INTERNATIONAL MONETARY FUND

MALAYSIA

SELECTED ISSUES

March 2018

This Selected Issues Paper on Malaysia was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on January 25, 2018.

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January 25, 2018

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CONTENTS

AN OVERVIEW OF THE MALAYSIAN LABOR MARKET[1,2]

Malaysia's economy and its labor market have undergone significant shifts in the last three decades. The labor market is now more urban and has a higher share of female workers and workers with tertiary education. Employment has kept pace with labor supply, keeping the unemployment rate stable for more than a decade. Meanwhile, reliance on non–citizen workers has also increased against the backdrop of slower growth in citizen population. Continuing with its economic transformation, Malaysia aspires to achieve high–income status, with a labor market that is ready for the economy of the future: a market that can support more female workers, more skilled jobs, and a higher labor productivity growth.

1.   The 11th Malaysia Plan (11MP, 2016–20) marks the final five years of Malaysia's Vision 2020. One of the aspirations under the Vision, launched in 1991, is Malaysia reaching high–income status. The 11MP incorporates strategies and targets toward that aspiration. With respect to the labor market, these strategies and targets include boosting productivity, improving labor market efficiency and institutions, encouraging female labor force participation, creating higher-skilled jobs, and reducing reliance on low-skilled non-citizen workers. Against this backdrop, this analysis takes stock of the key developments in the Malaysian labor market, including a focus on female labor force participation and the role of the non-citizen workforce.

Table 1. Malaysia: Selected Targets Under the 11th Malaysia Plan (2016–20)	10MP actuals	11MP goals	2016 actuals
Real GDP growth (percent, average)	5.2	**5-6**	4.2
Per capita GDP (U.S. dollars, end of period)	10,440	**15,690**	9,850
Labor's share in income (percent, end of period)	~35	**40**	...
Female labor force participation (percent, end of period)	54.1	**59**	54.3
Share of skilled employment (percent, end of period)	25.5	**35**	27.3
Labor productivity growth (percent, average)	1.8	**3.7**	3.5
Total factor productivity growth (percent, average) 1/	1.8	**2.3**	0.1

Sources: Economic Planning Unit, Prime Minister's Department; Department of Statistics, Malaysia; World Bank; and IMF staff calculations.
1/ IMF staff estimates for the 10th Malaysia Plan period (10MP, 2011–15) and 2016. See IMF Country Report No. 17/101 (Appendix III) for methodological discussion. Labor productivity growth was higher in 2017.

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[1] Prepared by Souvik Gupta with the assistance of Justin Flinner.

[2] Malaysia-specific data used in this analysis come from various data publications by the Department of Statistics, Malaysia. Examples of such data publications include Labor Force Surveys, Salaries and Wages Surveys, the 2016 Economic Census for various sectors of the economy, Informal Sector Surveys, etc.

A.   Labor Supply

2.   The evolution of Malaysia's labor supply reflects the underlying changes in the economic and socio–economic structures of the country. In the last three decades, Malaysia's labor force has become predominantly urban and the share of tertiary–educated workers in the labor 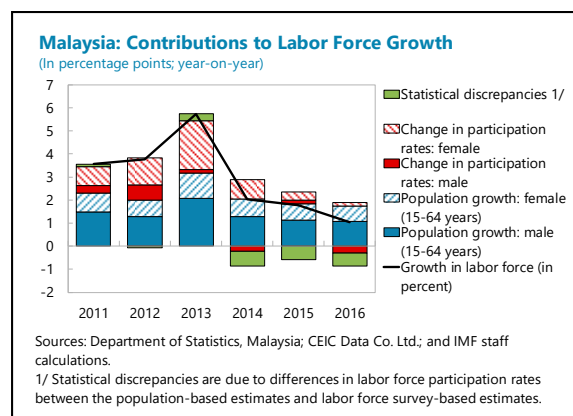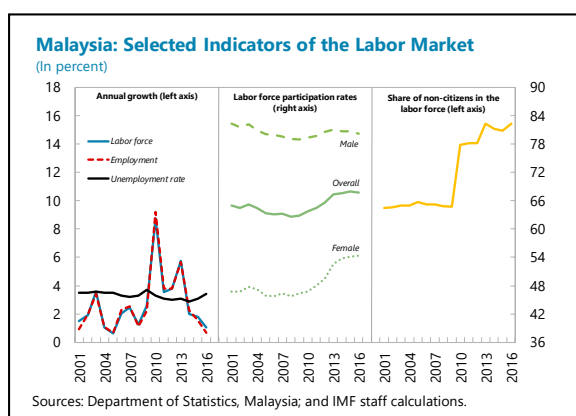force has quadrupled, reflecting growth in urbanization and gains in educational attainment. Nearly three–fourths of Malaysia's population now live in urban areas (mid–1980s: about 50 percent) and average years of schooling, an indicator of educational attainment, has also increased from below 7 years in the mid–1980s to about 10½ years by 2010.[3] This shows that the younger cohorts of the labor force have become increasingly more educated. Thus, the share of 15–24–year old participants in the labor force has declined over time, leading to a higher share of workers

Malaysia: Selected Characteristics of the Labor Market
(Shares in percent of the total labor force)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

in the 25–34 year age bracket. Female labor force participation rates have improved in recent history, but males seeking work continue to represent a larger share of the labor force. The share of non–citizens in the labor force has also increased.
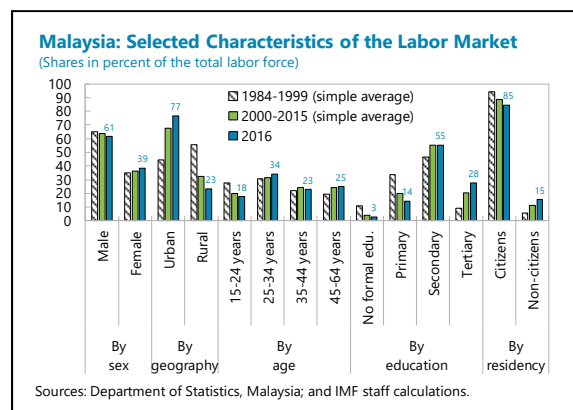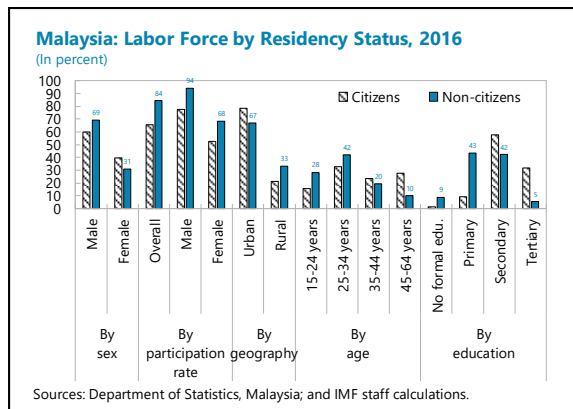
3.   More recently, despite gains in the overall labor force participation rate, the rate of Malaysia's labor force expansion has trended downward. Labor force growth peaked in 2010 and has declined steadily since 2013. The deceleration in labor supply growth in the post–Global Financial Crisis (GFC) period has been partly driven by slower growth in working–age population (15–64 years of age). Over 2002–09, working–age population grew at compound annual growth of about 2.9 percent. By 2017, it had slowed down to 1.6 percent. The slowdown in population growth was partly offset by an increase in the labor force participation rate, which reached close to the all–time high of nearly 68 percent of the working–age population in 2016. In particular,

Malaysia: Selected Indicators of the Labor Market
(In percent)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

Malaysia: Contributions to Labor Force Growth
(In percentage points; year-on-year)

Sources: Department of Statistics, Malaysia; CEIC Data Co. Ltd.; and IMF staff calculations.
1/ Statistical discrepancies are due to differences in labor force participation rates between the population-based estimates and labor force survey-based estimates.

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[3] Barro, Robert and Jong-Wha Lee, 2013, "A New Data Set of Educational Attainment in the World, 1950–2010." *Journal of Development Economics*, Vol. 104, pp.184-198. Latest available data are as of 2010.
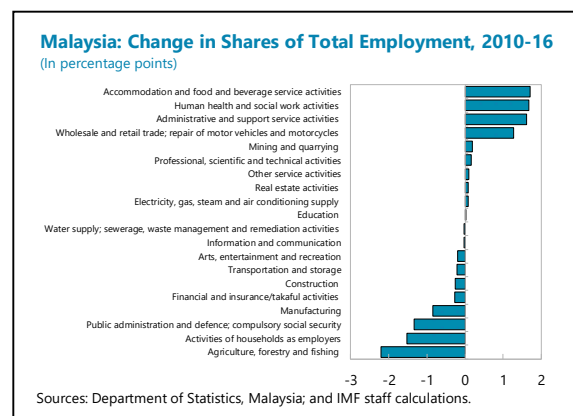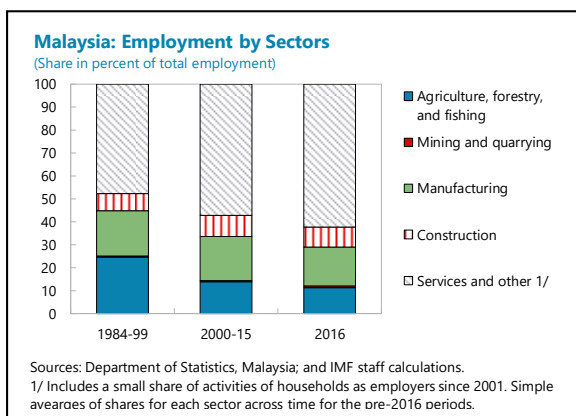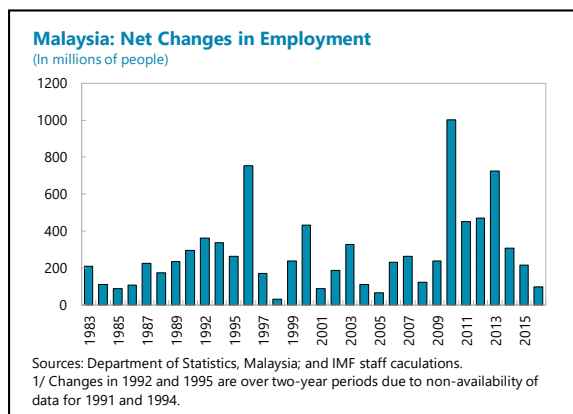
female labor force participation rate has notably improved in the last few years to about 54¼ percent in 2016 from 49½ percent in 2012.

4.   The share of non–citizen workers has also increased since 2010, reaching about 15½ percent of the total labor force in 2016. Non–citizens' share in the labor force remained largely stable between 9½ percent and 10 percent over 2000–09. The non–citizen labor force, as compared to the citizens, has a higher share of male or rural job seekers; significantly higher participation rates for both gender; and is younger, but has less years of schooling.

