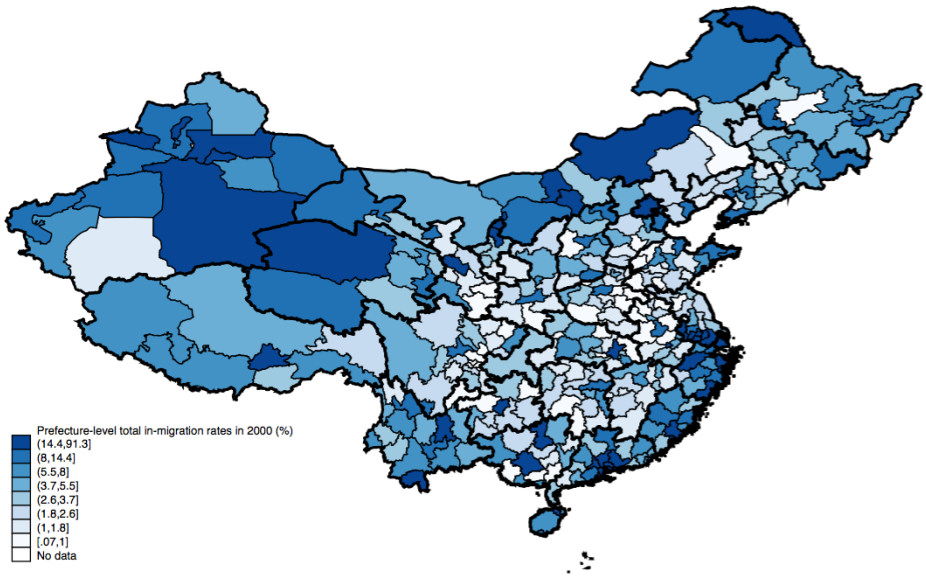
Notes: This figure plots the national-level stocks and rates of recent internal migrants (arrived in the previous five years) in 1990, 2000, and 2005. Blue bars represent the total numbers of migrants in millions, and red bars represent the total migration rates in percentage points. Samples are drawn from the censuses. We focus on 16-65 employed workers. Total migration includes cross-prefecture migrants.

Figure 2: HS 6-digit product level NTR gaps, 1999

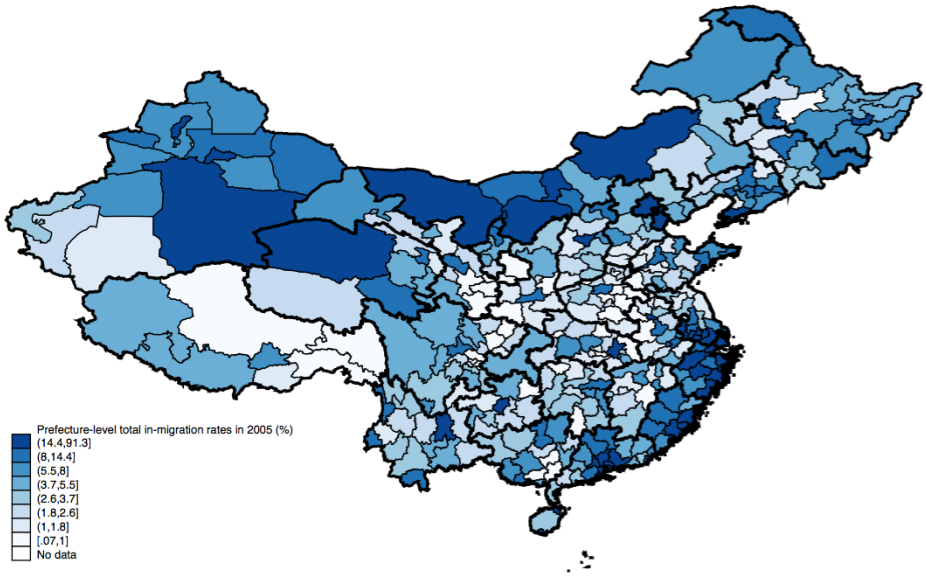


Notes: This figure shows the scatterplot and histogram of NTR gaps at the HS 6-digit (1996) product level. See text for details on the construction of NTR gaps.

Figure 3: Heat maps of in-migration rates among employed population aged 16-65, in 2000 and 2005



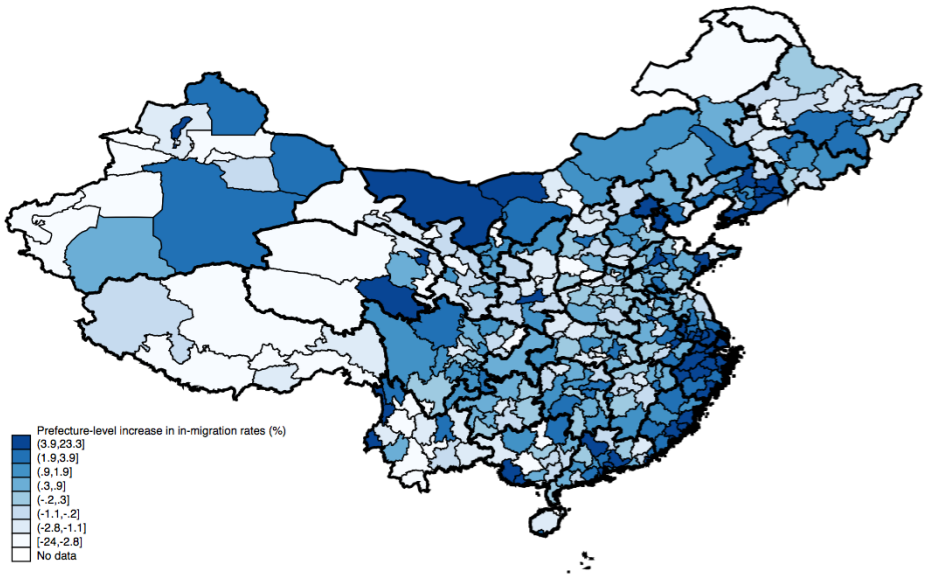
(a) Prefecture level *"non-hukou" plus "hukou"* migration rates in 2000 (%)



