Singapore's Productivity Challenge: Part IV

"It is a very important challenge: for us to be able to raise productivity while providing jobs and opportunities for all our citizens. It is a much bigger challenge than raising productivity by shedding jobs. That is what has happened in many countries."
– Mr Tharman Shanmugaratnam, Deputy Prime Minister and Minister for Finance, 2014 Annual Budget Statement Debate.[1]

"[P]roductivity has been weighed down by a shift in employment towards less productive sectors, with higher employment growth in sectors like Construction relative to more productive sectors like Transportation & Storage."
– Ministry of Trade and Industry, Drivers of Labour Productivity Growth Trends in Singapore, February 2015.[2]

"Enhancing productivity becomes particularly significant in view of the tightened immigration laws that have significantly increased operational costs for businesses. Despite several incentives offered to small businesses to increase productivity, there has been little progress on this front…. [I]n the long run, the changing population profile and the need to remain competitive will lead the government to ease its immigration laws."
– The Economist Intelligence Unit, March 2015.[3]

"We need to develop our own Singapore-based intellectual properties, like in infocomm[unications], socialised services and engineering competence, for nationwide programmes, like Smart Nation 2025, rather than have our companies be subcontractors of lower-value and commoditised activities"
– Mr Victor Tay, Chief Operating Officer, Singapore Business Federation, May 2015.[4]

"What to do? Singaporeans complain [that there are] too many foreigners. [So the g]overnment send them back lah!"
– "Now Even the Boss has to Work", govsingapore, official YouTube channel of the Singapore government, May 10, 2015.[5]

---

[1] Parliament of Singapore, "Debate on Annual Budget Statement", March 5, 2014.
[2] Ministry of Trade and Industry, "Drivers of Labour Productivity Growth Trends in Singapore", *Economic Survey of Singapore*, February 17, 2015.
[3] The Economist Intelligence Unit, "Singapore: Striding ahead and feeling secure at 50", March 2015.
[4] "Manufacturing needs new strategies", *The Straits Times,* May 4, 2015.
[5] Line said by an actor playing the role of an SME business owner, https://youtu.be/riC-F3xhchU.

This case was written by Hawyee Auyong under the guidance of Donald Low, Lee Kuan Yew School of Public Policy (LKY School), National University of Singapore and has been funded by the LKY School. The case does not reflect the views of the sponsoring organization nor is it intended to suggest correct or incorrect handling of the situation depicted. The case is not intended to serve as a primary source of data and is meant solely for class discussion.

This case examines how Singapore's policy decisions for economic development in the past, while appropriate in their particular historical context, produced unintended consequences and knock-on effects that now limit the country's on-going efforts to increase labour productivity in Singapore.

This case is divided into four parts:

- **Part 1**: From the 1961 Winsemius report to the 1985 recession.
- **Part 2**: From the 1986 Economic Committee report to the 1997 Asian Financial Crisis.
- **Part 3**: From the 1997 Asian Financial Crisis to current efforts to raise labour productivity.
- **Part 4**: The challenges facing policymakers in light of slowing global demand and future technological disruptions to jobs and employment.

Overview of Part 1

Part 1 of this case covered the existential economic challenges facing Singapore even before the country gained independence in 1965, and highlighted the government's successful responses to these challenges, first by solving the severe unemployment problem through a rapid industrialisation process that relied on foreign capital and know-how, and then supporting continued, strong economic growth by upgrading the quality of its workforce; and second by supplementing and complementing the local workforce with foreign labour. Up till the 1985 recession—Singapore's first since independence—reining in the country's growing reliance on foreign labour was seen by the government as integral to industrial restructuring toward higher labour productivity. The 1985 recession interrupted these plans.

Overview of Part 2

The 1985 recession was a sharp but short one, and Singapore again managed to regain double-digit economic growth by 1987, helped in no small part by the rapid reduction in, and suppression of, wages and other business costs. The 1990s saw the emergence of criticism by prominent economists that Singapore's efficiency in utilising factors of production was low. Even before these criticisms, parliamentarians had continued to warn against over-dependence on foreign labour. But the economic growth of Singapore for this period continued to be significantly supported by population growth (including migrant labour growth).