Malaysia: Labor Force by Residency Status, 2016
(In percent)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

B.   Employment

5.   The Malaysian economy witnessed net employment creation every year since the 1980s. The services sector now accounts for a higher share in the economy, both in overall value–added and in employment. Meanwhile, the share of employment accounted for by the agriculture, forestry, and fishing sector has declined. Gains in employment shares between 2010 and 2016 were concentrated in the following sectors: wholesale and retail trade; accommodation and beverage services activities; administrative and support services; and human health and social work activities.

Malaysia: Net Changes in Employment
(In millions of people)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.
1/ Changes in 1992 and 1995 are over two-year periods due to non-availability of data for 1991 and 1994.

Malaysia: Employment by Sectors
(Share in percent of total employment)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.
1/ Includes a small share of activities of households as employers since 2001. Simple averages of shares for each sector across time for the pre-2016 periods.

Malaysia: Change in Shares of Total Employment, 2010-16
(In percentage points)

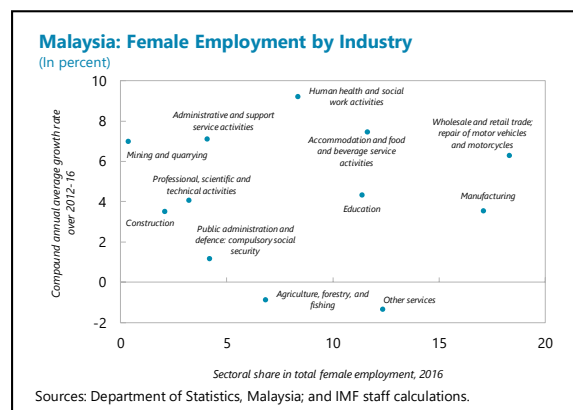Sources: Department of Statistics, Malaysia; and IMF staff calculations.

- As of 2016, manufacturing and wholesale and retail trade sectors accounted for most of labor demand, totaling a little over one–third share in overall employment. In the manufacturing sector, a key contributor to Malaysia's exports, share in economy-wide employment declined between 2011 and 2015 as the economy adjusted to external shocks, most notable of which were global trade slowdown, concerns on China's economy, and a significant drop in oil prices. However, it reversed partially in 2016 and 2017 as external trade improved. Decline in the public administration and defense reflects, in part, a hiring freeze.

- By skills, the share of skilled–workers increased slightly in 2016, reaching 27¼ percent of total employment (2011–15 average: about 25 percent; 2001–10 average: about 26¼ percent).

Malaysia: Employment by Occupational Skills
(Share in percent of total employment)

Sources: CEIC Data Co. Ltd.; and IMF staff calculations.
1/ Skilled workers are defined as legislators, senior officers, and managers; professionals; and technicians and associate professionals.
2/ Semi-skilled workers are defined as clerical workers; service, shop, and market sales workers; and skilled agricultural and fishery workers.

- Small and medium enterprises (SME), which are predominantly in the services sector and are micro–sized (i.e., annual turnover less than RM 300,000 and less than 5 full–time employees), accounted for about 40½ percent share in total employment in the economy in 2015, compared to about 33¼ percent in 2010.

- Additionally, employment in the non–agricultural informal sectors accounted for about 11½ percent of total employment in 2015, and increase from 8.2 percent in 2012, but still significantly lower than other emerging market economies in the region.[4] More than two–thirds of this type of employment comprised self-employed workers and employers.

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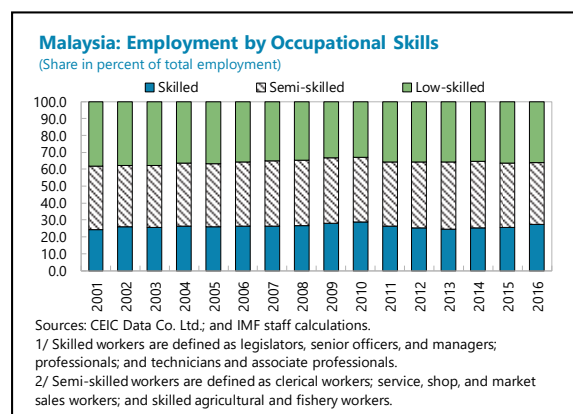
[4] Based on information for Indonesia, the Philippines, Thailand, and Vietnam in the Key Indicators of the Labor Market (KILM) database, published by the International Labor Organization. The definitions of the non–agricultural informal sector in the Malaysian data and in the KILM database are similar.

Employment of the female workforce

6.   In the post–GFC period, female employment has grown at a faster pace than male employment. Over 2010–16, female employment grew at a compound annual rate of about 4½ percent, compared to about 2 percent rate for male employment. Faster female employment growth took place mostly in the health and hospitality services and in the public sector. Higher female employment since 2012 explained most of the increases in three of the four sub–sectors of the economy that saw the largest increases in their shares in total employment.[5]

Malaysia: Female Employment by Industry
(In percent)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

7.   Female contribution to growth has increased at a faster pace in recent years. Based on a growth accounting exercise with human capital formation, staff finds that contribution from female employment to real GDP growth has more than trebled. [6] While in the 2001–08, female workers accounted for 4 percent, on average, of real GDP growth, their contribution increased to 14 percent over 2011–16. Meanwhile, contributions by male workers increased from about 7 percent to about

Malaysia: Contributions to Real GDP Growth
(In percentage points)

Sources: Department of Statistics, Malaysia; and IMF staff estimates.

13 percent. Not only women's share in total employment has increased, but also the gender gap in average years of schooling has shrunk, leading to additional contributions to growth through human capital formation.[7] Gross school enrollment ratios in secondary and tertiary education are
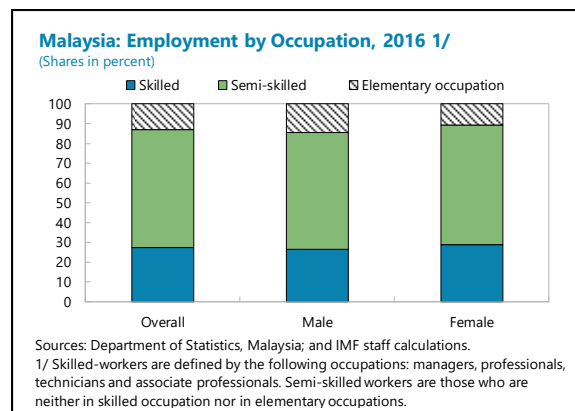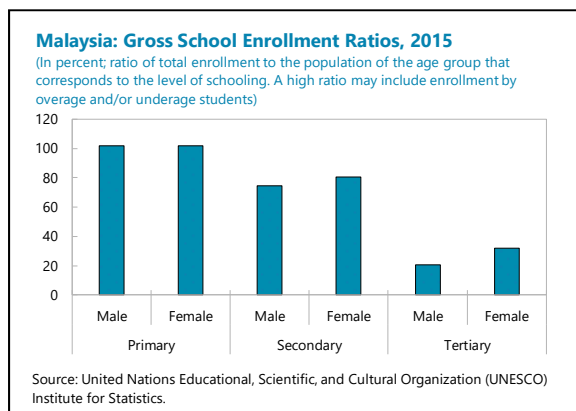
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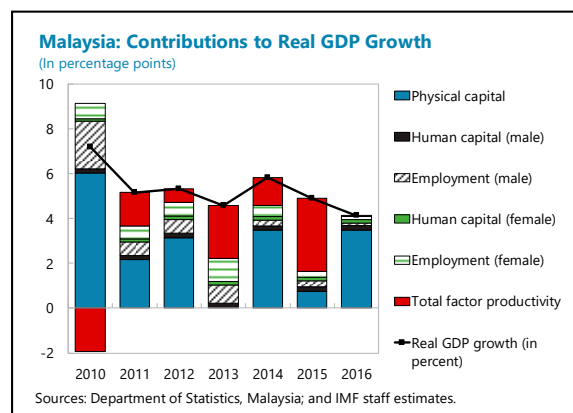
[5] Rise in female employment explained between 53 percent and 85 percent of the increases in employment in accommodation and food and beverage service activities; wholesale and retail trade, and repair of motor vehicles; and human health and social work activities. Female workers accounted for most of the rise in employment in the health sector.

[6] For details on the growth accounting framework using human capital please see IMF Country Report 17/101 (Appendix III). The analysis here extends that framework to break down the total contribution of labor by gender. Data from the official Salaries and Wages Survey Reports and employment by gender are used to split the overall labor–share of income by gender. Educational attainment, a proxy for human capital, by gender is obtained from the Barro–Lee database. Staff assumes that the historical trend in years of schooling over 1985–2010 continued into 2016 for both the genders. Returns to education are assumed to be same for males and females.

[7] By 2010, average years of schooling for females had almost caught up (lower by 0.2 years) with their male counterparts, declining from 1.4 fewer years of schooling in the mid–1980s.

also higher for females, particularly in tertiary education. This is likely reflected in the higher share of skilled occupations in female employment.

Malaysia: Gross School Enrollment Ratios, 2015
(In percent; ratio of total enrollment to the population of the age group that corresponds to the level of schooling. A high ratio may include enrollment by overage and/or underage students)

Source: United Nations Educational, Scientific, and Cultural Organization (UNESCO) Institute for Statistics.

Malaysia: Employment by Occupation, 2016 1/
(Shares in percent)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.
1/ Skilled-workers are defined by the following occupations: managers, professionals, technicians and associate professionals. Semi-skilled workers are those who are neither in skilled occupation nor in elementary occupations.

