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CHINESE LIGHT MANUFACTURING AND OUTWARD FOREIGN DIRECT INVESTMENT INTO AFRICA AND ASIA

Summary Background Paper

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Acknowledgements

This paper draws on data from longer background papers available at set.odi.org:
Hou et al. (2017) *The shift in manufacturing employment in China*. SET Background Paper. London: Overseas Development Institute; and Calabrese et al. (2017) *What drives Chinese outward investment?* SET Background Paper. London: Overseas Development Institute.

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KEY MESSAGES

- Manufacturing in China employs over 100 million people in total, of whom about 25 million are in export-oriented light manufacturing sectors where firms participate in global value chains.
- As light manufacturing operations relocate in response to rising wages in China, there is an opportunity for developing countries in Africa and Asia to secure some of these 25 million jobs. Even a very small share of these would represent significant employment gains in such countries.
- Employment in some labour-intensive light manufacturing sectors in China – especially the high-tech sectors of consumer electronics and household appliances – has continued to grow strongly, but in clothing job growth in China may have ended.
- Employment in light manufacturing is shifting strongly to the Central Region of China, though the Eastern (coastal) Region still dominates, with around three quarters of jobs.
- Wages in light manufacturing are rising rapidly across China – over 11% per annum in real terms – with the fastest wage growth being experienced in the Central Region, albeit from a low base relative to the Eastern Region.
- There appears still to be considerable room for Chinese light manufacturing firms to expand and/or relocate within China in reaction to rising wages, with China's infrastructure and institutional performance stronger on almost all indicators than that in a large group of comparator countries.
- South East Asia has geographic and cultural proximity to China and also offers lower costs and better services compared to other developing regions, though it still lags China on most indicators. If other developing countries are to take advantage of the opportunity of rising Chinese wages to attract Chinese light manufacturing firms, they will need to focus actively on their location cost challenges, while also engaging directly with the Chinese firms.

1. INTRODUCTION

The ‘rebalancing’ process underway in China’s economy involves a shift away from export- and investment-led growth towards domestic consumption and is associated with, among other things, rising real wages and exchange rate appreciation. These macro-level changes have significant cost implications for the export-oriented labour-intensive light manufacturing industries on China’s east coast, which have made a major contribution to poverty reduction by creating large numbers of jobs over the past 25-plus years.

It is often argued that rising wages in China will represent a very important opportunity for developing countries in Africa and Asia over the next decade or so, as Chinese manufacturing firms looking for cheaper wage locations could relocate into these countries. This inward foreign direct investment could, it is argued, create large numbers of low-skill, low-wage jobs in many countries, drawing people out of low-productivity household enterprises in the agriculture and informal urban services sectors into higher-productivity manufacturing, driving a dynamic process of economic transformation and growth. A figure of ‘85 million low-skill jobs’ is often cited as the potential job migration out of China to lower-income countries, as China’s manufacturing sector adjusts to higher wages and a stronger exchange rate.¹

There are some well-known instances of Chinese firms having already established labour-intensive export-oriented product assembly operations in African countries. But there is competition to attract low-wage jobs not only among African as well as South-East and South Asian countries but also from locations within China itself, from areas where wages are lower than in the Eastern (coastal) Region.

Firms’ choices – over both technology and location – depend on a range of cost factors in addition to relative wages, which, adjusted for relative productivity, are naturally very important for labour-intensive production. However, even for the latter, other costs are important, including infrastructure, finance and international trade logistics transport and transactions costs.²

It is significant that many Chinese light manufacturing firms that assemble mass market consumer goods for export are part of global value chains (GVCs) led by major North American, European or Asian consumer brands, retailers or supply chain managers. These ‘lead firms’ often play an important role in the investment decisions, including location and technology choices, of product assemblers within ‘their’ value chains. Connected to their participation in global (or regional) value chains, product assembly firms will often relocate in clusters that include both input suppliers and multiple product assemblers (competing with and complementing each other), reflecting the significance of firm networks and transactions costs.

Firms in China may of course also choose not to relocate low-wage operations in response to rising real wages, but instead to move away from labour-intensive production by investing in more capital-intensive technologies, including automation, which is increasingly available. In sum, China’s macroeconomic rebalancing involves a complex firm-level adjustment process that goes well beyond simple comparisons of wage levels, or even productivity-adjusted wage levels.

To fully assess the opportunity that changing economic conditions in China may offer African and Asian low-income countries, the Supporting Economic Transformation Programme at the Overseas Development Institute (ODI), London, and the Centre for New Structural Economics (CNSE) at Peking University, Beijing, are together undertaking a survey of labour-intensive light manufacturing (LILM) firms, supplemented by a small number of firm case studies. The report will be published in December 2017 and will aim to deepen our understanding of internationalisation strategies and decision-making

¹ See for example, Lin (2011, 2012, 2016).

² Cost structures will vary somewhat by product and sector.

in Chinese firms in these sectors. The LILM firms surveyed are in five sub-sectors – clothing, shoes, toys, consumer electronics and household electrical appliances – and in two provinces in Eastern China – Zhejiang province in the Yangtze River Delta and Guangzhou province in the Pearl River Delta. These sub-sectors and regions were deemed to represent the greatest potential for relocation to low-income countries, as they contain large numbers of firms engaged in export-oriented product assembly activities as part of GVCs.

