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**Projet régional pour  
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# CARIBBEAN NATIONAL ACCOUNT TRAINING PROGRAM

Project for the Advancement of Statistics in the Caribbean Region (PRASC)  
National Accounts Training  
Session 6 – Essential Concepts (4)

January 2018



# **National Accounts**

## **Essential Concepts – How and what is it measured?**

# National Accounts - Overview



## ➤ Course Objective

- ✓ Provide national account compilers with an overview of the SNA framework and the sequence of accounts.

# The basic national accounts question



*“Who does what, by what means, for what purpose, with whom, **in exchange for what, with what change in stocks.**”*

*John buys a coffee, from a coffee shop in exchange for cash, by having the coffee shop prepare him his favourite coffee, to satisfy his need for a coffee, reducing John’s cash and increasing the coffee shop’s cash (**in exchange for what with what change in stocks**).*

# Stocks and flows



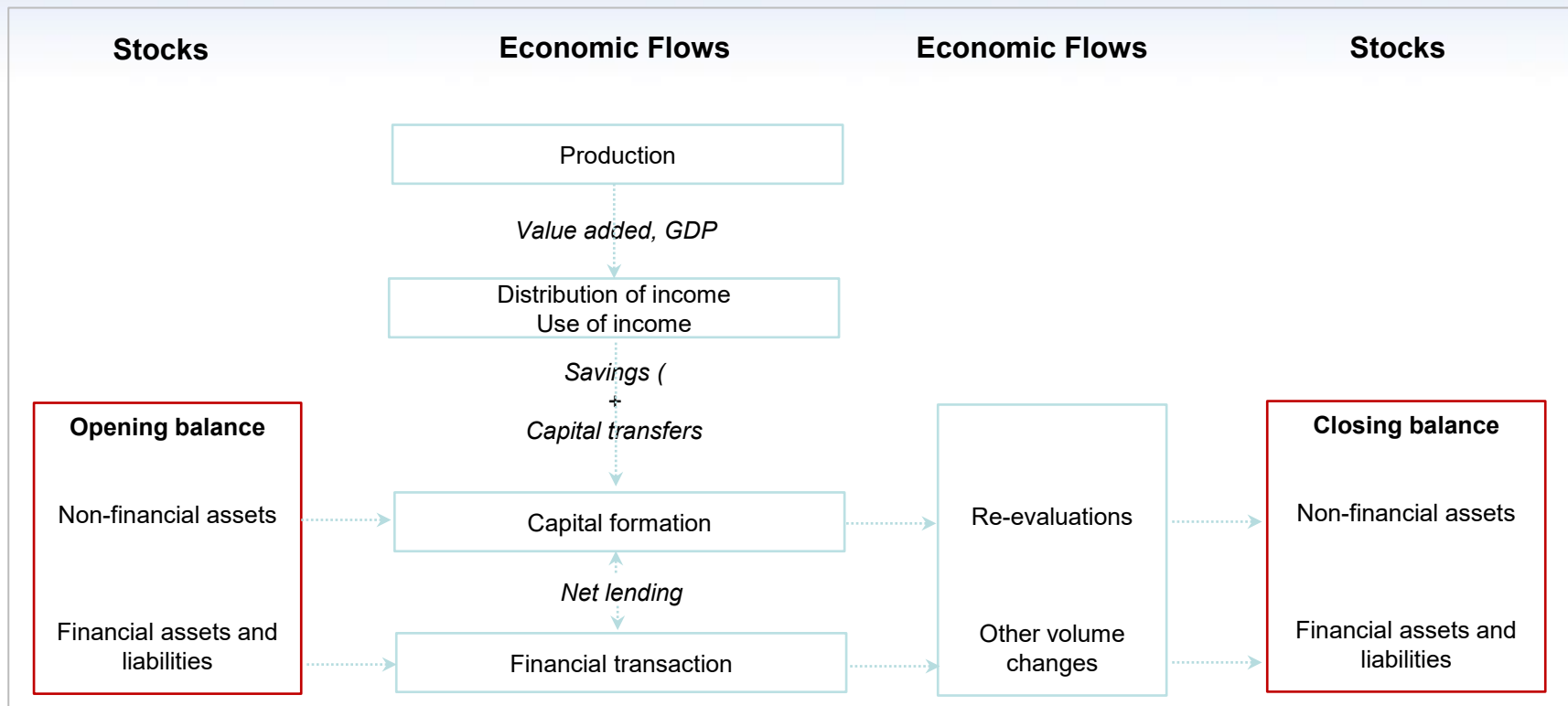
- The national accounts are a system of accounts designed to measure **stocks** of, and **changes in economic value (or economic flows)** and to identify the person, group of persons, legal or social entity with claims on the economic value.