8.   Malaysia has potential for further improving female labor force participation. Although the female labor force participation rate has improved in recent years, it remains low, both in absolute terms and relative to the male participation rate, when compared with some of the regional economies or the OECD average. Under the 11MP, Malaysia aspires to improve the female labor participation rate by 5 percentage points to 59 percent by 2020. If the female labor force participation rate had not

Selected ASEAN Countries and OECD: Female Labor Force, 2016
(In percent)

Sources: Department of Statistics, Malaysia; OECD.Stat; World Economic Forum, *the Global Gender Gap Report*, 2016; CEIC Data Co. Ltd.; and IMF staff calculations.

changed since 2012, the direct impact would have led to a 3½ percent smaller labor force by 2016 and real GDP would have been about 1 percent lower (average growth lower by 0.2 percentage points). The World Bank (2012) also found that improvement in female labor force participation rates helped real GDP growth.[8] Higher female labor force participation should help offset the impact of slowing population growth going forward.
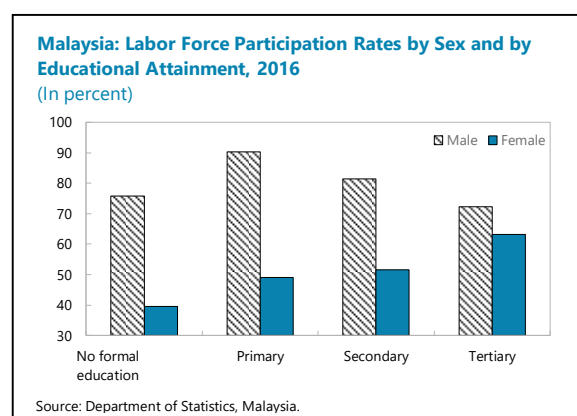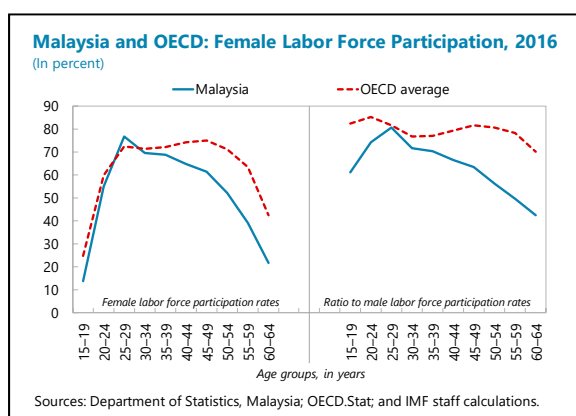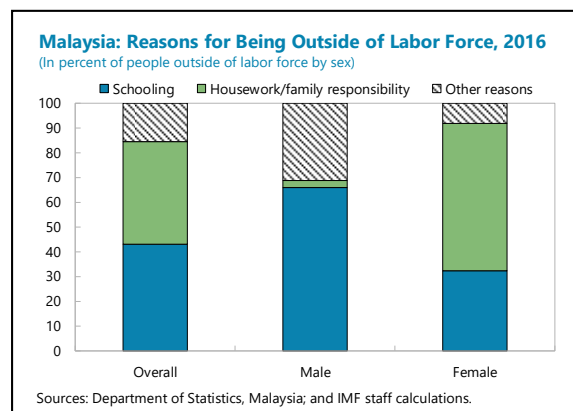
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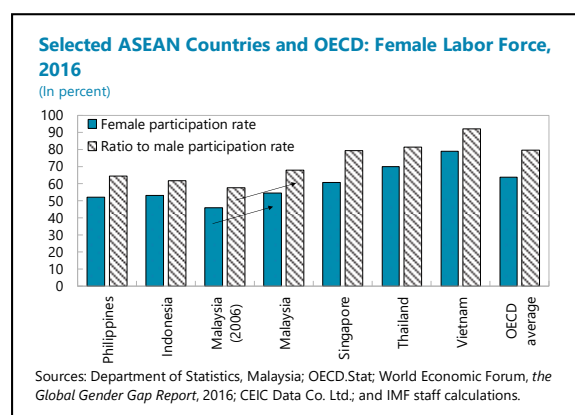
[8] World Bank, 2012, "Unlocking Women's Potential", Malaysia Economic Monitor, November 2012.

9.   While socio-cultural factor could potentially be at play, further policy actions may help improve female labor force participation. Studies have shown that beyond demographic factors, such as number of children, household size, etc., policy interventions can also help boost female labor force participation.[9] In Malaysia, official statistics reveal that housework or family responsibility is the dominant factor for women not seeking employment, both in urban and rural areas. This

Malaysia: Reasons for Being Outside of Labor Force, 2016
(In percent of people outside of labor force by sex)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

is also correlated with a faster decline in the participation rates among married women aged 30 years and above (the 2010 Population and Housing Census report the average age for females at marriage was about 26 years). In contrast, in OECD countries, female labor force participation rates do not fall until later in the life cycle. Relative to males, female labor force participation rates are particularly low for less–educated women.

Malaysia and OECD: Female Labor Force Participation, 2016
(In percent)

Sources: Department of Statistics, Malaysia; OECD.Stat; and IMF staff calculations.

Malaysia: Labor Force Participation Rates by Sex and by Educational Attainment, 2016
(In percent)

Source: Department of Statistics, Malaysia.

- IMF (2012) reports that female labor supply is more responsive to taxes than male labor supply. It finds that higher tax exemption for female workers than men and/or replacing family taxation, which usually leads to higher tax wedges for the secondary earners (e.g., women earners in many cases), by individual taxation have the potential to help improve female labor participation.

- In Malaysia, given women's dominant reason for not seeking employment mentioned above, particularly during the child–bearing or child–rearing ages, increased access to childcare facilities and family–friendly labor laws could help boost female labor participation. The Government Transformation Program 2.0 has set an ambitious target of 25 percent childcare enrollment by 2020 from 4 percent in 2012, but there has been limited success so far. Tax
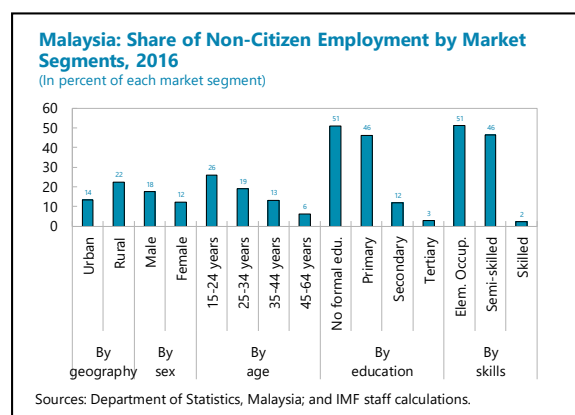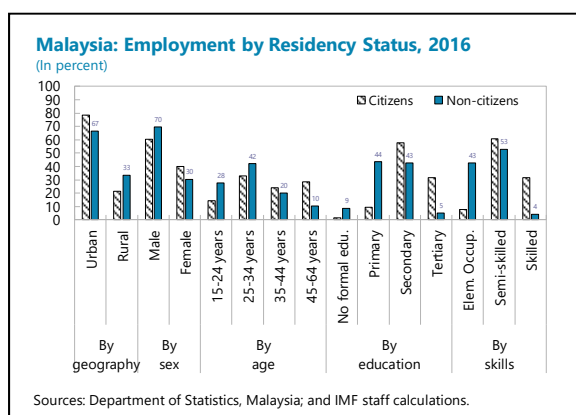
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[9] For example, Gonzales, C.; S. Jain-Chandra; K. Kochhar; and M. Newiak, 2015, "Fair Play: More Equal Laws Boost Female Labor Force Participation", IMF Staff Discussion Notes, SDN/15/02, International Monetary Fund; and IMF, 2012, "Fiscal Policy and Employment in Advanced and Emerging Economies", Policy Paper, International Monetary Fund, June 2012.

incentives to companies for setting up childcare facilities and/or encouraging them to allow flexible work arrangements could help retain married women workers.

- IMF (2012) documents that a shift away from labor to consumption taxes could potentially boost labor demand by reducing non–wage labor costs. In the Malaysian context, this would imply further upgrading the Goods and Services (GST) tax framework, including reduction in the number of exempt items and raising the tax rate. Use of the additional revenues on growth–enhancing items, including physical and human capital, could potentially have a positive effect on long–term growth and labor demand.

- Policies should also continue to strive toward achieving a gender–neutral employment law. In this context, while Malaysia has made improvements in recent years, including amendments to maternity benefits, announcing that termination of the services of a female employee during her maternity leave would be an offence in situations other than closure of the employer's business, and a new sexual harassment regime. However, certain restrictions remain on employment of women, for example, for night work and/or for certain industries.

- Some of the Budget 2018 measures have the potential of further incentivizing female labor force participation. These measures include, for example, (a) increasing the duration of maternity leave for the private sector to 90 days to match that of the public sector; (b) a minimum of 30 percent participation of women in Boards of government-linked companies and investment companies by end-2018; and (c) personal income tax exemptions on a maximum of 12 months consecutive salary for women with a career break of at least 2 years who intend to return to the workforce between 2018 and 2020.
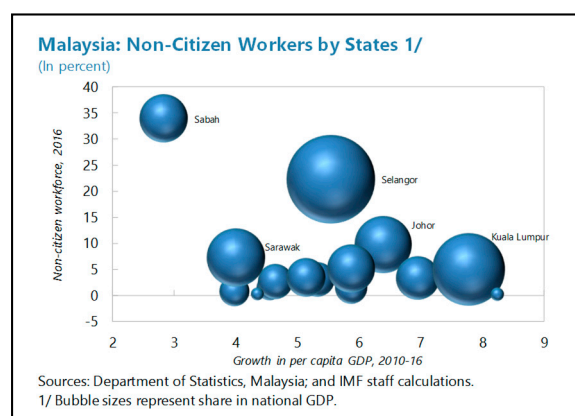
Employment of non–citizen workers

10.   Non–citizen workers are mostly employed in lower–skilled jobs. This reflects their relatively higher share in labor supply for such occupations compared to citizens. Citizens' higher education level are likely related to their relatively higher labor supply for higher–skilled jobs.

Malaysia: Employment by Residency Status, 2016 (In percent)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

Malaysia: Share of Non-Citizen Employment by Market Segments, 2016 (In percent of each market segment)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

11.   Demand for non–citizen workers varies by sectors and states. Data from the 2016 Economic Census reveal that non–citizen workers are primarily employed in three sectors: agriculture, forestry, and fishing; manufacturing; and construction, with the latter two sectors accounting for about two–thirds of the total non–citizen employment.

- A large share of workers in the agricultural sector are non–citizens, primarily employed on a full–time basis and are involved in sector–specific skilled work or in elementary occupation.[10] In the construction sector, non–citizen workers are mainly involved in construction of buildings, both residential and nonresidential.

- In the manufacturing sector, about one–quarter of the workers are non–citizens. Within manufacturing, the shares of non–citizen workers are relatively higher in furniture and wood–work related occupations; textiles; and plastic and rubber products etc., reflecting social factors influencing citizen's willingness to work in some of these occupations. In electrical and electronics (E&E) manufacturing (electronic components and board; computers and peripheral equipment; communication equipment; consumer electronics; electric motors etc.) — an important sector in Malaysia's economy (in 2016 this sector accounted for about one–third of total goods exports and manufacturing employment, and about 6¼ percent of GDP) — non–citizen workers account for between 20 and 30 percent of the workforce, and about two–thirds of them are females.

- Labor Force Survey data show that five states accounted for nearly 80 percent share in total non–citizen employment in 2016. In contrast, these states accounted for a combined 64 percent share in national GDP. The eastern state of Sabah (about 34 percent share in total non–citizen employment, with only 6.7 percent share in national GDP) and the peninsular state of Selangor (about 22 percent share in total non-citizen employment, similar to its share in national GDP), together accounted for more than half of overall non–citizen employment in 2016.

