Import Competition and the Gender Employment Gap in China

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Online Appendix

Appendix 1

Additional Figures and Tables

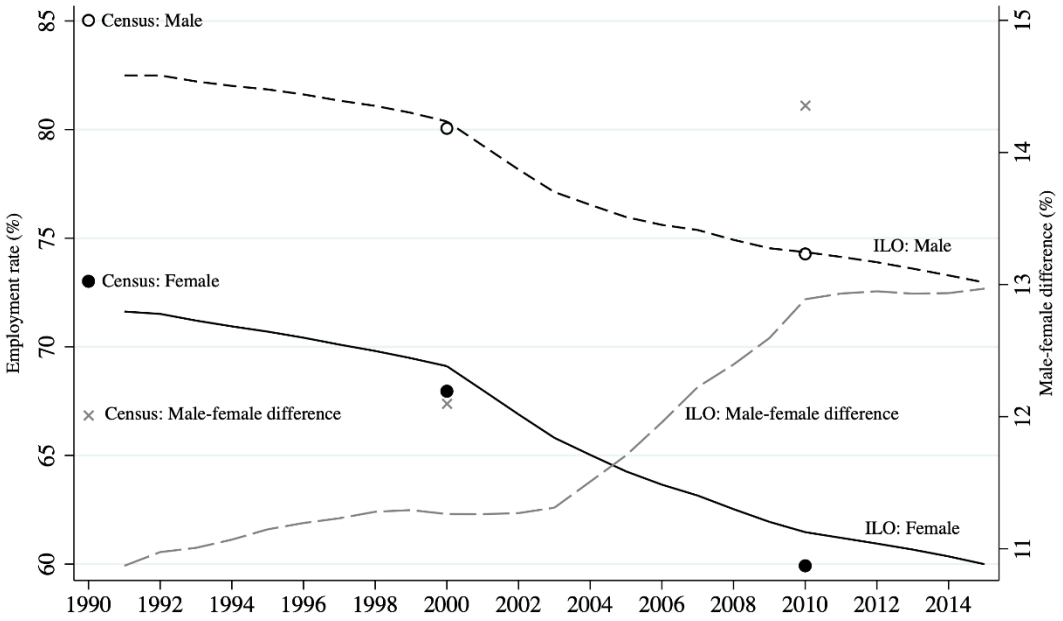


Figure A1

Employment Rates by Gender in China: 1990-2015

Notes: This figure shows employment rates of youth and adults (aged 15 or above) by gender, and the difference between males and females in China across the years. Lines represent employment rates as estimated by the International Labor Organization (ILO); and data markers represent employment rates from the population census waves (1990, 2000, and 2010). To make employment rates from the population census comparable to the ILO estimates, we constrain our sample to all individuals aged 15 or above.

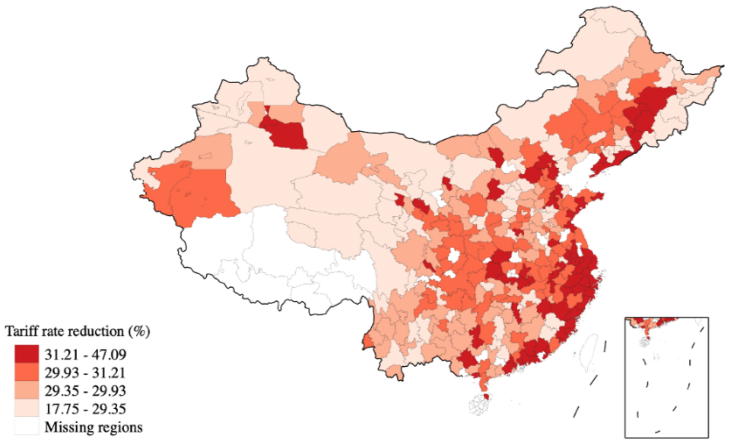


Figure A2

Map of Tariff Reductions (1992-2005) across Chinese Prefectures

Notes: This figure shows a map of reductions in import tariffs between 1992 and 2005 across Chinese prefectures. Missing regions on the maps are either non-prefectural level regions or prefectures without data in 1990 and those with tertiary employment share higher than 75 percent.

