



IFC - Central Bank of Armenia Workshop on "*External Sector Statistics*"

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## Compilation of External Sector Statistics: Malaysia's Experience<sup>1</sup>

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<sup>1</sup> This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

# Compilation of External Sector Statistics

## Malaysia's Experience

Norhayati Razi<sup>1</sup>

### Abstract

This paper provides details on the compilation of External Sector Statistics (ESS) in Malaysia. The compilation of Malaysia's ESS is supported by strong legal and institutional framework. While the Department of Statistics, Malaysia (or DOSM, the national statistics office) remains the official compiler of the Balance of Payments (BOP), International Investment Position (IIP) and Coordinated Direct Investment Survey (CDIS), Bank Negara Malaysia (BNM, the Central Bank) is the official compiler of the External Debt Statistics (EDS), Coordinated Portfolio Investment Survey (CPIS) and International Banking Statistics (IBS). The legal framework outlines the data collection responsibility of both agencies, and Malaysia's compilation of the external sector statistics is aligned with the standard and requirements of the Balance of Payments and International Investment Position Manual, Sixth Edition (BPM6) and Special Data Dissemination Standard (SDDS). In particular, Malaysia has adopted an integrated approach to collect the financial account transactions and positions at granular level to produce the various data sets, namely BOP, IIP, EDS, CPIS, CDIS and the IBS, which are consistent. An institutional arrangement (MOU) was established between DOSM and BNM to facilitate the data collection, i.e. via a Joint-Survey, and granular data collected are being shared between the two agencies to facilitate data compilation and dissemination.

Keywords: data collection, external sector statistics

JEL classification: C8

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## Contents

Abstract .....	1
Introduction.....	3
Compilation Practice in Malaysia.....	3
BNM-DOSM Joint IIP Survey.....	4
Coverage of the quarterly IIP Survey.....	6
Data quality checking mechanism.....	6
Cross-check against internal and external sources .....	6
Regular engagement with reporting entities.....	6
Benefits of integrated approach in compiling ESS .....	7
ESS Compilation Scope and Coverage .....	8
The System Architecture.....	9
Compilation Challenges and Moving Forward.....	12
Sustainable Compilation System .....	12
Expansion in Scope and coverage.....	12
Ever-changing Financial System.....	12
Data Accuracy.....	13
Conclusion.....	13

## Introduction

Despite relatively small in size as compared to other countries in the South-East Asia region, Malaysia is an open economy with strong external position. In 2017, Malaysia's Current Account (CA) of BOP recorded a surplus of MYR40.3 billion or 3.1% of Gross National Income (GNI), 20<sup>th</sup> consecutive annual surpluses since 1998 reflecting a favourable external trade performance, particularly in the manufacturing and mining sectors. At the same time, the Financial Account (FA) recorded a net inflow of MYR2.3 billion and international reserves, remained at a comfortable level of MYR414.6 billion. In terms of the IIP, Malaysia registered a marginal net liability position as at the end of 2017, due mainly to the appreciation of exchange rates which resulted in lower external assets valuation in ringgit. Malaysia's external debt position remained manageable, with the outstanding debt of MYR883.4 as at end-Dec 2017 (USD1=MYR4.1001). More importantly, more than a third of the external debt are in local currency, mainly the ringgit debt securities held by non-residents and the foreign currency debts are mainly by the banking institutions as well as the corporations which are monitored and regulated to ensure prudent management and supported by hedging arrangement. In addition, two-third of the Malaysia's external debt covers instruments of long and medium terms.

The external sector statistics (ESS) play a major role as key economic indicators and determinants for policy formulation by the Central Bank and the Malaysian Government. ESS provides an overview and comprehensive information on the size and composition of Malaysia's external trade in goods and services, financial transactions of Malaysia with the rest of the world, and Malaysia's international asset and liability position, covering external liquidity and debt obligation of the nation. ESS are also crucial in order to assess current economic developments, relative strength in the nation's currency in relation to others, and the country's vulnerability to external shocks. These signify the importance of external sector statistics which requires sophisticated statistical systems, and comprehensive reporting requirements and methodologies, which are in compliance to the international standards as outlined by the International Monetary Fund (IMF), World Bank and Bank for International Settlements (BIS). With the rapid development in global economic landscape following the rapid technological advancement, deregulation and privatisation of the financial markets, and globalisation, cross-border economic and financial activities in most countries are experiencing fast growth and greater contribution towards the domestic economy. This rapid advancement leads to a number of challenges to compilers and analysts of external sector statistics with issues on data quality and accuracy remaining at the fore-front, resulting in gaps in the balance of payments statistics, and miss-matched in the global asymmetries. This creates greater needs for robust statistical systems and new reporting methodologies, to encompass all possible scenarios under the external sector statistics.

## Compilation Practice in Malaysia

The compilation of external sector statistics in Malaysia is managed jointly by Bank Negara Malaysia (BNM, the Central Bank) and the Department of Statistics, Malaysia (DOSM, the national statistics office), through the formal institutional arrangement and the Memorandum of Understanding (MOU) signed between the two agencies.

Each institution carries out its respective roles and responsibilities, guided by the MOU and legal frameworks, namely BNM through the Central Bank of Malaysia Act, 2009 (CBA 2009) and DOSM through the Statistical Act 1965. This legal provision provides clear guidance for the compilation and dissemination of the external sector data, with DOSM being designated as the official compiler of the BOP, IIP, and CDIS, while BNM is designated as the official compiler of the EDS, CPIS, and IBS.

In Malaysia, data on goods transactions is sourced mainly from the custom records maintained by Malaysia Royal Customs Department and data on goods procured in ports is compiled by DOSM's International Transactions on Services (ITS) Survey of Transportation. For services data, the main data sources are the Quarterly Survey of ITS conducted by DOSM and the aggregated Cash BOP data provided by BNM. Apart from that, travel services are estimated by using data model on both credits and debits based on information supplied by the Immigration Department and Tourism Malaysia and Government Services are provided by the Ministry of Foreign Affairs, and various government departments and statutory authorities. Meanwhile, data on other services transactions are mainly sourced from Cash BOP, which is compiled by BNM. For Income Account, the primary data sources are from the Quarterly BNM-DOSM Joint IIP Survey, as well as Immigration records for compensation of employees. For Current Transfers and Capital Transfers, the data sources are mainly from administrative records of various government agencies as well as Cash BOP. As for FA and its other related statistics, the primary data source is from the Quarterly BNM-DOSM Joint IIP Survey, while BNM also provide data for reserve assets and data on Monetary Authority. Below is the summary of data sources for ESS in Malaysia:

## Data Sources

Official Publication of ESS in Malaysia

Table 1

BOP Components	Data Source
1. Current Account (Goods, Services and Income)	a) Malaysian Royal Customs Department b) Quarterly Survey of International Trade in Services c) Tourism Ministry d) Immigration Department e) Cash BOP f) BNM-DOSM Joint IIP Survey
2. Capital Account	a) Cash BOP b) Other Government Agencies
3. Financial Account (Direct Investment, Portfolio Investment and Other Investment)	BNM-DOSM Joint IIP Survey
Other Reports	Data Source
IIP, EDS, CPIS, CDIS and IBS	BNM-DOSM Joint IIP Survey

Throughout the years, developments have been made towards achieving a more integrated approach in compilation of external sector data by both agencies. Prior to the BNM-DOSM Joint IIP Survey in 2008, the compilation efforts were duplicated with external sector data being compiled through the Quarterly Survey of International

Investment and Services by DOSM and the Survey of External Assets and Liabilities by BNM, which covers similar data scope and reporting institutions. The Joint-Survey was then introduced to reduce reporting burden, better coordination in the compilation effort and streamlining the methodologies and standards used by both compilers. This effort was successful in producing more robust and accurate datasets, with shorter time in data processing and quality checking, as well as timely and high frequency data dissemination. Through the MOU and the data compilation governed by legislations of both agencies, this has enabled the sharing of detailed information for the publication of ESS by the respective agencies.