Malaysia: Non-Citizen Workers by States 1/
(In percent)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.
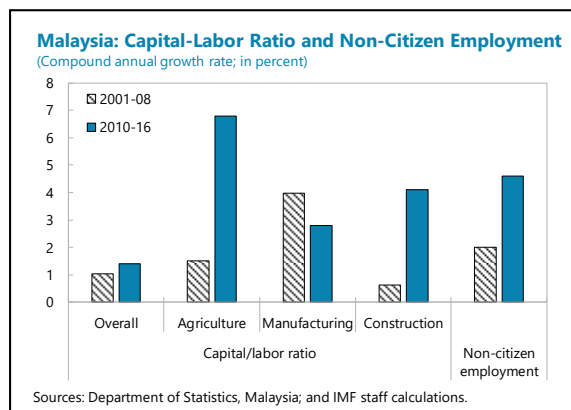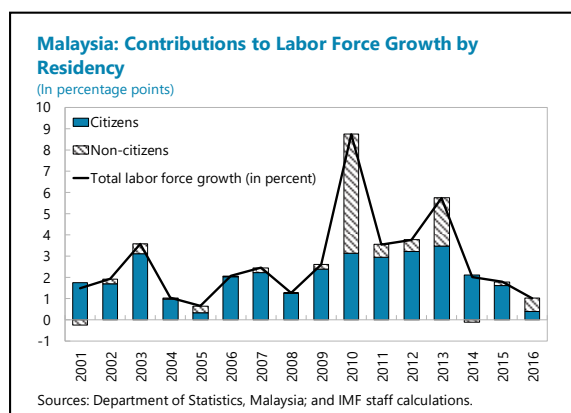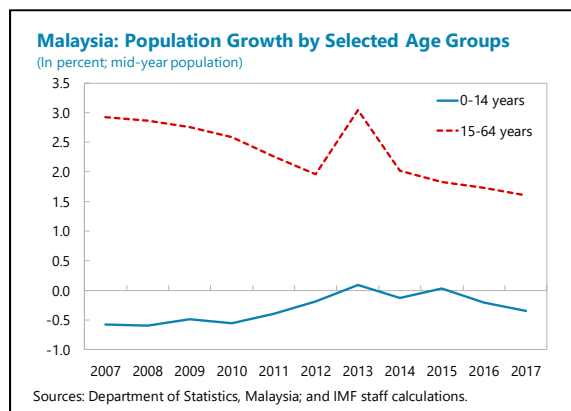1/ Bubble sizes represent share in national GDP.

12.   There are concerns in the public discourse that the influx of non–citizen workers has led to depressed wages and reduced job opportunities for lower–skilled workers. However, without establishing any causality, the data suggest that non-citizen workers have helped increase the labor force, contributing to GDP growth; while employment for lower-skilled

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[10] According to Malaysia Standard Classification of Occupations 2008 (MASCO 2008), elementary occupations are those that require skill levels equivalent to primary education. These includes cleaners and helpers; laborers in agricultural, forestry, farming, fishery, mining, manufacturing, construction, and transportation sectors; food preparation assistants; street and related sales and services workers; and refuse and other elementary workers.
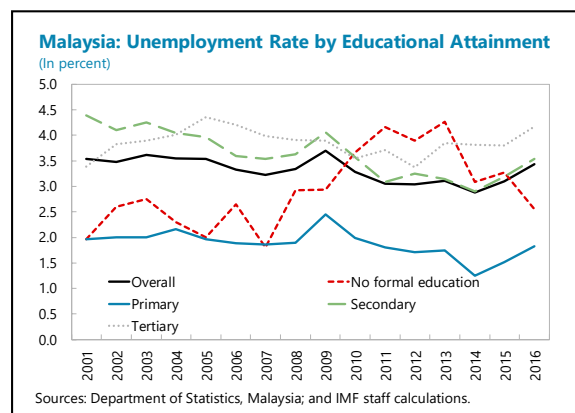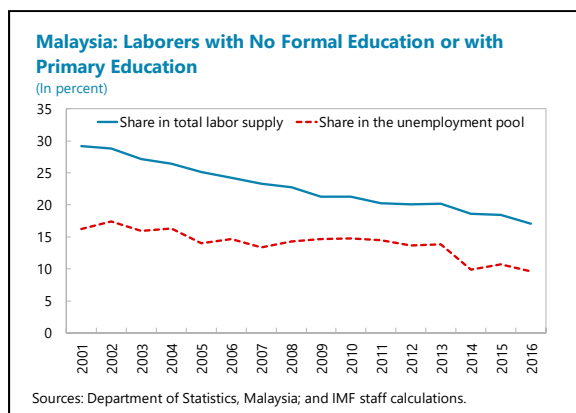
workers kept pace with their labor supply and their wage gap with higher skilled workers has declined, and the process of capital deepening proceeded at a faster pace. Indeed, the following were observed in Malaysia since the GFC:

- The rise in the non–citizen workforce has happened against the backdrop of slowing working–age population growth. Citizen population growth has nearly halved from 2 percent y/y in 2003 to 1.1 percent y/y 2017 (mid–year population estimates). Population growth by age groups shows that it has been largely negative for the youngest (0–14 years) age group, implying a risk of declining future labor force. As discussed earlier, working–age population growth has also slowed.

Malaysia: Population Growth by Selected Age Groups
(In percent; mid-year population)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

- During 2011–16, if the non–citizen labor force had grown at the lower rate observed over 2001–09, the total labor force would have been smaller by about 7 percent by 2016 and the average real GDP growth would have been lower by 0.4 percentage points (assuming no additional changes in the capital/labor ratio and/or in total factor productivity, and the same unemployment rate for non-citizens as observed during this period).

Malaysia: Contributions to Labor Force Growth by Residency
(In percentage points)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

- The economy-wide capital/labor ratio has grown at a slightly faster rate in the post–GFC period. This is not surprising given a rise in the share of labor income in total income (i.e., a higher wage/rental ratio) over this period. At the industry level, in agriculture and construction, two sectors that rely relatively more on non–citizen workers, capital/labor ratios have grown at a faster pace over 2010–16. However, in the manufacturing sector there has been a slowdown in growth in the capital/labor ratio. In the E&E sub–sector, fixed investment has grown at slower pace than the manufacturing sector as a whole since 2010. As labor's share

Malaysia: Capital-Labor Ratio and Non-Citizen Employment
(Compound annual growth rate; in percent)

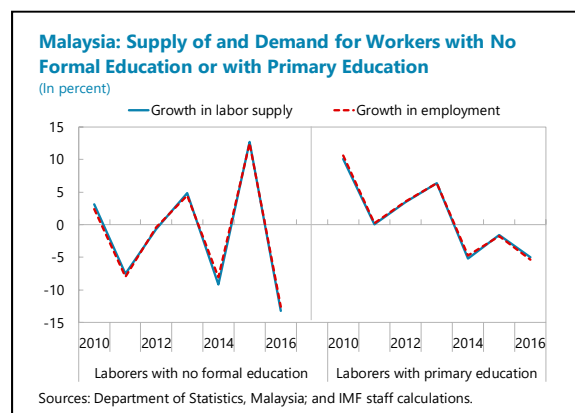Sources: Department of Statistics, Malaysia; and IMF staff calculations.

in total income rises over the medium term, overall capital/labor ratio should go up, supporting higher productivity.

- Despite a higher growth in the non–citizen workforce, workers with no formal education and primary education have seen a continued decline in their share in the total pool of unemployed workers, reflecting in part a decline in their share in total labor supply. Also, unemployment rates for these workers have remained lower than the national average, except between 2010 and 2015 when the unemployment rate for workers with no formal education was higher. However, the latter has declined at the fastest pace since 2013.

Malaysia: Laborers with No Formal Education or with Primary Education
(In percent)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

Malaysia: Unemployment Rate by Educational Attainment
(In percent)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

- In recent years, average salaries and wages for lower–skilled or less– educated workers have grown at a relatively faster pace than the highest–earning workers (see more below). Given that employment growth for these workers kept pace with labor supply, rising average salaries and wages point to complementarity in skills between citizens and non–citizen workers in these jobs and the impact of implementation of a minimum wage policy from 2013. Between 2010

Malaysia: Supply of and Demand for Workers with No Formal Education or with Primary Education
(In percent)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

and 2016, for sectors that rely relatively more on non–citizen workers, nominal average salaries and wages for all workers, relative to the national average of 5.4 percent compound annual rate, went up at a faster pace in agriculture, forestry, and fishing (7.4 percent rate); at a similar pace in the manufacturing sector; and at a slightly lower pace in the construction sector (5.1 percent rate). A World Bank study also found a positive impact of immigration on overall employment and wages for Malaysian citizens. However, this study also finds that a 10 percent rise in immigration has a small negative impact on wages of the less–educated Malaysian workers, but about five and half times larger negative impact on immigrant workers' wages.[11]
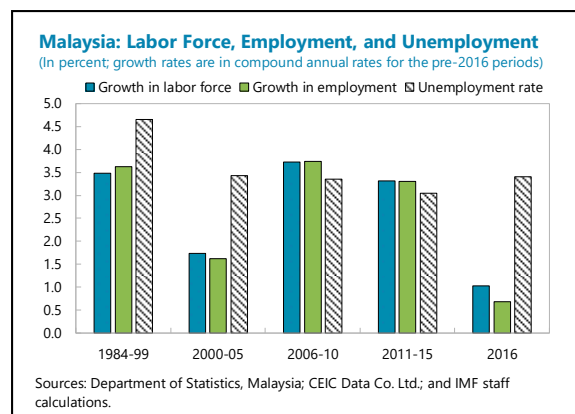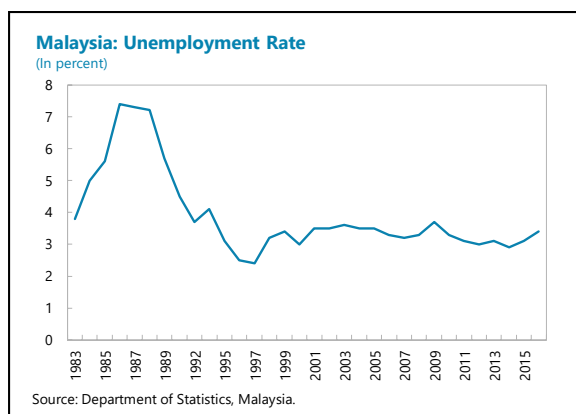
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[11] World Bank, 2015, "Immigrant Labour", Malaysia Economic Monitor, December 2015.

