



The impact of Chinese import competition on the local structure of employment and wages in France

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How has competition from Chinese exports affected the French labour market? This article aims to answer this question by exploiting the variation in exposure to competition from China across employment zones. The results suggest that around 13% of the decline in manufacturing employment in France from 2001 to 2007 is due to Chinese competition. The adverse effect on hourly wages is uniform along the wage distribution in the manufacturing sector, and concentrated in the middle of the distribution in the other sectors. The impact on the lowest wages is small, probably as a result of the lower limit set by the statutory minimum wage. The estimated impacts, albeit negative, do not necessarily imply that trade with China has not been generally beneficial. An assessment in terms of welfare would require the measurement of gains to consumers and firms that use imported intermediate goods – and whose productivity gains also ultimately benefit consumers.

The emergence of China as an industrial and trading power

The impact of heightened import competition from low-wage countries on manufacturing sector employment and wage inequalities is subject to intense debate in developed countries; and China is a key player among emerging countries. In the space of a decade (1998-2008), it increased its share of global exports from 3.3% to 9.5%. Chart 1 shows France's imports and balance of trade vis-à-vis China and a range of low-cost countries. The particular nature of trade relations between France and China not only results from the high growth rate of Chinese exports to France (see Chart 1a) but also from a substantial deficit in France's balance of trade (see Chart 1b).¹

Assessing the local impacts of a global shock

The aim of this *Rue de la Banque*, which is derived from Malgouyres (2016), is to estimate the effect of the huge

surge in Chinese import competition on the local structure of employment and wage inequalities in employment zones in France.² It follows the same empirical strategy as that applied by Autor et al. (2013) but also draws on the wealth of French data to assess the impact of this shock not only on employment and the average wage but also the impact along the wage distributions and on the type of jobs affected.

The empirical strategy consists in exploiting the fact that (i) changes in productivity and Chinese exports are highly heterogeneous across industries within the

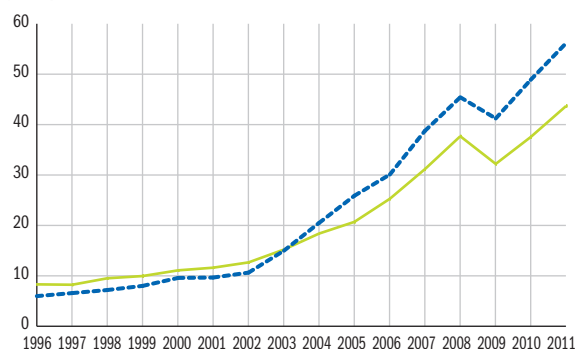
¹ We can also see a clear acceleration from 2001 when China joined the World Trade Organization.

² An employment zone is a geographical area within which most of the labour force lives and works and firms can find the majority of the workforce needed to fill the jobs on offer. Dividing France into employment zones provides a suitable breakdown for the analysis of the local functioning of the labour market.

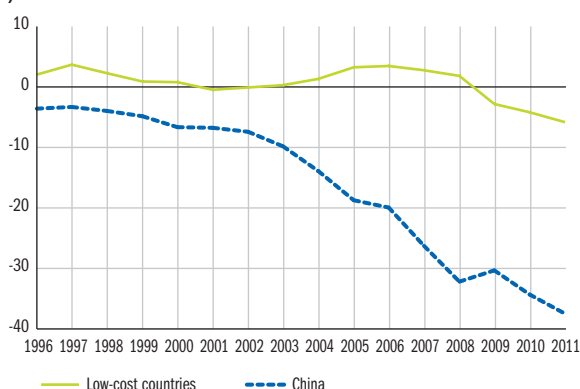
C1 France's imports and balance of trade vis-à-vis China and other low-cost countries

(in current USD billions)

a) Imports



b) Balance of trade

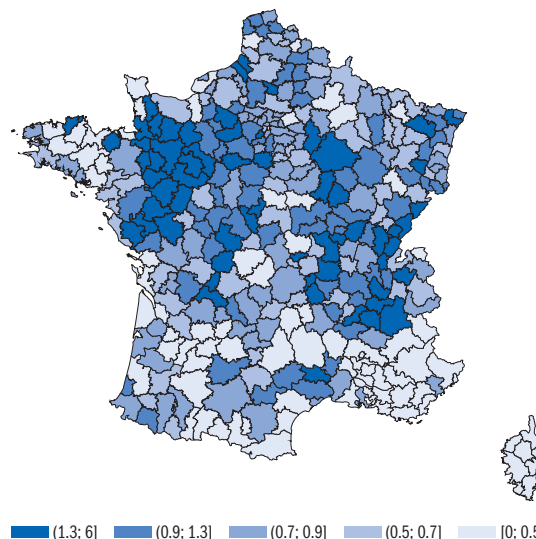


Source: Malgouyres (2016).

manufacturing sector³ and (ii) there is a significant variation in manufacturing specialisation between different employment zones in France. As a result, the rapid surge in Chinese competition will affect employment zones differently depending on their initial specialisation.