## BNM-DOSM Joint IIP Survey

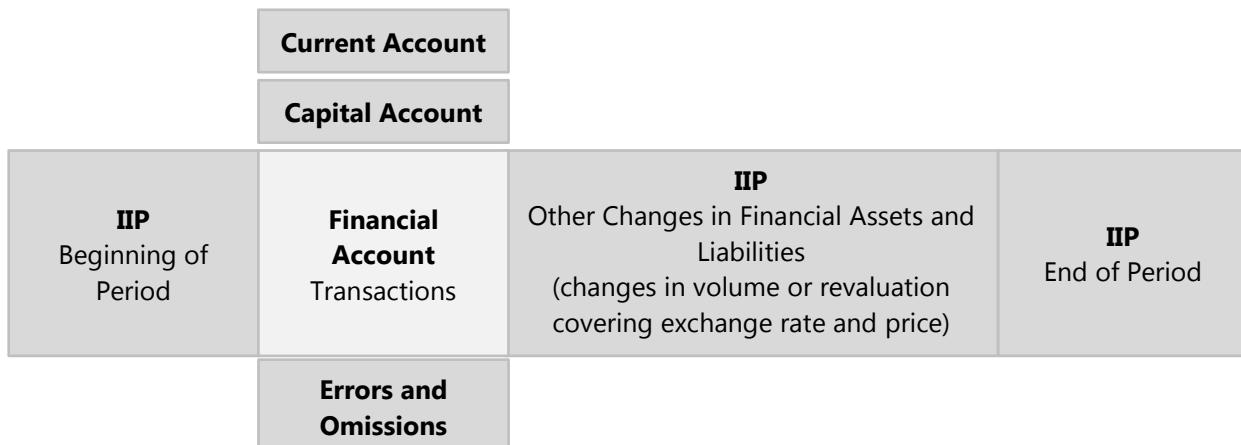
In view of data consistency among the Financial Account (FA) of the BOP, IIP and EDS, BNM has implemented an integrated IIP Framework to fully explain the changes in stock position resulting from FA transactions, revaluations (separately identifying price and exchange rate changes) and other changes in volume of assets (OCVA) since 2002. Data on the table are of intrinsic value in themselves, and to support the assessment of the various measures included in the integrated IIP. Based on the BPM6 implemented in 2009, IMF has strongly recommended this approach be adopted by compilers to facilitate the production of the BOP and its other related statistics including IIP, EDS, CPIS, CDIS and IBS from a single source in order to ensure data quality and consistency throughout these datasets.

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### Integrated IIP Framework

Compilation Practice

Diagram 1




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Note: Transactions reported in the integrated IIP framework provides BOP flow, closing position is the IIP statistics while EDS is derived from stock position of non-equity liability instruments. CDIS and CPIS refer to stock position of direct and portfolio investment respectively while IBS is the IIP of banking sector.

The quarterly BNM-DOSM Joint IIP Survey collects data based on item-by-item reporting, where the items reflect the financial instruments and are reported in the dimensions of the country of the counterparty, currency of transactions and maturity structure for selected financial flows. There are 36 data items which are identified by

unique purpose of transactions, namely equity capital, retained earnings, equity securities, debt securities, loans, deposits and etc. and these items are reported with further details based on each individual counter party, which are crucial identity to determine the types of investment for BOP classification. Additional details such as name, relationship, percentage holdings of investors and affiliated companies are collected to facilitate more in-depth analysis, particularly in the areas of foreign investments in Malaysia as well as Malaysia's investment overseas.

## Coverage of the quarterly IIP Survey

The IIP Survey is conducted on quarterly basis via online submission for non-banks and data transfer through secured network for the banking institutions. The survey coverage encompassed all financial institutions, identified non-bank enterprises, custodians managing on behalf of foreign funds in Malaysia as well as residents' funds for investment overseas, and relevant government agencies for the purpose of statistical compilation for the country's financial external assets and liabilities. Of significance is the inclusion of aggregated data of Labuan offshore entities as part of the data coverage through the online submission, which is managed by Labuan Financial Services Authority (Labuan FSA).

## Data quality checking mechanism

Data quality assurance remains one of the major targets among compilers as it is crucial to the usefulness of economic and financial statistics. Based on the IMF Data Quality Assurance Framework (DQAF), emphasis has to be given to (1) reliability, that is, not subject to many substantial revisions; (2) accuracy, that is, the approximation of "true" figures; (3) timeliness; (4) consistency with other statistical measures and (5) international comparability. Given the importance of the Survey as a source for Malaysia's official external statistics, it is therefore, of importance to ensure data collected are accurate and consistent. Data submitted by reporting entities are checked, evaluated and cross-examined thoroughly with both internal and external sources to ensure significant transactions are well-captured, in order to produce high quality outputs.

## Cross-check against internal and external sources

There are various internal sources which the data can be validated with. The main benchmark is the Cash BOP data, which record detailed transactions by transactions effected through the banking system and are classified according to the balance of payments purposes. As detailed information are made available to BNM, it served as lead indicator to the quarterly data as well as contributing significantly to the selection of quarterly survey frame.

Additionally, the banking system's external flows and position of currencies and deposits are compared with a more coherent source, i.e. Statistical Mart for Analysis and Reporting (STATsmart) which captures the monthly balance sheet information on overall position of banking institutions' domestic and external exposures. Other

internal sources used are the Real-time Electronic Transfer of Funds and Securities System (RENTAS) data which represent the foreign holdings of domestic debt securities issued by residents as well as the resident holdings of debt securities issues by non-residents in Malaysia. Notwithstanding the internal sources, external source such as BURSA information where end-quarter non-resident holdings of equity securities reported in the survey will be validated against the counter-by-counter information provided by BURSA to BNM to ensure consistency between these data. Other than that, the compilers are monitoring closely any market news as one of indicators for BOP statistics

Using various benchmarks, any significant difference in data submitted in the Survey can thus be identified, checked and validated to ensure accurate and consistent outputs.

### Regular engagement with reporting entities

While reporting entities are expected to submit accurate data, in reality this ideal situation is unlikely to be achieved. In an effort to promote higher accountability of the reporting entities in ensuring submitted reports are carefully checked, several measures have been introduced by the compilers. Regular engagement program with surveyed respondents through various platforms are being carried out to ensure good understanding on the reporting requirements as well as to place greater emphasis on online reporting to expedite the data submission. These measures have resulted in tremendous improvement in the respond rate to almost 100 percent every quarter, as compared with around 80% prior to the BNM-DOSM Joint IIP Survey implementation. With that, companies are better equipped and informed in conducting data checking processes to ensure that right information are submitted to the compiler. This could in turn help to reduce burden of re-submission by the respondents arising from queries to correct potential data errors resulting to significant data quality improvement as well as synchronised submission deadline with the timeframe set by BNM.