Overview of Part 3

The 1997 Asian Financial Crisis severely impacted regional economies. Although Singapore emerged relatively unscathed compared to other Southeast Asian economies, it adopted wide cost cutting measures including wage reductions to restore export competitiveness because the Singapore Dollar remained relatively strong. Singapore recovered strongly from the crisis, but continued to face economic volatility in the following decade. This volatility justified a strategy of "go for growth in the good years", supported by growth in the foreign labour force that helped to grow the workforce by up to 5% per year during this period. But largely due to the changing attitudes of the population towards the increasing proportion of foreign labour in the economy, labour productivity once again became a priority after 2009 and the government set an ambitious target of 2-3 per cent annual productivity growth for the decade from 2010 to 2020. Meeting this target has proved challenging because of a number of structural issues in the economy including an entrenched dependence on foreign labour. Nevertheless, the government has so far seemed determined to press on with industrial restructuring.

Policy challenges for employment and labour productivity

Slowing global growth and Singapore's pro-cyclical productivity performance

The Singapore economy is globally connected, exports-driven, and trade-dependent. In 2013, Singapore's external trade was almost 3 times larger than GDP (S$980.2b vs S$370.1b[6]). In contrast, the US had an external trade that was only about a fifth of its GDP.[7] As a result of its open economy, global growth and global demand tend to have a disproportionately large effect on Singapore's GDP growth.

Moreover, one of the features of Singapore's economy is that labour productivity growth is highly pro-cyclical (See **Figure 1**). This pro-cyclical pattern emerges because firms do not adjust their labour resources immediately in response to demand conditions. When demand is weak, firms may not retrench workers immediately, opting instead of cut back on working hours or maintain excess production capacity in anticipation of an eventual increase in demand. Holding on to unutilised surplus labour obviously has a negative effect on labour productivity. Conversely, when demand recovers, firms may not immediately hire more workers, opting instead to optimise production processes or invest in capital equipment.

Government economists in Singapore have attributed the tepid growth in labour productivity between 2010 and 2013 to this pro-cyclical effect coupled with weak external demand conditions. When this effect is taken in account, labour productivity growth for the period from 2010 to 2013 would supposedly be 1.6 per cent per year instead of the 0.2 per cent per year as measured.[8]

Unfortunately for Singapore, prospects remain dim for global economic growth and a recovery in global demand. Most advanced economies have yet to fully bounce back from the financial crisis of 2007/8, and many economists predict that the world faces a drawn-out period of "secular stagnation", where many economies will continue to experience slow or negligible economic

[6] Singapore Department of Statistics, "External Trade by Type", "Time Series on GDP at 2005 Market Prices and Real Economic Growth".
[7] CIA The World Factbook, "United States".
[8] Ministry of Trade and Industry, "A Sectoral Examination of Singapore's Productivity Growth", Economic Survey of Singapore Second Quarter 2014.

growth.[9] Regionally, even dependable growth engines such as China are facing significant headwinds.[10]

