Developing a Framework for High Frequency Indicators of Economic Activity in the Philippines: A Guide for Better Policies

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Outline of Presentation

I. The Need for HFIs

II. Developing the HFI Framework for the Philippines

III. Advancing Potentials and Data Support

IV. Experimental Results and Discussion

V. Challenges and Way Forward

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I. The Need for HFIs

❑ **Basic objectives**

Timely statistics needed for swift and timely policy actions
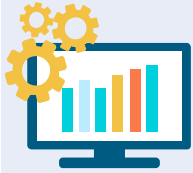
Support other statistical frameworks:
  ❑ Quarterly National Accounts
  ❑ Industrial Statistics
  ❑ International Trade Statistics

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I. The Need for HFIs

❑ **HFIs for what?**

- **Economic growth** is one indicator of an economy's health; however

- In many cases, economic growth is available only annually or quarterly, with significant lags

- Economic monitoring and policy decision making are carried out more frequently than quarterly

- To overcome this need, throughout the international community has developed a series of higher-frequency, timely estimates of economic activity

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I. The Need for HFIs

- Certain key aggregates of the System of National Accounts (SNA), such as Gross Domestic Product (GDP)… has acquired an identity of its own and is widely used by analysts, politicians, the press, the business community and the public at large as summary, global indicator of <u>economic activity</u> and welfare.
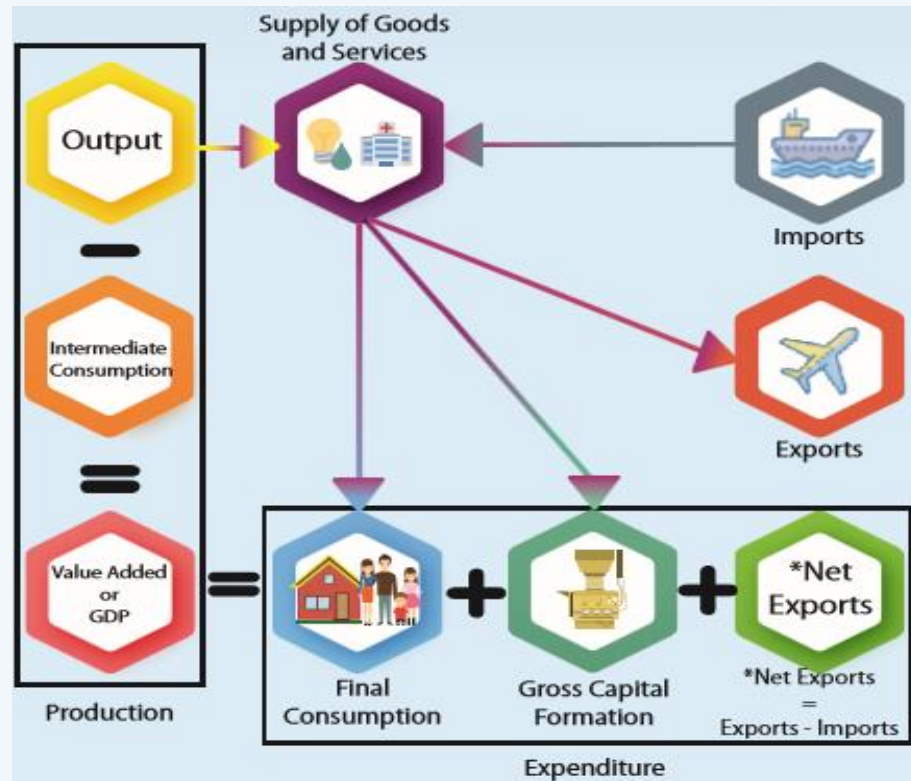
- Movements of such aggregate, and its associated price and volume measures, is used to evaluate the <mark>overall performance of the economy</mark> and hence to judge the relative success or failure of economic policies pursued by governments.

  - Price measures → Inflation

  - Volume measures → Economic Growth

I. The Need for HFIs

Volume terms GDP… our target.

- From the three approaches to measuring GDP, only the production and expenditure ones can be precisely derived in volume terms.

  GDP production: sum of all the value added in the economy (plus net taxes)

  GDP expenditure: sum of all final uses, minus imports

- Appropriate data and methods are needed to split the prices from the volumes in all GDP components.

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I. The Need for HFIs

Why GDP?

