RAFFLES INSTITUTION

MACROECONOMICS POLICIES
SUPPLY-SIDE POLICIES

Outline of Content

References:

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Lispey, Richard G, Steiner, Peter O, & Purvis, Douglas D, Economics, 9th Edition, Harper Collins
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At the end of this lecture series, you should be able to:

1. Explain the general objectives of supply-side policy.
2. Explain the various types of supply-side policies – for example, supply-side tax cuts, , elimination of structural bottlenecks, promoting labour mobility and productivity.
3. Explain examples of supply-side policies implemented by the Singapore government.
4. Discuss how supply-side policies are used to influence output and employment, price levels.
5. Evaluate the effectiveness of supply-side policies – for example, accuracy and availability of information, time lags, uncertainty of outcomes, policy acceptability.

1 Introduction

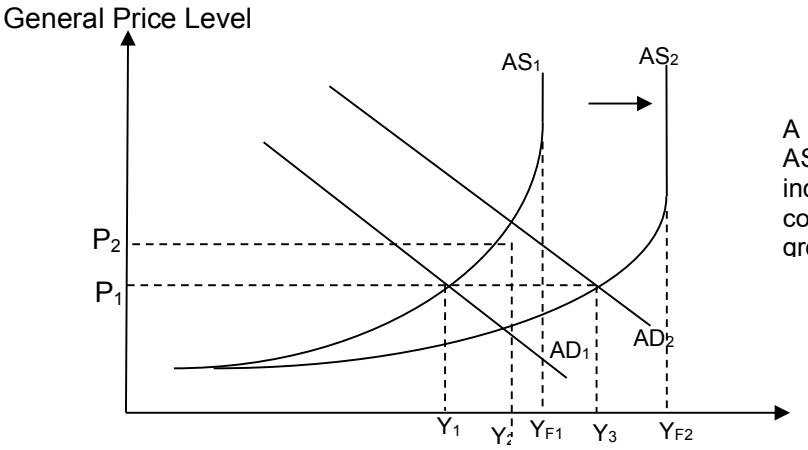
Prior to the Great Depression in the 1930s, public policy was shaped by the views of classical economists who advocated laissez-faire and the belief that recessions were short-run phenomena that corrected themselves through free market forces. Discretionary fiscal policy was seldom used to influence the performance of the macroeconomy explicitly.

Following the onset of the Great Depression, the 1960s were the Golden Age of fiscal policy. However, during the 1970s, the problem was stagflation: the double trouble of higher inflation and higher unemployment. Demand management could not solve stagflation: an increase in AD would only worsen inflation while a decrease in AD would worsen unemployment. Thus, some economists began to focus on "supply- side policies" to ensure that material SOL is growing over time.

2 Definition of Supply – Side Policies

Supply-side economic policies are mainly designed to improve the supply-side potential of an economy, make markets and industries operate more efficiently and thereby contribute to a faster rate of potential growth which can lead to lower general price levels and higher employment and more goods and services for people to enjoy. Referring to Figure 1 below, successful supply-side policies will shift the aggregate supply from AS_1 to AS_2.

Most governments now accept that an improved supply-side performance is the key to achieving sustained economic growth while dampening inflation.



Note:
Supply-side policy on its own however is not enough to achieve sustained economic growth. It **must be supported** by a high enough level of aggregate demand.

Figure 1: Supply Side Policies and Growth

Let's assume that there is an increase in Aggregate Demand from AD_1 to AD_2 as shown in Figure 1. Without any supply-side growth, the increase in Aggregate Demand will result in a higher general price level from $0P_1$ to $0P_2$. To avoid inflation, the economy must achieve supply-side growth. With successful supply side policies, the Aggregate Supply curve shifts from AS_1 to AS_2. Inflation is avoided as general price level returns to $0P_1$ and higher actual (0Y3) and potential (0YF2) growth are achieved.

Supply-side factors often help to explain why some countries grow faster than others. In the long run, the growth of an economy is determined by supply-side factors such as technological progress, capital accumulation and the size and quality of the labour force.