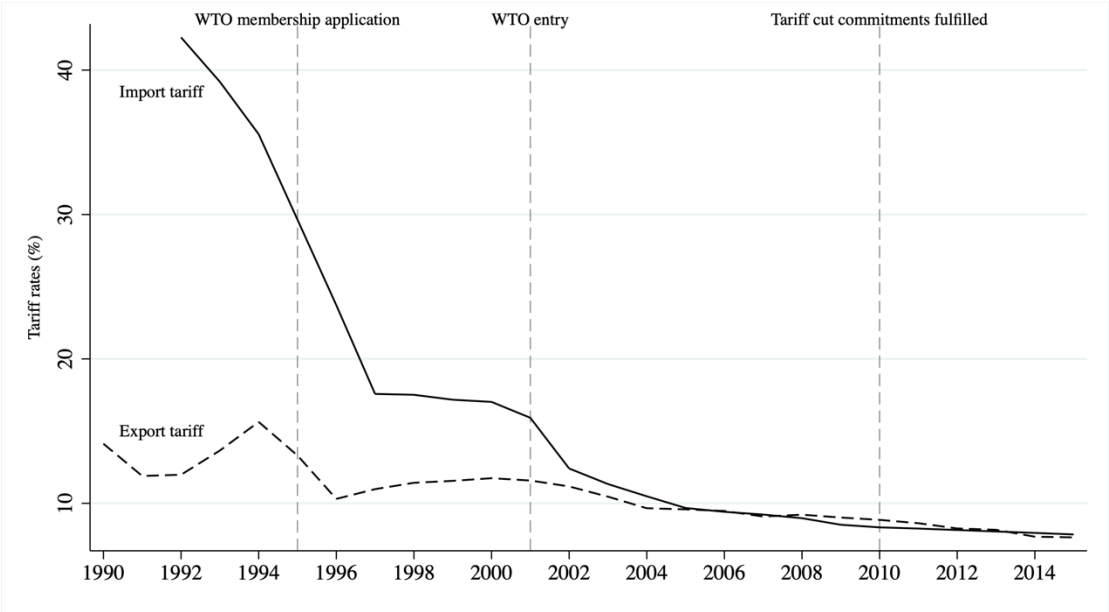


Figure A3

Import and Export Tariffs across Years: 1990-2015

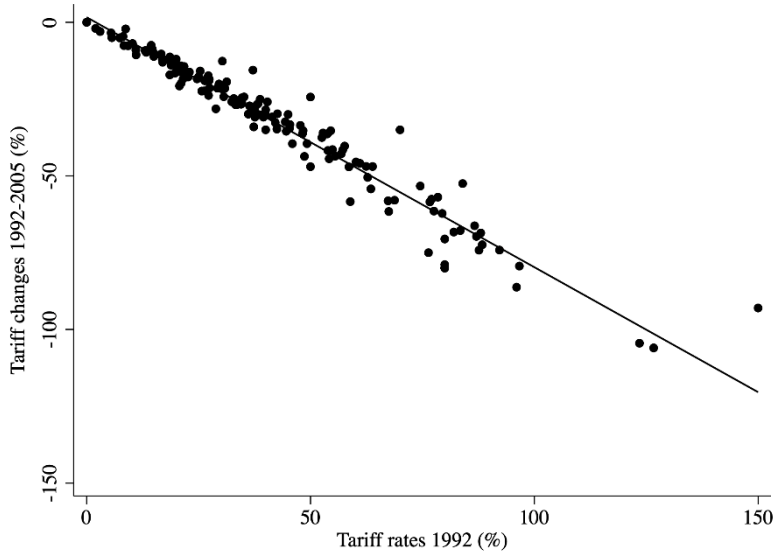
Notes: This figure shows the average import and export tariffs across years. Average tariffs are calculated as the simple average over all HS 6-digit products. Data of product-level tariffs are from the WITS.

Figure A4

Tariff Declines (1992-2005) and Initial Female Employment Shares

Notes: This figure shows scatter plots of import tariff declines between 1992 and 2005 against female employment shares in 1990 for 162 three-digit CIC industries. Industry-level tariff rates are calculated based on the product-level data from the WITS. The female employment share for each three-digit industry in 1990 is calculated using the 1990 population census.