13.   Reforming non–citizen worker policies and processes will involve structural shifts in certain key sectors and should be phased in. Malaysia remains an attractive destination for immigrant workers in the region and, as Malaysian citizens get more educated and seek employment in higher–skilled occupations, non–citizen workers can help fill in the vacancies in the lower–skilled occupations. However, the authorities aim to increasingly rely on higher–skilled non–citizen workers within an overall limit, and encourage increased employment in high–skilled jobs and adoption of technology as the economy moves up the value chain. While the aim is to improve productivity, changes in non–citizen worker policies should be phased in to allow important sectors of the economy time to adjust. The authorities should continue consultation with industries on the pace of adjustment and should rely on market–based mechanisms, as fixed numerical limits tend to lose relevance over time and lead to distortions and/or misreporting.
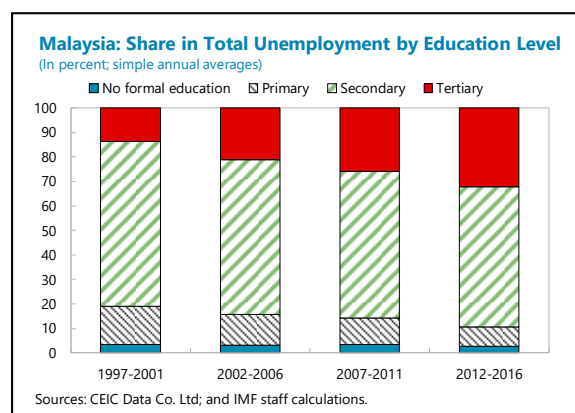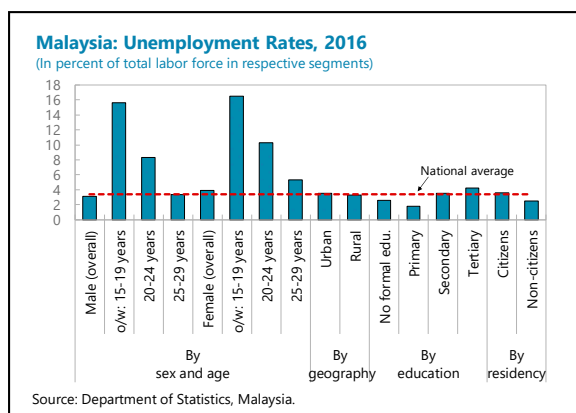
C. Unemployment

14.   The economy-wide unemployment rate has been largely stable since the late 1990s. In the last one and half decade, employment growth has been largely in line with labor supply growth, helping keep the unemployment rate stable. Earlier, faster average employment growth over nearly a decade preceding the Asian Financial Crisis helped lower the unemployment rate from above 7 percent in the mid–1980s to 2.4 percent in 1997. Since then the unemployment rate has remained within a range of 2.9 percent and 3.7 percent, with 2016 witnessing an uptick to 3.4 percent. In the ten months of 2017, the unemployment rate was largely stable around 3.4 percent.

Malaysia: Unemployment Rate
(In percent)

Source: Department of Statistics, Malaysia.

Malaysia: Labor Force, Employment, and Unemployment
(In percent; growth rates are in compound annual rates for the pre-2016 periods)

■ Growth in labor force ■ Growth in employment ▨ Unemployment rate

Sources: Department of Statistics, Malaysia; CEIC Data Co. Ltd.; and IMF staff calculations.

15.   However, certain segments of the labor market are exposed to higher unemployment rates than the national average. For example, in 2016, unemployment rates were higher for workers below the age of 30 years (youth unemployment); and more so for females than males in this age group. Also, females in rural areas and workers with tertiary education experienced higher rates of unemployment. Some of these patterns have remained for several years now pointing to structural factors that include skills mismatch. Unemployment of non–citizen workers was lower than that for citizens on average, reflecting that the demand–pull factors are playing a greater role than the supply–push factors in the employment of non–citizen workers.

Malaysia: Unemployment Rates, 2016
(In percent of total labor force in respective segments)
Source: Department of Statistics, Malaysia.

Malaysia: Share in Total Unemployment by Education Level
(In percent; simple annual averages)
Sources: CEIC Data Co. Ltd; and IMF staff calculations.

16.   The rising share of tertiary–educated workers in the unemployment pool suggests skills mismatch that needs to be addressed. Public spending on education, as a share of GDP, is much higher in Malaysia than in peer countries. But the quality of education needs improvement and the authorities are paying attention (see, for example, *Malaysia Education Blueprint, Pre–School to Post–Secondary Education*, 2013–2025 and *Malaysia Education Blueprint, Higher Education,* 2015–2025). Further improving the quality of education and better alignment of learning opportunities with evolving business needs should help lower skills mismatch, although achieving a 35 percent share for skilled employment by 2020 appears optimistic given the pace of improvements so far. Additionally, while the gender gap in school enrollment has been bridged, the overall level of enrollment in higher education remains significantly below the average for high–income countries, an income group Malaysia aspires to join. The authorities should continue to implement policies toward improving access to education and vocational training; modernizing course contents, including in consultation with industries; training the teachers; implementing dual language program to strengthen soft skills like English language literacy; and improving the infrastructural facilities in educational institutions.

D. Labor Compensation and Productivity

Labor compensation

17.   Labor's share in national income has increased in the last decade. Labor's share in national income has increased from 30 percent in 2005 to about 35 percent by 2015. Over 2011–16, average real salaries and wages have increased at 3 percent compound annual rate. In nominal terms, average salaries and wages are highest in the mining and quarrying sector, which also has the highest labor productivity, followed by services sub–sectors of real estate; information and communication; education; and financial activities. Average salaries and wages in the manufacturing and wholesale and retail sales sectors were lower than the national average.

18.   Malaysia has a much smaller gender earnings gap than most advanced and emerging market economies.[12] In 2016, female workers' average salaries and wages were about 4 percent below the average for male workers. Industry–wise, female workers earned about 30 percent less than males in agriculture, forestry, and fishing, whereas their average salaries and wages were higher in the construction sector, reflecting a higher share of female workers in skilled and semi–skilled occupations in that sector. Earning premia for higher–educated workers and skilled workers have declined slightly over 2011–16, partly because of the implementation of a minimum wage framework since 2013 that benefitted lower wage earners. State–wise, the gap between the states with the lowest and the highest average earnings has declined somewhat. However, slower increase in average salaries and wages in rural areas has contributed to a larger gap with urban areas.

Table 2. Malaysia: Minimum Wages
(Monthly; in ringgit)

	2013–15	2016
Peninsular Malaysia	900	1000
Sabah, Sarawak, and the Federal Territory of Labuan	800	920

Source: Attorney–General's Chambers, Malaysia, *Official*

Malaysia: Earnings Gaps by Type of Workers 1/
(Based on ratios of lowest and highest average salaries and wages within each category; higher ratio implies improvement toward equality)
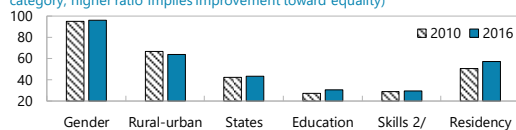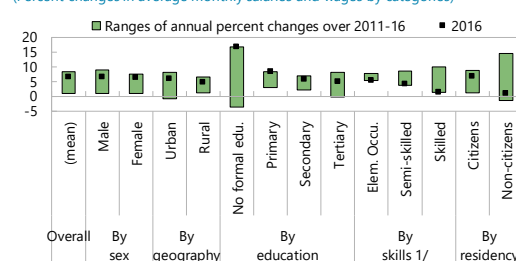

Sources: Department of Statistics, Malaysia; and IMF staff calculations.
1/ Ratio of average salaries and wages of: female workers to male workers (gender gap); rural workers to urban workers (rural-urban gap); the state with lowest mean payments to the state with highest payments (state-wise gap); relative to payments to tertiary-educated workers, averaged across workers with no formal education or primary education (education-related gap); workers in elementary occupation to skilled workers (skill-related gap); and non-citizens to citizens (residency based gap).
2/ Data on skills cover 2012-16 period. Skilled-workers are defined by the following occupations: managers, professionals, technicians and associate professionals. Semi-skilled workers are those who are neither in skilled nor in elementary occupations.

Malaysia: Salaries and Wages by Type of Workers
(Percent changes in average monthly salaries and wages by categories)

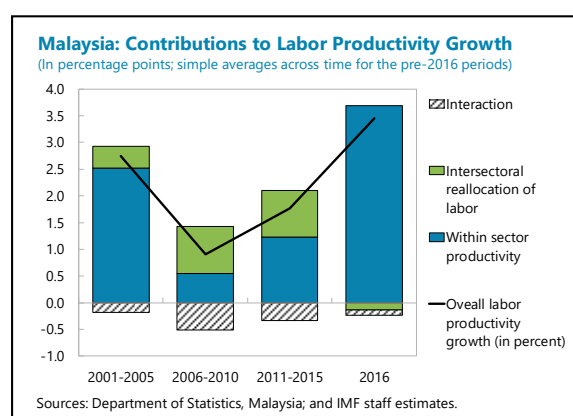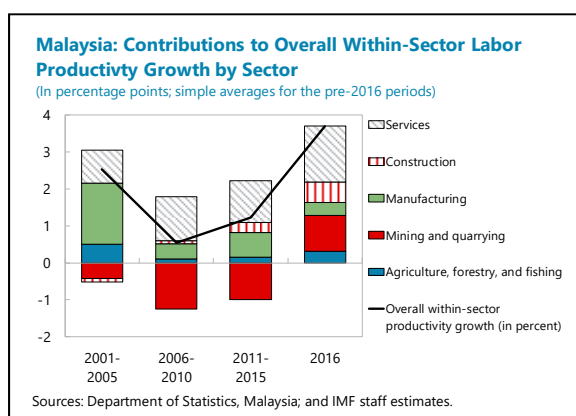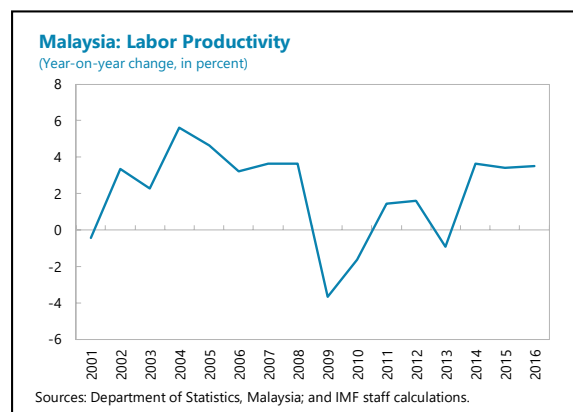Sources: Department of Statistcis, Malaysia; and IMF staff calculations.
1/ Data by skills cover 2013-16 period. Skilled-workers are defined by following occupations: managers, professionals, technicians and associate professionals. Semi-skilled workers are those who are neither in skilled nor in elementary occupations.