In general, supply-side policies will lead to

1) A **downward shift** of the AS curve arising from a **fall in the unit cost of production**, e.g. reducing the power of labour unions (Figure 2); OR

2) A **rightward shif**t of the AS curve arising from an **increase in productive capacity**, this is also known as potential growth, e.g. increased supply of labour through liberal immigration policy (Figure 3); OR
3) An **outward shift** of the AS curve, arising from **both a fall in unit cost of production and an increase in productive capacity** e.g. technological improvements and labour productivity (Figure 4).

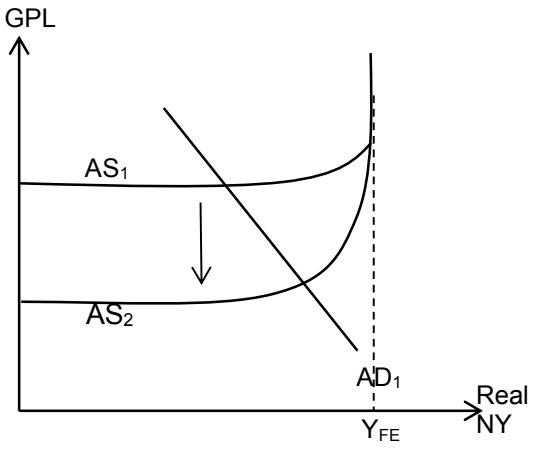


Figure 2: Downward shift of AS

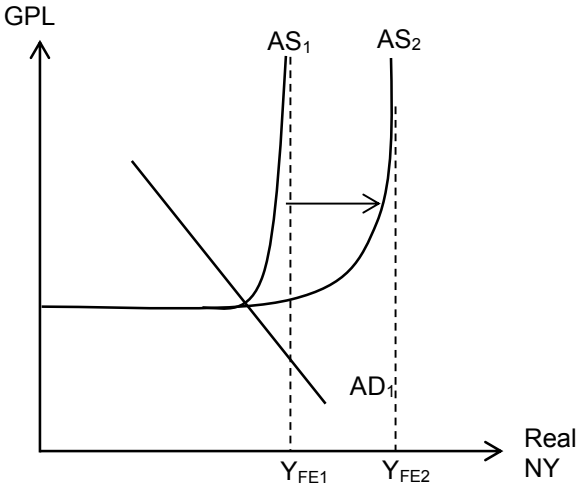


Figure 3: Rightward shift of AS

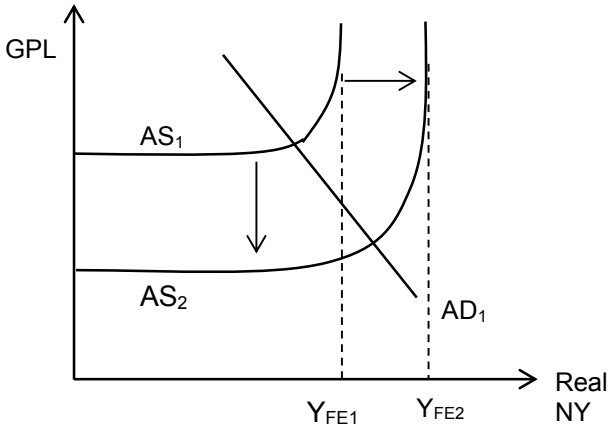


Figure 4: Outward shift of AS

3 Types of Supply-Side Policies

3.1 Market Oriented Supply-side Policies for Labour Markets

3.1.1 Reducing the power of trade unions

The power of trade unions to push up wages would raise unit labour costs, assuming productivity growth is slower than wage growth, and contribute to higher cost of production and hence cost-push inflation. At the same time, firms will cut down on their use of labour as they cut back on their production of goods and services, leading to a fall in employment. Reducing the ability of trade unions to unilaterally raise wages can encourage firms to production facilitiest as wage cost can be monitored and projected more accurately. This will reduce the extent of cost-push inflation and reduce the extent to which AS will fall. At the same time, it helps to reduce / eliminate the incidence of work stoppages or industrial strikes so that loss of output due to strikes is prevented. This may attract foreign investment, increasing productivity and thereby shifting the AS curve to the right in the long run (Figure 3). At the

same time, if productivity grows faster than wages, it will lead to a lower unit labour cost of production, thereby shifting the AS curve downwards.