Panel A: Tariffs at Three-digit Industry Level



Panel B: Tariffs at Prefecture Level

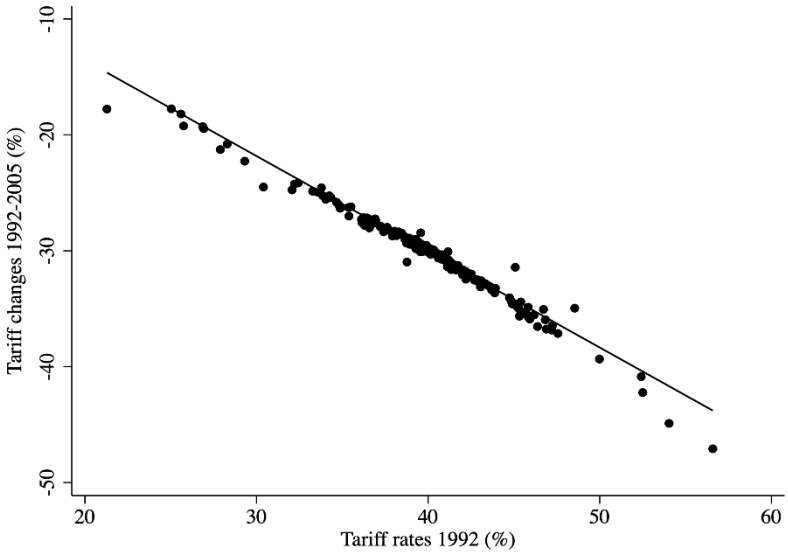


Figure A5

Import Tariff Declines (1992-2005) and Initial Tariff Rates in China

Notes: The two figures show scatter plots of import tariff declines between 1992 and 2005 against initial tariff rates at the three-digit CIC industry level (Panel A) and at the prefecture level (Panel B). Industry-level tariff rates are calculated based on the product-level data from the WITS. Prefecture-level tariff rates are calculated according to Equation 1.

Table A1

Summary Statistics of Key Variables

	Mean	Standard Deviation	Minimum	Maximum
Δ Import tariffs (percentage points)	-30.09	3.29	-47.09	-17.75
Δ Employment rates (percentage points)	-10.24	6.21	-25.48	13.96
Δ Male employment rates (percentage points)	-7.77	5.68	-20.76	21.76
Δ Female employment rates (percentage points)	-12.40	8.58	-32.98	30.58
Δ Male-female employment rate difference (percentage points)	4.63	7.55	-36.81	37.15
Δ Female intensity (percentage points)	-1.37	2.66	-9.41	10.06
Δ Female intensity: Formal industrial sector (percentage points)	-1.42	3.45	-18.89	8.96
Δ Female intensity: SOEs (percentage points)	-3.66	4.42	-22.17	12.37
Δ Female intensity: Non-SOEs (percentage points)	-6.46	7.47	-35.74	16.41
Δ Discrimination: Formal industrial sector	-5.79	12.59	-97.73	32.74
Δ Discrimination: SOEs	-8.60	15.61	-104.40	69.25
Δ Discrimination: Non-SOEs	-4.24	24.75	-186.20	49.20
Δ Computer intensity (percentage points)	1.77	2.40	-1.70	13.06
Δ Computer intensity: Formal industrial sector (percentage points)	-0.57	1.33	-5.59	3.93
Δ Computer intensity: SOEs (percentage points)	-5.71	2.07	-11.54	1.93
Δ Computer intensity: Non-SOEs (percentage points)	5.14	1.46	1.02	11.28
Δ GDP per capita (ln)	1.24	0.46	-0.29	2.76

1990 agricultural sector employment share (percentage points)	68.93	21.18	3.52	97.42
1990 tertiary sector employment share (percentage points)	17.02	11.27	1.47	65.99
1990 SOE employment share (percentage points)	75.73	9.80	41.64	95.43
1990 nightlights	2.40	3.81	0.00	35.59

Notes: Table lists selected key variables. $N = 311$. Sources: Authors' own calculations based on various data sources. Import tariffs at the prefecture level are calculated according to Equation 1 using industry-level tariffs from the WITS and the 1990 Population Census. Employment rates by gender and female intensity are based on the population censuses of 1990 and 2005. Computer intensity is based on sectoral computer usage, taken from the *China Statistical Yearbook on Science and Technology* (National Bureau of Statistics, 1991b, 1996, 2005, 2006b) and sectoral employment share within cities are calculated based on the population census of 1990. Female intensity, computer intensity, and discrimination for formal industrial sectors, SOEs, and non-SOEs are all calculated based on the industrial census of 1995 and the economic censuses of 2004. 1990 agricultural sector employment share and 1990 tertiary sector employment share are from the 1990 Population Census. 1990 SOE employment share is from the *China City Statistical Yearbook* of 1991 (National Bureau of Statistics, 1991a). 1990 nightlight density is calculated based on data from NOAA.

Table A2

Changes in Prefecture-Level Import Tariff Exposure: 1992-2005

	1992 (percent)	2005 (percent)	Reduction (percentage points)
Mean	40.01	9.92	30.09
95th percentile	45.87	10.51	35.51
75th percentile	41.35	10.25	31.21
50th percentile	40.05	10.17	29.92
25th percentile	39.30	9.80	29.35
5th percentile	33.78	8.41	24.95

Notes: The table shows prefecture-level tariff rates at the mean and different percentiles in 1992 and 2005 and the differences between the two years in percentage points.