This Briefing Paper represents a preliminary assessment of the size of the opportunity facing developing countries to advance their industrial development via the shift underway in Chinese labour-intensive light manufacturing. Using official Chinese statistical sources, the paper provides context and background for the joint ODI–CNSE survey. We present data in Section 2 on employment and wages – levels, trends and regional distribution – in the selected LILM sub-sectors in China, and data in Section 3 on selected location cost factors for African and Asian countries relative to China (drawing on a range of international databases).³

2. EMPLOYMENT AND WAGE TRENDS IN CHINESE LIGHT MANUFACTURING

This section assesses the potential by examining the size of the labour force in Chinese manufacturing and its sectoral and regional distribution, using data from the Ministry of Labour published in the National Statistical Yearbook (NSY) by the Chinese National Bureau of Statistics (NBS), as well as other official Chinese sources.⁴

2.1 Light manufacturing employment in China

Total employment in China in 2014 was 772.4 million people, of a total labour force of 796.9 million.⁵ Of the employed labour force number, secondary industry – manufacturing, construction, mining and utilities – employed 231 million people, equivalent to 29.9% of total employment. The primary sector (including subsistence and peasant agriculture) accounted for 228 million (29.5%), and the tertiary sector for the remaining 331.6 million (40.6%).

Within secondary industry, manufacturing employed 103.2 million people in 2014, or 13.4% of total Chinese employment. This figure is the sum of 52.3 million employed in ‘urban enterprises’ (a category in the NBS Yearbooks that includes only state-owned enterprises in urban areas, excluding private enterprises and self-employed),⁶ plus 50.8 million employed in private enterprises (plus self-employed), of which 27.2 million are in urban areas and 23.6 in rural areas. The total number of 103.2 million manufacturing jobs in China puts into perspective the widely-cited number of 85 million unskilled manufacturing jobs with the potential to migrate out of the country, which thus seems to refer to *all* manufacturing sub-sectors.

Based on the NSY, Table 1 shows that manufacturing employment was 73.3 million in 2009, implying a growth rate of 7.1% per year between 2009 and 2014.⁷ Of that total, 34.9 million were in ‘urban, excluding private’ enterprises, and 38.4 million were in ‘private’ enterprises, including both urban and rural enterprises.⁸

³ This paper draws on longer presentations of data in Hou et al. (2017) and Calabrese et al. (2017), both available at www.set.odi.org

⁴ This source is also used in Lardy (2015). It is worth noting that different official sources, drawing on data collected by different ministries, may report different data for the same category or define the same category in different ways.

⁵ China’s population in 2014 was 1.37 billion, according to the NSY 2015.

⁶ See Lardy (2015) and Banister and Cook (2011) for discussion of manufacturing data categories in Chinese official statistics.

⁷ Manufacturing employment was 71.2 million in 2008, with an annual growth rate over 2008-2014 of 6.4%.

⁸ Lardy (2015) presents a figure of 52.4 million for urban manufacturing in 2008, comprising 33.3 million in ‘urban excluding private’ and 19.1 million in ‘urban private’, using NSY data. Banister and Cook (2011), however, argue there were 99 million employed in manufacturing in

Turning to the sectoral distribution of employment, Table 1 shows that the five selected light manufacturing sectors on which we focus employed a total of 25.4 million people in 2014 – about a quarter of the total manufacturing labour force in the country. Over 60% of light manufacturing employment was in consumer electronics and household appliances, with less than a fifth in clothing and footwear, which are often seen as the sub-sectors most likely to relocate to low-income countries. The growth rate of employment in light manufacturing between 2009 and 2014 was only 5.2%, below that of manufacturing as a whole, while jobs in the clothing sector barely grew over this period, reflecting that the LILM sectors had passed their peak as a job creation ‘engine’ in China.

Table 1: China: Sectoral employment distribution, millions

	2005	2009	2014	Growth 2009-2014 (% p.a.)	% of light manufacturing, 2014
All manufacturing	44.3*	73.3	103.2	7.1	-
Selected light manufacturing (five sectors)	-	19.7	25.4	5.2	100
<i>Of which:</i>					
Consumer electronics	4.39	6.6	9.1	6.6	36
Household appliances	3.67	5.4	6.4	3.5	25
‘Toys’	n/a	1.2	2.3	13.9	9
Clothing, footwear and hats	3.46	4.5	4.6	0.4	18
Leather goods	n/a	2.1	3.0	7.4	12

Sources: Industrial Economic Statistical Yearbook (IESY) 2006–2015; 2009 data for ‘toys’ and leather products: compiled from Provincial Statistical Yearbooks.

Note: The definitions used in the Chinese NSY and IESY of light manufacturing sectors are different from the labels used for convenience in Table 1 – consumer electronics; household appliances; toys; clothing, footwear and hats. Consumer electronics = communications equipment, computers and electronic machinery; household appliances = electrical machinery; ‘toys’ = equipment for culture education and sport, including entertainment.

*Urban employment only, including private enterprises.

Unfortunately, it has not been possible to find data on the skill distribution of the labour force in the light manufacturing sector, though the vast majority of employment in these labour-intensive sub-sectors will be low-skill. It is useful for comparative purposes to look briefly at ‘high-tech’ manufacturing sectors, defined as those with high research and development (R&D) intensity,⁹ and including six sectors: pharmaceuticals; aircraft; electronics and communications equipment; computer

2008: 34.34 million in ‘urban (excluding private)’, which is the NSY figure that reflects data collected by the Ministry of Labour and Social Security, plus 64.67 million in non-urban enterprises, using data for the category ‘township and village enterprises’ previously collected by the Ministry of Agriculture, but since 2011 no longer an enterprise category of any significance in official data.