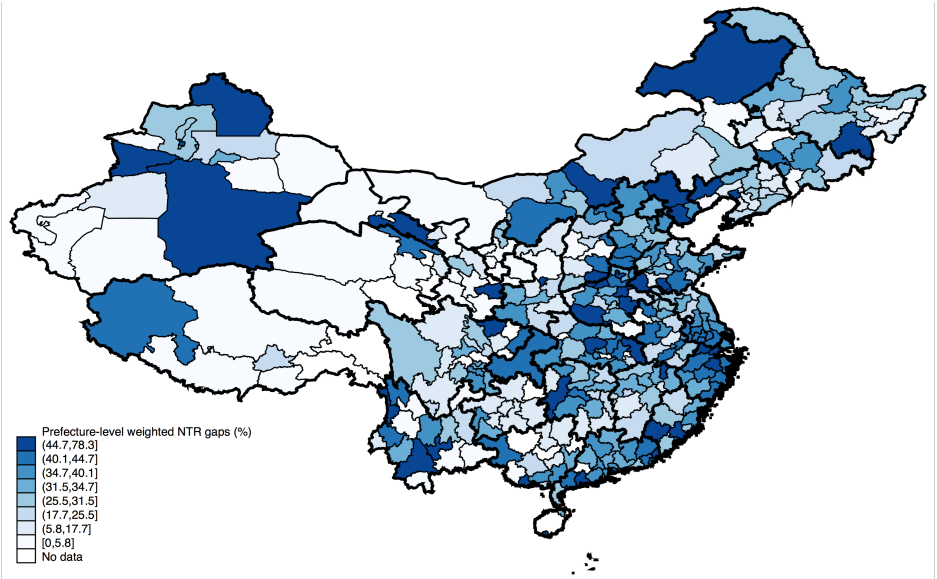
(b) Prefecture level *"non-hukou" plus "hukou"* migration rates in 2005 (%)

Notes: Figures (a) and (b) plot each prefecture's share of cross-prefecture migrants among working age (16 – 65 years old) employed male workers, in 2000 and 2005, respectively. The unit of observation is prefecture, and province borders are outlined in thick lines. Prefectures are color-coded into 8 intervals based on their in-migrant shares.

Figure 4: Heat maps of migration and trade policy uncertainty



(a) Increase from 2000 to 2005 in in-migration rates



(b) Weighted NTR gaps, 1999

Notes: Figure (a) plots the increase in cross-prefecture in-migrant shares from 2000 to 2005, in percentage points. The sample is working age (16 – 65 years old) employed male workers. The unit of observation is a prefecture, and province borders are outlined in thick lines. Prefectures are color-coded into 8 (roughly) equal-sized intervals based on their in-migrant shares. Figure (b) plots the size of Normal-Trade-Relations (NTR) gaps for each prefecture in 1999 – before China was granted permanent normal trade relations status. See text for details of the construction of NTR gaps.

Table 1: National-level internal migration of employed population

1990	Male	Female	Total
Total number of migrants (million)	10.04	7.71	17.75
Number of skilled migrants (million)	3.07	1.50	4.57
Number of unskilled migrants (million)	6.97	6.21	13.18
Rate of total migration (%)	2.78	2.61	2.70
Rate of skilled migration (%)	5.44	4.65	5.04
Rate of unskilled migration (%)	2.29	2.36	2.33
2000	**Male**	**Female**	**Total**
Total number of migrants (million)	29.38	22.35	51.73
Number of skilled migrants (million)	6.82	3.91	10.73
Number of unskilled migrants (million)	22.56	18.44	41.00
Rate of total migration (%)	8.13	7.41	7.77
Rate of skilled migration (%)	9.52	8.70	9.11
Rate of unskilled migration (%)	7.78	7.18	7.48
2005	**Male**	**Female**	**Total**
Total number of migrants (million)	37.36	29.36	66.72
Number of skilled migrants (million)	11.31	7.47	18.78
Number of unskilled migrants (million)	26.05	21.89	47.94
Rate of total migration (%)	10.27	9.45	9.86
Rate of skilled migration (%)	14.33	14.65	14.49
Rate of unskilled migration (%)	9.15	8.43	8.79

Notes: This table describes the national-level stocks and rates of recent internal migrants (arrived in the previous five years) in 1990, 2000, and 2005. Samples are drawn from the censuses. We focus on 16-65 employed workers. Total migration includes cross-prefecture non-*hukou* and cross-province *hukou* migrants. Skilled workers are those who completed at least high school education.

Table 2: Summary statistics of prefecture level panel data

	2000	2005
Total Migration Rate (*hukou* PLUS non-*hukou*)	8.14	10.33
	(13.24)	(15.77)
Total Provincial Migration Rate (Prov NHM + HM)	4.94	6.39
	(10.34)	(12.67)
Provincial non-*hukou* Migration Rate (Prov NHM)	4.57	5.93
	(10.26)	(12.69)
Provincial *hukou* Migration Rate (Prov HM)	0.46	0.55
	(0.67)	(0.71)
NTR Gap (weighted)	0	31.12
	(0)	(14.41)
NTR Rate	3.78	3.60
	(2.57)	(2.54)
Tariff Abroad	4.76	4.04
	(7.85)	(3.33)
Import Tariff	13.35	7.04
	(6.72)	(3.08)
Contract Intensity	0	41.95
	(0)	(10.38)
MFA Quota Bound	0	12.47
	(0)	(13.00)
Production Subsidy	0.86	0.54
	(2.09)	(1.74)
N	336	336

Notes: This table summarizes migration measures and trade barriers at the *prefecture* level. The sample includes 336 prefectures, observed at 2000 and 2005. The first four rows list migration rates calculated as the shares of migrants in a prefecture's working-age employed population. Rows 5-11 list measures of trade barriers and other policies considered in the main regression specification. *NTR gap (weighted)* measures the reduction in uncertainty of U.S. tariff rates. *NTR Rate* measures the weighted average MFN tariffs in the U.S. market. *Tariff Abroad* is the weighted average tariff rate a prefecture faced in China's top export markets, including Hong Kong, Japan, European Union, South Korea, Singapore, Taiwan, Australia, Canada, and Russia. *Import tariff* is the weighted average import tariff a prefecture imposes on imported goods, given its import basket. *Contract Intensity* measures the share of intermediate inputs that require relationship-specific investments. *MFA Quota Bound* measures the share of textile exports that would have faced binding MFA quotas were not for China's WTO-accession. *Production subsidy* measures the share of local production which is subsidized. All measures of trade barriers are aggregated from the product/industry/firm level to prefecture level. See text for more details.

Table 3: Migration Rates (different migrant definitions)

	All migrants (*hukou* PLUS non-*hukou*)			Prov NHM+HM	Prov NHM	Prov HM
	(1)	(2)	(3)	(4)	(5)	(6)
Post x NTR gap	0.051	0.052	0.048	0.034	0.030	0.004
	(0.015)***	(0.016)***	(0.018)***	(0.014)**	(0.013)**	(0.003)
Post x Δ NTR Rate		-0.037	-0.021	0.017	0.114	-0.098
		(0.518)	(0.518)	(0.387)	(0.341)	(0.094)
Post x Δ Tariff Abroad		0.044	0.048	0.012	0.002	0.011
		(0.056)	(0.055)	(0.040)	(0.038)	(0.014)
Post x Δ Import Tariff		-0.009	-0.013	-0.022	-0.009	-0.014
		(0.028)	(0.029)	(0.023)	(0.022)	(0.007)*
Post x Contract Intensity			0.018	0.013	0.021	-0.008
			(0.022)	(0.016)	(0.016)	(0.004)*
Post x MFA Quota Bound			-0.006	-0.003	-0.003	-0.000
			(0.015)	(0.014)	(0.012)	(0.004)
Post x Δ Production Subsidy			0.001	0.027	0.021	0.008
			(0.145)	(0.108)	(0.108)	(0.016)
Adjusted R-squared	0.91	0.91	0.91	0.92	0.92	0.38
N	672	672	672	672	672	672
Prefecture FE; Time FE	YES	YES	YES	YES	YES	YES
SE	Robust	Robust	Robust	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: Huber-White robust SEs are reported in parentheses. The dependent variables are: the migration rate of *hukou* (cross-province) migrants PLUS non-*hukou* (cross-province and cross-prefecture) migrants (columns (1)-(3)); migration rate of cross-province *hukou* PLUS non-*hukou* migrants (Prov NHM + HM in column (4)); cross-province non-*hukou* migrants (prov NHM in column (5)); and cross-province *hukou* migrants (Prov HM in column (6)). The sample includes 336 prefectures, observed at 2000 and 2005. The DID terms are constructed using a time dummy "Post" interacted with changes in trade/production policies. Refer to Table 2 and text for the definition and construction of the explanatory variables.