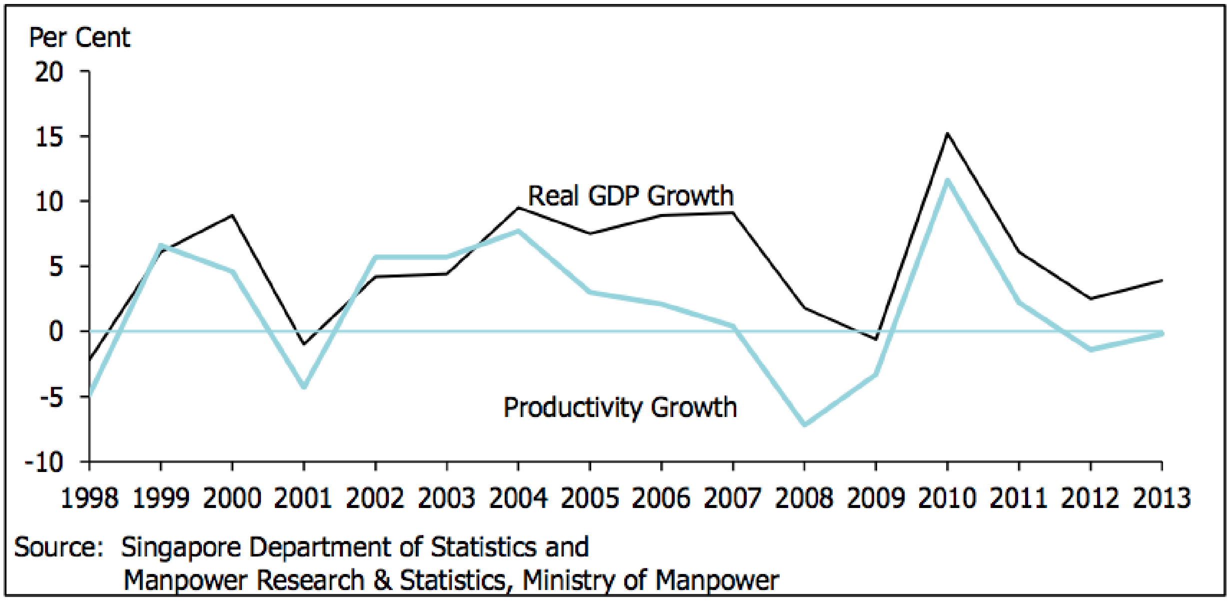

Figure 1 – Singapore's real GDP growth and productivity growth.[11]

Because of this, policymakers in Singapore have started to temper GDP growth expectations, warning that GDP growth would likely slow to 2 to 3 per cent a year in the next five years, half of the previously projected 5 to 6 per cent.[12] Singapore has few tools at its disposal to counteract this drag on productivity because most of its economic output serves global demand.

An increasing "graduate glut" and potential skills mismatch

Decades of emphasis by policymakers on the importance of education and the persistent pay gap between university degree-holders and those without university degrees have caused Singaporeans to place a significant premium on obtaining university degrees. Singapore has the highest proportion of degree holders between 25 and 29 years old (6 out of 10). This is ahead of even South Korea, which is contemplating the drastic step of shuttering some higher education institutes to combat what then-President Lee Myung Bak called "reckless university enrolment."[13]

---

[9] Adair Turner, "When Fewer Is Better", *Project Syndicate*, Aug 13, 2014.
[10] "China's slowing economy puts pressure on lopsided job market", *TODAY*, Apr 23, 2015.
[11] Ministry of Trade and Industry, "A Sectoral Examination of Singapore's Productivity Growth", *Economic Survey of Singapore Second Quarter 2014*.
[12] "PM Lee: Get used to more gradual pay rises as economic growth slows", *The Straits Times*, Jan 16, 2015.
[13] "Singapore Wants Kids to Skip College: Good Luck With That", *Bloomberg Business*, May 4, 2015.

The value that Singaporeans place on university degrees is not unjustified. The 2013 median starting salary for a graduate with a four-year electrical engineering degree in Singapore was almost double that of one who studied the same subject at a technical institute.[14]

However, as Singapore tries to restructure its economy by (among other things) reducing the inflow of foreign labour, the country could increasingly face a challenge of finding enough and appropriate jobs for the soaring number of university graduates. Answering queries in parliament on this issue, then-Minister for Manpower Tan Chuan-Jin said:

> *"In many countries, graduate under-employment is due in a large part to a high or increasing proportion of degree holders entering the workforce, at a time where their economies are unable to generate sufficient good jobs for these graduates. This is exacerbated in cases where there is a mismatch between the courses of study and the skillsets required of the jobs available. The disruptive effect of technology on the nature of jobs also means that graduates who are unable to update and upgrade their skills may face challenges staying relevant in their fields…* ***we will not be immune to these trends****."*[15] *[Emphasis added]*

The 2013 Population White Paper projected that Singapore's population could reach 6.9 million by 2030 from 5.31 million in 2012. This would have meant adding about 80,000 people a year to Singapore's population (including growth in the non-resident population, new PRs, and naturalised citizens). The White Paper also projected that by 2030, two-thirds of Singaporeans would hold "good jobs" in Professional, Managerial, Executive and Technical (PMET) positions.[16] Furthermore, the White Paper projected that the number of Singaporeans in non-PMET jobs would concurrently *fall* by 20% from 850,000 to 650,000 even as the number of Singaporeans (and the economy) continued to grow. However, these projections of the fall in number of Singaporeans in non-PMET jobs even as the number of Singaporeans grew were contingent on "complementing the Singaporean core with a foreign workforce", who would — among other things—be "taking up lower-skilled jobs, as more Singaporeans upgrade into higher-skilled jobs."[17]