⁹ Intensity = share of R&D expenditure in turnover.

and office equipment; medical equipment and instruments; and chemicals. Note that two of these sectors – electronics and communications equipment and computer and office equipment – are included in *both* light manufacturing and high-tech groups. According to the China Statistical Yearbook on High Technology Industry 2015, which is compiled by the NBS using data from China's Ministry of Science and Technology, 13.2 million people were employed in 2014 in high-tech. Employment in these sectors had risen from just 3.8 million in 2000 (a growth rate of 9.3% per year),¹⁰ in parallel with output: their share of Chinese exports rose from 24% in 2000 to 43% in 2014.¹¹ Most of this growth was before 2011, when total high-tech employment was 11.5 million.

2.2 Regional shifts in light manufacturing employment

Table 2 presents a regional distribution of employment that shows about two thirds of manufacturing employment is in the Eastern Region, which comprises six coastal provinces plus three large municipalities: Beijing, Shanghai and Tianjin. (See map of China in Appendix.) As Table 1 shows, the East holds just under two thirds of China's manufacturing employment, and this did not change over the half-decade 2009-2014. The Eastern Region saw more than 70% of total sales in 2005 but experienced the slowest growth in the subsequent decade to 2014, so its share of sales dropped to 59.4% by 2014. Despite this drop, its employment share remained constant.

The Central Region grew much faster than the national average but the increase in its share of the total came at a cost to the much more sparsely populated West and North-East, the latter being the region where state-owned enterprises in heavy industry are concentrated. In the high-tech sectors, employment is also heavily concentrated in the Eastern Region, with 2.4 million of the total of 3.8 million jobs in 2000, or 63%, the same as in light manufacturing; in 2014, the East's share had grown even larger: 9.5 million of a total of 13.2 million, or 72%.

Table 2: Regional distribution of total manufacturing employment, millions

	2009	% all manufacturing, 2009	2014	% all manufacturing, 2014	Growth (% p.a.)
China	73.3	100	103.2	100	7.1
East	46.5	63.4	65.5	63.5	7.1
Central	11.4	15.6	18.4	17.8	10.0
West	10.2	13.9	13.3	12.9	5.5
North-East	5.2	7.1	5.9	5.7	2.6

Source: NSY 2010-2015.

Four Eastern Region provinces – Guangdong, Jiangsu, Shandong and Zhejiang – had increased their employment levels by more than 1 million jobs between 2008 and 2014, while four Central Region provinces, all adjacent to the Yangtze River Delta (see map in Appendix), had achieved the same level of increase – Henan, Anhui, Jiangxi and Hubei.

¹⁰ But high-tech employment growth had slowed down prior to 2014 as these sectors already employed 11.5 million in 2011.

¹¹ The 2014 employment is equivalent to 12.8% of the total manufacturing figure in Table 1, but a direct comparison is not valid: the data are drawn from a different source.

Table 3 gives regional shares of national employment within the four main LILM sectors.¹² As can be seen, the Eastern Region strongly dominates employment in all four sectors. Its share of employment dropped significantly over the decade from 2005 but three quarters or more of all workers were still employed in the region in 2014. Most of the shift away from the Eastern Region was to the Central Region.

Table 3: Employment in light manufacturing: Regional shares of national total

	National total (millions)		East (% of national)		Central (% of national)	
	2005	2014	2005	2014	2005	2014
Consumer electronics	4.39	9.1	90.2	77.8	3.3	13.2
Household appliances	3.67	6.4	82.3	74.1	8.3	16.1
Toys	n/a	2.3	n/a	80.2	n/a	14.0
Clothing, footwear and hats	3.46	4.6	88.8	75.9	6.7	18.2

Source: NSY 2006-2015.

We next present a series of maps, which show the distribution of firms by province in 2005 and in 2014 for the four LILM sub-sectors. Provinces are shaded according to the number of firms present, with the darker blue shading signifying higher firm numbers.¹³ For all four sectors, the maps clearly illustrate two points, also demonstrated in Table 3. First, in 2005, firms were concentrated very heavily in the Eastern Region, but by 2014, a much larger number of firms were located in the Central Region, where in all four sub-sectors many provinces are a darker shade of blue in 2014 (right-hand maps).¹⁴ Second, although the Eastern Region's relative share of firms dropped over the decade, the absolute number of firms in the region increased significantly: all four charts for 2014 contain eastern provinces that are of a darker shade of blue than at the start of the period.