By interacting the initial industrial composition at the local level with sectoral imports at the national level, we calculate an index of exposure to Chinese import competition. This index captures the value of imports per worker that each employment zone faces. It varies depending on the initial share and the local specialisation of the manufacturing sector. Chart 2 shows the share of the change in this index during the 2001 to 2007 period, which is attributable to differences in specialisation within the manufacturing sector of each employment zone for the whole of metropolitan France. We find that the changes are highly heterogeneous between employment zones. We will use this geographical variation to assess the effect of Chinese competition on local labour market outcomes.

C2 Development of exposure to Chinese import competition in the different employment zones (2001 to 2007)



Source: Malgouyres (2016).

Note: The employment zones are classified into five categories by shades of blue, with zones where Chinese competition was most intense between 2001 and 2007 represented by the deepest blue (max. [1.3, 6] = USD 1,300 to USD 6,000 per job in the manufacturing sector).

Significant effects on manufacturing employment

We first consider the effects on local employment. Chart 3 shows the relationship between local employment growth (y-axis) and changes in the index of exposure to Chinese import competition (x-axis) between 1995 and 2007. We find a strong negative relationship in regard to manufacturing sector employment (see Chart 3a). We also find a negative, albeit weaker, relationship between growth in non-manufacturing sector employment and changes in the index of exposure to Chinese import competition (see Chart 3b).

The econometric analysis confirms the negative correlation illustrated in Chart 3. The results for the manufacturing sector suggest that the average increase in import competition between 2001 and 2007 – of approximately USD 1,000 per worker – caused a drop in local employment growth of around 6 percentage points.

³ For example, growth in Chinese exports has been particularly strong in the textile and clothing industries, as well as in toy manufacturing, but has been relatively limited in the chemical, pharmaceutical and food products industries.

C3 Relationship between local employment and Chinese import competition (1995 to 2007)

(x-axis : change in index of exposure to Chinese import competition;
y-axis : employment growth rate in %)

a) Manufacturing sector



b) Non-tradable sector



Source: Malgouyres (2016).

Note: Each point corresponds to an employment zone for a given period (1995 to 2001 and 2001 to 2007). Variables are expressed as deviations from the period average. The non-tradable sector excludes public and parapublic-sector employment.

The presence of multiplier effects

The effects on the non-manufacturing sector are less pronounced but they are nonetheless far from negligible and are statistically significant. The average increase in Chinese competition from 2001 to 2007 was associated with a 3.5 percentage-point decrease in local, non-manufacturing sector employment. These adverse effects on a category of jobs often considered to be sheltered from international competition confirm the presence of significant “local multiplier” effects (Moretti, 2010).

The non-manufacturing sector is largely made up of businesses whose production is not exportable and that depend heavily on local demand. In simplified terms, the negative shock to the manufacturing sector caused by the increase in Chinese competition propagates to the local

non-export sector through at least two channels. First, the shock results in a drop in local demand, which should exert downward pressure on employment in the non-export sector. Second, the decline in manufacturing employment at the local level – in the absence of perfect spatial mobility of the workforce – should lead to a positive labour supply shock to the non-export sector. The estimated impact results from the combined effects of these two channels. Our results suggest that over a horizon of six years, for every ten jobs destroyed in the manufacturing sector, around six are lost in the non-tradable sector.

What is the aggregate impact on employment in France?

Assessing the aggregate impact of trade with China on employment in France using estimates based on local variation across employment zones is problematic. Indeed, the estimated impacts are relative: the decline in manufacturing employment has been faster in the most exposed employment zones than in the least exposed zones. But it is possible that through general equilibrium effects, the less exposed zones have benefited from the other zones’ exposure. A potentially significant general equilibrium channel is the reallocation of workers between employment zones. If, for example, the contraction of the manufacturing sector in a badly affected employment zone leads to the out-migration of the workforce from that zone to another, it is possible that the estimated local impacts are more severe than the aggregate impact.⁴ Chinese competition, in a borderline case, would have therefore simply led to the redistribution of jobs between zones, with no aggregate impact. Nevertheless, this adjustment margin plausibly implies a drop in the population of the areas directly affected by heightened Chinese competition, which is not observed.

