Thing Nine: We do not live in a post-industrial age.

What they tell you

Our economy has been fundamentally transformed during the last few decades. Especially in the rich countries, the manufacturing industry, once the driving force of capitalism, is not important any more. With the natural tendency for the (relative) demand for services to rise with prosperity and with the rise of high-productivity knowledge-based services (such as banking and management consulting), manufacturing industries have gone into decline in all rich countries. These countries have entered the 'post-industrial' age, where most people work in services and most outputs are services. The decline of manufacturing is not only something natural that we needn't worry about but something that we should really celebrate. With the rise of knowledge-based services, it may be better even for some developing countries to skip those doomed manufacturing activities altogether and leapfrog straight to a service-based post-industrial economy.

What they don't tell you

We may be living in a post-industrial society in the sense that most of us work in shops and offices rather than in factories. But we have not entered a post-industrial stage of development in the sense that industry has become unimportant. Most (although not all) of the shrinkage in the share of manufacturing in total output is not due to the fall in the absolute quantity of manufactured goods produced but due to the fall in their prices relative to those for services, which is caused by their faster growth in productivity (output per unit of input). Now, even though de-industrialisation is mainly due to this differential productivity growth across sectors, and thus may not be something negative in itself, it has negative consequences for economy-wide productivity growth and for the balance of payments, which cannot be ignored. As for the idea that developing countries can largely skip industrialisation and enter the post-industrial phase directly, it is a fantasy. Their limited scope for productivity growth make services a poor engine of growth. The low tradability of services means that a more service-based economy will have a lower ability to export. Lower export earnings means a weaker ability to buy advanced technologies from abroad, which in turn leads to a slower growth.

Is there anything that is not made in China?

One day, Jin-Gyu, my nine-year-old son (yes, that's the one who appeared as 'my six-year-old son' in my earlier book, *Bad Samaritans* – really quite a versatile actor, he is) came and asked me: "Daddy, is there anything that is not made in China?" I told him that, yes, it may look that way, but other countries still make things. I then struggled to come up with an example. I was about to mention his

'Japanese' Nintendo DSi game console, but then I remembered seeing 'Made in China' on it. I managed to tell him that some mobile phones and flat-screen TVs are made in Korea, but I could not think of many other things that a nine-year-old would recognise (he is still too young for things like BMW). No wonder China is now called the workshop of the world.

It is hard to believe, but the name, workshop of the world, was originally coined for Britain, which today, according to Nicolas Sarkozy, the French President, has "no industry". Having successfully launched the Industrial Revolution before other countries, Britain became such a dominant industrial power by the mid-19th century that it felt confident enough to completely liberalise its trade (see Thing 7). In 1860, it produced 20% of world manufacturing output. In 1870, it accounted for 46% of world trade in manufactured goods. The current Chinese share in world exports is only around 17% (as of 2007), even though 'everything' seems to be made in China, so you can imagine the extent of British dominance then.

However, Britain's pole position was short-lived. Having liberalised its trade completely around 1860, its relative position started declining from the 1880s, with countries like the US and Germany rapidly catching up. It lost its leading position in the world's industrial hierarchy by the time of the First World War, but the dominance of manufacturing in the British economy itself continued for a long time afterwards. Until the early 1970s, together with Germany, Britain had one of the world's highest shares of manufacturing employment in total employment, at around 35%. At the time, Britain was the quintessential manufacturing economy, exporting manufactured goods and importing food, fuel, and raw materials. Its manufacturing trade surplus (manufacturing exports minus manufacturing imports) stayed consistently between 4% and 6% of GDP during the 1960s and the 1970s.

Since the 1970s, however, the British manufacturing sector has shrunk rapidly in importance. Manufacturing output as a share of Britain's GDP used to be 37% in 1950. Today, it accounts for only around 13%. Manufacturing's share in total employment fell from around 35% in the early 1970s to just over 10%.[i] Its position in international trade has also dramatically changed. These days, Britain runs manufacturing trade deficits in the region of 2-4% of GDP per year. What has happened? Should Britain be worried?