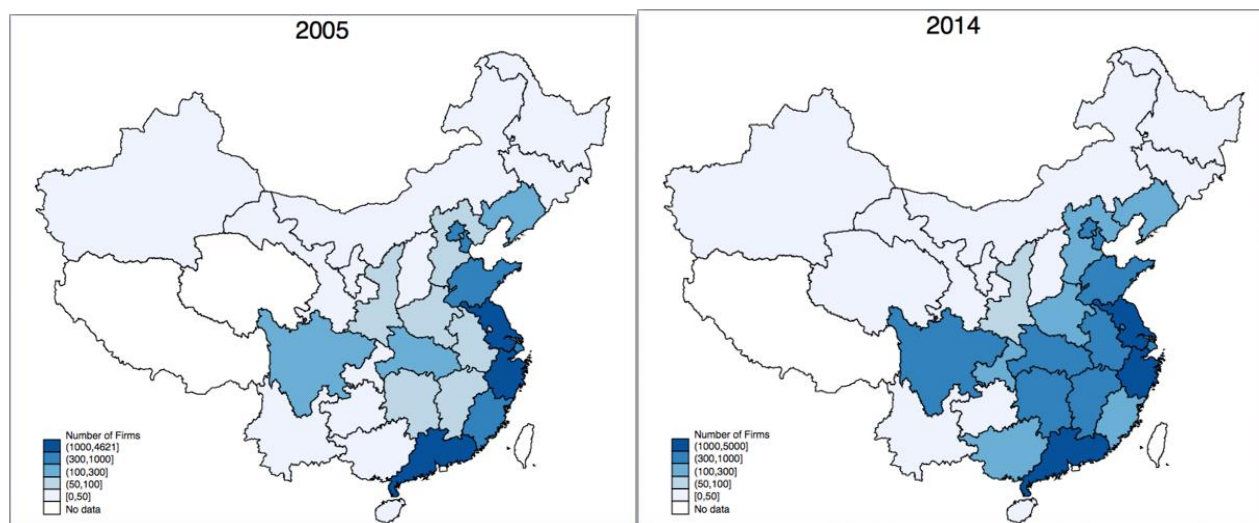
In consumer electronics, employment rose nationally from 4.4 million to 9.1 million between 2005 and 2014, but growth in the Central Region was 30.5% per year, whereas in the Eastern Region it was only 7.8% per year. In the East, firm numbers in Hebei province increased over the decade but those in Fujian province declined. In contrast, five of the six provinces in the Central Region saw increases in firm numbers, as did two Western Region provinces: Chongqing and Sichuan. Two Eastern Region jurisdictions – Shanghai municipality and Jiangsu province – saw employment declines in this sub-sector between 2011 and 2014.

¹² Data for leather goods were unavailable.

¹³ Note that the scales for the clothing and consumer electronics charts are the same but those for household appliances and toys differ from the former two and from each other.

¹⁴ The relative shift of firms to the Central region was encouraged by official policy, which included the building of transport and other infrastructure.

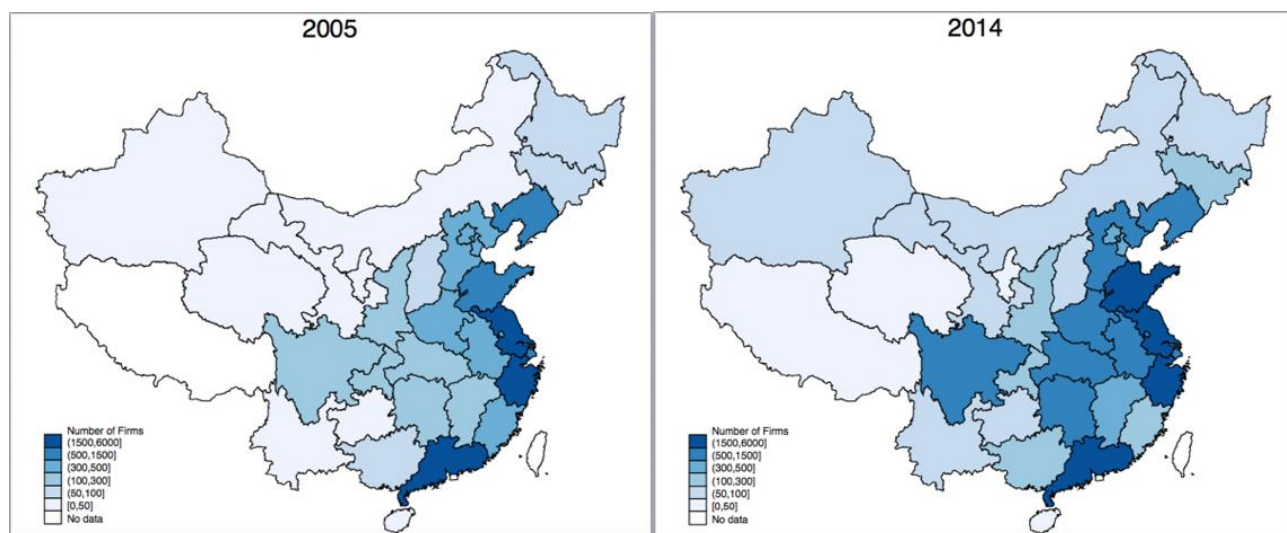
Figure 1: Consumer electronics: Distribution of firms by province (no. of firms)



Source: Maps drawn using data from Industrial Economic Statistical Yearbook 2006 and 2015 (original data from NBS).

In household appliances, there was strong employment growth nationally between 2005 and 2010 of 10.3% per year but growth during the four years 2011-2014 was much slower, at 1.6% per year. The eastern provinces of Guangdong and Zhejiang both experienced employment declines between 2011 and 2014, but employment in Anhui province in the Central Region rose, notwithstanding slow national growth. In terms of firm numbers, the pattern is similar to that in consumer electronics: the number of firms increased in two eastern provinces, Hebei and Shandong, but dropped in a third, Fujian, while they rose in five Central Region provinces (Anhui, Henan, Hunan, Hubei and Jiangxi) and in Sichuan in the West.