*SNA 2008 p 3.1*

# Stocks and Flows



- Schematically, these accounts take place in the overall framework:



# Stocks



- Stocks are recorded within the balance sheet of the System of National Accounts.
- All other accounts within the national accounts are used to record flows and articulate the change in stocks during an accounting period.

# Stocks



- Stocks are defined as “a position in, or holding of, assets and liabilities at a point in time” (*SNA 2008 p 3.4*).
- They are the accumulation of prior economic flows.
  - **Example:** Firm A begins operations on January 1<sup>st</sup>, 2013 and invests \$10,000 in an ice cream making machine. The stock of Firm A’s produced non-financial assets at that point in time is \$10,000. Assume the machine depreciates \$1,000 over the course of the year and on December 31<sup>st</sup>, 2013 the firm invests in another ice cream machine valued at \$15,000. The total value of the Firm’s stock at that time would be:
    - + Plus: First ice cream machine: \$10,000
    - Less Depreciation: \$1000
    - + Plus: Second ice cream machine: \$15,000
    - = Stock: \$24,000.

# Economic flows



- “Economic flows reflect the creation, transformation, exchanges, transfer or extinction of economic value, they involve changes in the volume, composition, or value of an institutional unit’s assets and liabilities.” *(SNA 2008 p 3.6)*

# Economic flows



- Economic flows can be broken down into:
  1. **Transactions** an economic flow that is an interaction between institutional units by mutual agreement or an action within an institutional unit that it is analytically useful to treat like a transaction, often because the unit is operating in two different capacities
  2. **Other economic flows** show how the value of assets and liabilities change other than by transactions (either by non-economic factors or where there is a lack of willingness of one party)

# Economic flows: transactions



- Transactions can be broken down into:
  1. **Monetary transactions:** A monetary transaction is one in which one institutional unit makes a payment (receives a payment) or incurs a liability (receives an asset) stated in units of currency.
  2. **Non-monetary transactions:** A non-monetary transactions are transactions that are not initially stated in units of currency.

# Economic flows: non-monetary transactions



- Examples of non-monetary transactions include.
  - **Barter** – Barter transactions involve two parties, with one party providing a good, service or asset other than cash to the other in return for a good, service or asset other than cash
  - **Remuneration in kind** – Remuneration in kind occurs when an employee accepts payment in the form of goods and services instead of money
  - **Payments in kind** – Payments in kind other than remuneration in kind occur when any of a wide variety of payments are made in the form of goods and services rather than money.
  - **Transfers in kind** – Represents transfers (something for nothing) of goods or services from one party to another.
  - **Internal transactions** – actions within a unit that are recorded to give a more analytically useful picture of the final uses of output and production.

# Economic flows not treated as transactions



- Externalities: Certain economic actions carried out by institutional units cause changes in the condition or circumstances of other units without their consent. These are not recorded as transactions in the CSMA (e.g. pollution).
  
- Illegal actions
  - Some illegal actions are recorded or should be recorded as transactions when the exchange is between willing buyers and sellers ( e.g., drugs)
  - Some excluded (crimes against persons or property). Stealing is not recorded as a transaction since it is not between a willing buyer and seller.

