Regional Course on SNA 2008 (Special Topics):
Improving Exhaustiveness of GDP Coverage
22 – 30 August 2016
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1. CURRENT PRACTICES AND STATUS

The Gross Domestic Product (GDP) of Malaysia is estimated quarterly and annually by using two types of prices namely current prices and constant prices (base year 2010) based on recommendation of SNA 2008. Various techniques based on best practices and availability of data for each sectors have been used to estimate the value at current and constant prices.

The national accounts are compiled by three approaches which are production, expenditure and income approach. GDP based on **Production Approach** is defined as value of total production of goods and services produced in Malaysia after deducting value of intermediate consumption. This approach is also known as value added approach which will be able to show the contribution of each economic activity on overall GDP.

GDP based on **Expenditure Approach** is the summation of Private Final Consumption, Government Final Consumption, Gross Fixed Capital Formation (GFCF), Changes in Inventories and Valuables, Exports of goods and services minus Imports of goods and services. All these components are categorised as 'final demand' or 'final expenditure'. This approach measures value of goods and services used by final users on goods and services produced by resident.

GDP based on **Income Approach** is the summation of all incomes accruing the production in economy. Thus, this method enables factors of income and the return to factors of production to be measured by economic activity. The income components are Compensation of Employees, Gross Operating Surplus and Taxes less Subsidies on Production and Imports.
Tables on GDP by kind of economic activity at current and constant prices are published for GDP by production approach while expenditure approach provides tables by type of expenditure at current and constant prices. Meanwhile, for GDP by income approach, tables on income components of GDP, income components by kind of economic activity, compensation of employees by kind of economic activity and gross operating surplus by kind of economic activity at current prices are published.

Furthermore, GDP Benchmark based on commodity flow method, also known as Supply and Use Table (SUT) is compiled generally every five years to provide a new benchmark for the Malaysia’s economic statistics. In conjunction with the compilation of SUT, Department of Statistics Malaysia (DOSM) is also responsible in compiling the Malaysia Input-Output (I-O) Tables. As of today, Malaysia has compiled I-O for reference year 1978, 1983, 1987, 1991, 2000, 2005 and 2010.

Apart from that, DOSM compiled the I-O Update for reference year 2007 and 2012. DOSM has also succeeded in publishing its first inaugural publication of I-O Regional 2010. Both I-O Update and I-O Regional are limited for main stakeholders only.

In terms of compliance with 2008 SNA recommendations, DOSM, has implemented Research and Development (R&D), Financial Intermediation Services Indirectly Measured (FISIM) and weapons system. SUT 2010 is yet to fully comply SNA 2008 in terms of goods for processing and estimating output produced for own final use by including the return to capital.
1.1 Methodology and Data Sources

SUT compilation requires a massive volume of statistical data. In Malaysia, as in most other countries, data are obtained from a variety of sources namely:

i. Surveys/censuses carried out by DOSM;

ii. Collection of data by government agencies for administration purposes;

iii. Financial accounts and other documents (both published and otherwise) relating to government enterprises, private companies and other organizations.

Although, primary and secondary data were available, there was requirement to estimate certain items or components such as value of services by detailed commodity whereby a few procedures were adopted in this compilation to complete the estimations such as:

i. All available relevant statistical data were gathered and adjustments were made for deficiencies or incomplete coverage;

ii. The basic data usually pertains to the total value of transactions but sometimes it becomes essential to use data on quantity produced and then apply the appropriate prices to arrive at transaction values; and

iii. Occasionally, even quantity data were not available and in order to value the transaction, basic estimates and proxy measure were used.

The quarterly estimates for economic activity and expenditure components are derived from the monthly/quarterly information on quantity, value and price and were aligned with the annual estimates by using the benchmarking technique. The estimates were done at current and constant prices.
Intermediate consumption at constant prices is derived by utilizing most recent accessible constant prices input-output ratio; inflating this gives intermediate consumption at current prices. Value added is derived as residuals by subtracting intermediate consumption from output. The national accounts statistics are compiled from a large number of data sources that include censuses and surveys; administrative statistics; records held by businesses or industry associations; and, a large number of other ad hoc sources.