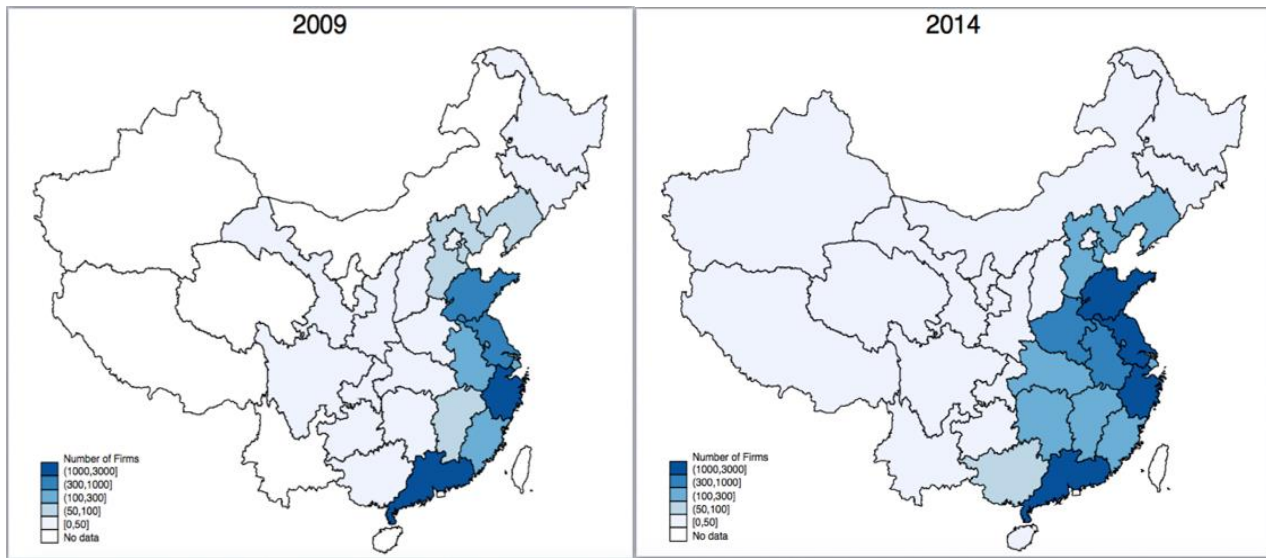
Figure 2: Household appliances: distribution of firms by province (no. of firms)



Source: Maps drawn using data from Industrial Economic Statistical Yearbook 2006 and 2015 (original data from NBS).

In toys, we cannot report here detailed provincial-level employment data for years prior to 2014, but in 2014 Guangdong province (Eastern Region) alone saw about a third of total employment in the sub-sector, and the five provinces with the largest labour force shares were all in the East, totalling 1.83 million of a total 2.28 million workers (80.3% of the total). The three largest Central Region provinces had only 0.32 million workers in the sector (14%), so in this sub-sector the shift to the Central Region was relatively minor. The charts show the shift in numbers of firms from 2009 (rather than 2005) to 2014. Firm numbers grew significantly in three provinces in the East (Shandong, Hebei and Jiangsu), five central provinces (with Henan the strongest) and a north-eastern province, Liaoning.

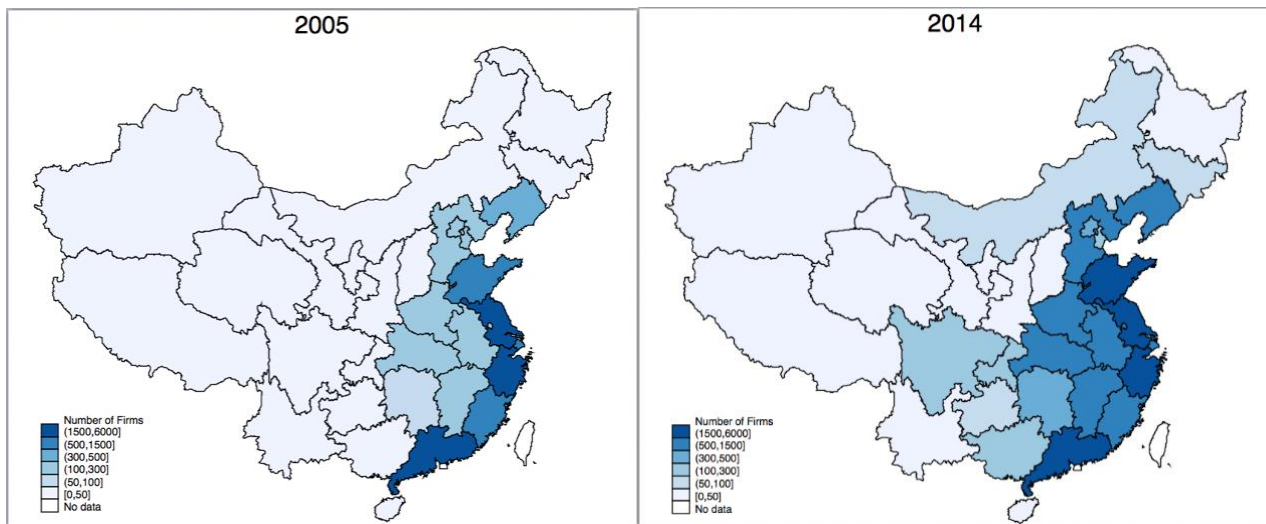
Figure 3: Toys: Distribution of firms by province (no. of firms), 2009 and 2014



Source: Maps drawn using data from Industrial Economic Statistical Yearbook 2006 and 2015 (original data from NBS).

In clothing, footwear and hats, the employment total rose from 3.5 million in 2005 to a peak of 4.6 million in 2008, and then dropped to 3.8 million in 2011. The sector was redefined to include leather products in 2012, and employment rose from 7.5 million in 2013 to 7.7 million in 2014. But in the Eastern Region, where about four fifths of jobs were located, the number of jobs dropped in absolute terms between 2009 and 2011 and again in 2014. Employment levels followed those of exports, of with the Eastern Region providing 92.2% in 2005 but 86.3% in 2014. The number of firms rose in two eastern provinces (Hebei and Shandong) and in Liaoning in the North-Eastern Region but, as in the other sub-sectors, what is most evident is the number of provinces in the Central Region – five – that saw significant increases in firm numbers.