- Rates of inflation and economic growth appropriately measured by price and volume indices for the main aggregates of the SNA are key variables both for the evaluation of past economic performance and as targets for the formulation of economic policymaking.

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I. The Need for HFIs

- The aim of an HFI is to provide a signal, an estimate of the movements of a target variable, say economic activity in a timely manner.

- Some high frequency indicators are:

Retail and wholesale sales

Agricultural production

Labor statistics

Economy

International trade

Industrial production

Consumer price index

These represent parts of the economy and may be related to the whole activity

But non of this can give an aggregate picture of the whole economic growth by itself

II. Developing the HFI Framework for the Philippines

❑ **The Role of PSA**

➢ **national censuses and surveys**

➢ **sectoral statistics**

➢ **consolidation of selected administrative recording systems**

➢ **compilation of national accounts**

Economic Accounts

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II. Developing the HFI Framework for the Philippines

❑ **Review of existing mechanisms in compiling economic accounts in the Philippines through the PSA**

1. **Quarterly** **National Accounts of the Philippines**
   - ❑ Production side
   - ❑ Expenditure side

2. **Annual** **Regional Accounts**
   - ❑ Gross Regional Domestic Product (GRDP)
   - ❑ Gross Regional Domestic Expenditure (GRDE)

3. **Annual** **Consolidated Income and Outlay Accounts**

4. **Annual** **Satellite Accounts (e.g tourism, health)**

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II. Developing the HFI Framework for the Philippines

❑ **Consistent with Quarterly/Annual National Accounts Classification**

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2009 Philippine Standard Industrial Classification

1. Agriculture, Hunting, Forestry and Fishing
2. Mining and Quarrying
3. Manufacturing
4. Electricity, Gas, Water and Water Supply
5. Construction
6. Transportation, Storage and Communication
7. Trade and Repair of Motor Vehicles, Motorcycles, Personal and Household Goods
8. Financial Intermediation
9. Real Estate, Renting & Business Activity
10. Public Administration & Defense; Compulsory Social Security
11. Other Services

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II. Developing the HFI Framework for the Philippines

❑ Framework for Integration into single system for HFIs
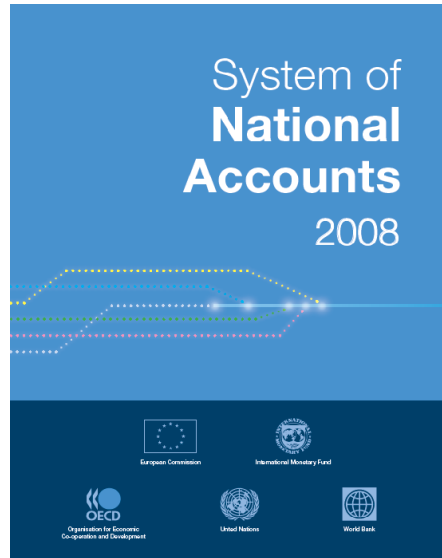
SNA Framework