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[12] See Table C2 in Appendix C of the World Economic Forum's *Global Gender Gap Report*, 2016 for female-to-male earnings ratios in other countries.
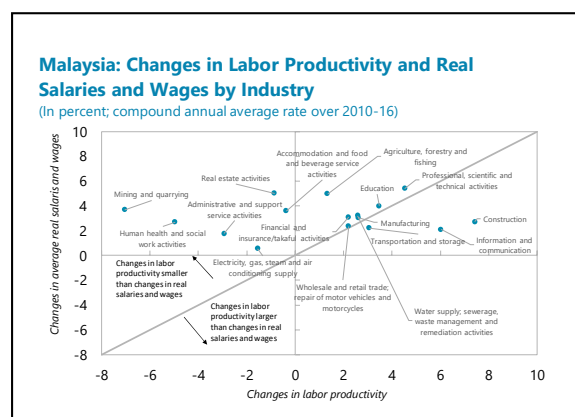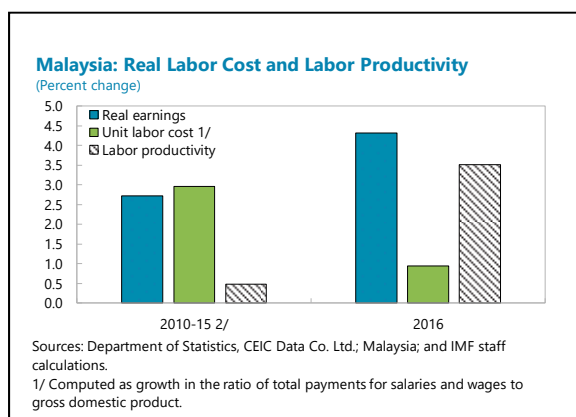
Labor productivity

19.   Since 2014, labor productivity growth has recovered. Labor productivity growth
weakened over 2009–13, but improved to about 3½ percent per annum average rate over 2014–
16.[13] Following Klyuev (2015), a decomposition
of Malaysia's labor productivity growth shows
that within–sector productivity improvements
have played a leading role in explaining overall
productivity growth.[14] Sectoral reallocation of
labor played a smaller role, except over 2006–10
when a productivity decline in the mining and
quarrying sector during 2008–09 lowered the
total contribution of within–sector productivity.
The manufacturing sector (particularly
during 2001–05) and the services sector have

Malaysia: Labor Productivity
(Year-on-year change, in percent)

Sources: Department of Statistics, Malaysia; and IMF staff calculations.

been the main contributors to within–sector productivity gains, with the agricultural sector
maintaining a small, but positive, contribution. The negative contribution from the interaction
term reflects primarily the decline in productivity, on average, in the mining and quarrying
sectors, while in 2016 it shows the impact of the lower combined shares in employment by the
mining and manufacturing sectors, which offset the turnaround in productivity in the former.

Malaysia: Contributions to Overall Within-Sector Labor Productivty Growth by Sector
(In percentage points; simple averages for the pre-2016 periods)

Sources: Department of Statistics, Malaysia; and IMF staff estimates.

Malaysia: Contributions to Labor Productivity Growth
(In percentage points; simple averages across time for the pre-2016 periods)

Sources: Department of Statistics, Malaysia; and IMF staff estimates.

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[13] Labor productivity is defined as the ratio of value–added across all industries (i.e., the real GDP) to total
employment. It is not adjusted for hours worked and/or quality of labor inputs. Labor productivity growth was
about 4 percent on a year-on-year basis in the first nine months of 2017.

[14] Klyuev, Vladimir, 2015, "Structural Transformation—How Does Thailand Compare?", IMF Working Paper, WP
15/51, International Monetary Fund.

20.   However, during 2010–16, labor productivity growth, on average, lagged the rise in real labor earnings. During this period, average labor productivity has improved at a much slower pace of about 1½ percent per annum, which was about 1–1½ percentage points slower than the average rise in real earnings for workers or in unit labor costs. Sectors that experienced highest negative gaps between labor productivity and labor real earnings accounted for close to one–third of total employment. For the two largest employing sectors (viz., manufacturing and wholesale and retail trade), productivity and real wage growth were broadly similar, on average. On the other hand, in the construction and information and communication sectors labor productivity gains were faster than real labor earnings growth. In the first nine months of 2017, labor productivity growth outpaced real wage growth.

Malaysia: Real Labor Cost and Labor Productivity
(Percent change)

Sources: Department of Statistics, CEIC Data Co. Ltd.; Malaysia; and IMF staff calculations.
1/ Computed as growth in the ratio of total payments for salaries and wages to gross domestic product.

Malaysia: Changes in Labor Productivity and Real Salaries and Wages by Industry
(In percent; compound annual average rate over 2010-16)

21.   Given its importance in the economy, the services sector should play a leading role in sustaining future increases in productivity. While the overall labor productivity growth in 2016 and the first nine months of 2017 met the 11MP aspirations, a sustained rise in the services sector productivity to 4.1 percent under the Plan's objectives seems optimistic given earlier performance (2001–15 average: 2.3 percent; 2016: 2.8 percent). In this context, productivity improvements in the following sub–sectors could have a greater impact on sectoral and economy–wide productivity: wholesale and retail trade; accommodation and food and beverages; education; transportation and storage; and healthcare. The Malaysia Productivity Blueprint has identified nine subsectors that are considered critical for improvements in productivity. Overall, staff's medium–term baseline projects a modest improvement in economy-wide labor productivity, between 2 and 3 percent per annum on average (faster than the historical average of about 2 percent, but slower than that assumed under the 11MP) accompanied by capital deepening.

E.   Conclusion

22.   The labor market in Malaysia has evolved and performed strongly in the last three decades, but there is room for further policy action to strengthen its performance. The labor market has evolved in line with economic and social transformations over the past three decades**.** Employment has kept pace with labor supply, helping maintain a stable unemployment

rate since the late 1990s. Labor's share in income has also gone up in recent years. However, some structural frictions remain and addressing them would help in realizing medium–term economic aspirations. As outlined in the 11MP and in several blueprints, policies should continue to be holistic with special focus on improving delivery of conventional and vocational education and their quality; creating skills that meet industry's needs; encouraging R&D; and incentivizing further female labor force participation. Any reform to foreign labor policies, aimed at inducing firms to switch to more capital-intensive technology, should be market-based, clearly communicated, and gradually phased-in to allow sectors that rely on foreign workers to adjust. Improved labor market outcomes, along with updated public infrastructure and regulatory framework will help further improve the business environment, support higher private investment, and contribute to lower external imbalances.

CALIBRATION OF FISCAL OBJECTIVES FOR MALAYSIA[1]

1.   The analysis in the paper illustrates the implications of the debt limit for the conduct of fiscal policy. It finds that, under unchanged policies, maintaining public debt below the policy objective over time would require a significant reduction in today's debt-to-GDP ratio. Otherwise, the policy response to shocks may be more restricted than in the past. The debt reduction can be achieved with a low deficit sustained over the long term.

2.   Fiscal deficit reduction is driving Malaysian debt down consistently. As shown in the Debt Sustainability Analysis (DSA) in Appendix IV of the companion Staff Report, the Federal Government Debt is expected to fall to less than 45 percent of GDP by 2022. The debt is expected to fall in the baseline and under a variety of shocks. Even the most severe shocks would lead to sustainable debt levels.

Malaysia: Gross Nominal Public Debt
(In percent of GDP)

3.   Fiscal policy is currently anchored by debt and deficit targets. The Malaysian authorities are conducting fiscal policy with an objective of achieving a near balance over the medium term. This objective has been the driver of the continuous fiscal deficit reduction over the past several years. Together with this objective, the ceiling of 55 percent of GDP for federal government debt, has been a major anchor for fiscal policy.

4.   The framework that limits the overall level of public sector debt is based on several laws that limit several aggregates. There is a

Malaysia: Medium-Term Fiscal Outlook
(In percent of GDP)

Source: IMF staff estimates.

legal ceiling of 55 percent of GDP for government securities, that is, Malaysian Government Securities (MGS), which are regular securities, and Malaysian Government Investment Issue (MGII) and Malaysian Islamic Treasury Bills (MITB), which are securities based on Islamic legislation. In addition, external debt and Treasury Bills are subject to ceilings of 35 billion ringgit and 10 billion ringgits respectively. The authorities have conveyed their policy of maintaining overall federal government debt below 55 percent of GDP but have not established this objective in legislation.

5.   The definition of a fiscal framework for the long term would be very beneficial. A framework that ensures fiscal sustainability and is well communicated to markets would foster

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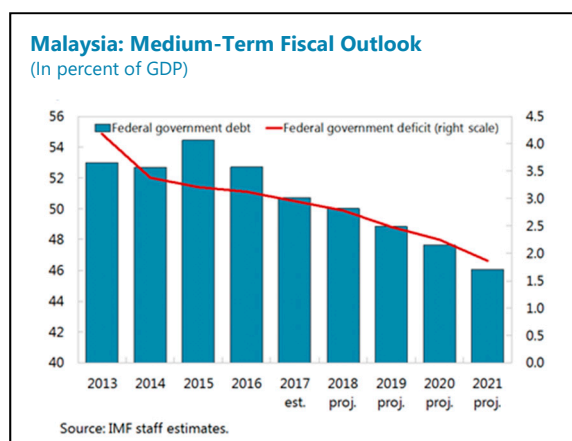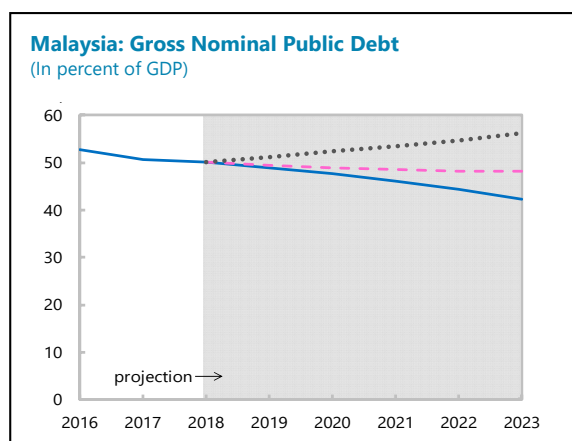
[1] Prepared by Juan Manuel Jauregui.

investment and growth. By anchoring market expectations, it can increase demand for government securities, reducing interest rates. Lower interest rates can increase domestic investment by reducing the cost of financing. A well-defined fiscal framework can also increase private investment by informing market participants about the level of taxation in the long term. This paper aims at providing a quantitative analysis that can help the authorities in defining long-term policy targets. The analysis is illustrative and complements the advice provided in the companion Staff Report, which factors in the entire macroeconomic policy mix.