Table A3

Full Baseline Results Including Controls

	Dependent: Δ Employment Rates		
	All	Male	Female
	(1)	(2)	(3)
Δ Import tariffs	-0.22**	-0.13	-0.33**
	(2.32)	(1.56)	(2.48)
1990 agricultural sector employment share	0.10**	0.06*	0.13**
	(2.34)	(1.75)	(2.59)
1990 tertiary sector employment share	0.02	0.03	0.01
	(0.33)	(0.45)	(0.14)
1990 SOE employment share	0.12***	0.09**	0.12**
	(2.96)	(2.53)	(2.44)
1990 nightlights	0.26**	0.26***	0.23
	(2.19)	(2.80)	(1.63)
1990 employment share	-0.54***		
	(7.97)		
1990 male employment share		-0.76***	
		(9.78)	
1990 female employment share			-0.51***
			(9.07)
Constant	13.42*	44.56***	0.92
	(1.88)	(5.29)	(0.13)
Mean dependent (percentage points)	-10.24	-7.77	-12.40
R^2	0.27	0.34	0.37

Notes: Regression results are estimated using robust standard errors. Dependent variables measure the change in the share of employment within working-age population (in total and by gender), derived from the population censuses of 1990 and 2005. $N = 311$. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Absolute t values are in parentheses.

Table A4

Import Tariffs and Prefecture-Level Employment Rates 1990-2005, Restricted Sample

	Dependent: Δ Employment Rates			
	All	Male	Female	Male-Female Difference
	(1)	(2)	(3)	(2) – (3)
Δ Import tariffs	-0.22**	-0.12	-0.33**	0.20*
	(2.23)	(1.41)	(2.40)	(1.97)
Mean dependent (percentage points)	-9.94	-7.53	-12.03	4.50

Notes: Regression results based on the restricted sample of 277 prefecture cities as in Panel B of Table 2 are reported in columns (1) to (3) using robust standard errors. Excluded cities are those that cannot be matched to the 1982 codes as a result of changes in administrative regions. The last column reports the difference in coefficients between regressions for males and females (the gender employment gap). Dependent variables measure the share of employment within working-age population (in total and by gender), derived from the population censuses of 1990 and 2005. We control for initial conditions in all regressions. Initial conditions include the 1990 level of the dependent variable (total, male or female employment shares), the share of SOE employment, employment shares of the agriculture and tertiary sectors, as well as nightlights, all measured in 1990. $N = 277$. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Absolute t values are in parentheses.

Table A5

Import Tariffs and the Expansion of Education

	Dependent: Δ Student Shares		
	Male	Female	Male-Female Difference
	(1)	(2)	(1) – (2)
Δ Import tariffs	-0.32*	-0.41**	0.08
	(1.78)	(2.32)	(0.85)
Mean dependent (percentage points)	21.80	22.12	-0.32

Notes: Regression results are reported in columns (1) and (2), using robust standard errors. The last column reports the difference in coefficients between regressions for males and females (the gender education gap). Dependent variables measure the change in the share of students within the population aged 15 to 25 (by gender), derived from the population censuses of 1990 and 2005. All regressions control for the 1990 level of the dependent variable, initial SOE employment shares, initial employment shares of the agriculture and tertiary sectors, and initial nightlights. $N = 311$. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Absolute t values are in parentheses.

Table A6

Import Tariffs and Prefecture-Level Employment Rates, Tradable and Non-tradable Sectors

	Dependent: Δ Employment Rates		
	Male	Female	Male-Female Difference
	(1)	(2)	(1) – (2)
Panel A: Tradable sectors			
Δ Import tariffs	0.03	-0.19	0.22**
	(0.14)	(0.85)	(2.03)
Mean dependent (percentage points)	-17.79	-19.18	1.39
Panel B: Non-tradable sectors			
Δ Import tariffs	-0.16	-0.14	-0.02
	(0.95)	(0.90)	(0.18)
Mean dependent (percentage points)	10.04	6.79	3.25

Notes: Regression results are reported in columns (1) and (2), using robust standard errors. The last column reports the difference in coefficients between regressions for males and females (the gender employment gap). Dependent variables measure the change in the share of employment in tradable and non-tradable sectors within working-age population (in total and by gender) between 1990 and 2005 in Panels A and B respectively, derived from the population censuses of 1990 and 2005. We control for initial conditions in all regressions, including the 1990 level of the dependent variable (total, male or female employment shares in tradable or non-tradable sectors), the share of SOE employment, employment shares of the agriculture and tertiary sectors, as well as nightlights, all measured in 1990. $N = 311$. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Absolute t values are in parentheses.