### Benefits of Integrated Approach in Compiling ESS

The BNM-DOSM Joint IIP Survey has successfully reduced the reporting burden of respondents from two submissions to only one. In view of the favourable responses from the reporting entities, the submission deadline was shortened to 15 days after the end of each reporting quarter, compared with 20 days previously. This was made possible as the reporting entities have better understanding on the definitions, concepts and methodologies outlined in the reporting guidelines as well as standardised explanation for clarification and assistance. The on-site engagement program by the compilers is an effective tool to broaden the networking with the reporting entities as well as served as a feedback platform for check-and-balance in the data compilation.

As for the compilers, the close collaboration between the BNM and DOSM has improved the efficiency and eliminated the duplication of work in collecting and processing the external sector data. As the data compilation is governed by both Central Bank of Malaysia 2009 and Statistics Act 1965, and logo of both institutions

are posted in the submission portal, greater integration and data sharing up to individual details between the two agencies have increased tremendously.

The single repository to produce ESS has helped to ensure the consistency of various statistics related to the balance of payments namely, the IIP, EDS, CDIS, CPIS and IBS, and in accordance with the BPM6 and compliant with the SDDS requirements. This in turn has facilitated the publication and cross-country comparisons of similar data for users. The output are also comprehensive due to the item-by-item reporting required from the reporting entities. Furthermore, the joint survey has also improved the publication of these reports as time lag in the IIP publication has shortened significantly to six months, from nine months and the publication of quarterly BOP by 7<sup>th</sup> week, release simultaneous with quarterly GDP starting from 3Q 2011, as compared with 10th week previously.

## Data Sources

ESS Official Publication

Table 2

Method	Survey Coverage	Outputs
Quarterly IIP Survey	i. All banking institutions ii. Corporations (listed and unlisted) iii. Labuan offshore entities iv. Government agencies v. Fund custodians	i. BOP Income and Financial Accounts ii. International Investment Position iii. External Debt Statistics iv. Coordinated Portfolio Investment Statistics v. Coordinated Direct Investment Statistics vi. International Banking Statistics
<b>Dissemination</b>		
Statistics are published in BNM Monthly Statistical Bulletin (MSB), DOSM website and international organisations namely IMF, World Bank and BIS		

## ESS Compilation Scope and Coverage

The main sources of ESS compilation by BNM are the reporting of the Quarterly BNM-DOSM Joint IIP Survey on external assets and liabilities (EAL) vis-à-vis non-residents as follows:

- i. Data on EAL of banking institutions;
- ii. Data on EAL of selected resident companies, which include credit facilities from non-residents, investment abroad and foreign investment in Malaysia;
- iii. Data on portfolio investments reported by custodians, which include holding of Malaysian securities by non-residents and portfolio investments of residents abroad;
- iv. Data on EAL of offshore entities in Labuan, managed by the Labuan Financial Services Authority; and
- v. Data on the government sector, obtained from the administrative records of the Treasury Department of the Ministry of Finance, Malaysia.

In addition, BNM continues to collect data on the Cash BOP for all cross-border transactions effected through the banking system as well as inter-company and overseas accounts maintained by selected resident companies with their non-resident

counterparts. The Cash BOP data, which has been put in place since 1991, are used mainly as a benchmark by DOSM to complement data sourced from the Customs Department, surveys and other administrative records, particularly for the Services and Capital Accounts. On the other hand, BNM uses the data mainly as an early indicator for the flow of funds and preliminary statistics for analyses on monthly basis, as well as for other surveillance and monitoring purposes.

BNM also submitted International Banking Statistics (IBS), in compliance with the Bank for International Settlement (BIS) requirements. Thus far, Malaysia has been submitting the IBS by "Locational" and "Nationality" and targets to submit the "Consolidated Banking Statistics" once the compilation system and the statistics are stabilised. Towards this end, BNM also collects the following statistics to ensure the comprehensiveness of the IBS submission to BIS:

- i. Data on assets and liabilities (AL) of all banking institutions vis-à-vis residents;
- ii. Data of Malaysian banks' on:
  - Ultimate risks transfers;
  - Foreign branches and subsidiaries; and
  - Consolidated financial position.

The external data compiled is then consolidated into various reports for surveillance, policy assessment and formulation, research and analysis, as well as dissemination in various publication and international organisation.

## The System Architecture

The Integrated Statistical System - External Sector Statistics (ISS-ESS) is envisioned to enable expansion of scope and coverage of the external sector data compilation to facilitate ease of production of various ESS outputs, to meet the diverse and changing data demand across internal and external users and as a compilation system that adopts best practices based on national and international reporting standards. The main objectives of the implementation of ISS-ESS are as follows:

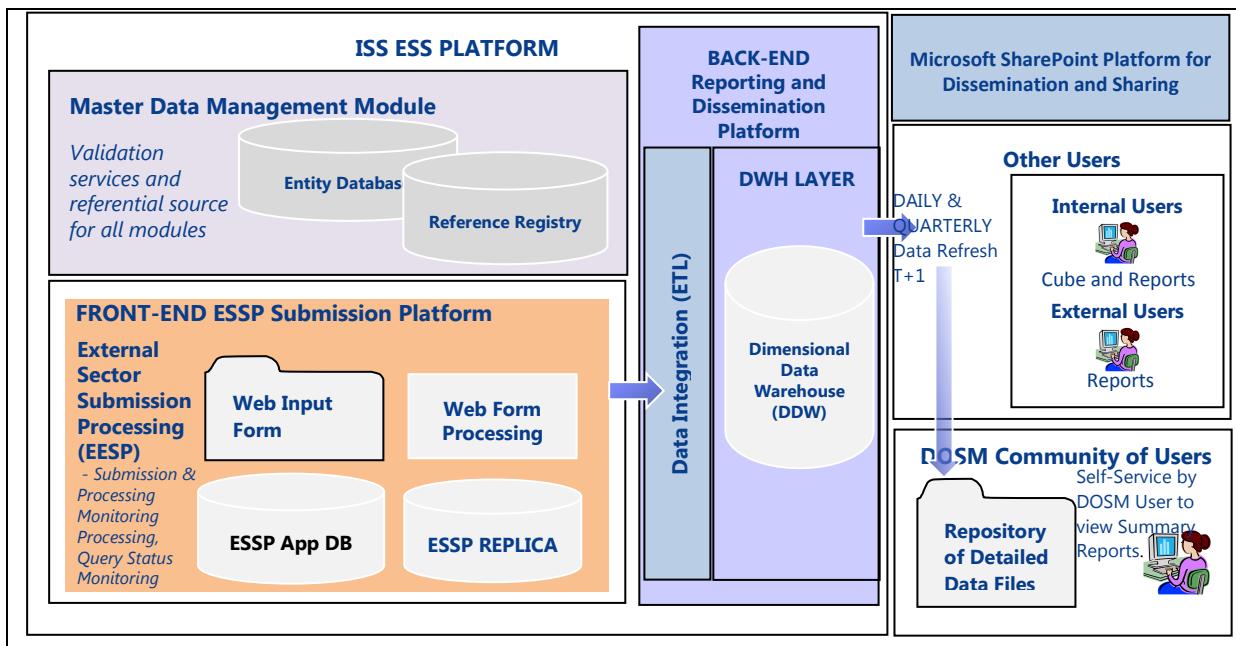
- i. Centralisation and harmonisation of the collection of ESS within BNM, with expanded data scope and granularity;
- ii. Integrate relevant databases and data sources to ensure comprehensiveness and quality of information;
- iii. Flexible dissemination platforms to allow data sharing across national agencies i.e. DOSM and Labuan FSA; and
- iv. One-stop and user-friendly business intelligence tools (SSRS, SharePoint and Excel-driven Cubes) for internal users' access to ESS Reports.