A. Debt Targets and Likelihood of Breaching the Debt Ceiling

6.   The analysis follows a methodology developed by FAD. A detailed explanation is presented in "How to Calibrate Fiscal Rules: A Primer" by FAD. This stochastic analysis estimates a multivariate normal distribution of the variables involved in a debt accumulation equation. It complements the DSA, which is based on the baseline debt projections and deterministic shocks applied to the baseline. Annual data covering the 20-year period from 1997 to 2016 are used to estimate the distribution of the variables involved in the evolution of public debt. The multivariate normal distribution of a k-dimensional vector of macroeconomic variables can be written as:

$$x \sim N_k(\mu, \Sigma)$$

with the k-dimensional mean vector

$$\mu = (E[X_1], E[X_2], \dots, E[X_k])$$

and the $k \times k$ covariance matrix

$$\Sigma = \left(cov(X_i, X_j)\right), \text{ for all } i = 1,2,\dots,k; j = 1,2,\dots,k$$

7.   A set of macroeconomic variables are forecast over a 6-year projection horizon N times by drawing from the calibrated multivariate distribution of macroeconomic variables each year. The N sets of macroeconomic variable forecasts are used to generate N trajectories of the primary balance, using the estimated fiscal reaction function (FRF) and the level of debt in the preceding year. The FRF applicable for either an advanced or emerging market economy is based on the specification of Bohn (1998)[2]. The coefficients of the FRF are estimated econometrically to capture historical fiscal behavior. The estimation is carried out using separate panels for advanced and emerging market economies, so that the estimated FRF coefficients differ between income groups. The estimated specification is:

$$pb_{it} = a_i + \beta_1 pb_{it-1} + \beta_2 ygap_{it}D_{it} + \beta_3 ygap_{it}(1 - D_{it}) + pd_{it-1} + \varepsilon_{it}$$

where pb_{it} is the primary balance (as a ratio of GDP) of country i in year t, D_{it} is debt (as a ratio of GDP), $ygap_{it}$ is the output gap, D_{it} is an indicator variable taking the value of one when the output gap is positive, a_i is the country specific intercept term (fixed effect) and ε_{it} is a random error term,

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[2] Bohn, H. 1998, "The Behavior of U.S. Public Debt and Deficits," Quarterly Journal of Economics, 87.

$\varepsilon_{it} \sim$ N(0, Σ^2). The FRF allows for an asymmetric response to the output gap, so that the primary balance may deteriorate more when the output gap is negative, than it improves when the output gap is positive ($\beta_2 > \beta_3$). The output gap is projected over the forecast horizon using GDP growth forecasts obtained from simulations (based on the joint distribution of macroeconomic variables) combined with an HP filter to estimate potential output. Each type of fiscal reaction function includes a fiscal shock realized each period. The distribution of fiscal shocks is calibrated based on the estimated residuals of the fiscal reaction function; these residuals correspond to the deviations between actual fiscal responses observed (i.e. actual levels of the primary balance) and the fiscal response predicted by the fiscal reaction function within the sample.

8.   Annual changes in the primary balance implied by the fiscal reaction function are constrained based on historical experience, to ensure that projected primary balances are realistic. Fiscal shocks can also be added directly in the fiscal reaction function. The distribution of fiscal shocks is calibrated based on estimated deviations between observed fiscal responses (i.e. actual levels of the primary balance) and the fiscal response predicted by the fiscal reaction function within the sample. The N corresponding trajectories of debt (starting at the current debt level) are obtained by the system of simultaneous equations formed by the debt accumulation equation (government budget constraint) and the estimated fiscal reaction function. The debt accumulation equation is:

$$d_t = \left(1 + \left(\frac{r_t - g_t}{1 + g_t}\right)\right) d_{t-1} - pb_t + SFA_t$$

where d_t is debt (as a ratio of GDP), r_t is the average effective real interest rate on debt, g_t is the real GDP growth rate, pb_t is the primary balance (as a ratio of GDP) and SFA_t is the stock-flow adjustment (as a ratio of GDP). SFA_t is a constant stock flow adjustment for each period t, that could potentially account for the realization of contingent liabilities.

9.   The debt target is chosen by adjusting the level of debt consistent with the chosen threshold. If the 95th debt percentile (or other chosen percentile) of the debt ratio distribution in any year over the projection horizon is not sufficiently close to the debt ceiling, the "starting level" of debt is adjusted by a small amount (up to 0.4 percent) and a new iteration is done based on this new "starting level" of debt. The process is repeated until the chosen percentile of the debt level falls into a small margin around the ceiling in any year over the medium-term projection horizon: [Debt95] ∈ [ceiling - 0.4; ceiling + 0.4]. The "starting level" of debt satisfying this criterion is called the debt target, i.e. the level of debt whose projection does not exceed the ceiling with 95 percent likelihood over the medium-term projection horizon. The safety margin is computed as the ceiling minus the debt target.

10.   Fan charts can also be used to determine the probability of breaching the maximum debt limit, conditional on any starting level. For example, using the current debt level as the starting level, the fan chart can be used to determine the probability that debt exceeds the debt limit, over the projection horizon. This can be useful to gauge the extent of risk associated with a

country's current debt position. In the following charts, the likelihood is computed for a range of six years from an initial state set at the target level.

11.   Staff analysis shows that, under unchanged policies, macroeconomic shocks can drive the overall level of debt above the ceiling. A calibration of the level of debt based on the distribution of macroeconomic and policy shocks observed in Malaysia over the last two decades shows that, at the current level of debt, there is a 25 percent of probability that the debt level could

exceed the ceiling of 55 percent of GDP over a 6-year horizon. These probabilities reflect the past behavior of fiscal policy. In other words, the analysis shows that at current debt levels, unless the authorities decide to react differently to shocks than in the past, there is a 25 percent probability that the debt would breach the ceiling. However, in the future, and given the current level of debt and policy commitments, the authorities may choose to respond to shocks differently than in the past, which would help preserve debt below the ceiling.

Malaysia Debt Starting at Current Level

Source: IMF staff calculations.
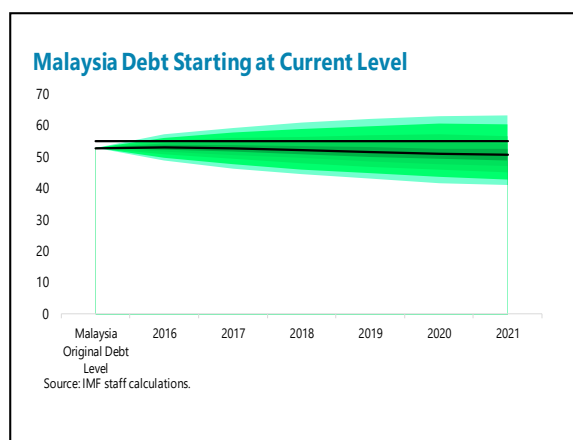
12.   There are several policy options to reduce the likelihood of high debt. The authorities can build fiscal space in good times, particularly when output is above potential. Another option is to exercise greater restraint than in the past when reacting to negative shocks. Such a path may be possible, but it may impose some risks or undesirable consequences, as it would mean less support to aggregate demand when output is below potential and could imply less support to vulnerable groups. Risk mitigation strategies are preferred, including the implementation of policies that reduce the frequency of negative shocks and their effects. Such policies could include regulatory or structural measures that would aim at maintaining a sound financial sector, exchange rate flexibility, and building up fiscal and monetary policy buffers, among others.

13.   A level of debt lower than projected for the medium term would be consistent with the current ceiling and past policy reactions. According to the calibration done by staff, under unchanged policies, a debt level of 34 percent of GDP would imply that overall debt remains under the ceiling of 55 percent of GDP with 95 percent probability. With such a debt level, fiscal policy can react to shocks in the same way as in the last two decades without imposing additional restrictions to policymaking.

Debt Target 34 Percent
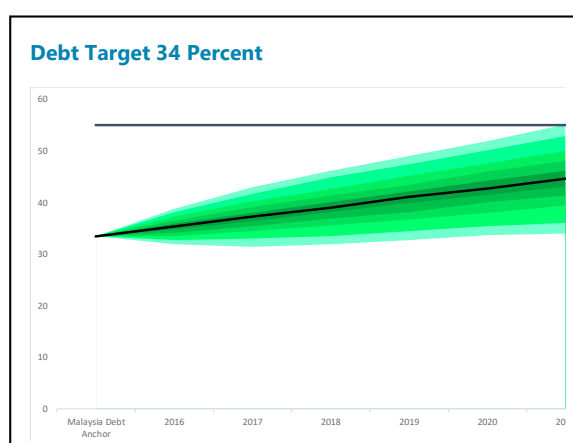
14.   Alternatively, a good level of safety can be achieved with a higher debt target. If the authorities build less fiscal space, and target a level of debt of 39 percent of GDP, the likelihood of debt remaining below the ceiling would be 90 percent.

Debt Target 39 Percent

15.   Gradual fiscal consolidation would be an alternative and more prudent way to raise the probability of maintaining the debt-to-GDP ratio under the 55 percent ceiling.[3] Debt has been falling at current deficit levels and is expected to fall, under staff's baseline projections for the medium term, to 45 percent of GDP as the deficit is expected to fall to 1.5 percent of GDP. Such a level of debt is associated with a likelihood of 85 percent of remaining below the ceiling. Alternative consolidation paths could also be appropriate depending on the macroeconomic circumstances.

Debt Target 45 Percent

B.   Operational Targets: Calibration of the Fiscal Deficit

16.   There are multiple ways to reach a chosen debt target. For each of the debt targets presented earlier, four alternative methods are followed to relate the debt target to the operational targets. First, the fiscal deficit is calibrated to bring the debt level to its target asymptotically over the long term. Second, the debt target is achieved in the long term after maintaining the deficit constant. Third, the deficit is adjusted gradually from the current level to the level that will be sustained for a longer term. Finally, the deficit is sustained at a level that allows for increased spending in the last part of the period of analysis.