The predominant opinion is that there is nothing to worry about. To begin with, it is not as if Britain is the only country in which these things have happened. The declining shares of manufacturing in total output and employment – a phenomenon known as de-industrialisation – is a natural phenomenon, many commentators argue, common to all rich countries (accelerated in the British case by the finding of North Sea oil). This is widely believed to be because, as they become rich, people begin to demand more services than manufactured goods. With falling demand, it is natural that the manufacturing sector shrinks and the country enters the post-industrial stage. Many people actually celebrate the rise of services. According to them, the recent expansion of 'knowledge-based' services with rapid productivity growth – such as finance, consulting, design, computing &

information services, R&D – means that services have replaced manufacturing as the engine of growth, at least in the rich countries. Manufacturing is now a low-grade activity that developing countries like China perform.

Computers and haircuts: why de-industrialisation happens

Have we really entered the post-industrial age? Is manufacturing irrelevant now? The answers are: "only in some ways", and "no".

It is indisputable that much lower proportions of people in the rich countries work in factories than used to be the case. There was a time in the late 19th and the early 20th century when in some countries (notably Britain and Belgium) around 40% of those employed worked in the manufacturing industry. Today, the ratio is at most 25%, and in some countries (especially the US, Canada, and Britain) barely 15%.

With so much fewer people (in proportional terms) working in factories, the nature of society has changed. We are partly formed by our work experiences (a point which most economists fail to recognise), so where and how we work influences who we are. Compared to factory workers, office workers and shop assistants do much less physical work and, not having to work with conveyor belts and other machines, have more control over their labour process. Factory workers cooperate more closely with their colleagues during work and outside work, especially through trade union activities. In contrast, people working in shops and offices tend to work on more individual bases and are not very unionised. Shop assistants and some office workers interact directly with customers, whereas factory workers never see their customers. I am not enough of a sociologist or a psychologist to say anything profound in this regard, but all this means that people in today's rich countries not only work differently from but are different from their parents and grandparents. In this sense, today's rich countries have become post-industrial societies in the social sense.

However, they have *not* become post-industrial in the economic sense. Manufacturing still plays the leading role in their economies. In order to see this point, we first need to understand why de-industrialisation has happened in the rich countries.

A small, but non-negligible, part of de-industrialisation is due to optical illusions, in the sense that it reflects changes in statistical classification rather than changes in real activities. One such illusion is due to the outsourcing of some activities that are really services in their physical nature but used to be provided in-house by manufacturing firms and thus captured as manufacturing output (e.g., catering, cleaning, technical supports). When they are outsourced, recorded service outputs increase without a real increase in service activities. Even though there is no reliable estimate of its magnitude, experts agree that outsourcing has been a significant source of de-industrialisation in the US and Britain, especially during the 1980s. In addition to the outsourcing effect, the extent of manufacturing contraction is exaggerated by what is called the reclassification effect.[ii] A UK

government report estimates that up to 10% of the fall in manufacturing employment between 1998 and 2006 in the UK may be accounted for by some manufacturing firms, seeing their service activities becoming predominant, applying to the government statistical agency to be re-classified as service firms, even when they are still engaged in some manufacturing activities.

One cause of genuine de-industrialisation has recently attracted a lot of attention. It is the rise of manufacturing imports from low-cost developing countries, especially China. However dramatic it may look, it is not the main explanation for de-industrialisation in the rich countries. China's exports did not really make a real impact until the late 1990s, but the de-industrialisation process had already started in the 1970s in most rich countries. Most estimates show that the rise of China as the new workshop of the world can explain only around 20% of de-industrialisation in the rich countries that has happened so far.

Many people think that the remaining 80% or so can be largely explained by the natural tendency of the (relative) demand for manufactured goods to fall with rising prosperity. However, a closer look reveals that this demand effect is actually very small. It looks as if we are spending ever higher shares of our income on services not because we are consuming ever more services in absolute terms but mainly because services are becoming ever more expensive in relative terms.