Some measures to weaken the power of militant trade unions include restrictions on close-shop policies and industrial strikes. In Singapore, the tripartite policy ensures a harmonious industrial relation between the employers (represented by the Singapore Employers Federation), the workers (represented by NTUC) and the government (represented by the Ministry of Manpower) Representatives from all 3 parties sit on the National Wage Council (NWC). Established in 1972, the NWC was designed to bring wage increases in line with national productivity growth.

For more information on Tripartism Policy in Singapore, please visit website: http://www.mom.gov.sg/employment-practices/tripartism-in-singapore/Pages/default.aspx

3.1.2 Incomes policies (Wage Guides/ Flexible Wages/Wage Freeze)

The basic wage guidepost is that wage rates in all industries should be flexible, i.e. rise in accordance with the rate of increase in labour productivity for the nation as a whole vice versa. Wages are allowed to rise but should lag behind or at best, keep pace with the rate of productivity growth. This is to ensure that the labour cost is not higher than labour productivity, keeping unit labour costs low. Ceteris paribus, a reduction in unit labour cost reduces the average costs of production, thereby leading to a downwards shift of the AS curve (Figure 2).

In Singapore, the flexible labour market's willingness to accept various wage recommendations has helped the economy to get out of the recessions of 1985, 2001 and 2003. Voluntary wage restraints such as the 2-year wage freeze for civil servants and the reduction in employers' CPF contribution rate from 25% to 20% were used during the 1985–6 recession. After Minister Mentor Lee Kuan Yew's speech in 2003 about Singapore's recession and long-term competition against China and India, the National Wage Council recommended wages freezes that year on top of other cost-cutting measures (e.g. lowering of rents, fees and taxes). Such measures not only induce employers to keep their workers on their payroll but also enhance cost competitiveness.

Wages in Singapore also have variable components that allow for flexibility of wages. The Annual Wage Supplement ("13th month payment") and bonuses allow for firms to vary the annual wages of employees. In 1999, the Monthly Variable Component (MVC) was also introduced to allow wages to vary from month to month.

Limitations:

However, given that wage guides are voluntary or while variable wage components are negotiable. Voluntary wage guides face the issue of non-compliance, especially since trade union leaders would have to abandon their primary objective of negotiating for higher labour wages. Thus, voluntary cooperation from trade unions may be limited. For policies such as flexible wages and wage freeze to work, workers themselves must be convinced of the necessity of such policies and accept them in view of the long term benefits, even at short term cost. The employers must also show willingness to reinstate or increase wages in times of economic growth or improved company performance. Clear communication and cooperation among the government, employers and trade unions are essential. Singapore is one of few countries in which the above policies have been fairly successful.

3.1.3 Tax Reforms (Reduction in Income Tax Rates)

Besides increasing aggregate demand, reduction in personal income tax or corporate tax have the supply-side effect of encouraging workers to work and save, and firms to invest. This is based on the belief that high tax rates are disincentives for hard work and induce people to work less. A cut in marginal tax rates increases the attractiveness of work and simultaneously increases the cost of leisure . Hence, individuals will substitute work for leisure. This increase in productive effort can occur through the increase in the number of hours worked per day or

per week; postponement of retirement; increase in entry of workers to the labour force; greater willingness to work harder; and discouragement of unemployment.

As a supply-side tool, lower personal income tax also helps to attract foreign talent and prevent brain drain while lower corporate tax rates as well as the lower interest rates due to higher savings encourage both foreign and local investments to take place since after-tax profits increase, leaving more funds for ploughing back into investment. With globalization, such tax reforms are deemed necessary as human capital (talent and expertise) and investment tend to shift away from countries with a high tax burden. Overall, lowered tax rates increase labour supply and investment spending by firms, increasing the productive capacity of an economy, hence causing a rightward shift of the AS curve (Figure 3).