Figure 4: Clothing, footwear and hats: distribution of firms by province (no. of firms)



Source: Maps drawn using data from Industrial Economic Statistical Yearbook 2006 and 2015 (original data from NBS).

The location of LILM firms in China is closely tied to their participation in industrial clusters, which grew as China industrialised in the 1980s and 1990s. Local governments supported clusters (which are a different institutional mechanism from the special enterprise zones (SEZs) set up by the national government) in a range of ways. Several hundred clusters emerged, each specialising in specific products but together covering all the export-oriented LILM sectors. Until recently, they were

concentrated in the Eastern Region.¹⁵ The clusters, and their proximity to the coasts, made possible the very high export volumes from China in mass consumer goods. They are characterised by very high levels of firm specialisation, so that one cluster covered multiple segments of a products value chain. This lowered barriers to entry for firms, both financial and technological, so that the clusters comprise a large number of small firms, with a high degree of interdependence, in that each firm's activities and profitability depend on many other firms within its cluster (Ruan and Zhang, 2009; Zheng, 2011). This interdependence extends to firms' location decisions: shifting location, whether to another part of China or to another country, is a collective action problem, rather than a set of separate disaggregated decisions. Furthermore, a large share of the firms within a cluster are too small to relocate individually, especially internationally, given the costs of doing so, both financially and in terms of management time.

2.3 Wages

Table 4 presents real wages for manufacturing overall, and shows that wages in China are highest in the Eastern Region, and grew more strongly in that region between 2009 and 2014 than in the country as a whole, though all four regions experienced strong wage growth. Even though employment growth in the Central Region was stronger than in other regions (Table 2), wage growth in that region lagged the others somewhat.

Table 4: Manufacturing wages (average real wages, 2005 prices)

	2009 (RMB '000s)	2014 (RMB '000s)	Growth rate (% p.a.)
China	18.8	32.2	11.4
East	21.5	37.6	11.8
Central	17.2	29.1	11.1
West	18.2	32.1	12.0
North-East	18.3	29.9	10.3

Source: NSY 2010-2015. 'China' figures are unweighted averages of regional figures.

Table 5 focuses on real wages in the LILM sub-sectors for 'urban' employment – that is, excluding private enterprises (and self-employed),¹⁶ and covering the decade 2005-2014. Not surprisingly, real wages are much higher in the high-tech sectors – consumer electronics and household appliances – than in the low-tech sectors – clothing and toys. However, between 2009 and 2014, the wage gap between consumer electronics and household appliances and toys narrowed considerably. Average wage growth rates nationally were much faster in the latter two sub-sectors than in consumer electronics. The wage gap between consumer electronics and clothing remained relatively constant.

¹⁵ Especially in four provinces, Zhejiang, Guangdong, Fujian and Jiangsu.

¹⁶ Detailed wage figures are excluded for the Western and North-Eastern Regions owing to space limitations.

Table 5: Comparison of urban wages by region in light manufacturing, 2005 and 2014

	National*			East			Central			West	North-East
	2005	2014	<i>Growth</i>	2005	2014	<i>Growth</i>	2005	2014	<i>Growth</i>	<i>Growth</i>	<i>Growth</i>
	(RMB '000s)		(% p.a.)	(RMB '000s)		(% p.a.)	(RMB '000s)		(% p.a.)	(% p.a.)	(% p.a.)
Consumer electronics	21.07	46.89	9.30	21.72	50.22	9.76	13.41	38.02	12.27	6.78	9.78
Household appliances	16.82	42.82	10.94	17.68	45.36	11.04	11.80	35.07	12.87	11.76	10.46
Toys	10.42	31.15	12.94	13.51	34.24	10.89	8.36	26.32	13.59	8.76	12.40
Clothing. Footwear and hats	12.42	27.45	9.21	13.03	28.75	9.19	7.53	22.57	12.97	12.82	15.26

Source: Labour Statistical Yearbook 2006-2015 (NBS).

Note: The regional averages are based on based on all enterprises, irrespective of size. The national wage is the average of regional wages, weighted by regions' share of the sector labour force.

The regional data for the LILM sectors present a somewhat different picture to that in Table 4, which covers only five years. In consumer electronics, urban real wages rose from just over RMB 21,000 to nearly RMB 47,000 per year between 2005 and 2014 – an annual growth rate of 9.3%. In the Eastern Region, wages rose from RMB 21,722 to RMB 50,215, only slightly faster than nationally. But wages rose much faster in the Central Region, from 63% of the national level to 85% (RMB 13,412 to RMB 38,021).

In household appliances, average annual wages grew at a rate of just below 11%, faster than in consumer electronics nationally and in the individual regions. In toys, the national average growth rate was the fastest among the four sectors, with particularly rapid wage increases in the Central Region. Finally, in clothing, wages roughly doubled in the East but they trebled in the Central Region, increasing from about 59% of the Eastern Region level in 2005 to 79% in 2014.

Comparing the regions, the Central Region had the fastest wage growth in all four LILM sectors between 2005 and 2014, and there has been a considerable degree of ‘catch-up’ in Central Region wages, from around 60-65% of Eastern Region wages in 2005 to around 75-80% in 2014. The continuation of the trend would see the wage gap between the Eastern and Central Regions disappearing over the period to 2024, but for now the wage differential between these two regions (and also the Eastern and the Western Regions) remains significant. The regional distribution of wages reinforces the picture of strong labour demand growth especially in the Central Region, which emerges from the discussion above of data on employment and on numbers of firms. But it would also appear there is still considerable room for both employment growth and wage increase *within* China.

