



اءوتوري تي مونيتاري بروني دارالسلام

AUTORITI MONETARI BRUNEI DARUSSALAM

4th Malaysia Statistics Conference 2016

**Macroeconomic Framework & Financial
Programming for Policy Analysis
- The Role of Monetary & Financial Statistics**

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Outline

- Introduction
- The Macroeconomic Framework (MF)
- The Special Role of Monetary & Financial Statistics (MFS)
- The Financial Programming Exercise (FPE)
- The Baseline & Policy Scenarios
- Stress Testing to Ensure Economic Logic & Consistency
- Conclusion



Outline

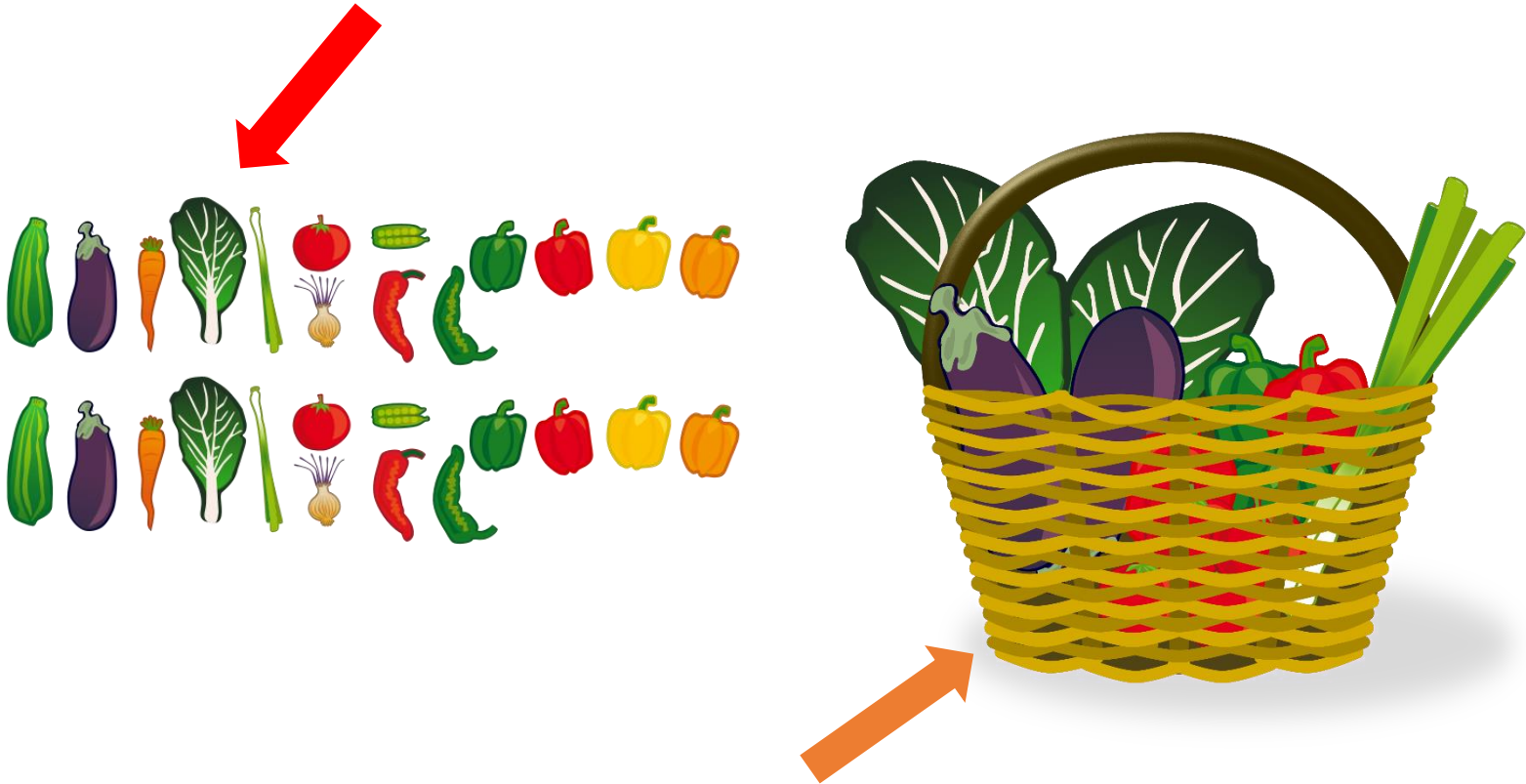
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Economic data overload!