Table 4: Pre-treatment trends: migration rates of all migrants

	2000-2005	1990 - 2000			
	NHM+HM	NHM+HM	Prov NHM+HM	Prov NHM	Prov HM
	(1)	(2)	(3)	(4)	(5)
Post x NTR gap	0.059	0.038	0.024	0.026	-0.001
	(0.019)***	(0.024)	(0.019)	(0.020)	(0.005)
Post x Δ NTR Rate	-0.026	-0.271	-0.508	-0.457	-0.055
	(0.525)	(0.627)	(0.428)	(0.411)	(0.078)
Post x Δ Tariff Abroad	-0.035	0.015	0.020	0.020	-0.000
	(0.008)***	(0.011)	(0.009)**	(0.011)*	(0.003)
Post x Δ Import Tariff	-0.004	0.015	0.044	0.030	0.015
	(0.031)	(0.031)	(0.027)*	(0.027)	(0.009)*
Post x Contract Intensity	0.036	0.066	0.099	0.105	-0.005
	(0.027)	(0.046)	(0.043)**	(0.043)**	(0.008)
Post x MFA Quota Bound	-0.012	0.006	0.004	0.004	-0.000
	(0.017)	(0.020)	(0.018)	(0.019)	(0.005)
Post x Δ Production Subsidy	0.062	-0.129	-0.147	-0.122	-0.030
	(0.159)	(0.191)	(0.139)	(0.138)	(0.022)
Adjusted R-squared	0.90	0.67	0.42	0.39	0.13
N	644	644	644	644	644
Prefecture FE; Time FE	YES	YES	YES	YES	YES
SE	Robust	Robust	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: This table shows the pre-trend using internal migration measures between 1990 and 2000 to test whether internal migration changed in anticipation to elimination of trade policy uncertainty after 2001. We use the 1999 NTR gap used in the main results (Table 3). The sample includes 322 prefectures, observed at 1990 and 2000. Not all prefectures are included in the placebo tests due to merges and splits in administrative units overtime. As a comparison, we reproduce column (3) in Table 3 for the same 322-prefecture delineation in 2000-2005 in the first column. Columns (2) - (5) report pre-trend of 1990 to 2000 migration. See Table 3 for definitions of migrants. Huber-White robust SEs are reported in parentheses.

Table 5: Robustness Check: migration rate of all migrants (*hukou* PLUS non-*hukou*), using alternative NTR gaps

	Trade US Unweighted (1)	Trade World Weighted (2)	Trade World Unweighted (3)	Employment Weighted (4)
Post x NTR gap	0.064	0.053	0.100	0.205
	(0.026)**	(0.022)**	(0.036)***	(0.062)***
Post x Δ NTR Rate	0.500	0.007	0.847	-0.852
	(1.046)	(0.521)	(1.003)	(1.247)
Post x Δ Tariff Abroad	-0.224	0.022	-0.302	-0.006
	(0.256)	(0.064)	(0.281)	(0.166)
Post x Δ Import Tariff	-0.056	-0.021	-0.071	-0.289
	(0.077)	(0.032)	(0.083)	(0.151)*
Post x Contract Intensity	-0.013	0.016	-0.036	0.033
	(0.028)	(0.022)	(0.030)	(0.054)
Post x MFA Quota Bound	-0.002	-0.019	-0.019	-0.007
	(0.014)	(0.017)	(0.018)	(0.020)
Post x Δ Production Subsidy	0.009	0.029	0.029	0.134
	(0.142)	(0.142)	(0.132)	(0.158)
Adjusted R-squared	0.91	0.91	0.91	0.91
N	672	672	672	644
Prefecture FE; Time FE	YES	YES	YES	YES
SE	Robust	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: This table shows the results of the baseline specification using alternative definitions of NTR gaps. Huber-White robust SEs are reported in parentheses. All specifications include prefecture and time fixed effects. The dependent variable is the migration rate of *hukou* (cross-province) migrants PLUS non-*hukou* migrants. See Section 6.1 in text for details on the alternative weights used in this table. Employment weights from 1990 census are used to construct trade barriers in column (4), thus the sample of prefectures are restricted to 322 consistent prefecture boundaries.

Table 6: Log Exports to US

	log Exp to US by product			log Exp to US by prefecture		
	(1)	(2)	(3)	(4)	(5)	(6)
Post x NTR gap	0.026	0.024	0.023	0.034	0.031	0.023
	(0.003)***	(0.003)***	(0.003)***	(0.009)***	(0.010)***	(0.009)***
NTR Rate		-0.057	-0.058		0.048	0.165
		(0.023)**	(0.023)**		(0.253)	(0.237)
Tariff Abroad		-0.005	-0.004		-0.049	-0.044
		(0.008)	(0.008)		(0.061)	(0.048)
Import Tariff		-0.004	-0.005		-0.012	-0.012
		(0.009)	(0.009)		(0.023)	(0.022)
Post x Contract Intensity			0.008			0.008
			(0.003)***			(0.014)
Post x MFA Quota Bound			0.376			0.020
			(0.178)**			(0.007)***
Post x Δ Production Subsidy						0.012
						(0.064)
Adjusted R-squared	0.75	0.75	0.75	0.97	0.97	0.97
N	29,484	29,436	29,436	628	628	628
Product FE; Time FE	YES	YES	YES			
Prefecture FE; Time FE				YES	YES	YES
Other Controls	NO	NO	NO	YES	YES	YES
SE	Clustered	Clustered	Clustered	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: The dependent variable is the annual log export values to the U.S. at the 6-digit HS product level in columns (1)-(3). In columns (4)-(6), the dependent variable is the prefecture-level average annual log export values to the U.S. during 1997-1999 and 2002-2004. Huber-White robust SEs are reported in parentheses, and they are clustered at the product level in columns (1)-(3). "Other Controls" in columns (4)-(6) include prefecture-level measures of log GDP, and log employed population. The sample size in columns (4)-(6) is constrained by the availability of population and GDP. We follow the standard gravity framework and account for the impact of these variables in the prefecture-level analysis. Note that in this table, we use the *levels* of trade/production policies, instead of the DID interaction of "Post" and *changes* in policies.