Limitations:

However, having a low tax rate as well as a range of tax and financial incentives alone is not sufficient to encourage foreign direct investment to raise a country's productive capacity. 'Tax incentive wars' between countries may arise as they compete fiercely for foreign investment and talent. Thus, other factors such as political stability and having a conducive business environment (transparency in government regulations, ease and availability of credit, protection of intellectual property rights etc) are just as critical, if not more so.

3.1.4 Cuts in social and welfare programme

The existence of a wide variety of public transfer programmes has eroded the incentives to work in welfare states. Unemployment compensation / benefit and welfare programmes reduce the hardship of being unemployed, and may encourage people to extent their time searching for jobs rather than taking up available jobs offered. Thus, reducing such programmes may in fact be the stimulus some of the unemployed requires to find a job, thereby increasing the willingness of these people to work. This increases the effective labour supply, and so causing a rightward shift of the AS curve (Figure 3).

Limitations:

However, maintaining an appropriate level of social welfare spending is important in helping the economically disadvantaged and building social cohesion. This is all the more important in light of the widening income inequality experienced by countries all over the world.

3.2 Interventionist Supply-Side Polices

Note:
Interventionist supply-side policies such as education and training, and grants for R&D are frequently applied in exams.

In contrast to market-oriented policies, interventionist supply-side policies involve direct government intervention in markets. These policies rest on the view that the free market is likely to provide too little incentive for education and training, investment, and research and development.

3.2.1 Manpower Policies

Education and Training

One of the objectives of the manpower polices is to reduce labour market imbalances or bottlenecks. This can be achieved through investment in human capital via education and training. Interventionist policies are required because firms may be unwilling to invest in training their workers, as the benefits to them would be lost when workers leave their firms. Nonetheless, education and training can help to improve the skills and quality of the work force, benefitting society as a whole. Educational policies designed by the government can thus be geared towards meeting the needs of key industries.

Workers will **become more skilled and efficient in their assigned responsibilities** with retraining, education and the ability to work with machines to enhance their productivity. As

such, output per unit of input will increase. Therefore, **as the quality of the workforce improves, the productive capacity of the economy will expand** and shift the AS curve to the right. Furthermore, re-training and skills upgrading of workers can also raise labour productivity. If labour productivity growth outpaces wage growth, unit labour cost is lowered as well, and overall AS curve shifts outward (Figure 4).

Lower unit labour cost as well as a well-educated workforce acts as a magnet for foreign investment in the economy. Improved training opportunities, especially vocationally oriented education for those who lose their job in an old industry, can improve the occupational mobility of workers in the economy too. This helps to reduce the problem of structural unemployment and reduce loss of potential output that can result from unemployment as firms will also be more willing to hire the more productive local workers who now possess better set of skills. As such, low-skilled workers can now move to higher value-added industry that pay much higher. If the wages of the low-skilled workers grow faster than the high-skilled workers, it will narrow the income gap and hence the degree of income inequality.

The Singapore government encourages skills upgrading and re-training through subsidies. This aims to incentivise workers to upgrade their skills and professional competencies to increase labour productivity and hence output per unit of input. *Such measures include:*

i. **Continuing Education and Training (CET)** – workers get up to at least 70% funding on various industry related courses

ii. **SkillsFuture** – subsidize courses for individuals to encourage lifelong learning and develop their skills for career progression

iii. **Workforce Skills Qualifications (WSQ)** – encourage workers to develop their soft skills (receive 90% subsidy)

iv. **Workfare Training Support (WTS) Scheme** – this is mainly for low-wage workers to raise their productivity and enable them to earn higher wages, thereby reducing income inequality. Low wage workers can enjoy higher course fee funding, cash awards and greater support when they upgrade their skills. The Workfare Training Support (WTS) scheme encourages low wage workers to upgrade their skills through training, so that they can improve their employability and upgrade to better jobs. The key features of the WTS scheme includes:

    - Lowering the cost of training for low-wage workers and their employers. For example, Singaporeans aged 35 years and above, who earn $1,700 a month and less, will receive higher course fee funding of up to 95% when they sign up for Workforce Skills Qualification (WSQ) training courses at Continuing Education and Training (CET) Centres.

    - Cash award for low-wage workers to Undergo Sustained Training.