With the (inflation-adjusted) amount of money you paid to get a PC ten years ago, today you can probably buy three, if not four, computers of equal or even greater computing power (and certainly smaller sizes). As a result, you probably have two, rather than just one, computers. But, even with two computers, the portion of your income that you spend on computers has gone down quite a lot (for the sake of argument, I am assuming that your income, after adjusting for inflation, is the same). In contrast, you are probably getting the same number of haircuts as you did ten years ago (if you haven't gone thin on the top, that is). The price of haircuts has probably gone up somewhat, so the proportion of your income that goes to your haircut is greater than it was 10 years ago. The result is that it looks as if you are spending a greater (smaller) portion of your income on haircuts (computers) than before, but the reality is that you are actually consuming much more computers than before, while your consumption of haircuts is the same.

Indeed, if you control for the changes in relative prices (or, to use technical jargon, if you measure things in *constant* prices), the decline of manufacturing in the rich countries has been far less steep than it appears to be. For example, in the case of Britain, the share of manufacturing in total output, without counting the relative price effects (to use the jargon, in *current* prices) fell by over 40% between 1955 and 1990 (from 37% to 21%). However, when taking the relative price effects into account, the fall was only by just over 10% (from 27% to 24%).[iii] In other words, the *real* demand effect – that is the demand effect after taking relative price changes into account – is small.

Then why are the relative prices of manufactured goods falling? It is because manufacturing industries tend to have faster productivity growth than services. As

the output of the manufacturing sector increases faster than the output of the service sector, the prices of the manufactured goods relative to those of services fall. In manufacturing, where mechanisation and the use of chemical processes are much easier, it is easier to raise productivity than in services. In contrast, by their very nature, many service activities are inherently impervious to productivity increase *without diluting the quality of the product*.

In some cases, the very increase in productivity will destroy the product itself. If a string quartet trots through a 27-minute piece in nine minutes, would you say that its productivity has trebled?

For some other services, the apparent higher productivity is due to the debasement of the product. A teacher can raise her apparent productivity by four times by having four times many pupils in her classroom, but the quality of her 'product' has been diluted by the fact that she cannot pay as much individual attention as before. A lot of the increases in retail service productivity in countries like the US and Britain has been bought by lowering the quality of the retail service itself while ostensibly offering cheaper shoes, sofas, and apples: there are fewer sales assistance at shoe stores, so you wait 20 minutes instead of five; you have to wait four weeks, rather than two, for the delivery and probably also have to take a day off your work because they will only deliver 'sometime between 8am and 6pm'; you spend much more time than before driving to the new supermarket and walking through the now-longer aisles when you get there, because those apples and frozen pizzas are cheaper than in the old supermarket only because the supermarket is in the middle of nowhere and thus can have bigger floor space.

There are some service activities, such as banking, which have greater scope for productivity increase than other services. However, as revealed by the 2008 financial crisis, much of the productivity growth in those activities was due not to a real rise in their productivity (e.g., reduction in trading costs due to better computers) but to financial innovations that obscured (rather than genuinely reduced) the riskiness of financial assets, thereby allowing the financial sector to grow at an unsustainably rapid rate (see Thing 22).

To sum up, the fall in the share of manufacturing in total output in the rich countries is *not* largely due to the fall in (relative) demand for manufactured goods, as many people think. Nor is it due mainly to the rise of manufactured exports from China and other developing countries, although it has had big impacts on some sectors. It is instead the falling relative prices of the manufactured goods due to faster growth in productivity in the manufacturing sector that is the main driver of the de-industrialisation process. Thus, while the citizens of the rich countries may be living in post-industrial societies in terms of their *employment*, the importance of manufacturing in terms of *production* in those economies has not been diminished to the extent that we can declare a post-industrial age.

Should we worry about de-industrialisation?

But if de-industrialisation is due to the very dynamism of a country's manufacturing sector, isn't it a good thing?