3. COMPARISONS BETWEEN CHINA AND POTENTIAL LILM INVESTMENT DESTINATION COUNTRIES

As mentioned, even though the focus here is on labour-intensive manufacturing, so that labour costs (relative wages adjusted for productivity) are a major component of firms’ overall cost structure, it is important to look also at other cost factors that influence the relative attractiveness of a potential investment destination. These other factors can be grouped into two sets: infrastructure – four sectors (transport, energy, communications and water), with attractiveness determined by the cost of services but also their availability and their quality; and institutions – including trade facilitation, the financial system and the education and skills system, which shapes the quality of the labour supply.

Infrastructure and institutions are part of national-level systems, being (largely) operated and regulated nationally, so costs, availability and quality vary between countries even within the same region. The dataset on which the discussion here draws includes 34 countries, of which 18 are in Africa and 16 in Asia, including China.¹⁷ But space limitations mean that here we provide very broad comparisons of regions, with China and with each other, rather than of individual countries. The regions considered include Southern, East and West Africa, and South, South-East and Central Asia. Also important to note is that data quality is a concern in many countries, including China, though naturally it is better on some indicators than others within individual countries.

1. *Electricity*. Supply in China is more reliable – a far smaller percentage of firms in China have generators compared with all other countries – but firms pay a premium for this reliability, as energy prices are higher in China than elsewhere. South-East Asia has greater reliability of supply than China but a significant percentage of firms nonetheless own generators (26% in Vietnam and 62% in Cambodia, for example).
2. *Water*. Data here refer to households, as firm-specific data are hard to find; furthermore, data reliability on this issue is a concern. Nonetheless, the data show that access and quality are better in China than in all other regions in the dataset.

¹⁷ See the list of countries in the Appendix, and full details of country indicators and data sources in Calabrese et al. (2017).

3. *Transport.* China has low average road coverage relative to all regions, but its road system is heavily concentrated in the Eastern and Central Regions within the country (see Zhang et al., 2015), and, though disaggregated figures are not available for those parts of China, road coverage there is probably higher than in most of the comparator countries. In rail transport, China has much higher coverage than all comparators.
4. *Telecommunications.* Mobile call costs in China are higher than in South Asia but lower than in the other regions. On internet costs, China is more expensive than India and Bangladesh in South Asia and also more expensive than South-East Asia, but prices in China are well below those in most African countries.
5. *Trade facilitation.* South-East Asia performs better than China on time and cost involved in international trade, both importing and exporting, while the time and cost required in South Asia is about the same as in China. Africa is behind China on these indicators, as with most of the infrastructure indicators. Southern Africa is slightly behind China and West and East Africa much further behind. On customs clearing times, South-East Asia and also India and Nepal are faster than China but Pakistan is much worse. The rest of South Asia and Central Asia are about the same as China. Africa outside of South Africa and Zimbabwe is slower than China.
6. *Labour.* Wages need to be adjusted to take account of productivity differentials, but we can still note that minimum wages in China are higher than in all the comparator countries except South Africa. South Asian wages are higher than those in South-East Asia. There is wide variation of minimum wages within regions, but in general, and unsurprisingly, countries with higher average incomes are associated with higher minimum wages. Looking at average wage levels,¹⁸ those in China (where recent wage growth has been strong, as discussed above) are much higher than those in all regions except Southern Africa.
7. *Overall comparison.* Using principal components analysis, the 31 indicators were grouped into a smaller set of six overall factors, aggregating labour, energy, transport infrastructure, logistics and finance. On these scores, the Eastern Region of China scored much better than all other regions on four groups of factors – transport, telecoms, finance and labour – and as well as the best of the rest on energy and logistics. South-East Asia was better on average than South and Central Asia than South or Central Asia on all sets of indicators except energy in Central Asia, and better overall than all regions of Africa. In Africa, Southern Africa scored best, driven in large part by South Africa, while West African lagged behind, especially on energy supply.

4. CONCLUSION

It is not clear from the data available to us whether the growth in employment and in firm numbers in China overall, and particularly in the Central Region, where growth has been strongest, owes to relocation of activities by existing firms from elsewhere in China, the establishment of new firms or (more likely) some combination of the two processes. But the high-level data presented above, both on employment growth and regional distribution and on wage increases, do suggest that, notwithstanding the increases that have already occurred, regional wage differentials in China remain substantial, even within the same sector, while employment growth continues, implying there are no labour shortages.

This suggests there is still considerable room for Chinese light manufacturing firms to expand and/or relocate within China in response to rising wages, as an alternative to possible relocation of some activities (and employment) to other countries. The central government has of course made efforts since 2000 to accelerate development in the country's West region, with mixed success. But China's Belt and Road strategy, which aims to link the country with other developing regions including South-east, Central and South Asia and East Africa, also improves infrastructure, at least for transport and logistics, in the West of China.

¹⁸ Available data are for different years.

The comparative analysis of location-specific cost factors suggests China's infrastructure and institutional performance is stronger on almost all indicators than that of the large group of comparator countries. It should also be emphasised that, for any company, expansion or relocation out of the home country presents operational challenges and transaction costs (associated with cultural distance and overcoming the 'liability of foreignness') (see Dunning and Lundan, 2008), which would not be encountered when the shift is a regional one, *within* the home country.