    - Low wage workers are eligible for Workfare Income Supplement (WIS) which will be awarded a Training Commitment Award of $200 in cash for every two WSQ modular Statements of Attainment or a full WSQ qualification they attain within a year. Each worker can receive up to a maximum of $400 every year for the Training Commitment Award.

    - A new Workfare-Skill Up programme will also be offered at Workforce Development Agency's (WDA) career centres located at the Community Development Councils and the National Trades Unions Congress' Employment and Employability Institute to assist low wage workers in building a stronger foundation before taking on more vocational courses.

Limitations:

The effectiveness of skills upgrading, education and apprenticeship largely depends on the mindset as well as receptivity of workers. This is especially for low-skilled and older workers, who may not actively sign up for such retraining and skills upgrading programmes due to their steep learning curve. Hence, such schemes may not necessarily achieve their intended effects of increasing the skills levels of such workers.

Fixing the productivity challenge is a lot harder than understanding the math behind it. Despite the continued effort by the government, annual productivity growth has been slower than wage growth in Singapore, particularly for the low-skilled workers. Many of the low-skilled workers end up doing low-value jobs and are also not eligible for subsidies to upgrade their skills. As a result, overall productivity has been pulled down. As such, firms continue to hire large number of foreign workers which are far cheaper than hiring local workers. However, if wages continue to exceed productivity growth, local workers may become unemployed in times of severe recession as companies replace them with cheaper foreign labour in order to lower the cost of production.

To support its productivity efforts, the government has taken additional measures to reduce its reliance on cheap foreign labour by raising the levy of hiring them, enhancing the qualifying criteria for Employment Pass (EP), increasing the EP salary bar ($3,600). All these measures serve to increase the cost of hiring foreign workers, forcing firms switch to technology that increase labour productivity or hire more high-skilled Singaporeans.

Additionally, skills training and upgrading is long term in nature as it takes time to acquire new skills and to be adept at them, hence the policy may not be as effective in addressing the issues and may only materialize in the long term. In addition, it is important to note that the burden of financing such supply-side measures may pose to be a huge financial burden on a government that is already struggling with other overriding priorities.

3.2.2 Grants to Encourage R&D

Firms investing in developing and improving products, and especially firms engaged in more general scientific research, may produce results that benefit other firms. Thus the social benefit from the investment may be much higher than the private benefit. Hence, the government may sponsor research & development (R&D) in certain industries like aerospace or life sciences in such areas where there are potentially large external benefits. Successful R&D efforts leading to technological breakthroughs help raise productive capacity and lower unit costs of production. This results in an outward shift of the AS curve (Figure 4).

In Singapore, research and innovation are recognised as keys to sustaining long-term growth of the economy. Singapore aims to raise its R&D sector to 3.5% of its GDP by 2015. In the last decade, Singapore has successfully drawn top scientific and creative talent to its shores and nurtured R&D collaborations between the public and private sectors.

Important:
You are required to identify and apply relevant supply-side policies given the macroeconomic problems faced in the economy, and illustrate the effects using the AD/AS framework and show how the policies work to alleviate the problem.

Limitations:

However, investment often involves risks too. The results of R&D are not guaranteed and there is a possibility that R&D efforts might not yield any results despite aggressive government support. There is also a long gestation period before R&D efforts can yield tangible and impactful results.

3.2.3 Provide subsidies/ tax deductions to firms

The government encourage firms to invest in productivity enhancing technology and/or purchase more machineries to improve production processes and raise labour productivity through capital deepening. As firms acquire more capital goods, it will increase the quantity of factors of production and at the same time raise the quality of workers due to a more efficient capital-labour ratio. A higher labour productivity will reduce the unit labour cost

of production if wage growth is slower than productivity growth. As a result, the AS curve will shift outward, promoting sustained economic growth by raising the full employment level of national income and actual level of output. Additionally, it will dampen cost-push inflation as the unit cost of production is lowered. Such measures include:

i. **Productivity and Innovation Credit Schemes (PIC)**
   Firms can receive tax deductions/allowances up to 400% of qualifying expenditures on process innovation and purchase of machineries.

ii. **Cash pay-out**
   Firms can convert up to 40% of the qualifying expenditures into cash pay-out. This is effective in helping smaller firms manage their cash flow and support them with low taxable income to fund their investment in technology/upgrade their operations.