- Standard Classification
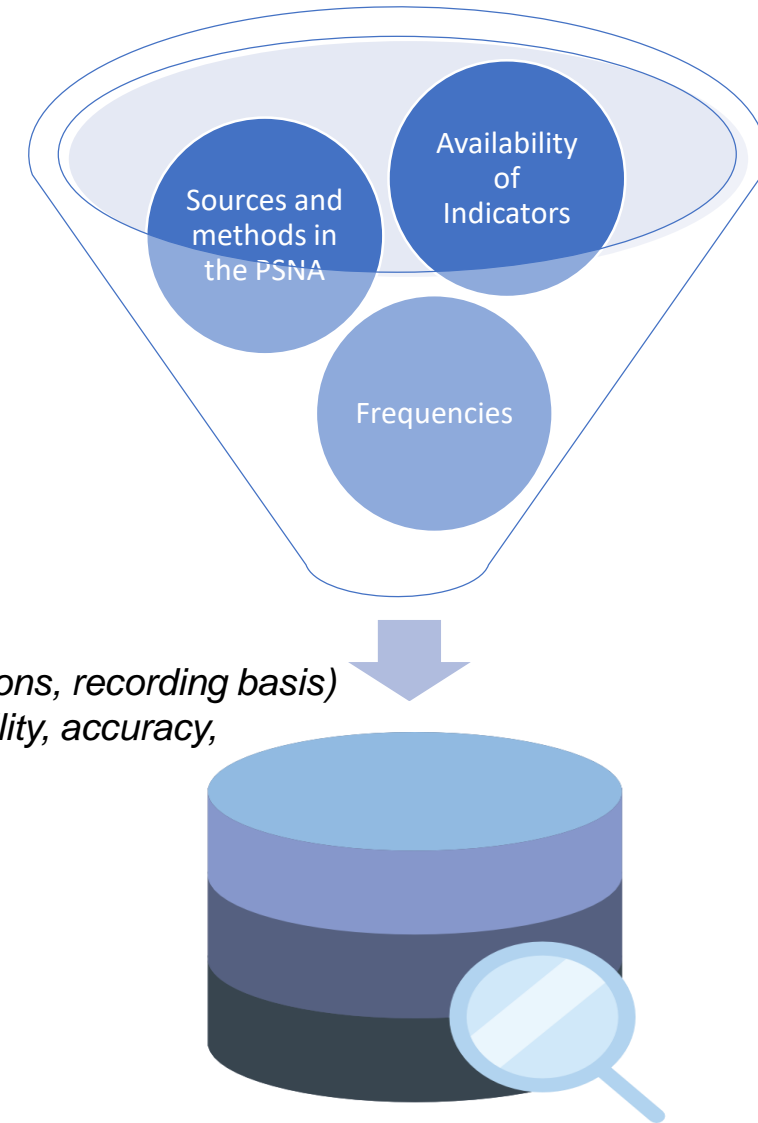- GDP Production Approach
- Benchmarking

Identification of Data Sources

- Census
- Surveys
- Administrative data

Assessment of Component Series

- Methodological aspects *(concept, scope, classifications, recording basis)*
- Quality characteristics *(periodicity, timeliness, reliability, accuracy, regularity, length of series)*
- Comparison with reference growth rates

Keeping source data up-to-date

System of **National Accounts** 2008

European Commission
International Monetary Fund
OECD Organisation for Economic Co-operation and Development
United Nations
World Bank

Sources and methods in the PSNA

Availability of Indicators

Frequencies

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III. Advancing HFI Potentials and Data Support

❑ **Major Steps Undertaken**

> **Review of annual and quarterly economic accounts**

> **Evaluation of high frequency indicators (monthly data series) for related industries**

> **Benchmarking**

> **Assessment of the validity of monthly economic activity (correlation, mean absolute deviation)**

> **Seasonal adjustment**

III. Advancing HFI Potentials and Data Support

❑ **Techniques**

Benchmarking is the procedure through which two measures of the same variable, in different frequencies, are made consistent

Benchmarking Techniques
- The Denton method
- The Cholette-Dagum method

III. Advancing HFI Potentials and Data Support

Proportional Denton method

Keeps the movements in the benchmarked HF series as proportional as possible to those in the indicator series using a least square technique to minimize the difference in relative adjustment to neighboring observation subject to the lower-frequency constraint

III. Advancing HFI Potentials and Data Support

Denton PFD method

- In mathematical terms, the benchmarked series X_t is the solution of the following minimization problem:

$$\min \sum_{t=2}^{4N} \left[\frac{X_t}{I_t} - \frac{X_{t-1}}{I_{t-1}} \right]^2 \quad for\ t \in \{1,2,...,4N\}$$

$$s.t. \quad \sum_{t \in T} X_t = A_T \quad for\ T \in \{1,2,...,N\}$$

As before, **A** represents the annual benchmarks; **X**, the adjusted quarterly series; and, **I** the indicator series

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Cholette-Dagum method

- Proportional Cholette-Dagum method with AR(1) error

$$\min \sum_{t=2}^{4N} \left[\frac{X_t}{I_t} - \frac{X_{t-1}}{I_{t-1}} \right]^2 \quad for\ t \in \{1,2,...,4N\}$$

$$s.t. \quad \sum_{t \in T} X_t = A_T \quad for\ T \in \{1,2,...,N\}$$

Denton can be approximated by setting ϕ very close (but not equal) to one.