**Health and vulnerabilities
of the economy?**

Numerous aggregates and variables



Macroeconomic framework



IMF macroeconomic framework

The image displays two Excel spreadsheets from the IMF macroeconomic framework for Brunei Darussalam. The left spreadsheet, 'BRN_BOP.xlsx', contains the Balance of Payments (BOP) and Monetary data. The right spreadsheet, 'BRN_FISC.xlsx', contains the Fiscal data. The spreadsheets are linked together, with formulas like '=F(COUNTBLANK(B17),""\$A\$2)' visible in the 'BRN_FISC.xlsx' spreadsheet.

Database	Series Code	Description	Alt. Description	Scale	Units	Revenue
1	516BCA	BOP, Current Account Balance	BOP, Current accou Million	US Dollars		
2	516BXG	BOP, Current Account, Exports, Goods	BOP, Export of good Million	US Dollars		
3	516BXGO	BOP, Current Account, Exports, Goods, Oil and Gas	BOP, Exports of Goc Million	US Dollars		
4	516BXGO	BOP, Current Account, Exports, Goods, Non-oil and Gas	BOP, Exports of Goc Million	US Dollars		
5	516BMG	BOP, Current Account, Imports, Goods	BOP, Imports of Goc Million	US Dollars		
6	516BXS	BOP, Current Account, Services, Receipt	BOP, Services: Recd Million	US Dollars		
7	516BMS	BOP, Current Account, Services, Payments	BOP, Services: Payr Million	US Dollars		
8	516BIC	BOP, Current Account, Income, Receipt	BOP, Income: Recd Million	US Do Million		
9	516BIO	BOP, Current Account, Income, Payments	BOP, Income: Paym Million	US Do Million		
10	516BXT	BOP, Current Account, Secondary Income, Receipt	BOP, Current Transf Million	US Do Million		
11	516BMT	BOP, Current Account, Secondary Income, Payments	BOP, Current Transf Million	US Do Million		
12	516BKF	BOP, Capital and Financial Account Balance	BOP, Capital Account Million	US Dollars		
13	516BK	BOP, Capital Account Balance (Net)	BOP, Capital Account Million	US Dollars		
14	516BF	BOP, Financial Account Balance (Net)	BOP, Financial Account Million	US Dollars		
15	516FPD	BOP, Financial Account, FDI (Net)	BOP, Financial Account Million	US Dollars		
16	516FPF	BOP, Financial Account, Portfolio (Net)	BOP, Financial Account Million	US Dollars		
17	516FPO	BOP, Financial Account, Other Investment (Net)	BOP, Financial Account Million	US Dollars		
18	516BOP	BOP, Errors and Omissions, Net	BOP, Errors and Om Million	US Dollars		
19	516BO	BOP, Financial Account, Overall balance (Net)	BOP, Financial Account Million	US Dollars		
20	516FDX	Balance of Payments: FDI: Total		Million	National Currency	
21	516POSA	Other Depository Corporations Survey, Foreign Assets	Foreign assets	Million	National Currency	
22	516POSLF	Other Depository Corporations Survey, Foreign Liabilities	Other Depository Co Million	National Currency		

Excel
worksheets

The image displays two Excel spreadsheets from the IMF macroeconomic framework for Brunei Darussalam. The left spreadsheet, 'BRN_REAL.xlsx', contains the Real GDP and Consumer Prices data. The right spreadsheet, 'BRN_MON.xlsx', contains the Monetary data. The spreadsheets are linked together, with formulas like '=F(COUNTBLANK(B17),""\$A\$2)' visible in the 'BRN_MON.xlsx' spreadsheet.

