

## **Statistics Canada System of National Accounts: Some Applications and Reflections**

High-Level meeting and Regional Seminar on the  
Implementation 2008 SNA and Supporting Statistics  
in the Arab Region  
24-27 June 2013  
Amman, Jordan

Presented by:  
Dr. Atif Kubursi  
Econometric Research Limited

## **The Economy is a System of inter-dependencies:**

- **Between**
  - **Companies**
  - **Economic Sectors**
  - **Communities**
  - **Provinces and Countries**

2



## **Models of Interdependence**

- **Macroeconomic Models: But they are Highly Aggregated**
- **Computable General Equilibrium Models: But they are Truncated and Too Abstract (Theoretically Based)**
- **Input Output Models: Best Suited for capturing Interdependence But theoretically challenged**

3

## **Input/Output Applications**

- **Real Product By Industry**
- **Impact Analysis**
- **Structural Analysis**
- **Simulations and Forecasting**
- **Regional Planning**

4



## Measures of Real Domestic Product by Industry

- The L Aggregation of the Input/Output Table for Canada includes 235 Industries and 471 Commodities
- The L Aggregation is used to generate estimates of Real Domestic Product by the 235 industries

## Impact Analysis

- ~~➤ Gross Output~~
- Initial expenditures
- Value Added
- Employment
- Imports
- Taxes

6



## Structural Analysis

- **Forward and Backward Linkages**
- **Clusters and Compact Product Spaces**
- **Multipliers**
- **Productivity Measures**
  - **Labour Productivity**
  - **Total Factor Productivity**

7

## Simulations and Forecasting

- **Macroeconomic Simulations**
- **Industrial Details of Macroeconomic Aggregates**
- **Spatial Allocations of Macroeconomic and Industrial Forecasts**
- **Policy Simulations**

8



## Regional Planning

- **Inter-Provincial Input/Output Tables**
- **Spatial Allocation of Activities and Impacts**
- **Simulations of Regional Impacts and Inter-Provincial Impacts**

9

## The Structure of the Canadian Input/Output Table

- They are rectangular, not square Leontief Systems where an industry produces only one commodity.
- An Industry can produce more than one commodity and a commodity can be produced by more than one industry
- The Use Matrix (U) comprises the technology cooking recipes of the economy
- The Make Matrix (V) comprises the market shares of the different commodities

10

## The Canadian I/O Matrix

	Commodities	Industries	Final Demand	Row Total
Commodities		<b>U</b>	<b>F</b>	<b>q</b>
Industries	<b>V</b>			<b>g</b>
Final Demand		<b>Y</b>	<b>YF</b>	<b>Y<sup>T</sup></b>
Column Total	<b>q'</b>	<b>g'</b>	<b>f<sup>T'</sup></b>	

6

## The 'MAKE' Matrix

	Commodities	Industries	Final Demand	Row Total
Commodities		<b>U</b>	<b>F</b>	<b>q</b>
Industries	<b>V</b>			<b>g</b>
Final Demand		<b>Y</b>	<b>YF</b>	<b>Y<sup>T</sup></b>
Column Total	<b>q'</b>	<b>g'</b>	<b>f<sup>T'</sup></b>	

7

## The 'USE' Matrix

	Commodities	Industries	Final Demand	Row Total
Commodities		<b>U</b>	<b>F</b>	<b>q</b>
Industries	<b>V</b>			<b>g</b>
Final Demand		<b>Y</b>	<b>YF</b>	<b>Y<sup>T</sup></b>
Column Total	<b>q'</b>	<b>g'</b>	<b>f<sup>T'</sup></b>	

8

## The Final Demand Matrix

	Commodities	Industries	Final Demand	Row Total
Commodities		<b>U</b>	<b>F</b>	<b>q</b>
Industries	<b>V</b>			<b>g</b>
Final Demand			<b>YF</b>	<b>Y<sup>T</sup></b>
Column Total	<b>q'</b>	<b>g'</b>	<b>f<sup>T'</sup></b>	

9

## Total Value by Commodity

	Commodities	Industries	Final Demand	Row Total
Commodities		$U$		$q$
Industries	$V$			$g$
Final Demand		$Y$	$YF$	$Y^T$
Column Total	$q'$	$g'$	$f^T$	

10

## Total Value by Industry

	Commodities	Industries	Final Demand	Row Total
Commodities		$U$	$F$	$q$
Industries	$V$			$g$
Final Demand		$Y$	$YF$	$Y^T$
Column Total	$q'$	$g'$	$f^T$	