Table 7: Falsification test: migration rates of all migrants

	2000-2005	1990 - 2000			
	NHM+HM	NHM+HM	Prov NHM+HM	Prov NHM	Prov HM
	(1)	(2)	(3)	(4)	(5)
Post x NTR gap	0.059	0.024	-0.019	-0.014	-0.006
	(0.019)***	(0.027)	(0.021)	(0.021)	(0.005)
Post x Δ NTR rate	-0.026	-0.047	0.317	0.275	0.050
	(0.525)	(0.302)	(0.264)	(0.260)	(0.048)
Post x Δ Tariff Abroad	-0.035	-0.055	-0.064	-0.051	-0.014
	(0.008)***	(0.044)	(0.043)	(0.044)	(0.021)
Post x Δ Import Tariff	-0.004	0.031	0.044	0.047	-0.003
	(0.031)	(0.031)	(0.029)	(0.028)*	(0.007)
Post x Contract Intensity	0.036	0.070	0.097	0.101	-0.003
	(0.027)	(0.043)	(0.040)**	(0.040)**	(0.008)
Post x MFA Quota Bound	-0.012	-0.000	-0.004	-0.005	0.002
	(0.017)	(0.024)	(0.021)	(0.021)	(0.005)
Post x Δ Production Subsidy	0.062	-0.101	-0.089	-0.070	-0.022
	(0.159)	(0.192)	(0.154)	(0.149)	(0.022)
Adjusted R-squared	0.90	0.66	0.42	0.39	0.13
N	644	644	644	644	644
Prefecture FE; Time FE	YES	YES	YES	YES	YES
SE	Robust	Robust	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: This table shows the falsification test using internal migration rates between 1990 and 2000 and test whether they respond to the contemporary U.S. trade policy uncertainty – the 1990 NTR gap – which was yet to be eliminated. The sample includes 322 prefectures, observed at 1990 and 2000. Not all prefectures are included in the placebo tests due to merges and splits in administrative units overtime. As a comparison, we reproduce column (3) in Table 3 for the same 322-prefecture delineation in 2000-2005 in the first column. Columns (2) - (5) report the results of falsification tests on 1990 to 2000 migration. See Table 3 for definitions of migrants. Huber-White robust SEs are reported in parentheses. All specifications include prefecture and time fixed effects.

Table 8: Heterogeneous effects: migration rate of all migrants (*hukou* PLUS non-*hukou*) by NTR gap quintiles

	NHM+HM	NHM+HM	NHM+HM
	(1)	(2)	(3)
1st Quintile: Post x NTR gap	0.121	0.118	0.086
	(0.221)	(0.223)	(0.227)
2nd Quintile: Post x NTR gap	0.018	0.017	0.006
	(0.043)	(0.044)	(0.046)
3rd Quintile: Post x NTR gap	0.050	0.051	0.043
	(0.027)*	(0.028)*	(0.030)
4th Quintile: Post x NTR gap	0.050	0.050	0.043
	(0.022)**	(0.023)**	(0.025)*
5th Quintile: Post x NTR gap	0.049	0.049	0.045
	(0.017)***	(0.018)***	(0.019)**
Post x Δ NTR rate		0.011	0.044
		(0.537)	(0.542)
Post x Δ Tariff Abroad		0.043	0.047
		(0.122)	(0.122)
Post x Δ Import Tariff		-0.013	-0.018
		(0.038)	(0.040)
Post x Contract Intensity			0.021
			(0.025)
Post x MFA Quota Bound			-0.006
			(0.018)
Post x Δ Production Subsidy			0.003
			(0.128)
Adjusted R-squared	0.91	0.91	0.91
N	672	672	672
Prefecture FE; Time FE	YES	YES	YES
SE	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: This table presents the non-linear effects of trade policy changes on migration rates. 336 prefectures are grouped into quintiles of treatment groups. Robust standard errors in parentheses in all regressions. All specifications include prefecture and time fixed effects. The dependent variable is the migration rate of *hukou* (cross-province) migrants PLUS non-*hukou* (cross-prefecture) migrants. The structure of the table follows columns (1)-(3) in Table 3.

Table 9: Heterogeneous effects: migration rates by gender

Female Migrants	NHM+HM	Prov NHM+HM	Prov NHM	Prov HM
Post x NTR gap	0.038	0.023	0.018	0.005
	(0.015)**	(0.011)**	(0.010)*	(0.003)
Adjusted R-squared	0.92	0.93	0.94	0.33
Female + Male Migrants	NHM+HM	Prov NHM+HM	Prov NHM	Prov HM
Post x NTR gap	0.044	0.029	0.025	0.004
	(0.016)***	(0.012)**	(0.011)**	(0.003)
Adjusted R-squared	0.92	0.93	0.93	0.42
N	672	672	672	672
Prefecture FE; Time FE	YES	YES	YES	YES
SE	Robust	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: Robust standard errors in parentheses in all regressions. All specifications include prefecture and time fixed effects. Sample includes 336 prefectures observed in 2000 and 2005. The dependent variables are gender-specific migration rates of (1) *hukou* (cross-province) migrants PLUS non-*hukou* (cross-prefecture) migrants, (2) migration rate of cross-province *hukou* PLUS non-*hukou* migrants, (3) cross-province non-*hukou* migrants, and (4) cross-province *hukou* migrants. The sample include, in the first panel, working-age female workers, and in the second panel, working-age male plus female workers. We use the same NTR gaps for both genders, ie, NOT trade policy changes are NOT gender -specific.

Table 10: Heterogeneous effects: migration rates of male migrants by age

Age: 16-25	NHM+HM	Prov NHM+HM	Prov NHM	Prov HM
Post x NTR gap	0.069	0.032	0.030	0.003
	(0.031)**	(0.025)	(0.025)	(0.006)
Adjusted R-squared	0.87	0.88	0.88	0.42
Age: 26-40	NHM+HM	Prov NHM+HM	Prov NHM	Prov HM
Post x NTR gap	0.072	0.060	0.052	0.009
	(0.024)***	(0.020)***	(0.018)***	(0.006)
Adjusted R-squared	0.88	0.88	0.89	0.28
Age: 41-55	NHM+HM	Prov NHM+HM	Prov NHM	Prov HM
Post x NTR gap	0.025	0.007	0.007	-0.001
	(0.015)*	(0.013)	(0.013)	(0.002)
Adjusted R-squared	0.83	0.74	0.75	0.09
Age: 56-65	NHM+HM	Prov NHM+HM	Prov NHM	Prov HM
Post x NTR gap	-0.010	0.027	0.026	0.001
	(0.029)	(0.022)	(0.022)	(0.002)
Adjusted R-squared	0.72	0.52	0.52	0.10
N	672	672	672	672
Prefecture FE; Time FE	YES	YES	YES	YES
SE	Robust	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: Robust standard errors in parentheses in all regressions. All specifications include prefecture and time fixed effects. Sample includes 336 prefectures observed in 2000 and 2005. The dependent variables are age-specific migration rates of (1) *hukou* (cross-province) migrants PLUS non-*hukou* (cross-prefecture) migrants, (2) migration rate of cross-province *hukou* PLUS non-*hukou* migrants, (3) cross-province non-*hukou* migrants, and (4) cross-province *hukou* migrants. We distinguish working-age employed male workers by 4 age groups and present the results in 4 panels: 16-25, 26-40, 41-55, and 56-65. We use the same NTR gaps for all age groups, ie, trade policy changes are NOT age - specific.