Database	Series Code	Description	Alt. Description	Scale	Units	Revenue
1	516PCPI	BN: Consumer Price Index (Jan2010=100)	BN: Unit	Index Number		
2	516PCPIE	BN: Consumer Price Index- exp. 2010 Jan=100	BN: Unit	Index Number		
3	516NGOP	National Accounts, GDP	BN: Million	National Current		
4	516NGEP	GDP by Expenditure, Final Consumption Expenditure	BN: Million	National Current		
5	516NGEP	GDP by Expenditure, Private Final Consumption Expenditure	BN: Million	National Current		
6	516NGEP	GDP by Expenditure, Public Final Consumption Expenditure	BN: Million	National Current		
7	516NGI	GDP by Expenditure, Gross Capital Formation	BN: Million	National Current		
8	516NGI	GDP by Expenditure, Gross Capital Formation, Gross Fixed Capital F	BN: Million	National Current		
9	516NGI	GDP by Expenditure, Gross Capital Formation, Gross Fixed Capital F	BN: Million	National Current		
10	516NGI	GDP by Expenditure, Gross Capital Formation, Gross Fixed Capital F	BN: Million	National Current		
11	516NGI	GDP by Expenditure, Gross Capital Formation, Gross Fixed Capital F	BN: Million	National Current		
12	516NGI	GDP by Expenditure, Gross Capital Formation, Gross Fixed Capital F	BN: Million	National Current		
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26	516NGI	GDP by Expenditure, Gross Capital Formation, Gross Fixed Capital F	BN: Million	National Current		
27	516NGI	GDP by Expenditure, Gross Capital Formation, Gross Fixed Capital F	BN: Million	National Current		

Inter-links



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Macroeconomic Framework

4 main sectors in the economy





To construct a coherent macroeconomic framework...

Historical sectoral data (flows and stocks) of sufficient quality

01

**National
Income and
Production
Accounts**

(production
and use of
goods &
services)

02

**Government
Accounts**

(revenues,
expenditure,
financing, assets
and liabilities of
the government)

03

**Monetary
Accounts**

(assets and
liabilities of
financial
corporations)