Not necessarily. The fact that de-industrialisation is mainly caused by the *comparative* dynamism of the manufacturing sector vis-a-vis the service sector does not tell us anything about how well it is doing compared to its counterparts in other countries. If a country's manufacturing sector has slower productivity growth than its counterparts in other countries, it will become internationally uncompetitive, leading to balance of payments problems in the short run and falling standards of living in the long run. In other words, de-industrialisation may be accompanied by either economic success or failure. Countries should not be lulled into a false sense of security by the fact that de-industrialisation is due to *comparative* dynamism of the manufacturing sector, as even a manufacturing sector that is very undynamic by international standards can be (and usually is) more dynamic than the service sector of the same country.

Whether or not a country's manufacturing sector is dynamic by international standards, the shrinkage of the relative weight of the manufacturing sector has a negative impact on productivity growth. As the economy becomes dominated by the service sector, where productivity growth is slower, productivity growth for the whole economy will slow down. Unless we believe (as some do) that the countries experiencing de-industrialisation are now rich enough not to need more productivity growth, productivity slowdown is something that countries should get worried about – or at least reconcile themselves to.

De-industrialisation also has a negative effect on a country's balance of payments because services are inherently more difficult to export than manufactured goods. A balance of payments deficit means that the country cannot 'pay its way' in the world. Of course a country can plug the hole through foreign borrowing for a while, but eventually it will have to lower the value of its currency, thereby reducing its ability to import and thus its living standard.

At the root of the low 'tradability' of services lies the fact that, unlike manufactured goods that can be shipped anywhere in the world, most services require that their providers and consumers are in the same location. No one has yet invented ways to provide haircut or house cleaning long-distance. Of course, this problem will be solved if the service provider (the hairdresser or the cleaner in the above examples) can move to the customer's country, but that in most cases means immigration, which most countries restrict heavily (see Thing 3). Given this, a rising share of services in the economy means that the country, other things being equal, will have lower export earnings. Unless the exports of manufactured goods rise disproportionately, the country won't be able to pay for the same amount of imports as before. If its de-industrialisation is of a negative kind accompanied by weakening international competitiveness, the balance of payments problem could be even more serious, as the manufacturing sector then won't be able to increase its exports.

Of course, not all services are equally non-tradable. The knowledge-based services that I mentioned earlier – banking, consulting, engineering, and so on – are highly tradable. For example, in Britain since the 1990s, exports of knowledge-based services have played a crucial role in plugging the balance of payments gap left behind by de-industrialisation (and the fall in North Sea oil exports, which had enabled the country – just – to survive the negative balance of payments consequences of de-industrialisation during the 1980s).

However, even in Britain, which is most advanced in the exports of these knowledge-based services, the balance of payments surplus generated by those services is well below 4% of GDP, just enough to cover the country's manufacturing trade deficits. With the likely strengthening of global financial regulation as a consequence of the 2008 world financial crisis, it is unlikely that Britain can maintain this level of trade balance in finance and other knowledge-based services in the future. In the case of the US, supposedly another model post-industrial economy, the trade surplus in knowledge-based services is actually less than 1% of GDP – nowhere near enough to make up for its manufacturing trade deficits, which are around 4% of GDP.[iv] The US has been able to maintain such a large manufacturing trade deficit only because it could borrow from abroad heavily – an ability that can only shrink in the coming years, given the changes in the world economy – and not because the service sector stepped in to fill the gap, as in the British case. Moreover, it is questionable whether the strengths of the US and Britain in the knowledge-based services can be maintained over time. In services like engineering and design, where insights gained from the production process are crucial, a continuous shrinkage of the industrial base will lead to a decline in the quality of their (service) products and a further consequent loss in export earnings.

If Britain and the US – two countries that are supposed to be the most developed in the knowledge-based services – are unlikely to meet their balance of payments needs in the long run through the exports of these services, it is highly unlikely that other countries can.