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III. Advancing HFI Potentials and Data Support

❑ **Assessment of Indicators**

Target GVA	Indicators	Source	Length of Series	Frequency
Agriculture, Hunting, Forestry, and Fishing	Compound Index (Corn, Palay and Livestock)	PSA	8 years	Monthly
Mining and Quarrying	Volume of Nickel Production Compound Index (Petroleum, Coal and Cement Production)	MGB DOE PSA	8 years	Monthly
Manufacturing	Volume of Production Index	PSA	8 years	Monthly
Construction	Non-Residential Floor Area	PSA	8 years	Monthly

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III. Advancing HFI Potentials and Data Support

❑ **Assessment of Indicators**

| Target GVA	Indicators	Source	Length of Series	Frequency
Electricity, Gas and Water Supply	Gross Generation	NGCP	8 years	Monthly
Transportation, Storage and Communication	Compound Index (Ridership, Passenger Km.)	DOTR, LRTA, Airline Companies	8 years	Monthly
Trade and Repair of Motor Vehicles, Motorcycles, Personal and Household Goods	Volume of Net Sales Index	PSA	8 years	Monthly

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III. Advancing HFI Potentials and Data Support

❏ **Assessment of Indicators**

Target GVA	Indicators	Source	Length of Series	Frequency
Financial Intermediation	Total Loans	BSP	8 years	Monthly
Real Estate, Renting & Business Activity	Housing Stocks	PSA	8 years	Monthly
Other Services	Visitor Arrivals	DOT	8 years	Monthly

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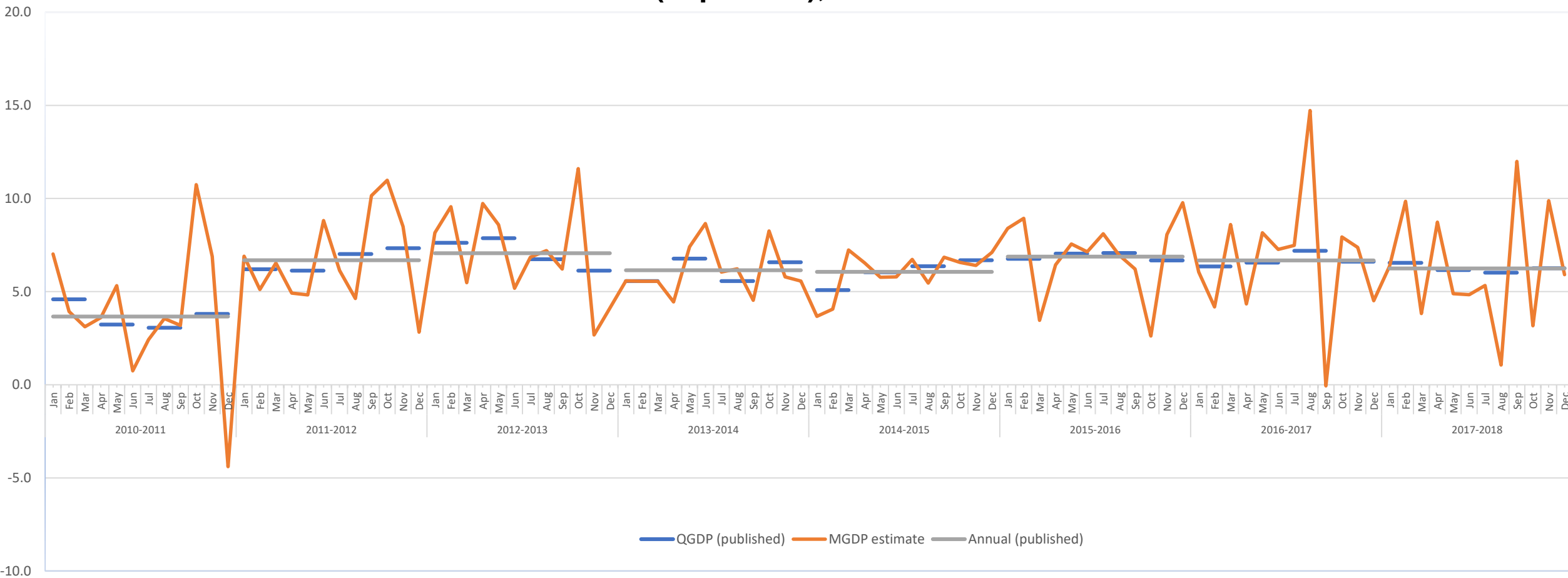Spearheaded by the Philippine Statistics Authority