# Economic flows: other economic flows



- Other economic flows can be broken down into:
  1. **Other changes in the volume of assets:** Other changes in the volume of assets are changes in assets, liabilities, and net worth between opening and closing balance sheets that are due neither to transactions between institutional units, as recorded in the capital and financial accounts, nor to holding gains and losses as recorded in the revaluation account
  2. **Revaluation:** Revaluations are holding gains or losses accruing during the accounting period to the owners of financial and non-financial assets and liabilities.

# What we measure: In Summary



- Stocks
- Flows
  - Transactions
    - Monetary transactions
    - Non-monetary transactions
      - » Barter
      - » Remuneration in kind
      - » Payments in kind
      - » Transfers in kind
      - » Internal transactions
  - Other Economic Flows
    - Other change in the volume of assets
    - Revaluations

# Stocks and Flows: What is it?



- An employer pays for a fitness membership for his employees.

# Stocks and Flows: What is it?



- A farmer rents land to another farmer in return for part of the crop yield.

# Stocks and Flows: What is it?



- An enterprise constructs an assembly line using machinery it imported as well as its own materials and labour. The assembly line will be used to produce goods for sale on the market.

# How and what is measured?



## ***Accounting rules***

*Recording stocks and flows*

# Recording Stocks and Flows



- The recording of Stocks and Flows needs to be comprehensive, consistent and integrated
  
- The national accounts therefore has specific rules related to:
  - Accounting entries
  - Valuation
  - Time of recording
  - Grouping of transactions

# How and what is measured?



## *Accounting Entries*

# The national accounts follows the principle of Quadruple accounting



- Similar to book keeping – a transaction gives rise to two entries in the books of a transactor – a debit and a credit transaction. This is referred to as vertical double-entry bookkeeping.
- For example: Household A purchases food from the grocery store:

Household A			
Groceries	\$200	Cash	\$200

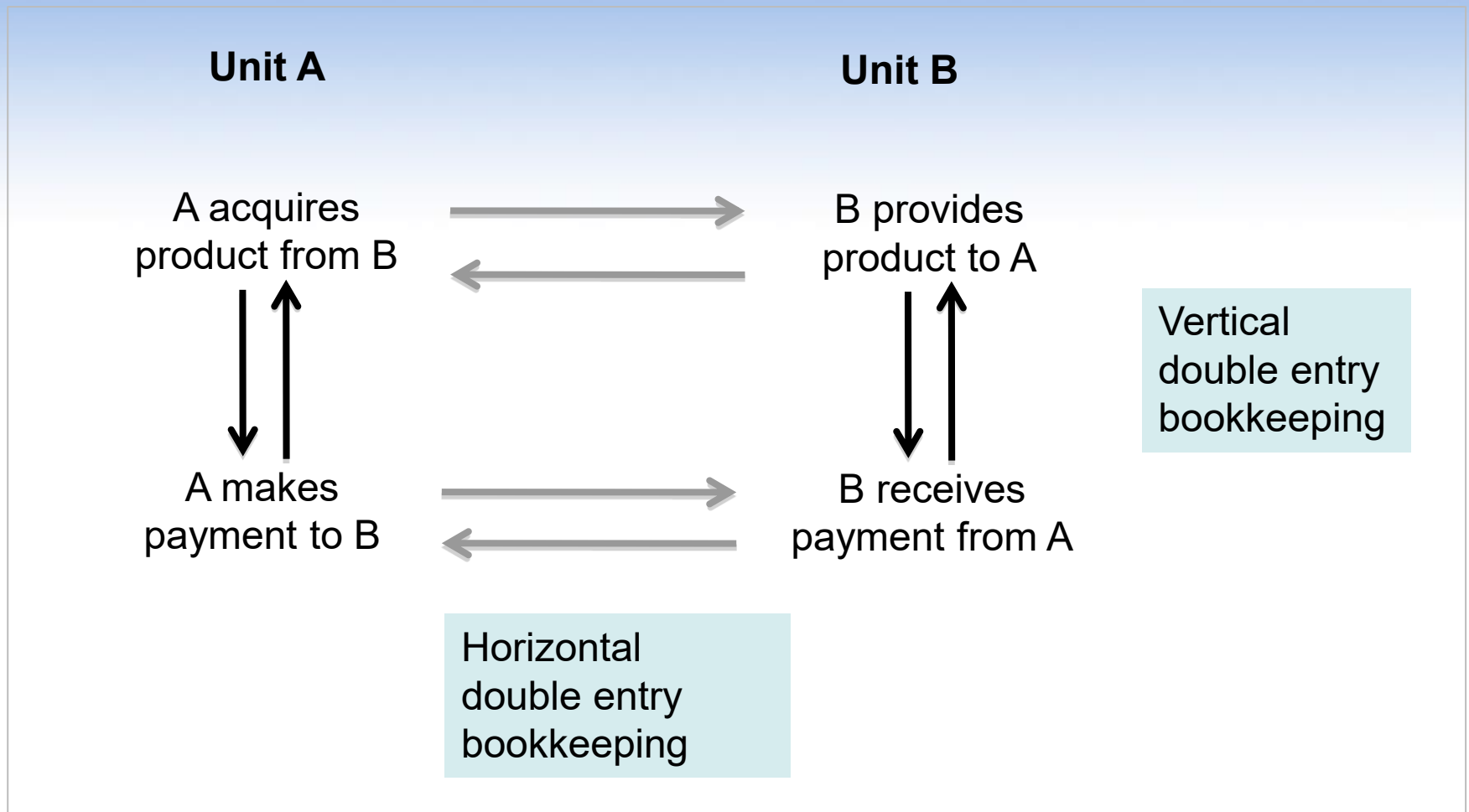
# The national accounts follows the principle of Quadruple accounting