For Agriculture, Fishery and Forestry, the source of information is often administrative; such as Malaysian Palm Oil Board (MPOB), Malaysian Rubber Board (MRB), Department of Agriculture (DOA), Malaysian Pineapple Industry Board (MPIB), National Kenaf and Tobacco Board (LKTN), Malaysian Pepper Board (MPB), Federal Agriculture Marketing Authority (FAMA), Malaysian Cocoa Board (KOKO), Department of Veterinary Services (DVS), Department of Fisheries (DOF) and National Timber Industry Policy (NATIP). Estimates of the production will be derived from the Monthly External Trade Statistics and Quarterly National Accounts Survey involved or based on assumptions about population growth. Output also includes estimation of fixed capital formation from new plantings (for Rubber, Oil Palm and Other Agriculture), breeds (for Livestock) and planted logs but has not attained the maturity to be cut (for Forestry and Logging).

For the Mining and Quarrying industries, Petram Nasional Berhad (PETRONAS), Minerals & Geoscience Department and Petroleum and Natural Gas Statistics are the usual source. Quantity of production and relevant prices information on quarterly basis are used to obtain output at current and constant prices. Production of crude oil, condensate and natural gas were used to obtain output for crude oil, condensate and natural gas while output of other mining was obtained from quantity by type of minerals.
Meanwhile, estimates of **Manufacturing** are very likely to be based on the Monthly Manufacturing Survey, Industrial Production Index and relevant price indices. Because it is difficult to obtain reliable data on construction activity, estimates of **Construction** output are usually based on value of work done from Quarterly Construction Statistics.

Data on production and distribution of **Electricity, Gas and Water** come from financial statements of the Federal Government, State Government, Local Authorities & Statutory Bodies and Quarterly National Accounts Survey. Consumption data of electricity, gas and water are used to estimate output at constant prices.

For **Wholesale & Retail Trade**, the total output is moved by sales value indicators that obtained from Monthly Survey of Distributive Trade and Index of Distributive Trade. Meanwhile, for **Food & Beverage, Accommodation, Transportation & Storage, Information & Communication, Real Estate, Private Education & Private Health Services, Business Services and Other Private Services**, Quarterly Survey of Services and Quarterly National Accounts Survey data are used as a mover to estimate output at current prices.

The number of owner occupied houses from Population and Housing Census and information on average rental from Household Expenditure Survey are used as a benchmark to estimate output at current prices. For the subsequent years, the quarterly estimate of **Owner Occupied Dwellings (OOD)** at constant prices is extrapolated based on changes in housing stock which includes the increased proportion factor of home ownership population in Malaysia.

For **Finance**, output consists of explicit service charges and FISIM. FISIM is calculated based on reference rate method as recommended in 2008 SNA. Allocation of FISIM is made according to the composition of stock of loans and deposits in the banking
system. On the other hand, output for **Insurance** is derived by adding premium income and net investment income minus claims paid.

In the case of **Government** activity, value added at current prices equals the sum of compensation of employees, pension allocated to the current employees and consumption of fixed capital. The Government Services at current prices is compiled based on accounts of four levels of government namely Federal, State, Local Authority and Statutory Bodies. For quarterly estimates, the Federal Government account is used as movers for the whole government sector. Relevant price indices are used to obtain the constant value added.

### 1.2 Rebasing of the Malaysian GDP from Base Year 2005 to 2010 Prices

DOSM revised the base year for GDP statistics from 2005 to 2010 with the release of 1Q 2015 GDP. In order to enhance the quality and comparability of Malaysia’s GDP statistics, the rebasing exercise incorporates conceptual and methodological improvements as well as the latest industrial reclassification to the statistical compilation based on SUT as the framework. This is to incorporate recent economic developments, methodological improvements, and industrial reclassification and to reconcile data from various censuses.

