Import competition, regional divergence, and the rise of the skilled city

JAVIER QUINTANA

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Over recent decades, cities in the US have been growing apart. While some metropolitan areas thrived, others have experienced a secular decline. Contemporaneously, the American economy experienced a significant structural change: the period was a major loss of manufacturing jobs, while some skill-intensive services expanded rapidly. In this paper, I show that the capacity to accomplish the transition between those sectors is key to the economic success of local labor markets. Among areas with high human capital, the decline of local manufacturing industries fueled the transition to fast-growing skill-intensive service sectors, resulting in real wage gains and attraction of college-educated workers to the area. On the other hand, local labor markets with lower human capital could not make up for the losses stemming from manufacturing contraction.

THE GREAT DIVERGENCE AND THE CHINA SHOCK

The first decades of the postwar period saw a process of convergence between the metropolitan areas of the United States. The gaps in wages and the shares of college-graduate population were progressively closing, with lagging metropolitan areas catching up with the leading ones. However, this process came to a halt in the late 1980s. From that moment on, areas with a higher density of college-educated workers have displayed a superior performance over a whole range of urban and economic growth measures.

Two of the most salient features of the so-called Great Divergence are the spatial skill polarization and the divergence of the college wage premium across local labor markets (Moretti, 2012). Most educated metropolitan areas have increased their skill advantage over the last decades. Workers with a college degree are more likely to move to cities with a high density of college-educated population
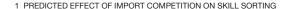
today than they used to be. At the same time, real wages for workers with a college degree have stopped converging across local labor markets, as opposed to the convergence of real wages for workers without a college education. College-educated workers in skill-abundant cities have experienced a more rapid wage growth than their peers in less educated areas. The sorting of educated and high-earning workers into few metropolitan areas has deepened inequalities within and between locations.
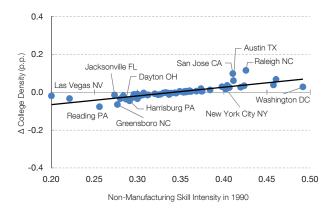
At the same time, the United States experienced an unprecedented increase in imports of manufacturing goods following China's access to the world market economy. An extensive literature documents that the increase of Chinese imports had a significantly negative impact on manufacturing employment (Autor et al., 2013, Pierce and Schott, 2016). The drop in manufacturing employment was not geographically even. Labor markets specialized in industries most exposed to Chinese competition experienced a more severe employment contraction.

However, I show that losses in manufacturing employment is not sufficient to capture the effect of import competition on local labor markets. Instead, local outcomes will be the result of their ability to reallocate those workers and the type of industries that will replace the waning manufacturing sector. If skill-intensive services can absorb former manufacturing employees, the initial negative shock to manufacturing industry will turn into a push for fast-growing skill-biased industries. Instead, if those industries are missing, the local labor market will not be able to recover from the negative shock.

Namely, metropolitan areas such as San Jose, Raleigh or Austin (with large and highly exposed manufacturing sectors, and skill-intensive non-manufacturing industries by 1990) performed better than cities in the Rust Belt (with similarly large and exposed manufacturing sectors but with a low density of college-educated workers). Moreover, these skilled-and-exposed metropolitan areas will also display a superior performance than areas like Washington or New York (with a similar density of college-educated workers but negligible exposure to manufacturing import competition).

Figure 1

PREDICTED EFFECT OF IMPORT COMPETITION FOR 60 LARGEST METROPOLITAN AREAS

1 PREDICTED EFFECT OF IMPORT COMPETITION ON SKILL SORTING

2 PREDICTED EFFECT OF IMPORT COMPETITION ON COLLEGE PREMIUM

HETEROGENEOUS EFFECTS OF MANUFACTURING IMPORT COMPETITION

Empirically, I develop my analysis in two steps. First, I test the heterogeneous effects of import competition. I analyze its impact on skill sorting and skill premium in urban areas between 1990 and 2007. The main dependent variables are decade changes in working-age population and changes in real wages by educational level. I extend the baseline regressions in Acemoglu et al., 2016 including the interaction between the exposure to import competition and the initial share of college-educated workforce in the non-manufacturing sector. This will be my variable of interest, capturing the heterogeneity of effects of the trade shock according to the skill intensity of local services[1].

The contribution of the China shock to regional divergence is significant and economically sizable. I find that the

heterogeneous effects of import competition explains above than one third and one fourth of the variation of the spatial skill polarization and the divergence of skill premium, respectively. Comparing cities with the median level of exposure to import competition, an area at the 75th percentile of skill-intensity will have a 13% faster growth of college-educated workforce and a 4.5% faster growth of real wages of college-educated workers per decade than one at the 25th percentile of skill-intensity. Moreover, comparing cities at the 75th percentile of skill-intensity, a city at the 75th percentile of exposure to the China shock will have a 12.6% faster growth of college-educated workforce and a 3.3% faster growth of real wages of college-educated workers per decade than one at the 25th percentile of exposure to import competition. Conversely, among cities at the 25th percentile of skill intensity, a city at the 75th percentile of exposure to the China shock will have a 5.6% relative drop of college-educated workforce and a 2.9% relative drop of real wages of college-educated workers per decade than one at the 25th percentile of exposure to import competition. Figure 1 shows graphically the predicted effect of import competition on the growth of college-educated workers (panel 1) and college wage premium (panel 2) for the 60 largest metropolitan areas.

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1 The main threat to the identification of the heterogeneous effects will be the potential correlation of skill intensity in local services with other local characteristics. By construction, the interaction of those covariates and the change in import penetration will also correlate with my variable of interest. I address the issue by including a large set of controls interacting the China shock with local manufacturing characteristics, demographic variables, and the export potential of the local labor markets. These controls account for confounding sources of heterogeneity as well as unobserved differences in exposure to trade competition.

CROSS-SECTOR LABOR REALLOCATION

Second, I carry out the analysis of labor reallocation across sectors as the mechanism for trade-induced regional divergence. I introduce a novel measure of 'labor market exposure' to the China shock for service industries. This measure exploits occupational similarities between sectors, the geographical distribution of directly exposed industries, and the uneven geographical co-location of different manufacturing and non-manufacturing industries. It captures the changes in the local labor supply that a service industry faces following the contraction of employment demand of directly exposed manufacturing industries.

Armed with my measure of 'labor market exposure' to the China shock I quantify the cross-sector labor reallocation and I analyze whether local service industries benefit from the negative shock to the rest of local industries. Empirically, I regress growth rates of employment and wages of industry-city pairs on my measure of 'labor market exposure' to the China shock. This setting compares the growth rate of employment and wages of the same industry across locations with distinct levels of exposure to the China shock.

I find that skill-intensive industries leverage out the flow of workers leaving the local manufacturing sector. Skilled services in highly exposed locations have access to a larger pool of resources, they benefit from agglomeration externalities, offer higher wages, and they attract skilled workers from other regions. Empirically, I find that cities with higher a skill density undergo a faster transition from manufacturing to service industries.

REFERENCES

Acemoglu, D., Autor, D., Dorn, D., Hanson, G. H., & Price, B. (2016). Import competition and the great US employment sag of the 2000s. *Journal of Labor Economics,* 34(S1), S141-S198.

Autor, D., Dorn, D., & Hanson, G. H. (2013). The geography of trade and technology shocks in the United States. *American Economic Review,* 103(3), 220-25.

Moretti, E. (2012). *The new geography of jobs.* Houghton Mifflin Harcourt.

Pierce, J. R., & Schott, P. K. (2016). The surprisingly swift decline of US manufacturing employment. *American Economic Review,* 106(7), 1632-62.