- Since the CSMA is concerned about transaction among institutional units – it must record an entry in the books of both transactors.
- For example: Household A purchases food from the grocery store:

Grocery Store			
Cash	\$200	Groceries	\$200

# Quadruple accounting bring both vertical and horizontal accounting together.



# The national accounts follows the principle of Quadruple accounting



- Another way to look at this is the sale of groceries from a grocer gives rise to a transaction in the economy wide non-financial account and an entry in the economy wide financial account.

Non-Financial Account			
Household Received		Grocer Provides	
Groceries	\$200	Groceries	\$200

Financial Account			
Grocer Receives		Household Pays	
Cash	\$200	Cash	\$200

# The national accounts follows the principle of **Quadruple accounting**



- **Example: Household purchases a car from a retailer.**

Non-Financial Account	
Household Received Car      \$200	Retailer Provides Car      \$200

Financial Account	
Retailer Receives Cash     \$200	Household Pays Cash     \$200

# The national accounts follows the principle of Quadruple accounting



- **Example: Household purchases a government bond.**

## Financial Account

Government Receives Cash    \$200	Household Pays Cash    \$200
Government incurs bond liability: \$200	Households holds bond asset: \$200

# The CSMA follows the principle of Quadruple accounting

- Example: Household pays income tax to the government.

Non-Financial Account	
Government Current Transfers Received: \$200	Household Current Transfers Paid: \$200

Financial Account	
Government Receives Cash     \$200	Household Pays Cash     \$200

# How and what is measured?



## *Valuation*

# Valuation



- *“The power of the SNA as an analytical tool stems largely from its ability to link numerous, very varied economic phenomena by expressing them in a single accounting unit. The SNA does not attempt to determine the utility of the flows and stocks that come within its scope. Rather, it measures the current exchange value of the entries in the accounts in money terms, that is, the values at which goods, services, labour or assets are in fact exchanged or else could be exchanged for cash (currency or transferable deposits).” SNA 3.118*

# Valuation - Transactions



- Market prices for transactions are defined as amounts of money that willing buyers pay to acquire something from willing sellers
- A market price is the price payable by the buyer after taking into account any rebates, refunds, adjustments, etc., from the seller.
- **Example: A household purchases a \$25,000 car from a retailer and takes advantage of a manufacturer's rebate of \$5,000.**