04

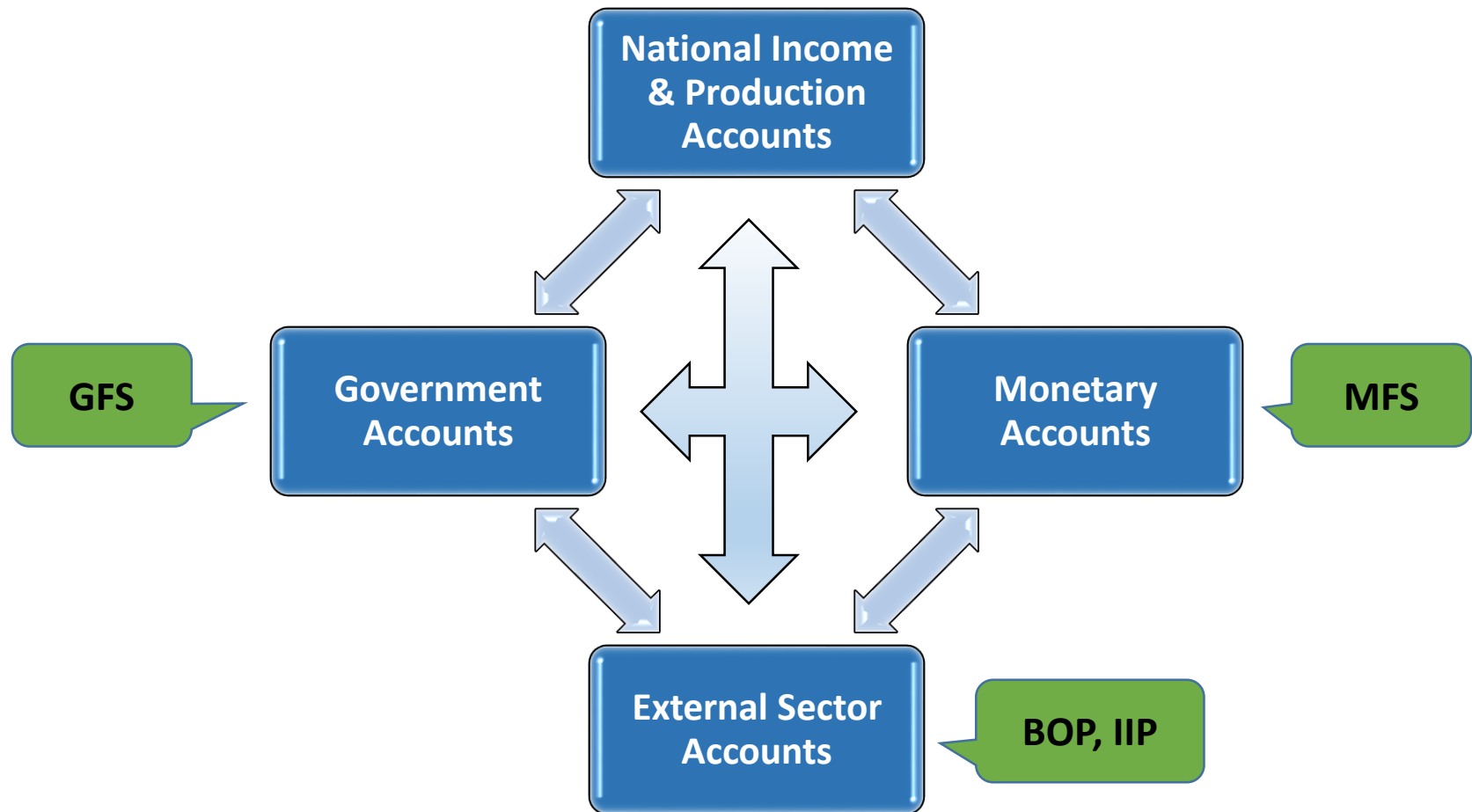
**External
Sector
Accounts**

(Transactions,
claims and
liabilities
with/to the
rest of the
world)