The system architecture of the end-to-end solution for the ESS compilation is as illustrated in the diagram below:

### ISS-ESS System Architecture

Data Compilation System

Diagram 2



Through the front-end (Submission) modules, the respondents are required to report their external financial assets and liabilities exposures vis-à-vis their non-resident counterparties following an accounting approach, whereby the reporting is done similarly to a financial statement with further categorisation by direct investment, portfolio investment, financial derivatives and other investment. In addition to the compilation notes and manual, the front-end modules are also equipped with build-in business validation rules to prevent and/or alert both the respondents and compilers on possible misreporting. A secured communication channel i.e. the Query Module, is also established as a medium between the respondents and compilers to rectify and obtain confirmation on issues relevant to data accuracy.

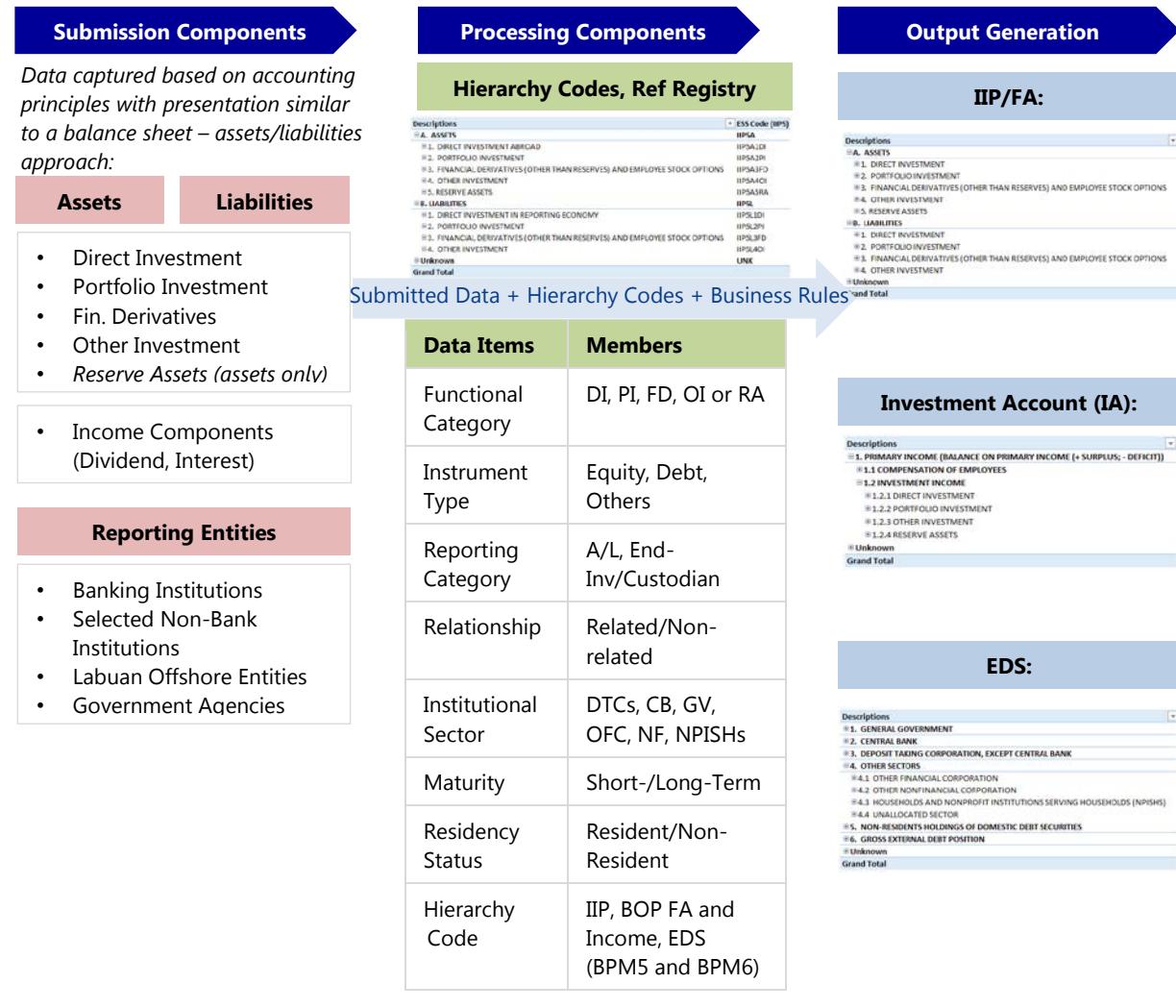
The front-end modules will process all survey submissions by respondents to prepare data required by the back-end (Dissemination) modules. Once this processing is completed, data is then transmitted to the back-end modules for further processing by the end of the day. During this transmission, data integration programs (Extract, Transform and Load or ETL) are initiated in two stages, with the first stage focusing to harmonise and link the survey data to the Master Data Management (MDM) module (standard codes, reference entity information and ISIN profiles) and second stage to map the data according to the business rules to produce the required ESS outputs.

The overall processing workflow are represented in diagram below:

## ISS-ESS System Process Flow

## End-to-end Data Processing Lifecycle

Diagram 3



In view of the complex structures of ESS and users' changing needs, the MDM is designed to allow maintainability of business rules and centralised storage for reference data such as standard codes, entity information and ISIN profiles to cater for any new development in the international reporting standard. The MDM is also integrated directly with the data sources such as registrars (National Registration Department and Company Commission of Malaysia) for entity information and the bonds data warehouse for profiles of locally-issued debt securities. Additionally, profiles of domestic equity securities are obtained from Kuala Lumpur Securities Exchange (KLSE), which is managed by Bursa Malaysia, on a regular and timely basis. The integration with the bond data warehouse, which are the back-end of the debt securities trading platform of RENTAS, facilitate the cross-checking of data on debt securities issued in domestic market that are reported by the custodian agencies, as the aggregated exposures by each custodian are transparent to BNM. Moreover, integration with these data sources eases respondents' reporting burden as information required for submission are limited to registered identification number

and ISIN codes, without compromising the needs to obtain granular data on entity and security profiles for users and publication of statistics as these information will be derived from the MDM.

After the ETL completes linking survey submissions to the master data, the system will proceed with the mapping of granular data to the hierarchy codes, which are assigned based on business rules to produce the ESS outputs. The hierarchy codes are reflective of all the ESS structures, complying with the international guidelines as follows:

- i. IIP/BOP FA/BOP Income – Balance of Payments and International Investment Position Manual, Fifth (BPM5) and Sixth (BPM6) Editions;
- ii. CPIS – Coordinated Portfolio Investment Guide;
- iii. EDS – External Debt Statistics: Guide for Compilers and Users; and
- iv. IBS – BIS Guidelines for Reporting IBS.

## Compilation Challenges and Moving Forward

Malaysia has made a significant progress in the ESS compilation. Currently, Malaysia publishes the Quarterly BOP statistics 7 weeks after the end of the reporting period, based on data collected from the primary sources. Nevertheless, as often faced by other ESS compilers world-wide, Malaysia continued to face challenges in the ESS compilation, and more so towards improving the quality of data for official statistics.

### Sustainable Compilation System

The ESS compilation requires system design to meet the long-term statistical needs in order to continuously comply with the international standard as outlined by International Monetary Fund, World Bank and the Bank for International Settlements. In this regard, Malaysia adopted the integrated compilation system to address end-to-end requirements for the ESS compilation, which provided flexible data submission system (front-end) for detailed reporting, expandable data items that follow closely the accounting principle to facilitate REs familiarisation, as well as data dissemination platform (back-end) to transform data into the BOP, IIP, EDS and IBS statistics. Of significance, the flexibility in MDM allows Malaysia to incorporate changes by or additional requirements from IMF and BIS without having to undertake major enhancement to the compilation system.