# Valuation - Contracts



- A price agreed by contract is the market price regardless of any change in economic conditions
- **Example: A supplier agrees to supply 100 widgets a month to a manufacturer for \$100 per widget for the next six months. Right after the contract is announced there is a world wide shortage of widgets and the price jumps to \$150.**

# Valuation – Agricultural products sold from the farm



- Observed market prices are appropriate only when similar products are traded in sufficient number and in similar circumstances. When these conditions do not hold, adjustments must be made to the observed price.
- **Example: A farmer sets up a stand along a busy highway and sells corn at \$10 a dozen. The current market price is \$15 a dozen at the local grocery store.**

# Valuation – Quotation Prices



- Market value at the time of the change of ownership should be estimated. The estimate should be revised with the actual market value, when known.
- Example: A supplier agrees to construct a machine for a manufacturer for a quoted cost of \$1,000,000 to be constructed over the course of two years. The manufacturer agrees to make progress payments on the machine as the different components are installed at the factory plant. As the machine is constructed the cost balloons to \$1,500,000.

# Valuation – transfers in kind



- Transfers in kind should be valued at the market prices that would have been received if the resources had been sold in the market. In the absence of a market value the donor's view will be quite different from that of the recipient. The suggested rule of thumb is to use the value assigned by the donor as the basis for recording.
- **Example: A household donates a car to a charity so that it can transport sick children to the hospital.**

# Valuation – transfer pricing



- Adjustments should be made to reflect market prices although this may not be practical in many cases. When adjustments are made adjustments in all accounts must be considered. For example if prices of goods are adjusted the associated income and financial account transactions should also be adjusted.
- **Example: A supplier agrees to supply widgets to an affiliated manufacturer for \$10 a widget even though the market price is \$100.**

# Valuation – Other volume flows



- It is usually necessary to value the other flow by taking the difference in the value of the asset before and after the change in volume.
- **Example: There is a fire at a house valued at \$350,000 causing damage such that the house is now worthless.**

# Valuation – Holding gains and losses



- Holding gains and losses are estimated by taking the total change in assets and deducting the changes attributed to transactions and other volume flows.
- **Example: An individual has a stock of tradable shares at the beginning of an accounting period valued at \$10,000. During the accounting period they purchase \$1,000 worth of shares. At the end of the accounting period the value of their stock of shares is \$15,000.**

# Valuation – positions of financial assets and liabilities



- Stocks of financial assets and liabilities should be valued as if they were acquired in market transactions on the balance sheet reporting date. When an observable market price is not available it will be necessary to estimate fair values that approximate market prices.
- **Example: A household also owns a 50% percent stake in a family business. The original investment was valued at \$100,000. The business has done well and has a net asset value of \$1,000,000.**

# How and what is measured?



## *Time of recording*

# Time of recording




- Options
  - Cash-based
  - Due-for-payment
  - Accrual
  
- The national accounts records economic flows on an accrual basis
  - Time of change of ownership of goods or assets or delivery of services
  - When a liability becomes payable

# Time of recording – acquisitions of goods



- The time of recording of the acquisition of goods and services is the moment when the economic ownership of those goods changes hands.
- **Example: A household purchases a car on loan from a local car dealer.**

# Time of recording – acquisitions of services



- Services are recorded when they are provided. Some services are supplied on a continuous basis. Examples include operating leases, insurance and housing services. These services are recorded as continuously provided over the period of the contract.
- **Example: An accountant does the taxes for a local car dealer.**

# Time of recording – redistributive transactions



- Distributive transactions are recorded at the moment the related claims arise. For example, entries for taxes are recorded at the moment on which the underlying transactions or other flows occur that give rise to the liability to pay.
- **Example: A firm submits payroll taxes on an annual basis.**

# Time of recording – transactions in financial assets and liabilities



- Transactions in financial assets and liabilities are recorded on the date at which the change in ownership occurs. For securities the transaction date may precede the settlement date (the delivery of the securities). Both parties should record the transaction on the transaction date.
- **Example: The sale of a government bond to a household.**