Examples include Construction Productivity and Capability Fund ($250 mn fund) – encourage construction firms to upgrade workforce & use more labour-efficient construction technologies to reduce reliance on foreign workers and raise labour productive capacity.

Limitations

The risks associated with PIC schemes and cash pay-outs are double edged. Firms make fraudulent claims and collude with vendors to inflate invoices for cash pay-outs. As a result, there may be no material increase in productivity of workers or improvement in process innovation. Firms may also engage in frivolous expenditures that does not raise productivity. Also, such schemes do not benefit all – usually large firms benefit more, while smaller firms find it hard to qualify for tax deductions/allowances.

4 Effects of Supply-side policies on the economy

4.1 Effect on National Income and General Price Level

Most governments now accept that an improved supply-side performance is the key to achieving sustained economic growth while maintaining low inflation. As seen in Figure 1, supply-side policies lead to an increase in real national output without an increase in price. Supply-side factors often help to explain why some countries grow faster than others for sustained periods of time.

In times of recession, governments can implement supply-side policies in preparation for the economic recovery (and prevent inflationary pressures).

4.2 Effect on Employment

Frictional and structural unemployment are caused by rigidities or imperfections in the labour market. Vacancies are not filled despite the existence of unemployment. Supply side policies like provision for skills upgrading and training help to make workers more responsive to changes in job opportunities and also make them more adaptable and mobile. This helps to bring down the level of unemployment in the economy.

4.3 Effect on the Government budget

Some other supply side polices require significant government expenditure which may be restricted by the fiscal and reserves position of countries. For example, given the size of the government debt in nations like Greece in 2010, it is difficult for the nation to implement education or training programmes for its workers.

5 Limitations of Supply side Policies

Note: As there is a broad and diverse range of supply-side policies, there are many limitations which pertain only to a selected group of supply-side policies. Students should exercise discretion in tailoring their limitations to the specific supply-side policy discussed. Nevertheless, below are some limitations that tend to affect many supply-side policies.

In general, the effectiveness of the various supply-side policies depends on the accuracy and availability of information to the government in deciding on the appropriate policy measures and upon implementation. Moreover, supply side policies are usually long term in nature and it takes a relatively long time for its effects to be felt. The outcomes of supply side policies also tend to be uncertain. Finally, some supply side policies might not be effectively executed with its intended effects if the government is limited by its fiscal budget (for example, given the size of the government debt in nations like Greece in 2010, it is difficult for the nation to implement education or training programmes for its workers), or if the policies are faced with heavy opposition.

The link between demand side and supply side policies

Policies can have **BOTH** demand side and supply side effects. Thus, it is important for governments to take secondary effects into account when working out their economic strategies.

For example, demand management policies can have supply side effects. If a cut in interest rates boosts investment, there will be a multiplied rise in NY (a demand side effect). But that rise in investment will also lead to increased productive capacity (a supply side effect).

Likewise, many supply-side policies involve increased government expenditure. This is true for retraining schemes and R&D projects. They will therefore cause a rise in aggregate demand (demand side effect). Similarly, supply side policies of tax cuts designed to increase incentive to work in invest (supply side effect) will also increase aggregate demand (demand side effect).

**** In your answers to examination questions on policies, you are expected to explain the primary effect arising from the policy first while keeping the secondary effect to the synthesis or evaluative comments.**

Section Summary:

- There are many policies that can affect the aggregate supply of the economy. Policies can target the aggregate supply in the short run, as well as in the long run.
- Main supply-side policies include market-oriented policies such as tax cuts, incomes policies, as well as interventionist policies such as training and education, and grants for R&D.
- Supply-side policies will increase aggregate supply and help an economy to achieve economic growth over time, dampen the effects of recession in the short run, reduce structural unemployment and improve BOP.
- Specific supply-side policies has specific limitations which limit its effectiveness.