Table A7

Tariff Rate Reduction and Changes in Population and Employment by Gender

	Male	Female	Male-Female Difference
	(1)	(2)	(1) – (2)
Panel A: Dependent: Δ ln population			
Δ Import tariffs	-0.02**	-0.02*	0.00
	(2.02)	(1.88)	(0.63)
Mean dependent (percentage points)	0.06	0.16	-0.09
Panel B: Dependent: Δ ln employment			
Δ Import tariffs	-0.02**	-0.03**	0.01*
	(2.30)	(2.52)	(1.82)
Mean dependent (percentage points)	-0.03	-0.00	-0.02

Notes: Dependent variables in columns (1) and (2) measure the change in natural log population by gender in panel A and the change in natural log employment by gender in Panel B. The last column reports the difference in coefficients between regressions for males and females. All regressions control for the 1990 level of the dependent variable, initial SOE employment shares, initial employment shares of the agriculture and tertiary sectors, and initial nightlights. $N = 311$ and robust standard errors are calculated in all specifications. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Absolute t values are in parentheses.

Table A8

Tariff Rates Reduction and Employment Rate by Gender: Robustness Check Controlling for Changes in Migrant Share

	Dependent: Δ Employment Rates		
	Male	Female	Male-Female Difference
	(1)	(2)	(1) – (2)
Δ Import tariffs	-0.08	-0.28**	0.21**
	(0.93)	(2.15)	(2.04)
Δ Migrant share	0.17***	0.14**	0.03
	(3.95)	(2.19)	(0.77)

Notes: This table reports results controlling for the change in migrant share. Dependent variables in columns (1) and (2) measure the change in employment share by gender and the last column reports the difference in estimated coefficients between columns (1) and (2). Migrant share measures the share of migrants over total working-age population in the prefecture. All regressions control for the 1990 level of the dependent variable, initial SOE employment shares, initial employment shares of the agriculture and tertiary sectors, and initial nightlights. $N = 311$ and robust standard errors are calculated in all specifications. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Absolute t values are in parentheses.

Table A9

Import Tariffs and Individual Probability of Working

	Dependent: Employed (=1)		
	Male	Female	Male-Female Difference
	(1)	(2)	(1) – (2)
Import tariffs	-0.0006	-0.0045***	0.0038***
	(0.77)	(3.08)	(3.49)
Mean dependent	0.89	0.82	
Observations	4,158,472	3,954,789	
R^2	0.36	0.22	

Notes: Regression results are reported in columns (1) and (2), using robust standard errors clustered at the prefecture level. The last column reports the difference between tariff coefficients for males and females. The dependent variables are indicator variables equal to one when an individual works. Both specifications control for individual characteristics, initial prefecture-characteristic specific trends, prefecture fixed effects, and a time fixed effect. Individual characteristics include age, age squared, education level, *hukou* type, marital status, ethnicity, household size, as well as indicators for household heads and migrant status. Prefecture-level initial characteristics of 1990 include SOE employment shares, employment shares of the agricultural and tertiary sectors, nightlight density, and initial male-to-female employment rates; all are interacted with a year indicator. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Absolute t values are in parentheses.

Table A10

Controlling for Potential Channels

	Dependent: Δ Employment Rates					
	Full Sample			Non-SOEs		
	Male	Female	Male-Female Difference	Male	Female	Male-Female Difference
	(1)	(2)	(1) – (2)	(3)	(4)	(3) – (4)
Δ Import tariffs	-0.24***	-0.68***	0.44***	0.17	-0.18	0.35**
	(2.81)	(4.35)	(3.69)	(0.85)	(1.19)	(2.34)
Δ Share of female-	0.39***	1.27***	-0.88***	-0.09***	0.01	-0.10***
	(3.55)	(7.39)	(6.34)	(2.60)	(0.16)	(4.53)
Δ Gender discrimination	0.05**	0.03	0.03	0.03**	0.03*	0.01
	(2.26)	(1.04)	(1.15)	(2.31)	(1.73)	(0.95)
Δ Computer intensity	0.33*	0.06	0.27	1.23***	1.11***	0.12
	(1.81)	(0.26)	(1.56)	(5.02)	(4.27)	(0.78)
Δ Local GDP per capita	1.32**	1.10	0.22	4.71***	3.72***	0.99***
	(2.35)	(1.36)	(0.37)	(6.35)	(6.01)	(2.67)

Notes: Regression results are reported in columns (1) and (2) and (3) and (4), using robust standard errors. The last column for the full sample and for the non-SOE sample reports the difference in coefficients between regressions for males and females (the gender employment gap). Dependent variables measure the change in the share of employment within the working-age population (by gender) between 1990 and 2005 for the full sample and between 1995 and 2004 for the non-SOE sample. All regressions control for the 1990 level of the dependent variable, initial SOE employment shares, initial employment shares of the agriculture and tertiary sectors, and initial nightlights. $N = 310$ for the full sample and $N = 307$ for the non-SOE sample. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Absolute t values are in parentheses.