IV. Experimental Results and Discussion

Gross Domestic Product in Quarterly and Monthly Frequencies
Growth Rates (in percent), At Constant 2000 Prices
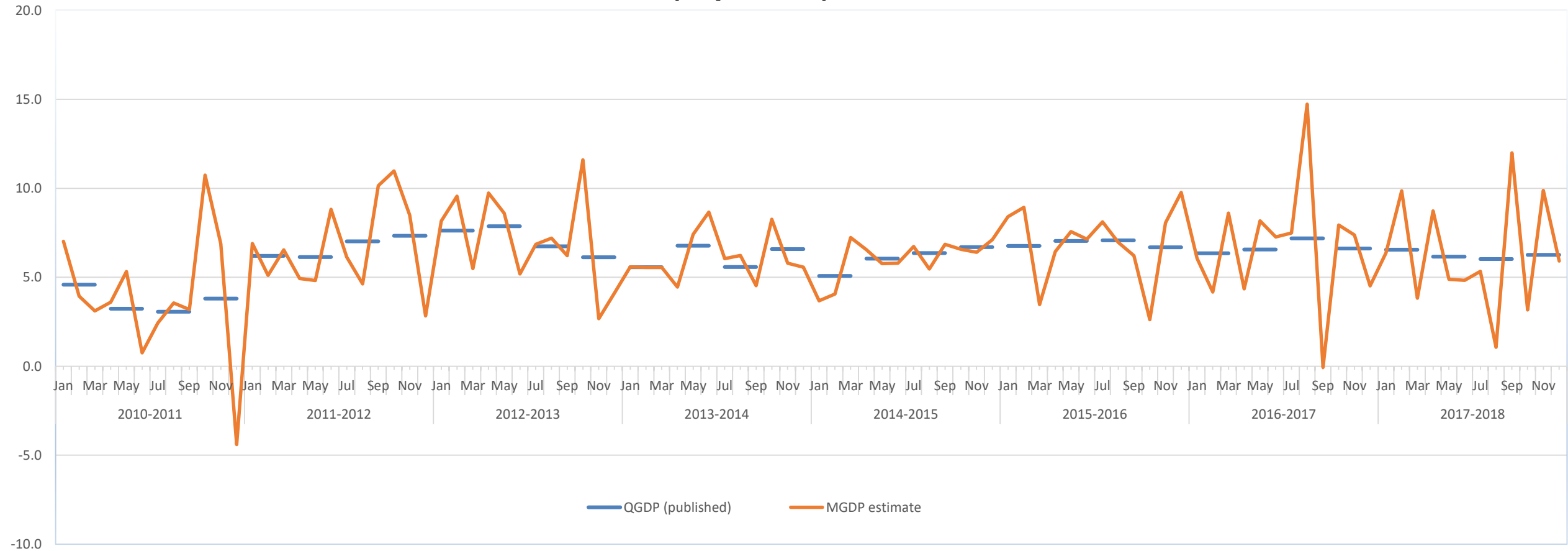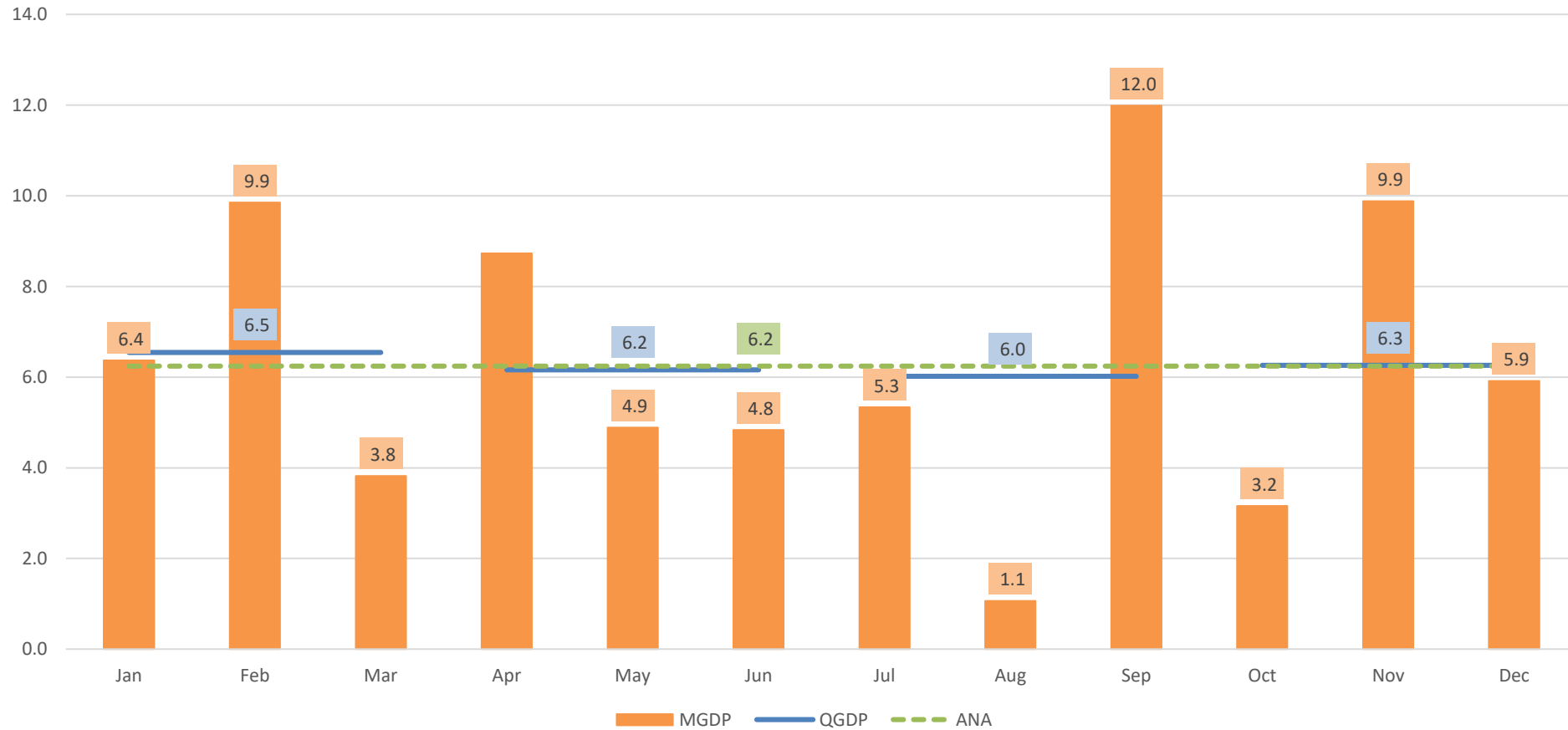
IV. Experimental Results and Discussion