# Time of recording – output



- The output should be recorded as the production takes place.
- **Example: The construction of a new house.**

# Time of recording – inventories



- Additions to inventories are recorded when products are purchased, produced or otherwise acquired. Deductions from inventories are recorded when products are sold, used up as intermediate consumption or otherwise relinquished.
- **Example: Inventories may be materials and supplies held as inputs by producers, outputs as yet unsold, or products held by retailers and wholesalers.**

# Time of recording – intermediate consumption



- The intermediate consumption of a good or service is recorded at the time when the good or service enters the process of production, as distinct from the time it was acquired by the producers.
- **Example: The purchase of flour by a baker to make bread for sale on the market.**

# Time of recording – other changes in volume flows



- Other changes in the volume of assets are usually discrete events, often unexpected, that occur at precise moments within fairly short periods of time.
- Example: Hurricane.

# Time of recording – other changes in volume flows



- Other changes in the volume of assets are usually discrete events, often unexpected, that occur at precise moments within fairly short periods of time.
- Example: A household defaults on a loan.

# Time of recording – holding gains and losses



- Nominal holding gains and losses will be computed between two points in time:
  - The moment at which the accounting period begins; or ownership is acquired from other units; or an asset is produced.And
  - The moment at which the accounting period ends; or the ownership of an asset is relinquished; or an asset is consumed in the production process.
- **Example: A household received a statement from the banking indicating that the value of their mutual funds declined by \$10,000.**

# How and what is measured?



## ***Aggregation, consolidation and netting***

# Aggregation



- In principle, information for groups of transactions are the sum of the individual transactions
- In practice, may have to use alternative estimates including allowances for mis-reporting

# Gross vs Net Presentation



- In some instances the national accounts presents flows on a gross basis and in other instances it presents flows on a net basis.
- In general the national accounts presents flows on a gross basis except when the net basis highlights an economically important property that is not apparent from the gross basis. Examples include:
  - Change in inventories (opening less closing inventories)
  - Changes in assets
  - Changes in liabilities

# Gross vs. Net Presentation



- **Example:** Suppose a household receives \$150 interest on government bonds and pays \$100 interest on a car loan.
  
- **Gross presentation:**
  - Household property income (interest) received:
  - Household property income (interest) paid:
  
- **Net presentation**
  - Household property income (interest):

# Gross vs. Net Presentation



- A gross presentation is not always possible due to data limitations. It is impossible to provide a gross presentation for most financial flows.
- For example: To measure the flow of currency and deposits within the household sector on a gross basis we would need to have information on total currency and deposits received by each household and total currency and deposit outlays by each household in a given accounting period.
- The information that we do have are stocks of currency and deposits at the beginning and end of the accounting period. The financial flow for the accounting period represents (more or less) the difference between the closing stock and the opening stock – i.e. the net change.

# Consolidation



- Consolidation involves eliminating the transactions or creditor / debtor relationships that occur between two transactors that belong to the same sector or sub-sector.
  
- Within the national accounts we attempt to present the data at a detailed level and consolidate upon aggregation when necessary.
  - Can consolidate detailed data; difficult to deconsolidate aggregate data.

# Consolidation



- For example, suppose we want to estimate the level of government debt. Assume that the federal government holds \$10 billion of provincial government bonds.
- Unconsolidated:
  - Federal Government Asset: \$10b
  - Provincial Government Liability: \$10b
- Consolidated
  - Total General Government Asset: \$0
  - Total General Government Liability: \$0
- Within the unconsolidated accounts the federal government would show a \$10 billion asset while the provincial government would show a \$10 billion liability. When these are consolidated both the asset and liability disappear, since at a consolidated level the general government sector cannot owe something to itself.

# National Accounts - Overview



## ➤ Key takeaways

- ✓ The national accounts includes a number of accounting rules, conventions and practices that ensure the results are comprehensive and internally consistent.
- ✓ The key rules revolve around how transactions/stocks are recorded, when transactions/stocks are recorded, and how the information is presented.

# National Accounts - Overview



## ➤ **Activity**



**Thank you!**