Appendix 2

Tariff Reductions and Regional Import Competition

Import tariff cuts affect local labor market outcomes by raising competition among domestic producers, which then shifts labor demand. National relative price changes due to tariff reductions at the industry level lead to differential regional exposure, according to the heterogeneous importance of each industry in local production (Kovak 2013). In the Chinese context, existing studies document that lower import tariffs significantly increase imports and reduce domestic prices, indicating a pro-competitive effect of trade liberalization in the product market (Han et al. 2016; Brandt et al. 2017). They further compress firm-level markups and markup dispersion and induce selective entry of more productive firms (Lu and Yu 2015; Brandt et al. 2017).

Lacking data on domestic prices, we translate the industry-level results by Brandt et al. (2017) and focus on firm-level markups as well as the dynamics of firm's entry and exit but at the region level. Considering that estimating firm-level markups requires extensive information on firm's production (e.g. DeLoecker and Warzynski 2012; Brandt et al. 2017), which is not available in firm census data, we employ a simplified measure following Dai and Xu (2017) and calculate markup as the ratio of sales over costs, with the latter being measured as the difference between sales and profits. We then regress the log of firm-level markup on prefecture-level import tariffs, controlling for prefecture fixed effects, four-digit industry fixed effects, and year fixed effects. The results are reported in Panel A of Table B1, where column (1) corresponds to all firms, and columns (2) and (3) correspond to SOEs and non-SOEs, respectively. We find that in regions with a lower tariff, firms on average have a lower level of markups, suggesting that tariff reduction increases the average product market competition in the local region. Interestingly, such a pattern is observed only among private firms, as shown in column (3), while SOEs do not experience systematic changes. This could be due to the fact that SOEs are relatively larger in size and often receive policy benefits from the government, thereby being less exposed to competition compared to private firms.

Table B1

Import Tariffs, Firm-Level Markups, and Changes in the Number of New Firms, 1995-2004

	All Firms	SOEs	Non-SOEs
	(1)	(2)	(3)
Panel A: Dependent: Firm-level markup (in ln)			
Import tariffs	0.03**	0.00	0.04***
	(2.38)	(0.17)	(2.75)
Prefecture FE	Yes	Yes	Yes
Four-digit industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	1,665,723	504,583	1,160,706
R^2	0.15	0.17	0.15
Panel B: Dependent: Change in the number of new firms (in ln)			
Δ Import tariffs	-0.08***	0.01	-0.11***
	(3.29)	(0.29)	(3.93)
Observations	311	311	311
R^2	0.38	0.39	0.27
Panel C: Dependent: Change in the total number of firms (in ln)			
Δ Import tariffs	-0.02	0.01	-0.06**
	(1.43)	(0.55)	(2.56)
Observations	311	311	311
R^2	0.37	0.11	0.39
Panel D: Coefficient difference between Panel B and Panel C			
Δ Import tariffs	-0.06***	-0.00	-0.05***
	(3.83)	(0.17)	(3.43)

Notes: Panel A shows regression results of firm-level markup on prefecture-level import tariffs using data of the industrial census 1995 and the economic census 2004. Firm-level markup is calculated as the ratio of sales over the difference between sales and profits, transformed in natural logarithm. Prefecture fixed effects, four-digit industry fixed effects, and year fixed effects are included. Two-way clustered standard errors at the prefecture and the industry level are computed. Panels B and C show regression results of changes in the number of newly registered firms and the total number of firms between 1995 and 2004 on import tariff changes. A firm is identified as a new one if it is registered within one year based on the two waves of firm census. To account for 0 number of new firms in some prefectures, we add 1 before taking logs. Regressions in Panels B and C control for the 1995 level of the dependent variable, the share of SOE employment, employment shares of the agriculture and tertiary sectors, as well as nightlights, all measured in 1995. Robust standard errors are computed. Panel D reports the coefficient differences between Panel B and Panel C, which measure the effect on firm exits. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Absolute t values are in parentheses.