11





## Total Value of Primary Inputs

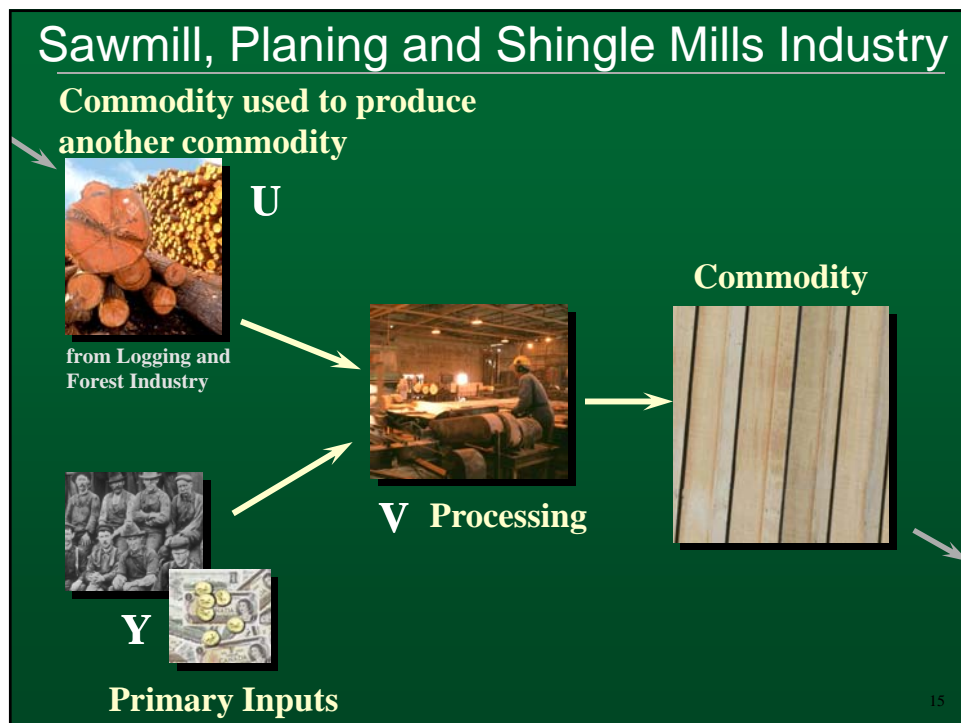
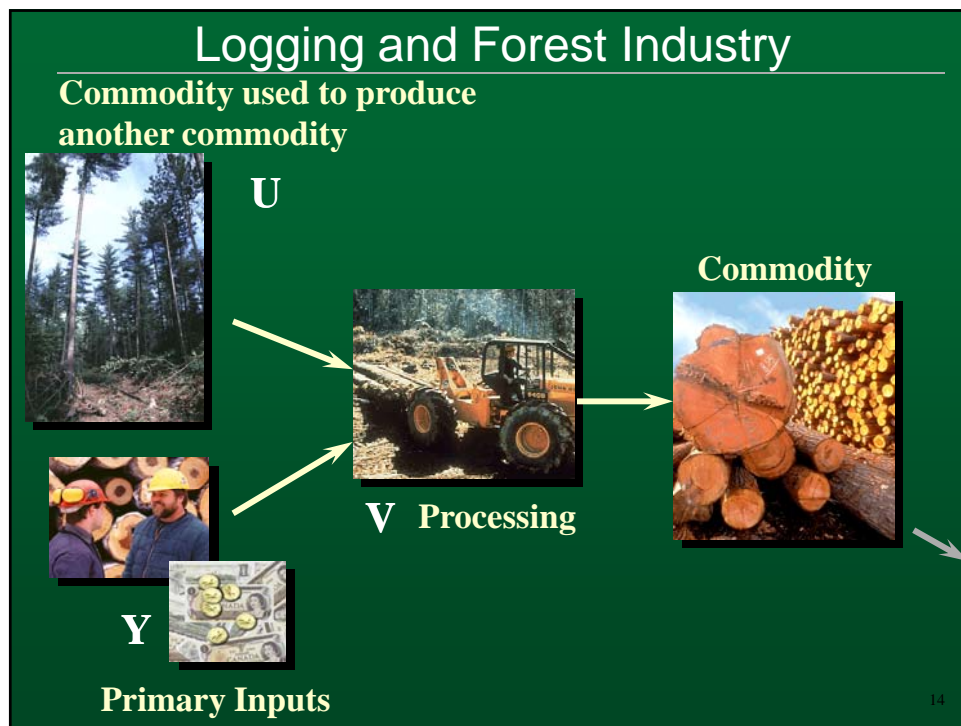
	Commodities	Industries	Final Demand	Row Total
Commodities		$U$	$F$	$q$
Industries	$V$			$g$
Final Demand		$Y$	$Y^F$	$Y^T$
Column Total	$q'$	$g'$	$f^T$	