Table 11: Migration rate of all migrants (*hukou* PLUS non-*hukou*); skill-specific

	Same NTR gaps		Specific NTR gaps	
	Unskilled	Skilled	Unskilled	Skilled
	(1)	(2)	(3)	(4)
Post x NTR gap	0.031	0.094	0.020	0.063
	(0.020)	(0.033)***	(0.020)	(0.023)***
Post x Δ NTR rate	-0.163	0.154	0.743	-0.233
	(0.657)	(0.715)	(0.603)	(0.480)
Post x Δ Tariff Abroad	-0.010	0.191	-0.008	0.119
	(0.079)	(0.150)	(0.043)	(0.159)
Post x Δ Import Tariff	0.006	-0.130	0.031	-0.089
	(0.029)	(0.118)	(0.029)	(0.103)
Post x Contract Intensity	0.028	-0.020	0.009	0.089
	(0.024)	(0.040)	(0.022)	(0.045)**
Post x MFA Quota Bound	-0.002	-0.037	0.005	0.005
	(0.015)	(0.042)	(0.009)	(0.008)
Post x Δ Production Subsidy	-0.026	0.586	-0.026	0.661
	(0.139)	(0.378)	(0.134)	(0.351)*
Adjusted R-squared	0.91	0.76	0.91	0.76
N	672	672	672	672
Prefecture FE; Time FE	YES	YES	YES	YES
SE	Robust	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: Robust standard errors in parentheses in all regressions. All specifications include prefecture and time fixed effects. The dependent variable is the migration rate of *hukou* (cross-province) migrants and non-*hukou* (cross-prefecture) migrants by skill types. Skilled workers are those who completed at least high school education, and skilled sectors are ones that uses skilled workers intensively. The sample includes unskilled sectors (Columns (1) and (3)) and skilled sectors (Columns (2) and (4)) in 336 prefectures, observed at 2000 and 2005. In Columns (1)-(2), we use the same NTR gaps for both skill groups, ie, NOT skill-specific, while in Columns (3)-(4), we use skill-specific NTR gaps and other trade measures for each skill group. The other explanatory variables are constructed similarly. The DID terms are constructed using a time dummy "Post" interacted with changes in trade/production policies.

Table 12: Labor Market Outcomes: Employment Rates of Migrants (M) and Natives (N)

	All			Unskilled			Skilled		
	M+N	M	N	M+N	M	N	M+N	M	N
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post x NTR gap	0.000	-0.021	0.004	0.001	-0.033	0.008	0.009	0.053	0.009
	(0.007)	(0.029)	(0.007)	(0.007)	(0.030)	(0.008)	(0.011)	(0.038)	(0.011)
Post x Δ NTR Rate	-0.098	-1.061	-0.069	-0.120	-0.715	-0.088	0.004	-2.261	0.079
	(0.228)	(0.534)**	(0.234)	(0.228)	(0.506)	(0.236)	(0.302)	(1.280)*	(0.318)
Post x Δ Tariff Abroad	0.049	0.050	0.049	0.019	0.137	0.022	0.076	-0.080	0.058
	(0.063)	(0.136)	(0.069)	(0.040)	(0.106)	(0.047)	(0.081)	(0.519)	(0.083)
Post x Δ Import Tariff	-0.001	0.154	-0.002	0.004	0.205	0.004	-0.019	0.100	-0.015
	(0.015)	(0.103)	(0.015)	(0.017)	(0.136)	(0.019)	(0.021)	(0.197)	(0.019)
Post x Contract Intensity	0.019	-0.020	0.019	0.022	0.034	0.019	0.002	-0.149	0.004
	(0.008)**	(0.030)	(0.009)**	(0.009)**	(0.027)	(0.010)**	(0.014)	(0.066)**	(0.015)
Post x MFA Quota Bound	-0.007	-0.012	-0.008	-0.009	-0.028	-0.010	-0.006	0.023	-0.007
	(0.007)	(0.023)	(0.008)	(0.007)	(0.025)	(0.008)	(0.011)	(0.058)	(0.012)
Post x Δ Production Subsidy	-0.064	-0.138	-0.064	-0.048	-0.118	-0.044	-0.070	-0.305	-0.054
	(0.041)	(0.117)	(0.043)	(0.039)	(0.118)	(0.051)	(0.073)	(0.525)	(0.066)
Adjusted R-squared	0.66	0.13	0.68	0.63	0.19	0.63	0.52	0.06	0.54
N	672	672	672	672	671	672	672	654	672
Prefecture FE; Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
SE	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust

Notes: Robust standard errors in parentheses in all regressions. All specifications include prefecture and time fixed effects. The sample includes 336 prefectures, observed at 2000 and 2005. The dependent variables are the employment rates of migrants (M) and natives (N). Columns (1)-(3) include migrants and natives of all skill types, and results for unskilled labor (Columns 4-6) and skilled labor (Columns 7-9) are reported separately.

Table 13: Labor Market Outcomes: Weekly Working Hours of Migrants and Natives

	All			Unskilled			Skilled		
	M+N	M	N	M+N	M	N	M+N	M	N
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post x NTR gap	0.050	-0.024	0.050	0.057	-0.042	0.058	0.001	-0.011	-0.003
	(0.015)***	(0.027)	(0.014)***	(0.016)***	(0.035)	(0.016)***	(0.012)	(0.042)	(0.012)
Post x Δ NTR Rate	0.083	0.012	0.131	0.077	0.314	0.119	0.079	-1.140	0.178
	(0.482)	(0.656)	(0.452)	(0.547)	(0.660)	(0.507)	(0.262)	(1.051)	(0.282)
Post x Δ Tariff Abroad	0.143	0.022	0.150	0.140	0.090	0.151	0.130	0.018	0.126
	(0.106)	(0.184)	(0.113)	(0.106)	(0.315)	(0.116)	(0.076)*	(0.368)	(0.072)*
Post x Δ Import Tariff	-0.017	0.009	-0.019	-0.023	0.039	-0.022	0.052	0.116	0.038
	(0.034)	(0.074)	(0.033)	(0.037)	(0.106)	(0.036)	(0.033)	(0.155)	(0.028)
Post x Contract Intensity	0.051	0.039	0.044	0.054	0.025	0.044	0.017	0.090	0.020
	(0.020)***	(0.028)	(0.019)**	(0.021)***	(0.033)	(0.020)**	(0.017)	(0.060)	(0.016)
Post x MFA Quota Bound	0.003	-0.003	0.002	0.001	0.007	-0.000	0.017	0.069	0.021
	(0.015)	(0.034)	(0.015)	(0.017)	(0.040)	(0.016)	(0.011)	(0.056)	(0.013)
Post x Δ Production Subsidy	-0.056	0.045	-0.060	-0.056	-0.018	-0.068	0.045	0.284	-0.035
	(0.185)	(0.114)	(0.188)	(0.194)	(0.130)	(0.198)	(0.115)	(0.313)	(0.103)
Adjusted R-squared	0.39	0.25	0.40	0.43	0.20	0.42	0.37	0.09	0.43
N	672	672	672	672	671	672	672	651	672
Prefecture FE; Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
SE	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Notes: Robust standard errors in parentheses in all regressions. All specifications include prefecture and time fixed effects. The sample includes 336 prefectures, observed at 2000 and 2005. The dependent variables are the weekly working hours of migrants (M) and natives (N). Columns (1)-(3) include migrants and natives of all skill types, and results for unskilled labor (Columns 4-6) and skilled labor (Columns 7-9) are reported separately.