With the recent restrictions on immigration (partly due to the strong negative public reaction to the White Paper; See **Part 3**, pg8), it is now unclear if the target of having two-thirds of Singaporeans in PMET jobs by 2030 would still be achieved without sufficient foreign labour imports to fill the complementary jobs. Already, foreign worker inflows have plunged from 80,000 in 2011 to only 26,000 in 2014 (a 67.5% drop in just 3 years),[18] This reduction in foreign labour imports has happened so rapidly that many businesses now complain of their inability to

[14] Ibid.
[15] Parliament of Singapore, "Dealing with Graduate Under-employment", Nov 4, 2014.
[16] National Population and Talent Division (NPTD), *A Sustainable Population for a Dynamic Singapore: Population White Paper*, January 2013, Executive Summary.
[17] NPTD, *Population White Paper,* January 2013, p40
[18] "S'pore 'cannot count on global demand to drive economy'", *The Straits Times,* Apr 30, 2015.

cope with the pace of restructuring, with one economist warning that the Singapore economy would "grind to a virtual standstill" because of the tight labour market.[19]

There are also early signs that significant graduate under-employment/unemployment could be a significant risk for Singapore. Data from the Ministry of Manpower (MOM) show that 15,100 degree-holders were underemployed in 2013, up from 13,000 in 2012. Although the increase was small and the problem was still minor (affecting only about 2.3 per cent of all graduates), it occurred amid a tight job market, and was in jarring contrast with falling under-employment rates for all other school leavers (i.e. secondary school dropouts and vocational and technical school graduates).[20]

In recent months, government officials have issued calls to persuade Singaporeans that having a university degree is not the only pathway to good jobs, and that vocational or technical skills could be just as valuable. In his 2014 National Day Rally, Prime Minister Lee Hsien Loong presented two examples of employees at local oilrig manufacturer Keppel Corp who achieved career success in the company even without university degrees.[21] To help Singaporeans invest in skills and learning, the SkillsFuture initiative was launched in the 2015 budget. This programme, which would eventually cost S$1 billion a year, would give each Singaporean an individual account with credit that could be applied towards a myriad of continuing education courses. Minister for Finance Tharman Shanmugaratman emphasised during his budget speech that Singapore had to become "a meritocracy of skills, not a hierarchy of grades earned early in life."[22] In particular, vocational training models in countries such as Germany where vocational jobholders are highly respected have been held up as good examples for Singapore to emulate.[23]

In spite of these efforts to reduce the country's reliance on foreign labour and to rebalance the workforce, The Economist Intelligence Unit pointed out in a special report on Singapore that small businesses have made little progress on productivity and predicted that the country would eventually have to reverse its recent restrictions on immigration.[24]

Increasing workforce participation rates and low productivity domestic sectors

Somewhat ironically, one other factor that played a role in Singapore's relatively poor labour productivity growth is the increasing labour force participation rate (the proportion of those working out of all who are able to work).

Singapore provides for retirement security through the Central Provident Fund (CPF[25]). Many social assistance programmes such as wage top ups for the lower income make use of the CPF

[19] "Could manpower squeeze stall S'pore economy?", *The Straits Times*, Mar 14, 2015.
[20] "Graduate employment: Degrees of relevance", *The Straits Times*, Oct 23, 2014.
[21] National Day Rally, 2014.
[22] Parliament of Singapore, "Annual Budget Statement", February 23, 2015.
[23] "S'pore to retain manufacturing as pillar of economy: PM Lee", *The Straits Times*, Feb 5, 2015.
[24] *Singapore: Striding ahead and feeling secure at 50*, The Economist Intelligence Unit, March 2015, pg 10.
[25] CPF is an individualized, defined-contribution pension fund that has restrictions to prohibit most types of withdrawals before retirement.

framework. In response to recent concerns over retirement adequacy, the government has introduced programmes to encourage more people to work so that they can continue to contribute to their CPF accounts. One such programme is the Workfare Income Supplement Scheme (WIS), which is essentially a negative income tax with both a CPF top-up as well as a cash component. Such programmes have encouraged previously economically inactive, older as well as less-educated locals to enter or re-join the workforce, particularly in less productive domestic sectors such as food & beverage services where the barriers to entry are lower. Businesses have also become more receptive towards hiring older workers, spurred on by the tight labour market and the array of government incentives.[26] The addition of less productive workers to the workforce has dragged down overall productivity growth. The productivity growth of domestically oriented sectors (which experienced a greater employment growth) averaged 0.8 per cent per year from 2009 to 2014 even as the productivity of export-oriented sectors grew 5.3 per cent per year.[27]

Nevertheless, given that Singapore already has one of the highest workforce participation rates in the world, the addition of lower productivity workers to the workforce could slow in the future and this drag on overall labour productivity could lessen.