The previous GDP rebase exercise was done in 2012 where GDP base year and prices were changed to 2005 from 2000. The annual and quarterly GDP data under the new base year is published from the year 2010 onwards.

GDP base year 2010 is the sixth rebase exercise implemented by Department of Statistics, Malaysia. The previous series of base years were 1970, 1978, 1987, 2000
and 2005. The 2005 series were produced in 2012, while the 2010 series are released in 2015.

There are two main conceptual and methodological changes that were carried out. First, treatment on Goods for Processing from Abroad (GFP) and Manufacturing Services (MS) which is based on change of ownership principle as outlined in SNA 2008 and Balance of Payments and International Investment Position Manual, Sixth Edition (BPM6). GFP are goods that are sent abroad by an owner to a processor for processing and subsequently returned to the owner or exported to third party, without a change of ownership. Throughout the process, the processing entity does not own either the imported inputs or the processed goods. The processing entity merely receives a processing fee from the owner of the goods for providing the processing services.

Based on the survey conducted by DOSM, Malaysia is predominantly a GFP processor country. In the past, GFP were treated as export and import transactions between a resident and non-resident in the goods account, regardless of the ownership status. With the rise of global production networks, this statistical treatment on GFP has inflated international trade statistics. In response to these concerns, both SNA 2008 and BPM6 have recommended the exclusion of GFP from the goods accounts, with only the processing fees included in the services account.

Secondly, the Component of Consumption of Fixed Capital (COFC) or depreciation for Government Services and Government Consumption will now be based on the Perpetual Inventory Method as recommended by SNA 2008.

With the aim of enhancing the quality, reliability and coverage of Malaysia’s national account statistics, the rebasing exercise reconciles the latest data from the various censuses, surveys and data sources. DOSM utilised detailed censuses and surveys
undertaken since 2010 (reference year 2010) for National Accounts compilation. The data were used as the main source to compile the SUT and I-O Tables. Availability of comprehensive data for the year 2010 enables this exercise to be materialised and the respective data were:

i. Economic Census 2011 (reference year 2010);
ii. SUT 2010;
iii. I-O Tables 2010;
iv. Household Expenditure Survey 2009/10 and 2014;
v. Census of Distributive Trade 2014 (reference year 2013) & Quarterly Distributive Trade 2010;
vi. Relevant Price Indices 2010

Moreover, more comprehensive information and data on industries were obtained from other public agencies such as the MPOB and the Ministry of Agriculture (MOA). Consumer Price Index (CPI), Producer Price Index (PPI) and other price indices of 2010 were used to derive the constant value. However for those commodities which were not covered in PPI and CPI, the prices were obtained from respective authorities. Wages Index is used to derive the constant value for Government Services.

In terms of industrial reclassification, selected subsectors in the manufacturing, services and mining sectors were reclassified in accordance with the latest Malaysia Standard Industrial Classifications (MSIC 2008).

The rebase resulted in changes in GDP values and some key economic ratios. The estimation of Malaysia’s GDP has been improved and benchmarked to the base year 2010 to reflect the latest changes in economic structure and relative prices in the
The revision has minimal impact on Malaysia’s overall growth figures, suggesting that underlying growth momentum of the economy remains unchanged.

2. CHALLENGES FOR COMPILATION OF NATIONAL ACCOUNTS

2.1 Data coverage

DOSM has taken an initial effort to take into account the contribution of informal in GDP. However lack of coverage of the informal sector and the non-observed economy in general would result in underestimate/overestimate on levels and trends of GDP, and thus causes imbalances in the internal consistency of economic transactions and would ultimately pose a real challenge to the credibility of national account estimates. Towards addressing the issue in more concrete, DOSM had identified and gathered some information on the informal activities. Currently, DOSM is studying the estimation of informal sector for year 2010 and 2011 with using the Labour Input Method (LIM). At the moment DOSM is exploring LIM based on Small and Medium enterprise value added especially establishment with less than nine employees in deriving value added of Informal sectors.