References

Autor, D. H., D. Dorn, and G. H. Hanson (2013). The China syndrome: Local labor market effects of import competition in the United States. *The American Economic Review 103*, 2121–2168.

Bartik, T. (1991). *Who Benefits from State and Local Economic Development Policies?* Kalamazoo, MI: WE Upjohn Institute for Employment Research.

Bond, E., R. Riezman, and P. Wang (2016). Urbanization and economic development: A tale of two barriers. Working Paper 5742, CES Ifo.

Brambilla, I., A. K. Khandelwal, and P. K. Schott (2010). China's experience under the multi-fiber arrangement (MFA) and the agreement on textiles and clothing (ATC). In R. Feenstra and S.-J. Wei (Eds.), *China's Growing Role in World Trade*, pp. 345–387. Chicago, IL: University of Chicago Press.

Brandt, L. and P. Morrow (2013). Tariffs and the organization of trade in China. *Journal of International Economics 104*, 85–103.

Chan, K. W. (2009). The chinese hukou system at 50. *Eurasian Geography and Economics 50*, 197–221.

Chan, K. W. (2012a). Crossing the 50 percent population Rubicon: can china urbanize to prosperity? *Eurasian Geography and Economics 53*, 63–86.

Chan, K. W. (2012b). Migration and development in China: Trends, geography and current issues. *Migration and Development 1*, 187–205.

Chen, C., L. Chang, and Y. Zhang (1995). The role of foreign direct investment in China's post-1978 economic development. *World Development 23*, 691–703.

Cheng, W. and A. Potlogea (2015). Trade liberalization and economic development: Evidence from china's wto accession. Mimeo, Universitat Pomepu Fabra.

Defever, F. and A. Riaño (2017). Subsidies with export share requirements in china. *Journal of Development Economics 126*, 33–51.

Edmonds, E. V. and N. Pavcnik (2005). The effect of trade liberalization on child labor. *Journal of international Economics 65*, 401–419.

Edmonds, E. V., N. Pavcnik, and P. Topalova (2010). Trade adjustment and human capital investments: Evidence from indian tariff reform. *American Economic Journal: Applied Economics 2*, 42–75.

Fan, J. (2015). Internal geography, labor mobility, and the distributional impacts of trade. Mimeo, University of Maryland.

Fisman, R. and S.-J. Wei (2004). Tax rates and tax evasion: evidence from "missing imports" in china. *Journal of political Economy 112*(2), 471–496.

Ge, S. and D. T. Yang (2014). Changes in china's wage structure. *Journal of the European Economic Association 12*(2), 300–336.

Goldberg, P. K. and N. Pavcnik (2005). Trade, wages, and the political economy of trade protection: evidence from the Colombian trade reforms. *Journal of International Economics 66*, 75–105.

Goldberg, P. K. and N. Pavcnik (2007). Distributional effects of globalization in developing countries. *Journal of Economic Literature 45*, 39–92.

Handley, K. and N. Limao (2017). Policy uncertainty, trade and welfare: Theory and evidence for China and the U.S. *The American Economic Review*. Forthcoming.

Hasan, R., D. Mitra, P. Ranjan, and R. N. Ahsan (2012). Trade liberalization and unemployment: Theory and evidence from India. *Journal of Development Economics 97*, 269–280.

Kee, H. L. and H. Tang (2016). Domestic value added in exports: Theory and firm evidence from China. *The American Economic Review 106*, 1402–1436.

Kovak, B. K. (2013). Regional effects of trade reform: What is the correct measure of liberalization? *The American Economic Review 103*, 1960–1976.

Lewis, W. A. (1954). Economic development with unlimited supplies of labor. *The Manchester School 22*, 139–191.

Li, J., B. H. Seok, and H. M. You (2015). Migration restrictions: Implications on human capital, output, and welfare. Mimeo, The Ohio State University.

Meng, X. and S. Xue (2017). Institutional restrictions on migration and migrant consumption and savings response. Mimeo, Australian National University.

Molloy, R., C. L. Smith, and A. Wozniak (2011). Internal migration in the US: Updated facts and recent trends. *Journal of Economic Perspectives 25*, 173–196.

Monte, F. (2016). The local incidence of trade shocks. Mimeo, Georgetown University.

Nunn, N. (2007). Relationship-specificity, incomplete contracts and the pattern of trade. *Quarterly Journal of Economics 122*, 569–600.

Pierce, J. R. and P. K. Schott (2016). The surprisingly swift decline of us manufacturing employment. *The American Economic Review 106*, 1632–1662.

Scheineson, A. (2009). China's internal migrants. Mimeo, Council on Foreign Relations.

Tilly, C. (1976). Migration in modern european history. In W. H. McNeill and R. S. Adams (Eds.), *Human migration: Patterns and policies*, pp. 48–72. Bloomington: Indiana University Press.

Tombe, T. and X. Zhu (2015). Trade, migration and productivity: A quantitative analysis of China. Mimeo, University of Calgary.

Topalova, P. (2007). *Trade liberalization, poverty and inequality: Evidence from Indian districts*, pp. 291–336. Chicago, IL: University of Chicago Press.

Topalova, P. (2010). Factor immobility and regional impacts of trade liberalization: Evidence on poverty from India. *American Economic Journal: Applied Economics*, 1–41.

Wang, J. (2013). The economic impact of special economic zones: Evidence from Chinese municipalities. *Journal of Development Economics 101*, 133–147.

Wang, X. (2015). International trade and internal migration with labor market distortions: Theory and evidence from china. Mimeo, Peking University.

Yu, M. (2015). Processing trade, tariff reductions and firm productivity: evidence from chinese firms. *The Economic Journal 125*, 943–988.

Zi, Y. (2016). Trade liberalization and the great labor reallocation. Mimeo, University of Oslo.