The two-tier economy and innovation efficiency

Third, the divergent nature of the Singapore economy—with a competitive export-oriented sector dominated by foreign companies and a less competitive domestically oriented sector comprised mainly of smaller local companies—has been an entrenched feature of the Singapore economy since before independence (See **Part 3**, pg 12). This is especially important in the context of the current priority placed on improving productivity because the domestically oriented, lower productivity sector employs a majority (60%) of the workforce. Speaking to the press at a Labour Day event, Minister for Finance Tharman Shanmugaratnam said, "We cannot continue with this two-track economy indefinitely. It will otherwise mean that businesses in the domestic sector get squeezed year by year as costs go up faster than productivity."[28]

It remains to be seen if the current slew of productivity-boosting initiatives aimed at the domestic sector will succeed. **Figure 2** shows how the share of indigenous GDP (percentage of GDP accruing to resident citizens and PRs, and local companies) has gradually but consistently fallen for the past three decades. This could indicate that the more productive export-oriented sector has continually managed to outgrow the domestic sector and outcompete it for resources, as it is mainly local (indigenous) companies that make up the domestic sector.

[26] "'It's older workers or no workers'", *The Straits Times*, Feb 27, 2015.
[27] Ministry of Trade and Industry, "Drivers of Labour Productivity Growth Trends in Singapore", Economic Survey of Singapore, Feb 17, 2015.
[28] "S'pore 'cannot count on global demand to drive economy'", *The Straits Times*, Apr 30, 2015.

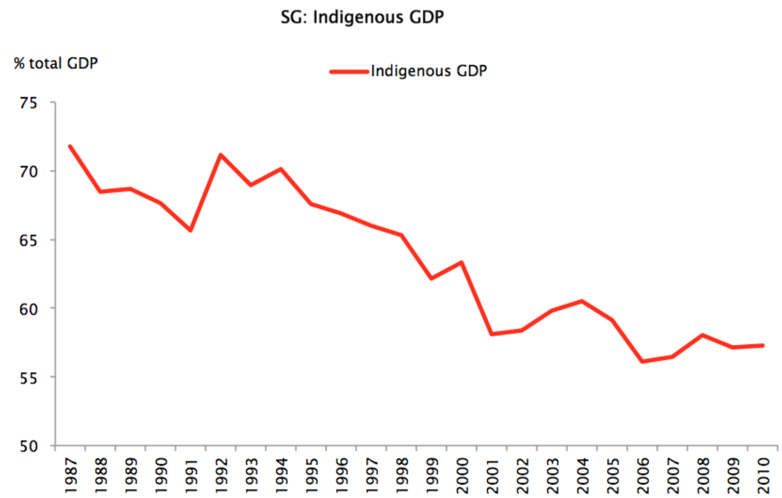

Figure 2 – Singapore's indigenous GDP as a share of total GDP[29]

Whether Singapore will be successful in restructuring the domestic sector to achieve higher productivity growth will depend to a large extent on increasing innovation output and business efficiency in that sector.[30] The government is also beginning to realise that the previous (foreign MNC and foreign labour dependent) growth strategy could be "reaching its limits" and that Singapore needs "a fresh approach".[31]

Even so, some do not see this two-tier economy as an issue that needed to be solved. Dr Augustine Tan, Practice Professor of Economics at Singapore Management University, wrote:

> *"Much has been said and written about our two-track economy. We should recognise, however, that not every sector and not every worker can be on the same track. Inevitably, some run faster. Our export sectors have been the most productive and should be seen as engines of growth, pulling the rest of the economy. Concentrating on the laggards and penalising the fast runners would be a terrible mistake."*[32]

Even if the government pivoted its focus to the domestic sector, investment in innovation and local value creation is a long-term endeavour and the effects would take some time to be felt in the wider economy—not to mention the fact that the returns on such investment is uncertain and variable. Although the government has been successful in rapidly increasing the country's Gross Expenditure on Research & Development (GERD; See **Part 3**, pg 5) to developed country levels, by some measures Singapore's *efficiency* in converting these innovation *inputs* into innovation

[29] Manu Bhaskaran, CEO Centennial Asia Advisors, "Singapore: Economic Outlook – Challenges to the Economic Model", presentation at the Lee Kuan Yew School of Public Policy, Mar 31, 2015; referencing data from the Singapore Department of Statistics. Note: This data is no longer made publicly available by the Singapore Department of Statistics from 2010.