The above requirements have to be strongly supported by financial resources as well as adequate talents with both in-depth ESS knowledge and the IT expertise to develop and manage the entire compilation and system infrastructure.

### Expansion in Scope and Coverage

The Quarterly BNM-DOSM Joint IIP Survey reporting covers all banking institutions as well as survey of companies. Since the inception, the number of entities covered under the survey increased significantly by more than threefold, which encompassed across all sectors, reflective of Malaysia's economic composition. Additionally, the team also faced constant challenges in handling high volume of data records due to

granular data compilation to comply with national and international standards, as well as to facilitate analysis for surveillance and monitoring purposes. In this regard, BNM leverages highly on technology and has developed the system that equipped with infrastructure to facilitate validation and data quality processes for the compilers as well as adoption of suitable BI tools to facilitate data mining for users. The flexible data sharing platform for daily micro data sharing facilitates effective handling of Joint Survey between BNM and DOSM.

### **Ever-changing Financial System**

Rapid technological advancement in the Financial System such as FinTech and Cryptoassets introduces new and complex scenarios in statistical reporting. In order to address this issue, the compilers are to ensure the guidelines issued to reporting entities are comprehensive and cover all scenarios based on the fundamentals of ESS compilation. Among others, continuous review of the compilation guidelines as well as the issuance of "Frequently Asked Questions" through the reporting portal have been put in place, to provide further clarity on the reporting.

### **Data Accuracy**

Data accuracy has always been the biggest challenge faced by the ESS compilers and as experienced by many countries that have had to cope with an increasing level of errors and omissions (E&O) in the BOP data compilation. In this regard, significant efforts are required to maximise the accuracy on data compilation and ensure the E&O level to be within an acceptable range, by working towards having more granular analysis for data quality checking. In addition, regular engagement with reporting entities are essential to ensure accurate understanding on reporting requirements. New methodology for estimating missing data is also carried out by incorporating model-based estimates to manage limitations of the existing data compilation.

## **Conclusion**

In order to address the increasing users' demand for more granular data, BNM adopted a concept of external sector statistics proactively through the integrated compilation approach. The integrated model would enable the compilers to optimise the compilation of various reports, namely the BOP, IIP, EDS and IBS through a single platform to ensure consistency across all statistics. This facilitates the compilers in striking a right balance between the requirements for consistency in concept, the need to capitalise on existing investment and practices, as well as allowing sufficient flexibility to adjust to users' requirements to reflect the evolving economic development. Additionally, the formal institutional framework by the compilers has enhanced the data quality as well as facilitated the dissemination and publication of the official BOP and IIP statistics by DOSM and the EDS and IBS by BNM respectively.

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*Statistical Services Department*



**BANK NEGARA MALAYSIA**  
CENTRAL BANK OF MALAYSIA

# Presentation Outline

- i. Overview of Malaysia's external sector
- ii. ESS compilation practice in Malaysia
- iii. Integrated approach in compilation of external sector statistics
- iv. ESS Compilation Scope and Coverage
- v. The System Architecture
- vi. Challenges and Mitigation Plan

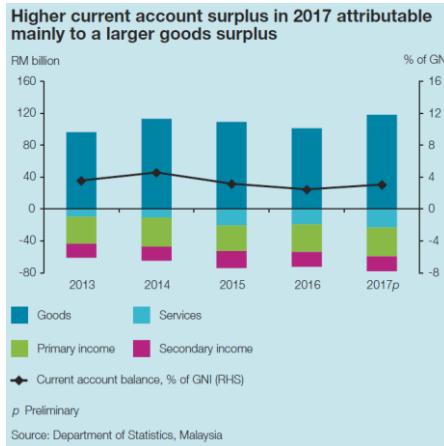




# Key External Sector Statistics (ESS) of Malaysia

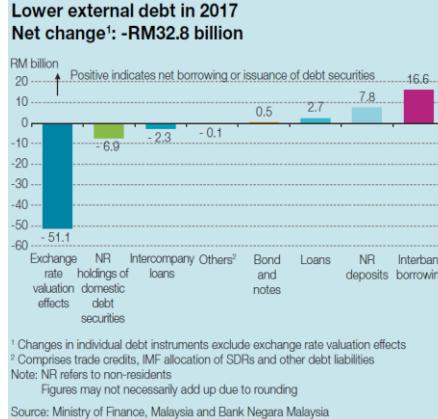
*... an open economy with strong external position*

## Balance of Payments (BOP):



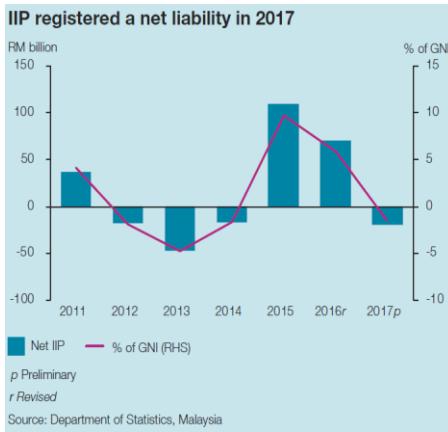
- In 2017, the BOP remained strong with Current AC registering a surplus of RM40.3b and Financial AC recording a net inflow of RM2.3b
- Current AC bal. has been in surplus since 1998
- As at end-2017, reserves amounted to RM414.6b, sufficient to finance 7.3 months retained imports

## External Debt Statistics (EDS):



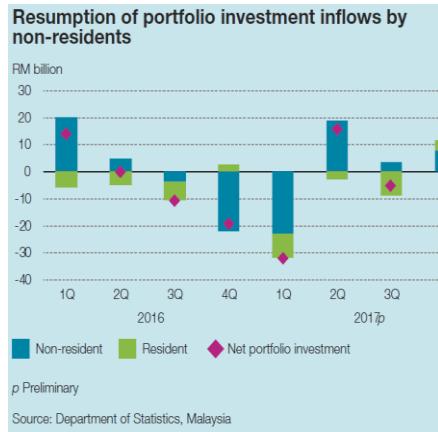
- As at end-2017, total external debt amounted to RM883.4b
- More than a third are in local currency, mainly MYR debt securities held by NR
- The FC debts are mainly by banking institutions & corp. which are subjected to prudent management and hedging requirements
- Two-third of ED are long & medium term debt

## International Investment Position (IIP):



- As at end-2017, IIP registered a marginal net liability position
- Appreciation of the exchange rate was the main cause of the reversal in Malaysia's net IIP which reduced the country's external assets valuation in ringgit

## Portfolio Investment Statistics (CPIs):



In 2017, the *portfolio investment* account registered a net outflow of RM9.2b, reflecting net acquisition of foreign portfolio assets by residents of RM16.5b, which were offset partially by the net inflow of portfolio investments by NR of RM7.3b





# Malaysia's ESS Data Compilation Framework

Collaborative effort in compilation, quality assessment and dissemination in accordance to SDDS :



**BANK NEGARA MALAYSIA**  
CENTRAL BANK OF MALAYSIA



COMPLIERS



Department of Statistics Malaysia (DOSM)

- ✓ Financial Account and Income via BNM-DOSM Joint IIP Survey
- ✓ Cross border flows of funds via Cash BOP reports



INSTITUTIONAL FRAMEWORK

- ✓ Central Bank of Malaysia Act 2009
- ✓ Financial Services Act 2013



LEGAL PROVISIONS

Goods and Services Accounts via customs records, surveys and administrative records