A Definition of Migrants

To better illustrate the two definitions of migration, graph A.2 and graph A.3 show the composition of individuals surveyed at a certain prefecture R, which is located in province P.

Take 2000 as an example, there are three groups of individuals associated with a prefecture: 1) those who are registered and currently residing in R (local residents) 2) those who are residing but not registered in R (immigrants), and 3) those who are registered in but away from R (emigrants). Only 1) and 2) are observed in prefecture R, and emigrants from R fill out their census questionnaire in their destination prefectures. The "Unregistered and residing" (immigrants) are what we define as "non-*hukou* migrants", whose location of origin prefectures determine whether they are *within–province* or *cross–province* non-*hukou* migrants. Among the "Registered and residing" (local residents), we identify "*hukou* migrants" as those who, within the previous 5 years, moved to R and acquired residentship. Their origin prefecture determined whether they are *within–province* or *cross–province hukou* migrants. The classification of residents in 2005 are exactly the same, with one regrettable exception from the data restriction, that is, among the local residents who are "registered and residing" in a prefecture, we cannot separate natives and *within-province hukou* migrants apart. This limitation is the reason why we can only study *cross–province* non-*hukou* migrants in our empirical analysis.

Figure A.1: Administrative organization of a Chinese province

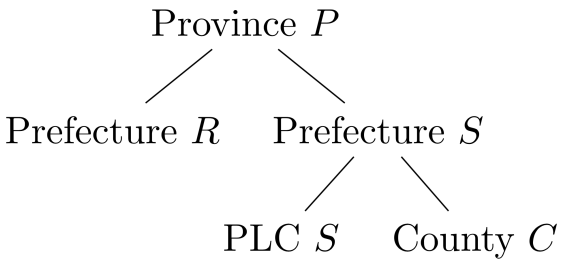


Figure A.2: Composition of survey subjects in 2000 Census

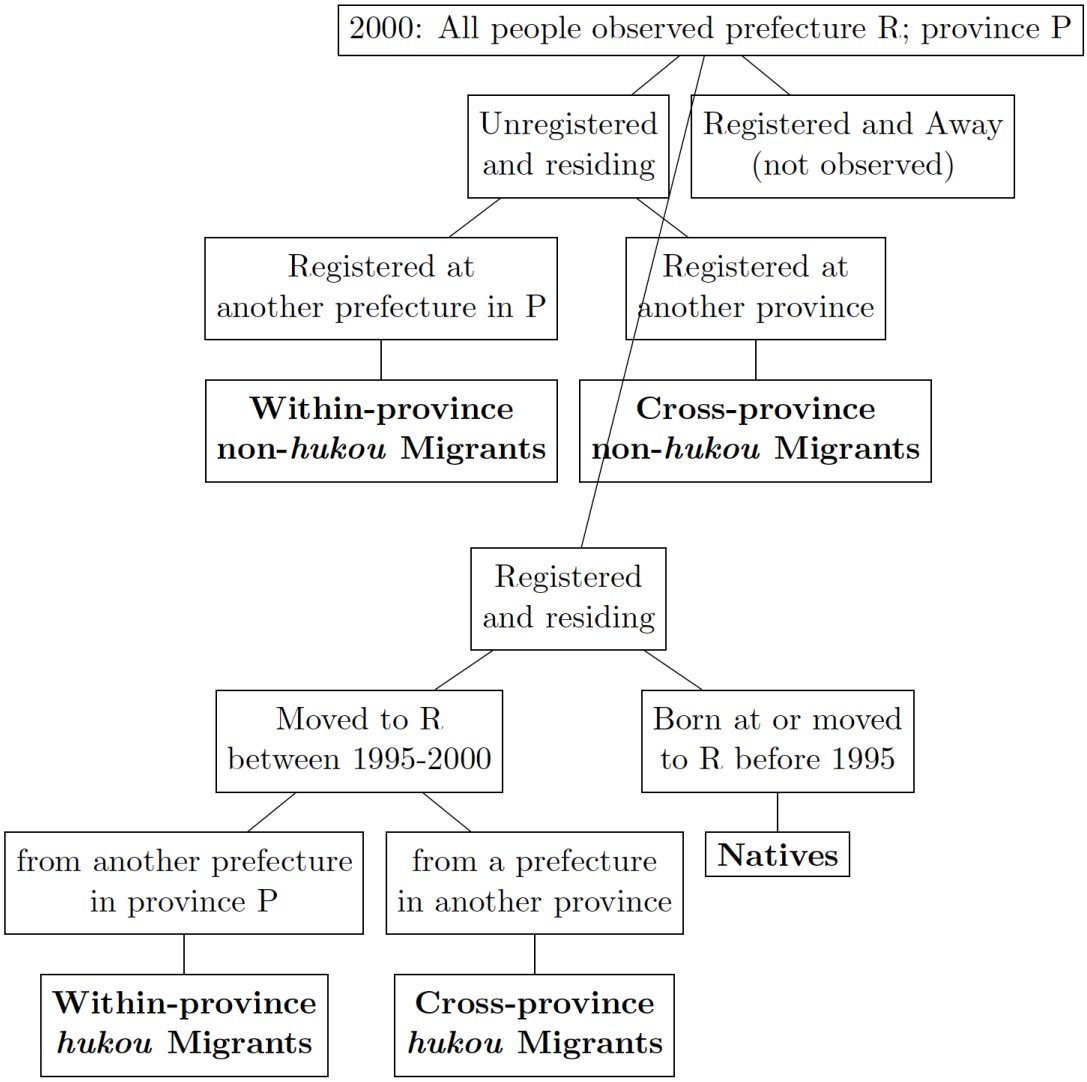
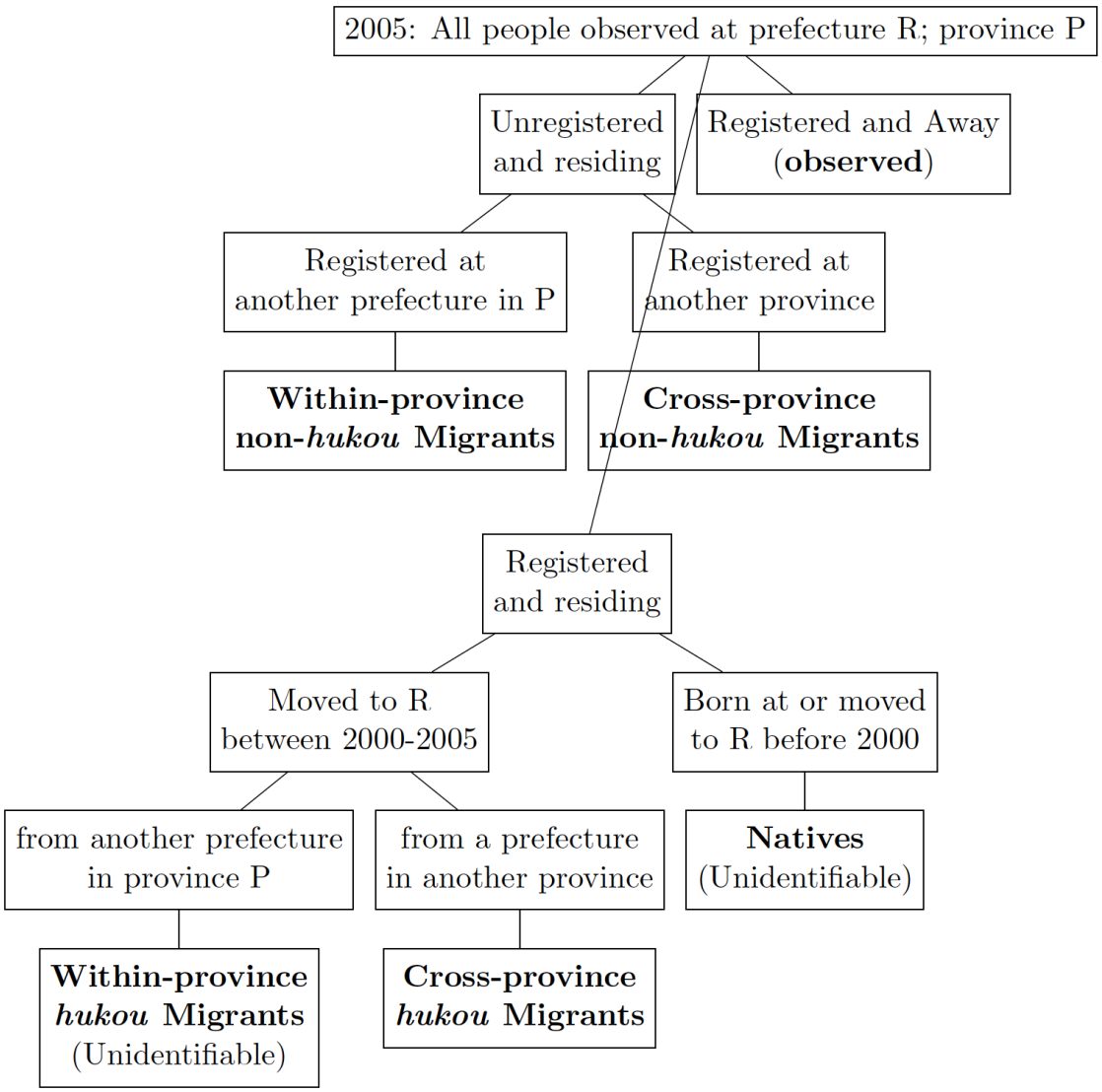