Gross Domestic Product in Quarterly and Monthly Frequencies
Growth Rates (in percent), At Constant 2000 Prices

IV. Experimental Results and Discussion

QGDP and MGDP Growth Rates (in percent)
At Constant 2000 Prices, 2017-2018

IV. Experimental Results and Discussion

Data Sources

Airline Companies

Bangko Sentral ng Pilipinas

Department of Energy

Department of Tourism

Department of Transportation

Financial Statements

Land Rail Transportation Authority

Metropolitan Waterworks and Sewerage System

Mines and Geosciences Bureau

National Grid Corporation of the Philippines

Philippine Statistics Authority

Private Electric Companies

World Bank

V. Challenges and Way Forward

❖ Develop new partnership to maximize/exploit high frequency data from possible sources
  ✓ Data collection
  ✓ Potential use
  ✓ Views and needs

❖ Strengthen high frequency data series (Evaluation/Analysis of administrative based data as inputs)

❖ Determine if developing a Monthly Indicator of Economic Growth (MIEG) would be useful for policy makers
  ✓ Resources/Requirements

❖ Establish a experimental template (activity detail) that could be used to compile MIEG – all activities, expenditure components
  ✓ automated system to manage the databases, run statistical processes, and generate results
  ✓ assess the estimates and the procedures

❖ Develop a comprehensive indicator for the whole economy, in the medium run

❖ Produce data and a protocol to seasonally adjust the monthly results

❖ Develop an aggregate measure of growth, plan its dissemination, and prepare detailed documentation

❖ Support other statistical frameworks: quarterly national accounts, industrial statistics, international trade statistics, etc.

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- Quarterly National Accounts (QNA) Manual 2017 version

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Maraming Salamat

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