[30] "S'pore 'cannot count on global demand to drive economy'", *The Straits Times*, Apr 30, 2015.

[31] "PM: Further rise in wages hinges on productivity", *The Straits Times*, May 1, 2015.

[32] "The nine pillars of productivity growth", *The Straits Times*, May 5, 2015.

outputs lags that of other economies. One global index ranked Singapore 110th out of 143 economies in "Innovation Efficiency"[33], while a separate Asia-centric study ranked Singapore 8th out of 22 Asian economies in "Creative Productivity."[34] In particular, the latter study noted:

> *"Singapore provides the starkest example of the importance of efficiency in turning creative inputs into creative outputs. The city-state is far from an innovation laggard: it is ranked first in the level of creative inputs and sixth in the level of creative outputs. However, given its level of creative inputs, Singapore could be achieving even more creative outputs. Japan; Hong Kong, China; and New Zealand all have a lower level of creative inputs than Singapore, yet achieve a higher level of creative output."*[35]

Decreasing share of manufacturing and a shift to services

A fourth drag on productivity in Singapore could come from the decreasing share of manufacturing in Singapore's economy. A significant share of Singapore's GDP comes from manufacturing, and the government provides many grants and incentives to sustain manufacturing. Policymakers have said multiple times that manufacturing must continue to be a "pillar of the economy".[36]

Nevertheless, rising business costs, recent labour shortages and skills mismatch, and the strength of the Singapore dollar relative to other export-oriented economies have caused the share of manufacturing in Singapore's economy to shrink in the past decade (See **Figure 3**). In April 2015, manufacturing activity shrank for the fifth straight month[37], and a survey by the Singapore Business Federation showed that 35 per cent of its members had difficulty keeping up with the pace of industrial restructuring towards higher labour productivity. The manufacturing share of GDP in 2013 dropped to its lowest level in more than 40 years, and is likely to continue to shrink.

[33] *Global Innovation Index 2014*, World Intellectual Property Organization, pg xxiv.
[34] *Creative Productivity Index: Analysing creativity and innovation in Asia,* The Economist Intelligence Unit, Aug, 2014, pg 5.
[35] Ibid, pg 6.
[36] "S'pore to retain manufacturing as pillar of economy: PM Lee", *The Business Times*, Feb 5, 2015.
[37] "Singapore's factory activity shrinks for fifth straight month", *TODAY*, May 5, 2015.

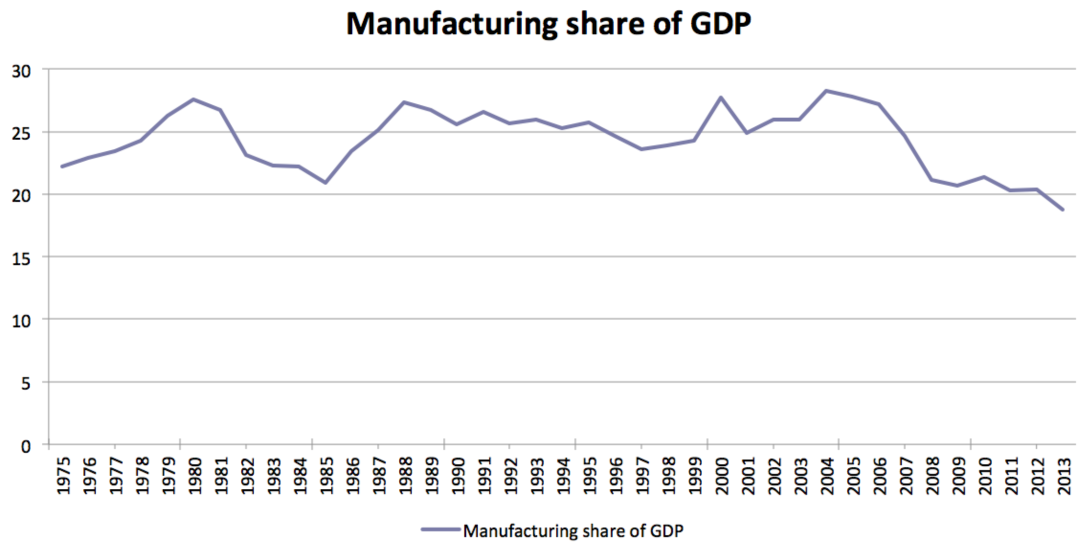

Figure 3 – Manufacturing as a share of Singapore's GDP[38]