Figure A.3: Composition of survey subjects in 2005 Census



B Data Source

This section goes over the details of the data used in this paper, as well as the key variables for the empirical analysis. There are 3 main sources of data: China's Population Census of 1990, 2000 and 2005, China Custom Data (CCD) of 1997-1999, and tariff rates of 1990 - 2006 from the World Integrated Trade Solution (WITS) dataset . In addition, the industry skill intensity data is aggregated from the China's Annual Survey of Industrial Firms (CASIF).

B.1 China Custom Data: 1997-2006

We use China Custom Data (CCD, also called China Import and Export Data) between 1997 – 1999 to construct the the export basket of each prefecture. China Custom Data is an annual HS-based transaction-level data compiled by the General Administration of Customs of China. It records information on each import/export transaction, and the variables relevant for our analysis include commodity code (HS 6-digit), partner country, firm type, firm location at the prefecture level, import/export type, transaction value (in USD), and transaction types.

B.2 Skill Intensity

We use HS 6-digit level factor intensity data aggregated from the 2004 China's Annual Survey of Industrial Firms (CASIF), which is also known as "Chinese Industrial Enterprises Database". It is a firm-level data, collected yearly by China's National Bureau of Statistics. The survey includes all industrial firms that are either state-owned, or are non-state firms with sales above 5 million RMB. It contains the management data of more than 300,000 industrial enterprises above the designated size in China. The data covers the indexes including industry, output value, export delivery value, number of employers, wage payments, profit and tax etc.

B.3 Census of China: 1990, 2000, 2005

The migration data comes form the population census of China, conducted by the National Bureau of Statistics (NBS). We use samples from the 1990, 2000 and 2005 waves . The population census of China documents detailed information on individual's location, *hukou* status and migration history, among other individual characteristics.

C Other Results

Table C1: Log Exports to US & HK

	log Export by product			log Export by prefecture		
	(1)	(2)	(3)	(4)	(5)	(6)
Post x NTR gap	0.038	0.039	0.037	0.031	0.028	0.023
	(0.003)***	(0.003)***	(0.003)***	(0.010)***	(0.012)**	(0.010)**
U.S. Tariff		0.002	-0.001		0.258	0.193
		(0.022)	(0.023)		(0.285)	(0.258)
Tariff Abroad		-0.010	-0.010		-0.067	-0.079
		(0.007)	(0.007)		(0.075)	(0.075)
Import Tariff		0.019	0.018		-0.027	-0.013
		(0.010)*	(0.011)*		(0.021)	(0.024)
Post x Contract Intensity			0.016			0.030
			(0.003)***			(0.014)**
Post x MFA Quota Bound			0.198			0.011
			(0.078)**			(0.008)
Post x Δ Production Subsidy						-0.054
						(0.057)
Adjusted R-squared	0.73	0.73	0.74	0.96	0.96	0.96
N	29,484	29,436	29,436	628	628	628
Product FE; Time FE	YES	YES	YES			
Prefecture FE; Time FE				YES	YES	YES
Other Controls	NO	NO	NO	YES	YES	YES
SE	Clustered	Clustered	Clustered	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Table C2: Heterogeneous effects: migration rate of all migrants (*hukou* PLUS non-*hukou*) by education levels

	ES	JS	HS	COL
Post x NTR gap	0.031	0.071	0.076	0.076
	(0.024)	(0.033)**	(0.039)*	(0.041)*
Post x Δ NTR rate	-0.143	-0.307	-0.088	0.600
	(0.792)	(1.196)	(0.736)	(0.815)
Post x Δ Tariff Abroad	-0.202	0.111	0.268	-0.032
	(0.238)	(0.083)	(0.138)*	(0.297)
Post x Δ Import Tariff	0.078	-0.192	-0.074	-0.099
	(0.049)	(0.081)**	(0.114)	(0.232)
Post x Contract Intensity	0.036	0.075	-0.057	0.050
	(0.036)	(0.058)	(0.056)	(0.045)
Post x MFA Quota Bound	-0.010	0.016	-0.054	-0.005
	(0.022)	(0.023)	(0.056)	(0.028)
Post x Δ Production Subsidy	-0.088	0.012	0.844	-0.217
	(0.118)	(1.058)	(0.458)*	(0.245)
Adjusted R-squared	0.87	0.80	0.75	0.56
N	672	670	672	665
Prefecture FE; Time FE	YES	YES	YES	YES
SE	Robust	Robust	Robust	Robust

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$