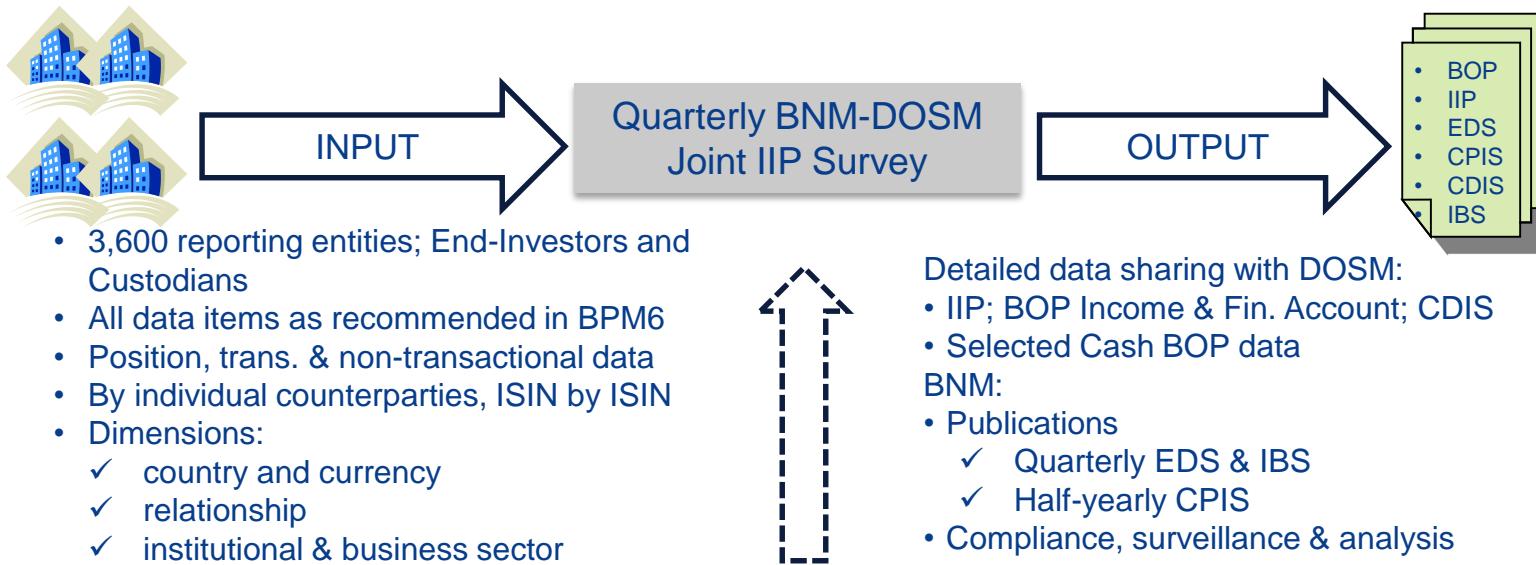
Statistics Act 1965

BOP	Data Source
<b>Current Account</b> Goods, Services and Income	i. Customs Department ii. Quarterly Survey of International Trade in Services iii. Tourism Ministry iv. Immigration Department v. Cash BOP vi. BNM-DOSM Joint IIP Survey
<b>Capital Account</b>	i. Cash BOP ii. Other Government agencies
<b>Financial Account</b> Direct, Portfolio and Other Investment	BNM-DOSM Joint IIP Survey
Other Reports	Data Source
<b>IIP, EDS, CPIS, CDIS, IBS</b>	BNM-DOSM Joint IIP Survey



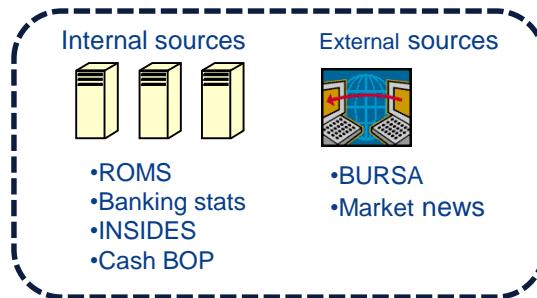
# BNM-DOSM Joint IIP Survey Frame

*... BNM-DOSM joint effort in compilation to reduce reporting burden, improve quality and turnaround time*



## Validation

- Reporting frequency: Quarterly basis
- Submission deadline: 15 days after end of reporting period
- 100% response rate;
- Online submission;
- Final data 3 weeks after deadline
- Publish quarterly BOP/EDS/IIP: 7 weeks after reference period (together with GDP)



- Cross-check against internal and external sources
- Data quality assessment by both BNM and DOSM
- Inter-agency technical discussion
- Regular engagement with reporting entities



# BNM-DOSM Joint IIP Data Quality Framework

*... joint effort in compilation to reduce reporting burden, improve quality and turnaround time*

## Data Quality Assurance Process

Data Provider	System	Data Compiler	Data Quality Review Panel	Policymakers /Researchers/Analysts
<ul style="list-style-type: none"> <li>Comply with the reporting guidelines provided by Bank Negara Malaysia</li> <li>Understand system functionalities and reporting requirements</li> <li>Conduct internal validation to ensure data accuracy and consistency</li> <li>Rectify data errors identified or rejected by system</li> </ul>	<ul style="list-style-type: none"> <li>Develop validation rules in submission system</li> <li>Perform data validation check</li> <li>Establish integration with other data sources where possible to facilitate data collection (e.g. ISIN codes)</li> <li>Generate data processing and validation result</li> <li>Return data errors (reject) to reporting entities</li> </ul>	<ul style="list-style-type: none"> <li>Comprehensive understanding on BPM6 and transform into reporting requirements</li> <li>Perform data quality checks via micro and macro analysis</li> <li>Cross check IIP data against internal and external sources</li> <li>Engage and train reporting entities on reporting requirements</li> <li>Data Quality Checking Framework for REs to ensure accurate reporting.</li> </ul>	<ul style="list-style-type: none"> <li>BNM-DOSM Technical Meeting on overall BOP and IIP statistics</li> <li>Ensure consistency of data with other indicators and economic/financial developments following the market news and trends</li> <li>Ensure data align with international reporting standards such as BPM6, EDS Guide and BIS Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>Highlight outliers in data compiled during analysis and research</li> <li>Provide independent assessment on data quality</li> </ul>

## Data Dissemination in Accordance with BPM6 and Complied with SDDS

Compiler	Report	Periodic	Timeliness	Compiler	Report	Periodic	Timeliness
By BNM	EDS	Quarterly	7 <sup>th</sup> week after end of quarter (Released together with GDP)	By DOSM	BOP	Quarterly	7 <sup>th</sup> week after end of quarter (Released together with GDP)
	IBS	Quarterly	12 <sup>th</sup> week after end of quarter		IIP	Quarterly	7 <sup>th</sup> week after end of quarter (Released together with GDP)
	CPIS	Semi - Annual	6 months after reference period		CDIS	Annual	9 months after reference year