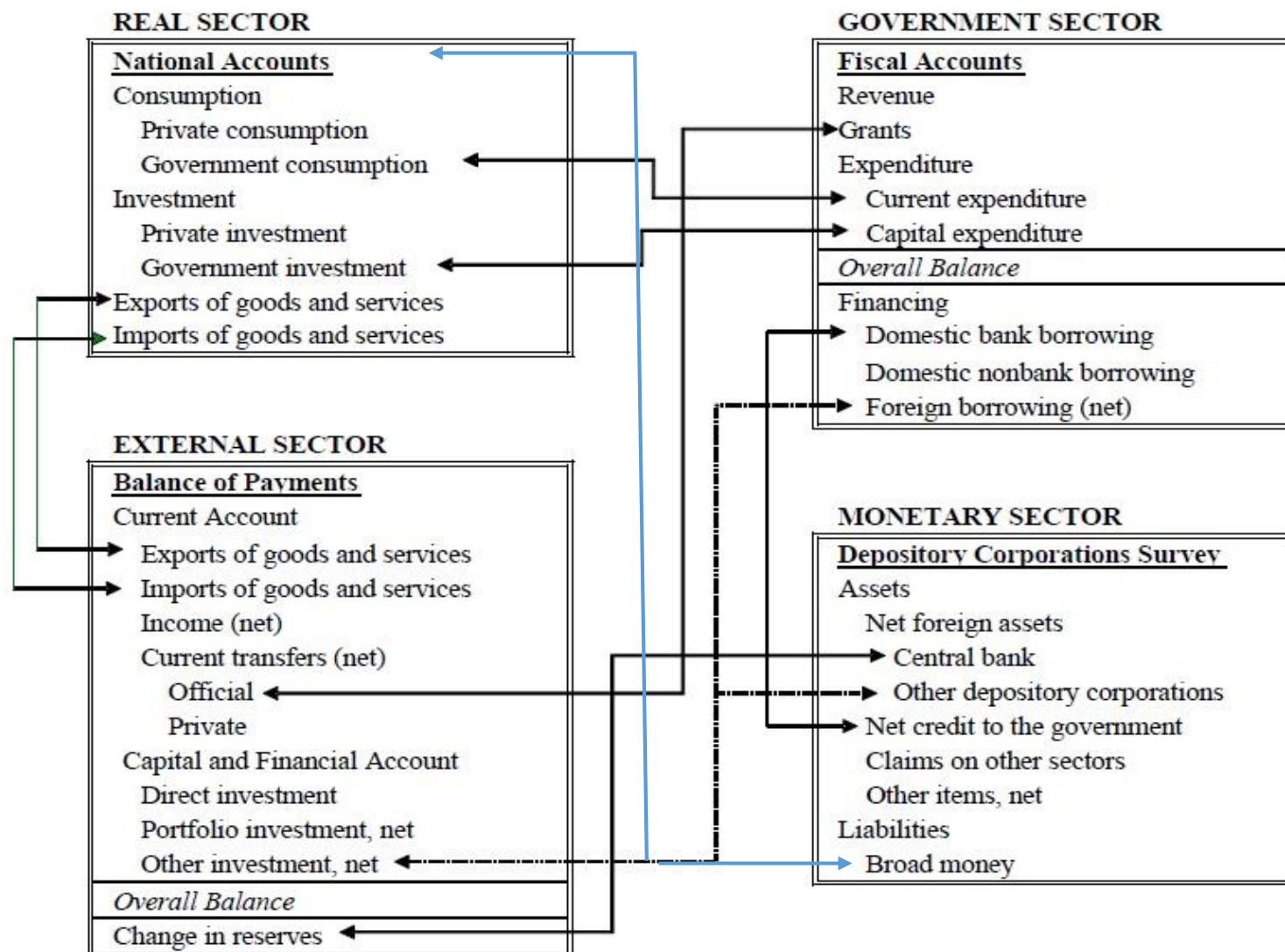
+ other selected indicators



The interrelationships



The linkages between the accounts



Source: IMF (2013)



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MFS – “The Policewomen” of the Macro Framework

- ❑ The financial system intermediates the resources flowing among the economic sectors. Valuable insights of behaviour of these **financial flows**.

- ❑ MFS **reflect activities** in real, external and fiscal sectors
 - Useful for cross-checking inter-sector consistency, correctness of other statistical data (money is everywhere!)
 - MFS can be used to ‘second guess’ or estimate developments in other sectors and to help verify data consistency



MFS – “The Policewomen” of the Macro Framework

❑ MFS are **unique** among economic statistics

- Compiled from accounting data and financial statements and not surveys
- Other economic statistics - a mix of accounting and survey data
- Available with minimal delay
- Relatively easy to compile (with automated programs)