In Panels B and C, we link local firm's entry and exit dynamics to prefecture-level tariffs. Specifically, we count the number of newly established firms for each prefecture. To account for 0 number of new firms, we add 1 before taking logs. We then regress changes in the number of new firms (total and by ownership) on tariff reductions at the prefecture level and the results are reported in Panel B of Table B1. Tariff reduction leads to a higher number of new firms in the region, and this effect is entirely driven by the entry of private firms. While the economic census data do not allow us to identify firm exits, we can observe the total number of operating firms in the market. In Panel C, we regress changes in the number of firms on tariff declines. The results show no evidence that tariff cuts are associated with changes in the number of firms in total and for SOEs, but show that lower tariffs tended to increase the net number of private firms. In Panel D, we use the seemingly unrelated regression framework and estimate the coefficient differences between Panel B and Panel C, which essentially measure the effect on firm exits. These results indicate a positive impact of tariff cuts on firm exits overall and for private firms. Brandt et al. (2017) document that import tariff reduction in China induces entries of relatively more productive firms. Combined, our results suggest a market selection mechanism of intensified competition at the regional level that is consistent with Melitz (2003).

Overall, the results in Table B1 show support for lower tariff rates being associated with stronger competition in the local markets. Indeed, a rapidly growing body of literature directly uses the localized measure of tariff reduction to measure import competition, such as Hakobyan and McLaren (2016), Gaddis and Pieters (2017), Dix-Carneiro and Kovak (2017), Dai, Huang, and Zhang (2021), Ponczek and Ulyssea (2022), among many others.

Appendix 3

Data Generation and Description of Variables

A. Estimation Sample

Our main regression results are based on 311 prefectures of China. We first concord the 1990 prefecture codes with the 2005 ones by combining prefectures in 2005 back

to 1990 for split prefectures. This yields 322 prefectures. We exclude seven Tibetan prefectures due to missing data on key variables, and further exclude four prefectures with higher than 75 percent tertiary employment in 1990.

We concord prefecture codes of 1995 and 2004 in the firm censuses with those in the population censuses and obtain a final sample of 311 prefectures.

B. Measuring Prefecture-level Import Tariff Rates

Our prefecture-level import tariff rates are calculated in two steps. First, we calculate tariff rates at the 1990 sector level. We obtained data on effectively applied tariff rates at HS six-digit level in the years 1992 (the earliest available year) and 2005 from the World Integrated Trade Solution (WITS) database (World Bank 2018). We first concord the product-level tariff rates to the four-digit Chinese Industry Classification (CIC) 2002 version using the concordance table provided by Brandt et al. (2017).[1] Tariff rates at the four-digit CIC level are calculated as the simple average across all products within industries. We then map tariff data at the 2002 CIC level to the 1990 three-digit sector level using our own concordance table. Again, tariff rates at the three-digit sector level are simple averages within sectors. In the second step, we calculate prefecture-level tariff rates according to Equation 1, which combines sectoral employment shares of tradable sectors within prefectures in 1990 and time-variant sector-level tariffs.

To calculate input tariffs, we first calculate the cost share of each input using the 2002 input-output table and then weight output tariffs by the input cost shares to obtain sector-level input tariffs. We then calculate prefecture-level input tariff rates as weighted averages according to Equation 1 using the 1990 employment share of each sector within prefectures as weights.

In our robustness checks, we decompose tariff rates into industrial tariffs and agricultural tariffs by using employment shares of industrial and agricultural sectors separately.

[1] The concordance table provided by Brandt et al. (2017) has only manufacturing industries. We manually generate a concordance table for agriculture and mining industries.

C. Measuring Prefecture-level Employment Rates

We measure employment rates in 1990 and 2005 based on the 1 percent random sample of the 1990 population census conducted by the National Bureau of Statistics (NBS) of China, which we obtained from IPUMS-International (Minnesota Population Center 2019), and the 20 percent random sample of the 2005 mini population census directly obtained from NBS China.

The 1990 population census does not report individual's working status. We rely on the industry and occupation variables to identify employment. Specifically, individuals reporting non-missing values for the two variables are considered as being employed. According to the manual book of the census, all individuals who had a formal or informal job were required to report details of their jobs, including the full name of the workplace, main business activities of the workplace, and a detailed description of their job duties, which were subsequently used to assign individual's industry affiliation and their occupation type. Our data show that all those reporting non-missing values for the industry variable also reported non-missing values for the occupation variable and vice versa. We also find that all those who reported not working had missing values for the industry and occupation variables. We therefore believe the two variables can precisely identify employment in 1990. The identification of employment in 2005 relies on the information on individual's working status in the data.

We aggregate population and employment to the prefecture level based on individual's location. We use a weight of 100 for the 1990 wave and the provided sampling weights for the 2005 wave when aggregating population and employment. Overall and gender-specific employment rates at the prefecture level are calculated by dividing the total number of employed by the size of the working-age population (in total and by gender). Considering that the official retirement age is 50 years old for females and 60 years old for males in China, we constrain the working-age population to those aged between 15 and 50. Employment rates by age group and by skill level are calculated similarly. We consider workers as high-skilled if they have completed at least high school (upper secondary education).