We perform a simple quantification exercise based on the assumption that the general equilibrium effects between zones cancel out in order to isolate the share of the growth in Chinese exports to France that is due to the expansion of Chinese competition rather than changes in French demand. It is estimated that between 2001 and 2007, 90,000 jobs were lost in the manufacturing sector and a further 190,000 jobs were lost in the non-manufacturing sector as a result of Chinese competition. This represents around 13% of the decline in manufacturing-sector employment over the same period. This is lower than

⁴ It should also be noted that the growth in exports to China has created jobs in other sectors, even though additional results based on net trade suggest that this effect is probably small in scale.

the figure calculated by Autor et al. (2013) for the United States, where the impact was estimated at around 50%, but significantly higher than in other European countries, particularly Germany, whose industrial base counts a smaller proportion of sectors in which China's comparative advantage most rapidly took hold (Dauth et al., 2013).

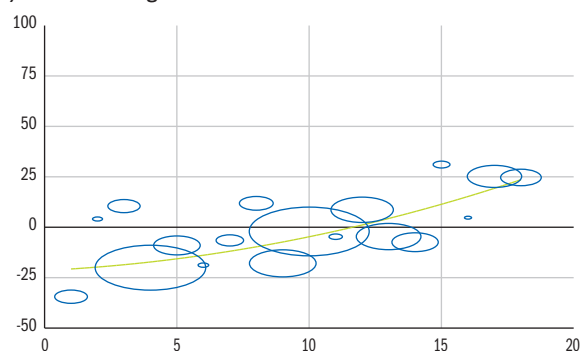
Job polarisation

In addition to its impact on the number of jobs, how does Chinese competition affect the employment structure? The French labour market, like the labour markets of other advanced economies, has undergone a process of job polarisation (Goos et al., 2014). "Polarisation" refers to the disproportionate growth in jobs within occupations that are traditionally at either extreme of the wage distribution, relative to jobs situated in the middle. Chart 4 shows that job polarisation between 1995 and 2007 mainly took place in the non-manufacturing sector whereas in the manufacturing sector, we can see a decreasing monotonic

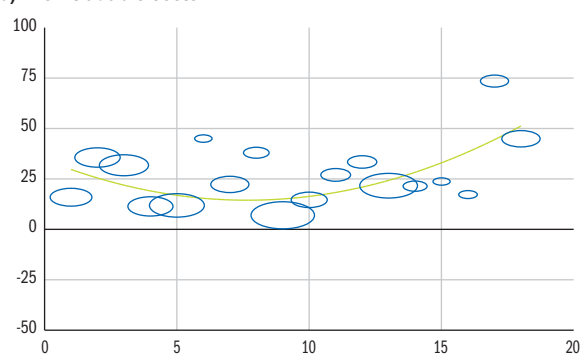
C4 Labour market polarisation in France from 1995 to 2007

(x-axis : reversed ranking of occupation based on average wages in 1995;
y-axis : employment growth rate in %)

a) Manufacturing sector



b) Non-tradable sector



Source: Malgouyres (2016).

Note: Each point corresponds to an occupation. The size of the circle is proportional to the total number of jobs within an occupation in 1995.

relationship between the reverse initial wage rank and employment growth of an occupation.

By tailoring the method developed by Juhn et al. (1993), we find that in contrast to the aggregate trends observed, the surge in Chinese competition has contributed to polarising employment within the manufacturing sector, but not in the non-tradable sector.

Adverse – though differentiated – effects on wages

The theoretical literature on the effects of international trade on the relative remuneration of factors of production is extensive and long-standing. The standard models show that although international trade generates aggregate gains, trade openness does not generally lead to a Pareto improvement. Heckscher-Ohlin-Samuelson (HOS) type models, for example, predict that trade openness increases the remuneration for the relatively abundant factors in each country at the expense of relatively scarce factors of production. In a country where skilled labour is relatively abundant such as France, this therefore implies an inegalitarian effect that would result in a rise in the relative wages of the skilled workforce. More recent research – both theoretical and empirical – shows that where in the presence of firm heterogeneity, trade is likely to amplify residual inequalities, i.e. inequalities that are not explained by observable variables such as education or occupational status.⁵

Chart 5 shows the estimated impact on hourly wages for different percentiles of the wage distribution. We observe an average negative impact in the manufacturing sector. This finding conflicts with the results of Autor et al. (2013), who concluded that wages in this sector were unaffected.⁶ The effect is relatively uniform along the wage distribution in the manufacturing sector. In the non-tradable sector, the average impact is weaker and wage effects are concentrated in the middle of the wage distribution.