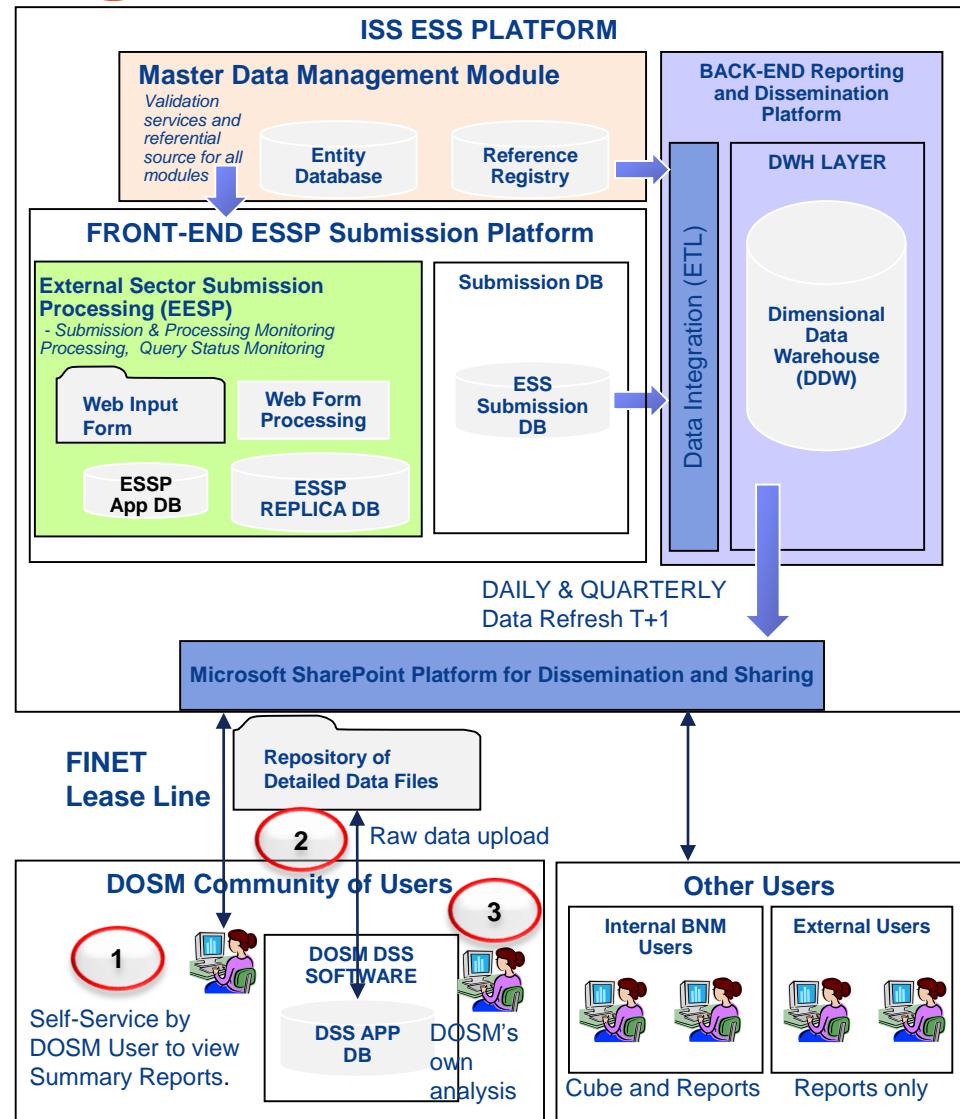


## Reporting by Financial Institutions/Surveyed Companies

Quarterly IIP				Daily/Monthly Cash BOP
Assets and Liabilities				Consolidated Financial Position
Vis-à-vis Non-resident (NR)		Vis-à-vis Resident (R)		
Own Exposure	Custodian Report on Portfolio Investment	Foreign Branches and Subsidiaries	Assets and Liabilities (A&L)	
1. Type of Data Item 2. NR Counterparty (NRCP) Profile 3. ISIN Profile 4. EAL Profile 5. EAL Transaction and Position 6. <i>Ultimate risk transfers (where applicable)</i>	1. Type of Data Item 2. ISIN Profile 3. EAL Profile 4. EAL Transaction and Position 5. <i>Ultimate risk transfers (where applicable)</i>	1. Type of Data Item 2. EAL Profile 3. EAL Transaction and Position  <i>Applicable to Local Bank only</i>	1. Type of Data Item 2. EAL Profile with Position by Currency 3. EAL Transaction and Position 4. <i>Ultimate risk transfers (where applicable)</i>  <i>Applicable to Local Bank only</i>	<p>1. Preliminary Consolidated Financial Position 2. Position at total level: a) Total Assets b) Total Equity c) Total Liabilities:<ul style="list-style-type: none"><li>• Debt securities</li><li>• Derivatives</li><li>• Other and unallocated liabilities</li></ul> <i>Applicable to Local Bank only</i></p> <p>1. Aggregated reporting for transactions between R to NR below RM200,001.00 2. Reporting by purpose of transactions as follows: a) Goods b) Services &amp; Transfers c) Income d) Capital and Financial Transactions</p>
Official Statistics		Official Statistics		Inputs
1. BOP Income and Financial Accounts 2. International Investment Position 3. External Debt 4. Coordinated Direct Investment Statistics 5. Coordinated Portfolio Investment Statistics		1. Locational Banking Statistics by Residency 2. Locational Banking Statistics by Nationality 3. <i>Consolidated Banking Statistics</i>		1. BOP statistics 2. Surveillance and monitoring 3. Early indicator on flow of funds



# Overview of Integrated ESS Data Compilation System



## System Infrastructure of ISS ESS:

### Front-End Components

#### Submission Platforms:

- a) ESS Portal (ESSP)
- b) ESS Data Submission System (ESS DSS)

- Online reporting via
  - ✓ ESS Portal (internet base) for NB entities; and
  - ✓ ESS DSS (client application – installed at banking institutions)
- Covers validation of submitted records through the query module, validation against entity data and ISIN profiles stored in Entity Database.

#### Report Generation Module (FE SSRS) and Submission Database

- Flexible platform to allow raw data extraction based on the data submitted by reporting entities
- Once submission completed, data will be harmonized to prepare for processing at DDW in Submission Database

### Master Data Management Components

#### Entity Database

- Centralised repository for entity data and securities profile (ISIN issued in domestic and international market) used throughout the ISS ESS platforms

#### Reference Registry

- Centralised repository for storage of reference codes used throughout the ISS ESS platforms