Employment rates in 1982 are aggregated from the population census of 1982, obtained from IPUMS-International (Minnesota Population Center 2019) as well. Due to

changes in administrative codes, we can only identify 277 consistent prefectures with the 1990 codes.

Employment rates of formal manufacturing and mining sectors in 1995 and 2004 are calculated based on the 1995 industrial census and the 2004 economic census data, both obtained from NBS China. We aggregate the total number of workers reported by each firm to the prefecture level (in total and by gender) and divide it by the size of the working-age population (again aged 15-50). Working-age population of 1995 is from the National 1% Population Sample Survey Statistical Book (1995) (Bureau of National Population Sample Survey 1996). As working-age population at the prefecture level is not available for 2004, we use data from the 2005 mini population census instead. Employment rates of SOEs and private firms are calculated based on firm ownership information. SOEs include both state-owned enterprises and collective-owned enterprises. Private firms include domestic private firms and foreign-invested firms.

D. Prefecture-level Initial Conditions

1990 employment shares of the agricultural and tertiary sectors over total prefectural employment are calculated from the 1990 population census.

1990 SOE employment share denotes the share of SOE employment in total prefectural urban employment. The data is obtained from the *China City Statistical Yearbook* (National Bureau of Statistics, 1991a).

Nightlight data are derived from the National Oceanic and Atmospheric Administration (NOAA).[2] Prefecture-level nightlights are calculated as the simple average of all pixel values within the boundary of each prefecture in 1990.

E. Additional Policy-related Control Variables

In our robustness checks, we control for a large set of measures for the regional exposure to trade-related policies, including NTBs, export tariffs, NTR tariff gaps, government subsidy to exporters, export licensing requirements, and FDI restrictions. Industry-level NTBs and FDI restrictions are from Brandt et al. (2017). We employ a similar approach to Equation 1 and calculate regional exposure to NTBs and FDI

[2] https://www.noaa.gov/

restrictions by weighting industry-level NTBs and FDI restrictions using the initial level of sectoral employment share within prefectures as weights. As data on NTBs and FDI restrictions are only available for manufacturing industries, we use employment shares of manufacturing industries as weights.

We collect product-level export tariffs by country from the WITS database and construct product-level export tariffs as the weighted average of foreign tariff rates using the relative economic size of each potential trading partner as weights:

$$(C.1) \qquad ExpTariff_{st} = \sum_{s=1}^{S} \frac{GDP_{nt}}{\sum_{n=1}^{N} GDP_{nt}} T_{snt}$$

where T_{snt} is the tariff imposed on China's export product s by country n in year t. We weight national tariff lines by the relative share of each country n in year t in world GDP, $GDP_{nt}/\sum_{n=1}^{N} GDP_{nt}$, to approximate the export market potential of various trading partners. We then map the HS six-digit product-level export tariff rates to the 1990 three-digit sectoral level and calculate prefecture-level tariff rates following Equation 1.

Prefecture-level measures of NTR tariff gap, government subsidy to exporters, and export licensing requirements are obtained from Facchini et al. (2019) which are available for 1999 and 2005. Given that 1999 is still before China's WTO accession, we use these short-term changes as proxies for long-run changes for the purpose of robustness checks. We have data for 306 prefectures.

F. Measuring Channel Variables

Expansion of female-intensive industries (FI_{pt}) is calculated using Equation 3 based on the 1990 and 2005 population census waves, and the 1995 industrial census as well as the 2004 economic census. Since four prefectures had no private firms in 1995, we are only able to calculate FI_{pt} for the private sector for 307 prefectures.

We estimate the sectoral level discrimination index following Equation 4 using the 1995 and 2004 firm census data, and then compute the local degree of discrimination by using time-variant industrial employment shares within each prefecture as weights following Equation 5. Since one prefecture had no firms observed in 1995, the discrimination measure is only available for 310 prefectures.

The local computer intensity measure is computed in two steps. We first calculate the share of computers within the total value of machinery for medium and large firms within two-digit industrial sectors, obtained from the *China Statistical Yearbook on Science and Technology* (National Bureau of Statistics, 1991b, 1996, 2005, 2006b). Then we use the population census waves in 1990 and 2005, as well as the firm census waves in 1995 and 2004 to measure the relative importance of each two-digit sector within each prefecture and compute a prefecture-level index of computer intensity following Equation 6.

We use local GDP per capita as a proxy for average income obtained from the 1991 and 2006 issues of the *China City Statistical Yearbook* (National Bureau of Statistics, 1991a, 2006a). Data for prefectures that are not included in the *Yearbook* are collected from provincial statistical yearbooks. In some cases when local GDP per capita is not available, we use per-capita gross national income (GNI) or per-capita local aggregate social product.

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