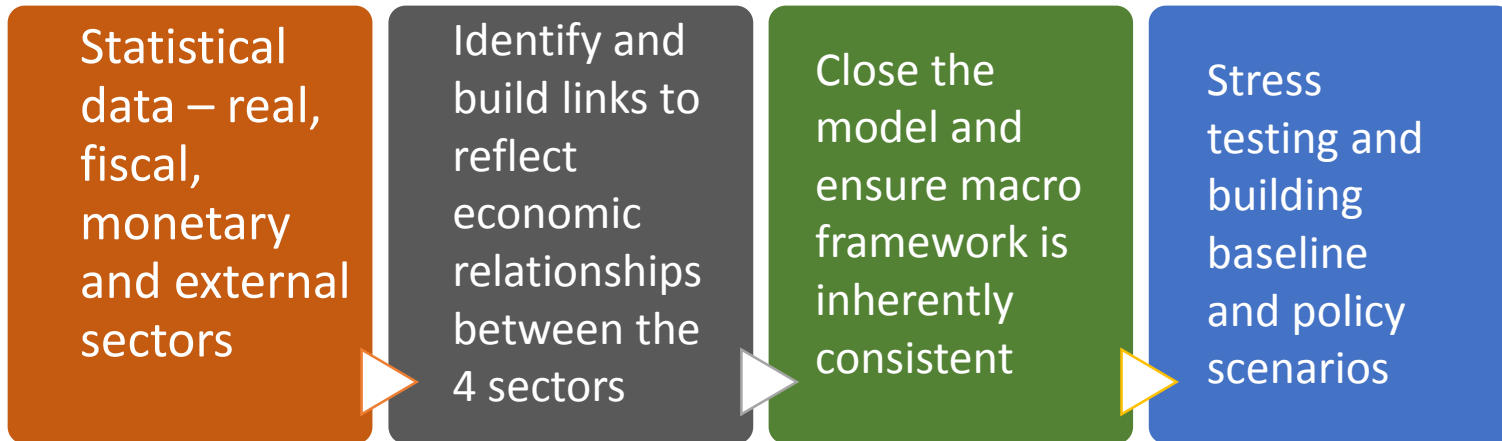
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Financial Programming Exercise (FPE)

- A financial program is a set of policy measures designed to achieve a given set of macroeconomic goals. Start with the Macroeconomic Framework (MF) for diagnosis before the policy scenario.



- After familiarizing themselves with the design of the IMF's MF, the national economic team can introduce adjustments to improve the MF, to simplify it, or to make it more detailed, nuanced when and where necessary.



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Baseline Scenario

- Baseline assumes continuation of contemporaneous policies in current environment.
- Allows one to estimate historical relationships in economic aggregates for forecast.
- Needs sound economic principles: ‘rule of thumb’ and ‘common sense’ approach in forecasting
- Underlying assumptions and macroeconomic framework linkages to verify.
- Provides a foundation to identify significant imbalances/vulnerabilities in the economy.



Policy (Active/Alternative/Adjustment) Scenario

- Specific policy or reform can be simulated with the use of MF after establishing the baseline.

For example:

- Fiscal consolidation of 2%
- To also close gap by raising taxes
- Fiscal tightening → impact on aggregate demand, GDP, monetary, external accounts...



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Purpose of Stress Testing

- To ensure that the macroeconomic framework is:
 - Economically logical
 - Stress test outcomes deliver economically justified, expected outcomes across the sectors of the economy
 - Inherently consistent
 - Inter-sector links working properly
 - Functions well
 - Simulations do not require large heuristic, ad-hoc adjustments



An example of **stress test** - case of Brunei

Impose a very large positive shock in oil export price..

- Examine the primary and secondary effects:
- Exports ↑ , current account balance ↑ , GDP ↑ in both oil/non-oil sectors, govt revenue ↑ , demand for money ↑ , broad money ↑
- Currency Board System – international reserves ↑
- If the model is mis-specified (e.g. a link from BOP to monetary account), a sharp rise in the price of exports could bring a bizarre contraction in international reserves.



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Conclusion

- Financial programming as a tool in the assessment of the economy.
- Understanding of the workings and linkages of the macroeconomic framework is essential.
- Use of sectoral data and information of sufficient quality, especially monetary and financial statistics.
- Always verify the macroeconomic framework linkages for meaningful projections and analysis.
- Essential to work closely with the statistics compilers in the analysis process.



THANK YOU



References

International Monetary Fund (1977), “The Monetary Approach to the Balance of Payments – a collection of research papers by the staff of International Monetary Fund”, Washington D.C.

_____ 2013, *Manual for Financial Programming and Policies (FPP) course*, International Monetary Fund, Washington D.C.

_____ 2016, “IMF Surveillance”, *International Monetary Fund Factsheet*, 28 September 2016, <http://www.imf.org/external/np/exr/facts/surv.htm>