2.2 Appropriate deflators

Appropriate deflator in financial activities is needed to derive a constant price. Currently DOSM is using general price (CPI) as the deflator. At the same time, DOSM consistently monitor changes in the Overnight Policy Rate (OPR) as it will affect general interest rate in the market. In the absence of comprehensive data set on interest paid by
sector, data on loans and deposits by sectors are used as an indicator to allocate the FISIM by economic activities.

The standard procedure recommended in the SNA for OOD is to assume that the rents that would be paid are the same as the rents actually paid for similar dwellings. But the standard procedure cannot always be applied. This is the case where so few dwellings are rented that rents actually paid cannot be regarded as typical. When the standard procedure cannot be used, expenditure on dwellings is estimated by the user cost method. For SUT 2010, domestic production of OOD is estimated using the user cost method as recommended by Guidelines for the User Cost Method. Various data items needed to impute expenditure on owner occupied dwelling services by the user cost method. In case of Malaysia, the transaction data obtained from National Property Information Centre (NAPIC) does not stated whether the house is owned or rented and there is no information on the breakdown by type of dwellings. The input-output ratio from SUT 2010 is used to derive the input for this sector.

2.3 Capacity Building

Knowledgeable and skilled personnel are a prerequisite to produce the right statistics. The increasing need for a wide range and complex statistics requires skilled personnel with diverse knowledge and passion in the field of statistics, economics, demographics and ICT. Subject matter experts on SUT and I-O are limited. Expertise is needed to expand SUT and I-O Tables into new areas such as Trade in Value Added (TiVA) and Global Value Chain (GVC).

The purposes for participating this course is to enhance understanding on the SNA 2008 especially on concepts and best practices in data sources, indicators & compilation
techniques regarding GDP. This experience will pave the way to compile a more reliable SUT; consistent with the recommendations of SNA 2008. Besides, DOSM plans to produce annual SUT, which will be used to obtain detailed and consistent annual estimates of the GDP.

This course will be a useful platform for sharing of knowledge and experience in terms of compilation and methodologies of national accounts used by other countries. Furthermore, DOSM will benefit this opportunity to learn on methods and techniques used to deflate each element of I-O Tables to compile national I-O Tables at constant prices. The I-O Tables at constant prices are most often used to provide consistent time series on gross output and GDP by industry.

3. QUALITY PRACTICES

3.1 Modernisation in Technology

Prior to the 1950s, DOSM adopted hand-pick system whereby data were collected and captured manually. This practise was insufficient to capture and process the data that might lead to momentous non-sampling error. In year 1954 and 1957, ICT tabulator and Key Punch Machine were introduced to speed up the process in producing statistics, and in 1967, the workflow had migrated from mechanical to electronic data processing following the installation of main frame system. The system had been continuously upgraded up to 1980’s, few generations of mainframe systems were installed to cope with the increasing usage and users' demand for timely data. DOSM started to use the Intelligent Character Recognition (ICR) for data processing in 2005. ICR has definitely reduced the time consumed in data processing and human error in data capturing.
Recently, DOSM has taken new initiatives to integrate different system applications and all statistical workflow through a computerised system known as National Enterprise-Wide Statistical System (NEWSS). The workflow includes designing, processing, collecting, analysing, interpreting and disseminating activities as highlighted in the Generic Statistical Business Process Model (GSBPM). Internationally, the implementation of GSBPM started since April 2009 with the main objective to define and describe statistical process in a consistent way. The NEWSS project kicked off in 2008 and the first phase of development was completed and fully implemented in 2010. Ultimately, DOSM is moving towards developing NEWSS as an integrated system and serve the following purposes:

i. To standardise, consolidate and improve the existing system/application to support the strategic requirement and the operation of DOSM;

ii. To simplify, improve and expedite the process of statistical data dissemination;

iii. To develop an integrated business process management that adheres to international statistics standard; and

iv. To build up a central repository to facilitate data sharing between DOSM and other government agencies.