Manufacturing accounts for a majority of Singapore's exports (68.1% in 2011[39]). Moreover, productivity growth in the manufacturing sectors has traditionally outperformed that of the service sectors in Singapore.[40] As such, the declining share of manufacturing in Singapore's GDP could be problematic if the service sectors do not achieve significant improvements in productivity growth.

In fact, some economists argue that Singapore's competitiveness in manufacturing has for a long time been artificially sustained through massive state intervention, and that the declining share of manufacturing in the economy would release both unskilled labour for the non-traded services sector as well as skilled labour for the highly competitive traded services sector[41], benefitting the economy as a whole.

Technological unemployment and the broken jobs ladder

Even as Singapore faces a graduate glut and a potential rebalancing of the GDP towards services, some economists fear that the world is on the cusp of a new wave of technological unemployment. Exponential progress in computing and software means that many well-paying, white-collar jobs in the service sectors are now vulnerable to automation, just as how many blue-collar jobs in the manufacturing sectors had been made obsolete by automation.

[38] *World Development Indicators*, The World Bank.
[39] *Global Manufacturing Competitiveness Index 2013*, Deloitte.
[40] MTI, "A Sectoral Examination of Singapore's Productivity Growth".
[41] Pang Eng Fong and Linda Lim, "Singapore's Foreign Workers: Are They Worth the Costs?", *Asian Wall Street Journal*, Aug 4, 1981.

A 2013 paper by Carl Benedikt Frey and Michael Osborne, of the University of Oxford, argued that 47% of occupational categories were at high risk of being automated. Such jobs included accounting and auditing, technical writing, certain legal work, and many others classified as coveted PMET jobs in Singapore that have traditionally been seen as secure white-collar jobs.[42] Such a technological disruption could have the effect of polarising the job market, with those in jobs requiring high education high cognitive work, or highly specialised skills commanding disproportionately high wages, while the rest of the population suffer from unemployment or underemployment.

The disappearance of such middle-class jobs could lead to a "broken ladder" phenomenon where occupational mobility for large parts of the workforce deteriorates because the middle rungs of the traditional job progression ladders are missing. Policymakers in Singapore have already identified this as a possible risk for the local job market.[43]

The way forward

Solving Singapore's productivity challenge means tackling multiple issues on different fronts. Some of the issues such as skills mismatch and the two-tier economy are domestic and possibly solvable through government intervention; while others such as technological disruption and weak global demand are inevitable international trends that Singapore simply has to find ways of adapting to.

If Singapore is no longer able to support growth through rapid labour imports, its competitiveness in the manufacturing sectors could continue to erode. A shift towards a more services-based economy would better match the job aspirations of an increasingly educated workforce. However, further economic growth would then depend on how fast labour productivity grows in those sectors as well as how quickly Singapore's investments in local innovation pay off. Having grown and sustained the economy in past decades through large factor injections of labour and capital, Singapore faces a potentially painful period of economic restructuring and adjustment at a time when the global economic environment is far from favourable (in contrast to previous restructuring efforts in the late 1980s and the early 1990s).

Many of Singapore's current labour productivity challenges stem from policy responses to other problems in the past, such as rapid industrialisation through foreign investment to tackle high unemployment during the immediate post-independence years; suppressing domestic costs in order to remain competitive as other economies in the region mimicked Singapore's export-oriented growth strategy; and the drive to maintain high GDP growth rates through large labour and capital imports. Singapore's current policy challenges in labour productivity demonstrate how policymaking is extremely path dependent, and that care has to be taken when designing

[42] "Previous technological innovation has always delivered more long-run employment, not less. But things can change", *The Economist*, Jan 18, 2014.
[43] Ministry of Trade and Industry, "Future of Jobs", Future Tense 2012, Oct 2012, pg 21.

interventions to current challenges to minimise unintended consequences for future policymakers.