These two conclusions together imply that, if other developing countries are to take advantage of the current opportunity to attract Chinese light manufacturing firms, they will need to focus actively on addressing the challenges associated with their location-specific costs, while also engaging directly with Chinese firms in relevant sectors, in order to understand better their cost drivers and their decision-making. This is already underway, for example in the Partnership for Investment and Growth in Africa (PIGA) programme, which is assisting four African countries to promote inward investment from China.¹⁹ The report from the ODI–CNSE joint survey to be released in December 2017 will help inform this engagement.

¹⁹ This is a programme being carried out by the China Council for the Promotion of International Trade and the China–Africa Development Fund with support from the International Trade Centre, a UN agency based in Geneva, and the UK Department for International Development. More information on PIGA can be accessed at www.intracen.org.

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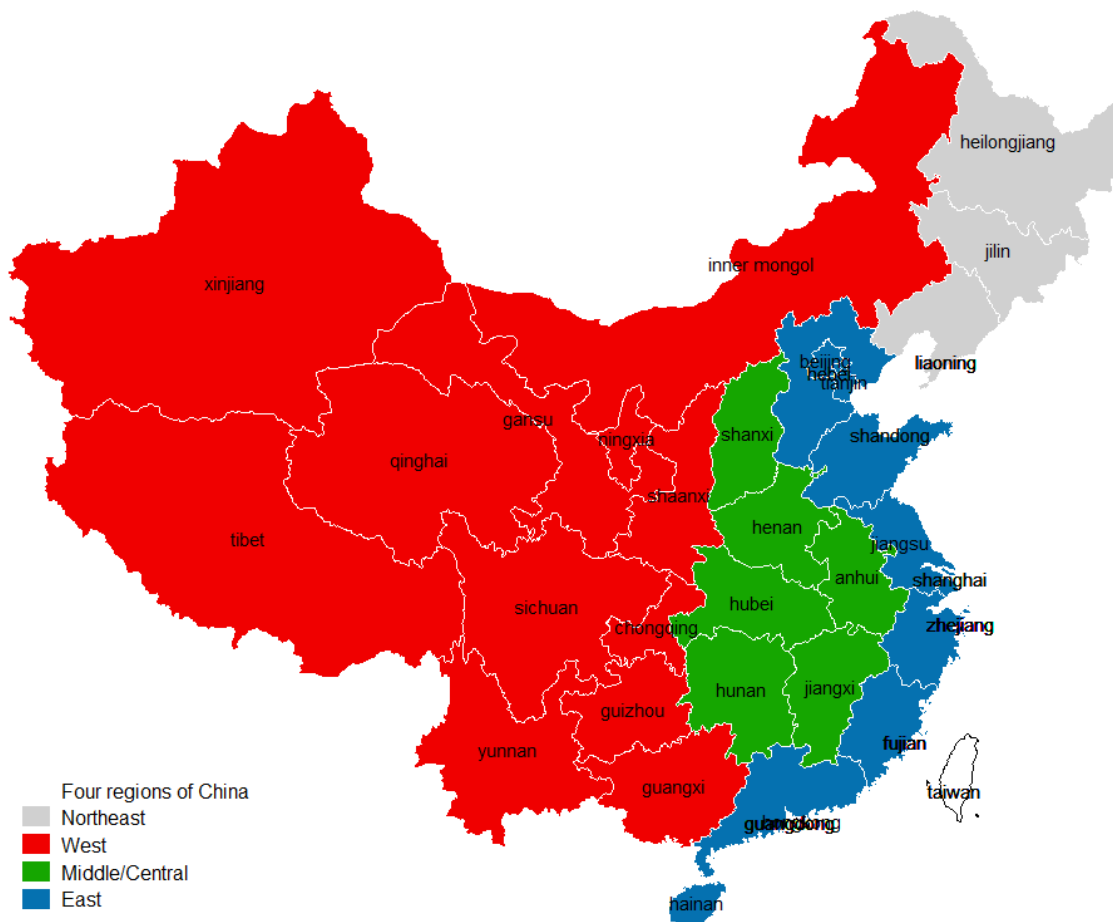
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APPENDICES

Appendix A: China's regions

Eastern China (blue) includes the six provinces of Hebei, Jiangsu, Zhejiang, Fujian, Shandong and Hainan, as well as the municipalities of Shanghai, Tianjin and Beijing. Central China (green) includes six provinces: Shanxi, Anhui, Jiangxi, Henan, Hubei and Hunan. The Western Region (red) includes eight provinces, one municipality (Chongqing) and three autonomous regions (Tibet, Ningxia and Xinjiang). The North-Eastern Region (grey) includes three provinces.

Figure A1: China's provinces



Appendix B: Comparator countries

Table B1: Comparator countries for Section 4

Central Asia	South Asia	South-East Asia
Kazakhstan	Afghanistan*	Cambodia
Kyrgyzstan*	Bangladesh*	Lao PDR
Mongolia	India*	Myanmar* (Burma)
Tajikistan	Nepal*	Vietnam
Turkmenistan	Pakistan*	
Uzbekistan		
East Africa	West Africa	Southern Africa
Ethiopia*	Ghana*	Malawi*
Kenya*	Liberia*	Mozambique*
Rwanda*	Nigeria*	South Africa*
Somalia*	Sierra Leone*	Zambia*
South Sudan*	Democratic Republic of Congo* [§]	Zimbabwe*
Sudan*		
Tanzania*		
Uganda*		

Note: * Department for International Development partner country. [§] Grouped with West Africa as no other Central African countries were included.