### Back-End Components

#### Integrated Cubes and Dynamic Reports

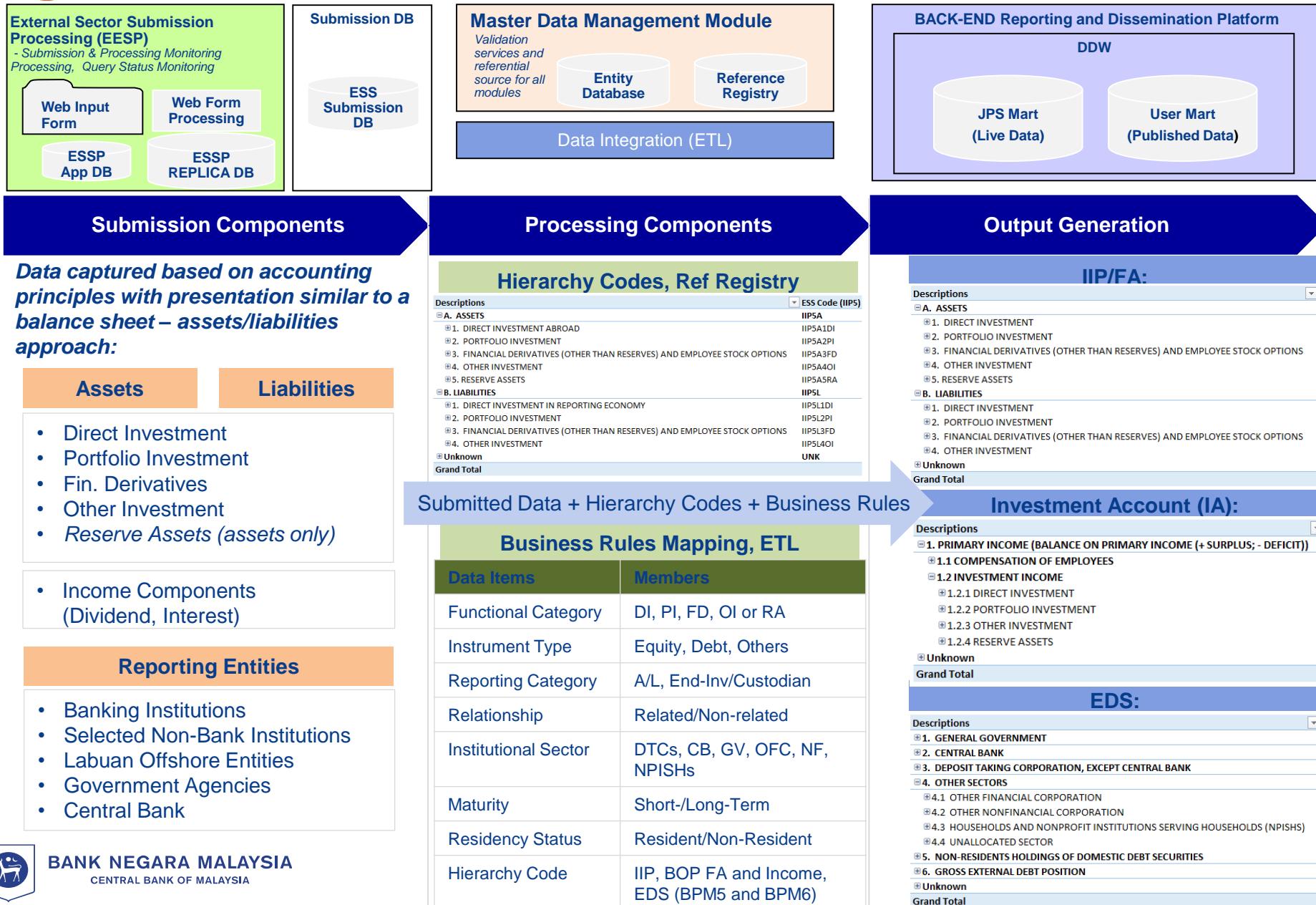
- Cubes built based on the ESS subject areas i.e. IIP, FA, EDS, Income Account, and Cash BOP
- Interlinked cubes to ensure consistency of data across all ESS subject areas.
- Excel-base reports for users with active cube connection to allow for dynamic analysis

#### Data Sharing Platform

- Daily and Quarterly data transfers to DOSM to support the BNM-DOSM Joint-IIP Survey
- Allow for data sharing between both organisations through secured channel



# ISS ESS System Workflows in IIP, BOP, and EDS Production





# ESS Data Compilation Challenges and Mitigation Plan

## Challenges

### 1 Sustainable Compilation System

- System design to meet long-term statistical needs
- Simplified compilation approach that facilitate understanding by reporting entities
- Institutional knowledge among both compilers and reporting entities
- Adequacy of resources, talent and IT

### 2 Expansion in Scope and coverage

- Mandatory reporting by all banking institutions
- Increase in the number of non-bank reporting entities from 2,449 in 2008 to 3,600 in 2018 to ensure representable of economic structure
- Short compilation period of within 4 weeks
- High volume of records due to granular data compilation to comply with national and international standards and facilitate analysis

### 3 Ever-changing Financial System

- Rapid technological advancement in the Financial System such as FinTech and Cryptoassets introduces new and complex scenarios in reporting.

### 4 Data Accuracy

- Maximise the accuracy on data compilation and ensure the E&O to be within acceptable range.

## Mitigation Plan

### 1 Integrated Compilation System

- Centralised and maintainable reference registry to cater for changes in standard codes
- Flexible data submission system (front-end) for detailed reporting, expandable data items and adopt accounting principle for REs familiarisation.
- Data dissemination platform (back-end) to transform data into BOP/IIP/EDS/IBS statistics via maintainable business rules

### 2 Improve Data Compilation Methods

- System equipped with infrastructure and BI tools to facilitate validation and data quality processes
- Flexible data sharing platform for daily micro data sharing to facilitate effective handling of Joint Survey between the Central Bank and DOSM
- Regular engagement with reporting entities to ensure accurate understanding on reporting requirements

### 3 Comprehensive Reporting Guideline

- Ensure guideline to reporting entities are comprehensive and covers all scenarios based on main principles and fundamentals of ESS compilation
- Continuous review of reporting guidelines

### 4 Micro-level Data Quality Checking

- More granular analysis on the data during quality checking
- New methodologies for estimating missing data
- Incorporating model-based estimates into data compilation



# Thank you

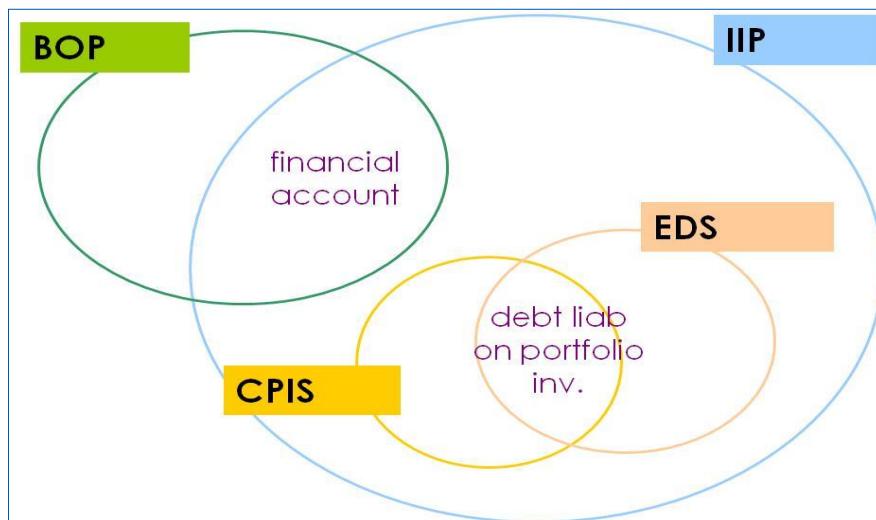
[norhayati@bnm.gov.my](mailto:norhayati@bnm.gov.my)





# IIP as Framework for ESS Interlinkages

		BOP			IIP	
Items	Opening Position	Transactions	Other Changes			Closing Position
			Price Changes	Exch Rate Changes	Other Adj	
<u>Assets</u>						
1. Direct Inv 2. Portfolio Inv 3. Fin. Derivatives 4. Other Inv 5. Reserves						
<u>Liabilities</u>						
1. Direct Inv 2. Portfolio Inv 3. Fin. Derivatives 4. Other Inv						
Net IIP						
		3. Financial Account				



- Integrated approach facilitates productions from a single source to ensure quality and consistency
- From the IIP framework:
  - Flow Transactions: BOP Fin AC
  - Interest and Dividends: BOP Primary Income
  - Closing Position: IIP
  - Non-Equity Liabilities: EDS
  - Direct Investment: CDIS
  - Portfolio investment: CPIS
  - IIP of banking institutions: IBS
- As SDDS subscriber, Malaysia complies with international requirements on all ESS reports
- These include BOP, IIP, EDS, CPIS, CDIS, and IBS