17.   The assumptions for the calibration are in line with the baseline and the most challenging of the debt targets presented. This choice helps anchor the analysis in the current state of the economy and illustrates the change in fiscal deficit required to achieve the most challenging scenario discussed above. The starting point is characterized by debt at 51 percent of GDP, a debt target at 34 percent of GDP, long term nominal interest rate at 5.5 percent, long-term
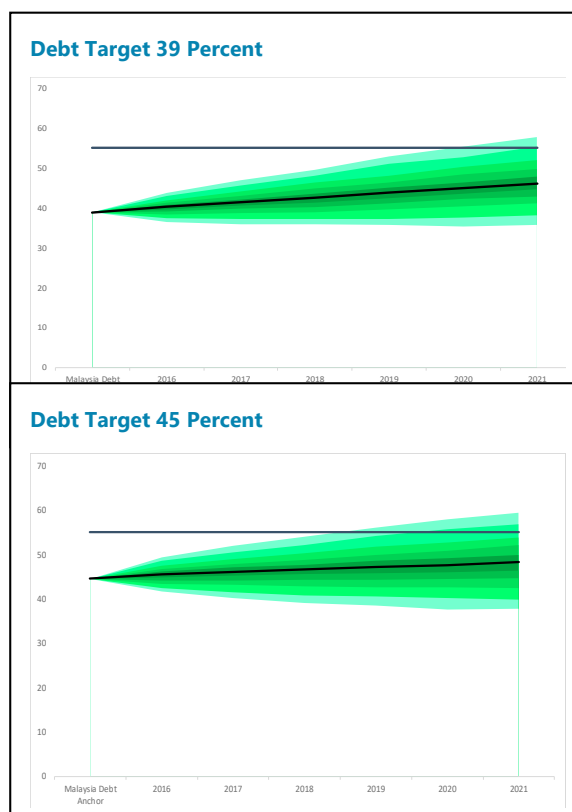
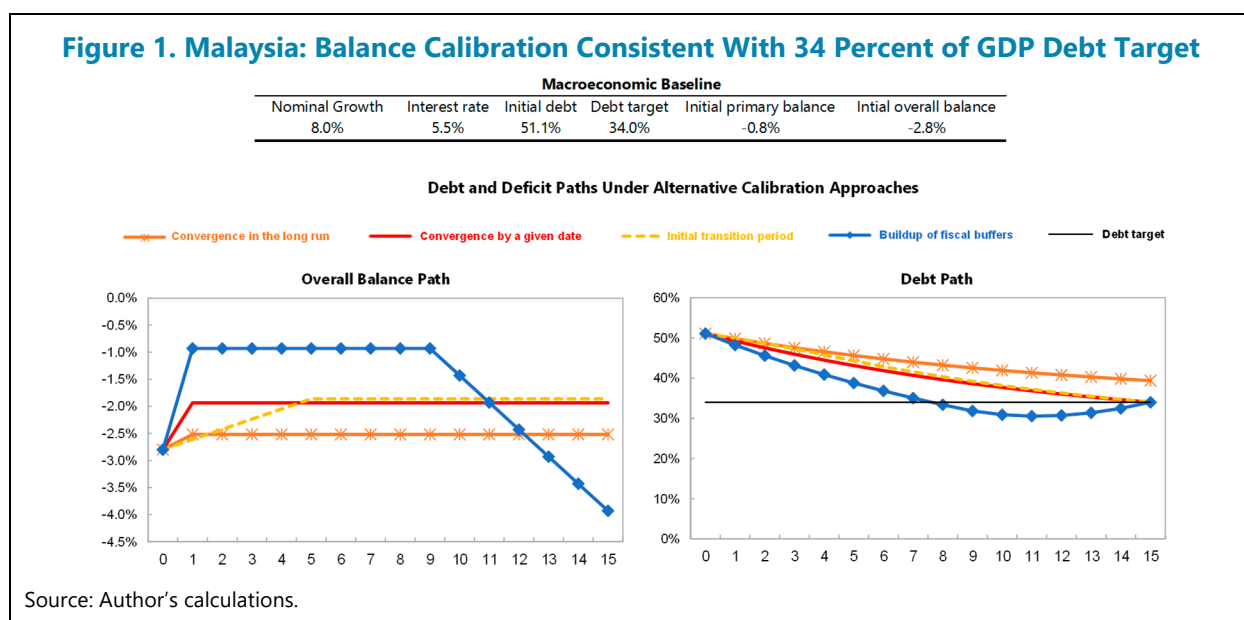| Table 1. Malaysia: Assumptions for Balance Calibration		
Variable	**Notation**	**Value**
Current debt ratio (% GDP)	d0	51%
Target debt ratio (% GDP)	d*	34%
Long-term nominal interest rate (%)	i	5.5%
Long-term nominal growth rate (%)	γ	8.0%
Current fiscal balance (% GDP)	b0	
Primary balance (pb)		-0.8%
Overall balance (ob)		-2.8%
Convergence period for debt (years)	N	15
Initial fiscal adjustment period (years)	T	5
Period until spending increases in (years)	P	10
Incremental spending (% GDP)	δ	0.5%

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[3] For a thorough explanation of Staff recommendation of a gradual fiscal consolidation see Fiscal Policy section in the Staff Report.

nominal growth at 8 percent, an initial primary deficit at 0.8 percent of GDP, and an initial overall deficit at 2.8 percent of GDP.

18. **Sustaining the deficit at a level close to that projected in the medium term in the baseline can achieve a great level of security.** A deficit of 2.5 percent of GDP sustained in the long term can take debt asymptotically to the target of 34 percent of GDP. Such a deficit, would bring debt to about 40 percent of GDP in fifteen years. A deficit of 1.9 percent of GDP sustained for fifteen years can bring debt to 34 percent of GDP. If the deficit adjusts gradually over five years from the current level to a level of 1.9 percent of GDP, the same debt level can be reached over the same period. Finally, adding 0.5 percent of GDP of extra spending per year between the tenth and the fifteenth year would require that the deficit be initially at 1 percent of GDP in order to remain within the debt limit.

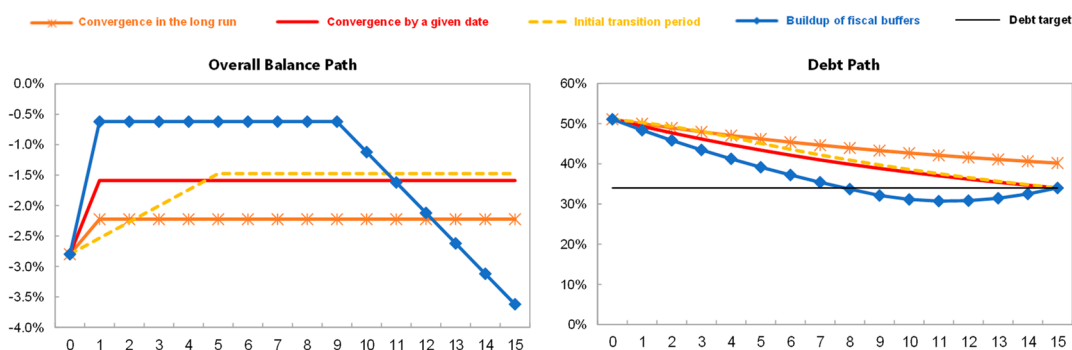**Figure 1. Malaysia: Balance Calibration Consistent With 34 Percent of GDP Debt Target**

Macroeconomic Baseline

Nominal Growth	Interest rate	Initial debt	Debt target	Initial primary balance	Intial overall balance
8.0%	5.5%	51.1%	34.0%	-0.8%	-2.8%

Debt and Deficit Paths Under Alternative Calibration Approaches

Source: Author's calculations.

19. **Under lower growth and higher interest rates the fiscal effort is higher.** Assuming 1 percent lower nominal growth and 1 percent higher interest rates would imply that a lower deficit is necessary to reach the debt target, although the difference is less than 0.5 percent of GDP.

20. **A credible long-term policy commitment can substitute for fiscal adjustment.** A medium-term fiscal framework and credible policy commitments with well calibrated anchors can be beneficial. Sustaining the current level of the deficit for the long term could achieve the same level of debt currently envisaged in the baseline at the end of the projection period, but over a longer period of time. An additional adjustment can create fiscal space for increased future spending.

Figure 2. Malaysia: Sensitivity Analysis

Macroeconomic Baseline

Nominal Growth	Interest rate	Initial debt	Debt target	Initial primary balance	Intial overall balance
7.0%	6.5%	51.1%	34.0%	-0.8%	-2.8%

**Debt and Deficit Paths Under Alternative Calibration Approaches**

Source: Author's calculations.

Figure 3. Malaysia: Balance Calibration Consistent With 45 Percent of GDP Debt Target

Macroeconomic Baseline

Nominal Growth	Interest rate	Initial debt	Debt target	Initial primary balance	Intial overall balance
7.0%	6.5%	51.1%	45.0%	-0.8%	-2.8%

Debt and Deficit Paths Under Alternative Calibration Approaches
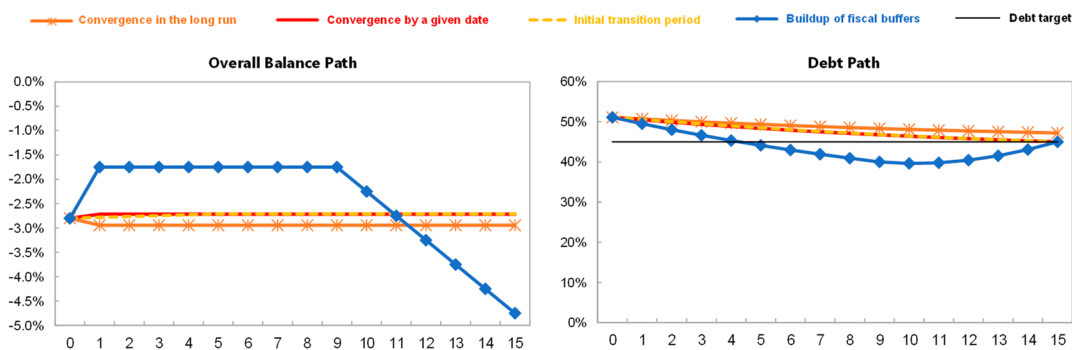
Source: Author's calculations.

C.   Conclusion

21.   A gradual consolidation is beneficial. The present analysis serves as a validation of the consolidation plans of the authorities. Consolidation would increase the likelihood of maintaining the debt below the ceiling and help build useful fiscal space. Having limited fiscal space restricts fiscal policy response to negative shocks as the debt ceiling could become binding. It is important to note that consolidation efforts should be done when growth is strong. The Staff Report explains staff's fiscal policy recommendation and the proposed path for the fiscal deficit under the baseline.

22.   The analysis is indicative of the degree of fiscal policy flexibility in response to shocks. The likelihood of the debt remaining below the ceiling of 55 percent of GDP varies between 75 and 85 percent by targeting debt levels between 34 and 45 percent of GDP. The illustration takes the debt ceiling as given and serves as an illustration to help guide the authorities in defining long-term fiscal anchors and operational policy objectives.

23.   Deficit levels within the range of the baseline projection are consistent with the calibrated debt targets. Different alternatives are possible to gradually achieve the deficit targets and to build space for future spending. A long-term commitment is required to achieve these targets. In order to appropriately manage aggregate demand, these targets should be understood as average deficit over the business cycle.