Appendix 1: CET 2020: Transforming the CET System to Build a Competitive Economy and a Career Resilient Workforce

Singapore, 17 September 2014

The new Continuing Education and Training (CET) Masterplan by the Singapore Workforce Development Agency (WDA) will support the work of the new tripartite committee led by Deputy Prime Minister Tharman Shanmugaratnam.

2. Known as CET 2020, the Masterplan will support efforts to restructure the economy and build a career-resilient workforce:

a. Build deep expertise in the Singapore workforce, with increased involvement by employers in building and valuing skills;

b. Enable individuals to make informed learning and career choices through the improved delivery of education, training and career guidance, and

c. Develop a vibrant CET ecosystem with a wide range of high-quality learning opportunities.

3. Mr Ng Cher Pong, Chief Executive of the Singapore Workforce Development Agency (WDA), said: "CET 2020 has been developed based on feedback from individuals, unions and employers. We have identified the major shifts required to enable Singaporeans to be career-resilient in an advanced economy that is driven by innovation and productivity. To realise CET 2020, WDA plans to significantly strengthen its partnerships with employers, industry associations, unions and training organisations to implement the key initiatives and effect these major shifts."

A. Increased Involvement by Employers in Building and Valuing Skills	• Sectoral Manpower Strategies • Sectoral Competency Frameworks • One-stop Manpower and Training Advisory • support for SMEs
B. Informed Learning and Career Choices	• Online education , training and career guidance portal • Lifelong Learning Exploration Centre • Raising professionalism of career coaches to deliver education, training and career guidance
C. Wide Range of High-Quality Learning Opportunities	• Technology-enabled learning • iN.Lab for more innovation in CET • More structured workplace-based learning

Adapted from http://www.wda.gov.sg/content/wdawebsite/L209-001About-Us/L219-PressReleases/16_Sep_2014.html

Appendix 2: Govt commits S$19b to new 5-year plan for R&D initiatives RIE2020

Channel NewsAsia, 8th Jan 2016 By Loke Kok Fai and Xabryna Kek

SINGAPORE: Prime Minister Lee Hsien Loong on Friday (Jan 8) unveiled a S$19 billion plan to support Singapore's R&D efforts over the next five years. The Research Innovation Enterprise 2020 Plan (RIE2020) seeks to support and translate research into solutions that address national challenges, build up innovation and technology adoption in companies, and drive economic growth through value creation.

The S$19 billion commitment represents an 18 per cent jump from RIE2015's S$16.1 billion and is the biggest budget to date.

Speaking at the launch of RIE2020, Prime Minister Lee said RIE will continue to be important to secure Singapore's future. "It will contribute significantly to the economy and creates opportunities and jobs, supports national initiatives like Smart Nation, SkillsFuture, studies which we are doing under the Committee for the Future Economy, and it helps our workers to thrive amidst technological changes and globalisation," he said.

Specifically, instead of broadly categorising the funding into "Private R&D" and "Public R&D", as was done in RIE2015, this time there would be four primary technology domains:

1. Advanced Manufacturing and Engineering
2. Health and Biomedical Sciences
3. Services and Digital Economy
4. Urban Solutions and Sustainability

Also, the Government will sustain R&D spending at about 1 per cent of GDP. This is more than the UK, but comparable to the US and public spending in other research-intensive economies.

Deputy Prime Minister Teo Chee Hean, who is the chairman of the NRF Board said: "Essentially R&D is an investment in our own future. It's an expression of belief in Singapore and Singapore's future and if we want to be a knowledge-based economy, which thrives on innovation and enterprise, and to build this knowledge base on which we can build the future of Singapore, then R&D is where we have to invest."

In terms of manpower, the agency recognises the need to have a Singapore core to anchor capabilities. As such, it is doubling its efforts to attract Singaporeans home such as through the Returning Singaporeans Scientists Scheme.

"To drive the RIE2020, we will need good people, both Singaporeans as well as foreign talent," said Prime Minister Lee. He said interest in science and technology must be encouraged in youth and "give them the sense that it is indeed possible to do exciting things in Singapore and change the world". It is also important to attract talented Singaporeans abroad to work in the scientific field, he added.