Post-industrial fantasies

Believing de-industrialisation to be the result of the change of our engine of growth from manufacturing to services, some have argued that developing countries can largely skip industrialisation and move directly to the service economy. Especially with the rise of service offshoring, this view has become very popular among some observers of India. Forget all those polluting industries, they say, why not go from agriculture to services directly? If China is the workshop of the world, the argument goes, India should try to become the 'office of the world'.

However, it is a fantasy to think that a poor country can develop mainly on the basis of the service sector. As pointed out earlier, the manufacturing sector has an inherently faster productivity growth than the service sector. To be sure, there are some service industries that have rapid productivity growth potential, notably

the knowledge-based services that I mentioned above. However, these are service activities that mainly serve manufacturing firms, so it is very difficult to develop those industries without first developing a strong manufacturing base. If you base your development largely on services from early on, your long-term productivity growth rate is going to be much slower than when you base it on manufacturing.

Moreover, we have already seen that, given that services are much less tradable, countries specialising in services are likely to face much more serious balance of payments problems than countries that specialise in manufacturing. This is bad enough for a developed country, where balance of payments problems will lower standards of living in the long run. However, it is seriously detrimental for a developing country. The point is that, in order to develop, a developing country has to import superior technologies from abroad (either in the form of machines or in the form of technology licensing). Therefore, when it has a balance of payments problem, its very ability to upgrade and thus develop its economy by deploying superior technologies is hampered.

As I say these negative things about economic development strategies based on services, some of you may say: What about countries like Switzerland and Singapore? Haven't they developed on the basis of services?

However, these economies are not what they are reported to be either. They are in fact manufacturing success stories. For example, many people think that Switzerland lives off the stolen money deposited in its banks by Third World dictators or selling cowbells and cuckoo clocks to Japanese and American tourists, but it is actually one of the most industrialised economies in the world. Of course, we don't see many Swiss manufactured products around, because the country is small (around seven million people), which makes the total amount of Swiss manufactured goods rather small, and because its producers specialise in producer goods, such as machinery and industrial chemicals, rather than consumer goods that are more visible. But in per capita terms, it has the highest industrial output in the world (it could come second after Japan, depending on the year and the data you look at). Singapore is also one of the five most industrialised economies in the world (once again, measured in terms of manufacturing value-added per head). Finland and Sweden make up the rest of the top five. Indeed, except for a few places like the Seychelles that has a very small population and exceptional resources for tourism (85,000 people with around $9,000 per capita income), no country has so far achieved even a decent (not to speak of very high) living standard by relying on services and none will do so in the future.

To sum up, even the rich countries have not become unequivocally post-industrial. While most people in those countries do not work in factories any more, the manufacturing sector's importance in their production systems has not fallen very much, once we take into account the relative price effects. But even if de-industrialisation is not necessarily a symptom of industrial decline (although it can be), it has negative effects for long-term productivity growth and balance of payments, both of which need reckoning. The myth that we now live in a post-

industrial age has made many governments ignore the negative consequences of de-industrialisation.

As for the developing countries, it is a fantasy to think that they can skip industrialisation and build prosperity on the basis of service industries. Most services have slow productivity growth and most of those services that have high productivity growth are services that cannot be developed without a strong manufacturing sector. Low tradability of services means that a developing country specialising in services will face a bigger balance of payments problem, which for a developing country means a reduction in its ability to upgrade its economy. Post-industrial fantasies are bad enough for the rich countries, but they are positively dangerous for developing countries.

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[i] K. Coutts, A. Glyn & B. Rowthorn, 'Structural change under New Labour', *Cambridge Journal of Economics*, 2007, vol. 31, no. 5.

[ii] The term is borrowed from the 2008 report by the British government's Department for BERR (Business, Enterprise and Regulatory Reform), *Globalisation and the Changing UK Economy*.

[iii] B. Alford, 'De-industrialisation', *ReFRESH*, Autumn, 1997, p. 6, table 1.

[iv] B. Rowthorn & K. Coutts, 'De-industrialisation and the balance of payments in advanced economies', *Cambridge Journal of Economics*, 2004, vol. 28, no. 5.