DOSM also has started using this electronic medium for data collection for some of the surveys some years back. Computer-assisted personal interview (CAPI) has been used to collect monthly prices, computer-assisted telephone interview (CATI) for the labour force survey; e-mail and e-survey for economic surveys are some of the examples of electronic data collection method implemented.

3.2 Evolution in Statistical Products
**Statistics Data Warehouse (StatsDW)** is an Enterprise Data Warehouse (EDW) and it stores historical data from as early as 1974 from various censuses and surveys conducted by the DOSM as well as compiled data for economic indicators. StatsDW enable fast and easy access to data stored (e.g. time series data) and facilitates wider access for users according to user requirements and level of access permitted. Apart from functioning as data storage, it also provides interactive platform through eDataBank, Data Visualisation and Location Intelligence where users can explore and utilize freely. The purposes of the project are:

i. To consolidate all historical micro data and aggregate data in the EDW;

ii. To enhance data quality and consistency;

iii. To enable fast and easy access to data stored;

iv. To disseminate the data to wider users in a timely manner.

For the time being, StatsDW consists of mainly the annual data and may not be the latest. DOSM are expanding the scope to quarterly and monthly in the near future. DOSM are uploading the latest data from time to time and also the historical data in stages.

DOSM has participated in the **Regional Capacity Development Technical Assistance (RCDTA) 8838 Project** organized by ADB, starting from December 2014 until December 2018. The participant other than Malaysia were Bangladesh, Bhutan, Brunei, Cambodia, People Republic of China, Fiji, Hong Kong China, Lao PDR, Indonesia, Malaysia, Mongolia, Maldives, Nepal, Pakistan, Sri Lanka, Taipei China, Thailand and Vietnam. By the end of the project, it is envisaged that (i) all participating economies are able to compile benchmark and/or updated SUT based on latest data and in accordance with international standards, (ii) gross domestic product (GDP) estimates of participating economies will incorporate 2008 SNA recommendations to the extent possible, (iii) reliable and accurate data for measuring and monitoring economic output will be made
available, and (iv) outputs are used for time series and cross-country analysis of economic outputs and structures for the region.

Since SUT 2010 is compiled manually i.e. based on a stand-alone basis, the compilation process is time consuming especially during data extraction and compilation, data coding, data reconciliation and balancing. Thus, DOSM plans to compile the future SUT based on centralised system which could integrate those multiple stages during the process. The system is aimed to compile data at detailed level such as by district, state, ownership and institution. The capability of the system is seen able to expedite the compilation of I-O Tables, GDP, Distribution and Use of Income Accounts and Capital Account (DUICA) and etc.

4. THE WAY FORWARD

The third Malaysia’s SUT is for reference year 2015 and subsequently I-O Tables will be compiled. DOSM plans to fully implement SNA 2008 in the compilation of SUT 2015. For SUT, DOSM are investigating methods and data sources for annual balancing and the SUT framework will now be developed to facilitate the production of balanced constant price estimates of GDP.

DOSM will compile the I-O Update for reference year 2014 which is expected to be completed in December 2016. The upcoming Regional I-O Tables for reference year 2015 will be compiled subsequently after the completion of Benchmark SUT. Leveraging from this project, DOSM plans to compile I-O Tables annually.
This course served as one of the platform for National Statistical Offices (NSOs) to exchange experiences, especially the host country can share the knowledge and ideas in improving and enhancing our National Account Statistics in this region. Moving forward, DOSM is looking for the opportunity to expand further collaboration with other NSOs in terms of improving the estimation of National Accounts.