Consequently, we find that the shock at the local level is associated with an increase in inequalities at the upper end of the wage distribution – the ratio of the

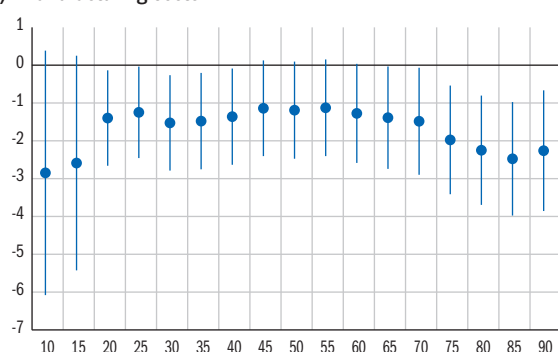
⁵ For example, Amiti and Davis (2012) show that trade liberalisation in Indonesia magnified wage dispersion by generating salary increases for workers at exporting and importing firms while reducing salaries in firms that only operated in the domestic market. See Harrison et al. (2011) for a recent review of the relationship between globalisation and inequality.

⁶ It should be noted that the estimated negative impact is not incompatible with the existence of downward wage rigidities in that it can simply be due to a smaller, though nevertheless positive, increase in wages or a cut in starting salaries.

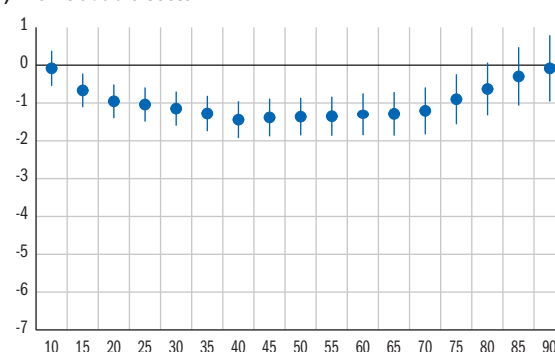
C5 The impact of Chinese competition along the wage distribution

(x-axis : percentile; y-axis : estimated impact on growth in hourly wages)

a) Manufacturing sector



b) Non-tradable sector



Source: Malgouyres (2016).

Note: Each point corresponds to the estimated impact on growth over a six-year period of the percentile shown on the x-axis. For example, at the 20th percentile (the wage level at which 20% of employees in an employment zone earn a lower wage and 80% are paid a higher wage) the impact represents a reduction of 1.4 percentage points in the manufacturing sector and 0.7 percentage point in the non-traded sector (vertical line: 95% confidence interval).

85th percentile relative to the median wage rises – and a decrease at the lower end – the ratio of the median wage relative to the 15th percentile falls. As a result of these two opposing movements, the ratio between the 85th and 15th percentiles – an overall measure of wage inequality – remains unchanged. However, a supplementary analysis demonstrates that Chinese competition is linked to an increase in this ratio in employment zones where minimum wage coverage is low.

With regards to the adjustment margin, the negative impact of the shock on total labour earnings is due in large part (70%) to a reduction in working hours and to a lesser extent (30%) to a decrease in the average hourly wage.

Conclusion

The negative impact of Chinese import competition on jobs and wages does not necessarily mean that trade with

China has not been generally beneficial from France's point of view. An overall assessment of the impact of trade with China and other emerging countries on aggregate welfare in France would notably require the measurement of gains to consumers, which are assessed as being relatively favourable to low-income households (Fajgelbaum and Khandelwal, 2016).⁷ It would also be advisable to include firms that use imported intermediate goods – and whose productivity gains also benefit consumers.

Nevertheless, given the substantial local multiplier effects and the limited sectoral and spatial mobility of the workforce, the negative estimated impacts are likely to be long-lasting in the most affected employment zones.

⁷ As well as the potential positive impacts on exports, notably via access to inputs with lower quality-adjusted prices.

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