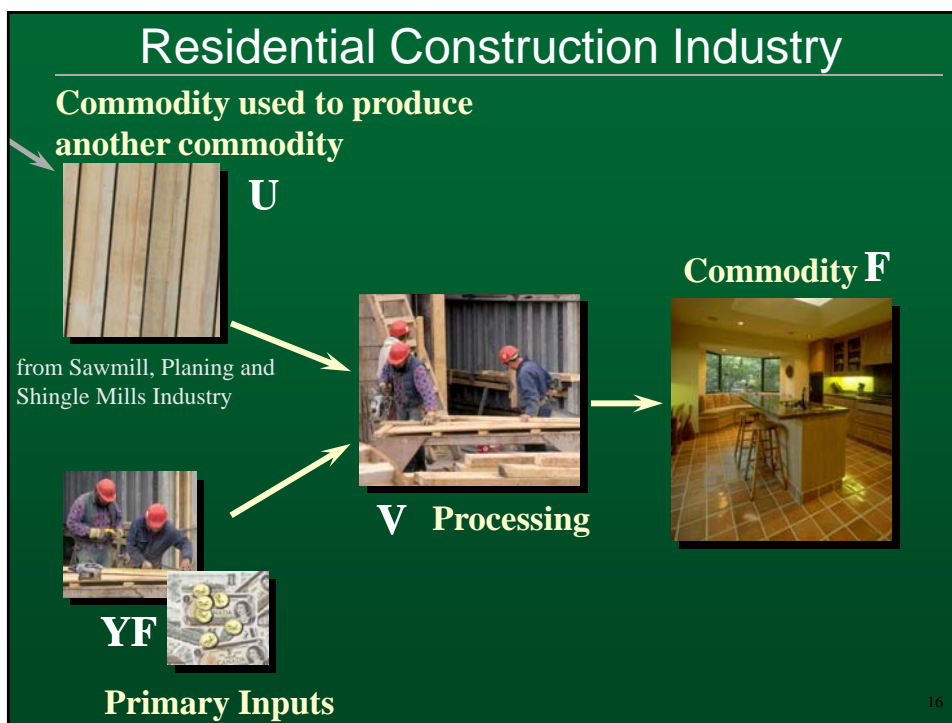
12

## Total Value of Final Demand

	Commodities	Industries	Final Demand	Row Total
Commodities		$U$	$F$	$q$
Industries				$g$
Final Demand		$Y$		$Y^T$
Column Total	$q'$	$g'$	$f^T$	

13





## Tourism Satellite Account

### Objective of Accounts

- (a) bring the Canadian Tourism Satellite accounts into closer harmony with the international standards for Tourism Satellite Accounts, the most important being the Tourism Satellite Account: Recommended Methodological Framework (TSA-RMF) developed by the Commission of the European Communities, the Organisation for economic Cooperation and Development (OECD), the World Tourism Organisation (WTO) and the United Nations (UN), and approved by the United Nations Statistical Commission in March 2000.
- (b) bring the CTSA into closer congruence with user requirements, especially those of industry users, for analysis and information.

22



## The Connection of the Canadian TSA to the UN SNA93

The international framework of TSA-RMF is a satellite account of the UN System of National Accounts (SNA93), which in turn uses the concepts of and data compiled for, the Balance of Payments (BPM 5) of the IMF.

It also uses the relevant United Nations international classifications of products, industries and international transactions (ISIC, CPC and the BOP Classification of International Transactions in Services).

The Canadian TSA is a satellite account of the Canadian adoption of SNA 93 and BPM 5.

## Differences between the UN Satellite Account and the Canadian One

The Canadian System of National Accounts diverges from the concepts of SNA 93 in some respects that affect the measurement of tourism. These include:

- The specification of definitions of final household expenditure and actual final consumption.
- The modified basic prices valuation of goods and services used in Canada
- Net valuation of the services of travel agencies and tour operators.
- The SNA 93 definition of business expenses, which includes accommodation and transportation as part of intermediate consumption

## Final Household Expenditure and Actual Final Consumption

- Tourism consumption, except when it corresponds to the intermediate consumption of enterprises, will...conform to the concept of 'final consumption' in the system of national accounts, regardless of the type of consumer.
- Visitor actual final consumption by visitors, including individuals who travel for holidays, or personal reasons but also those traveling for business purposes. The consumption of these visitors could be paid by businesses, government or by NPISH. Consequently, the consumption of these visitors is within the scope of visitor consumption, even though this consumption does not fall within household final/actual consumption expenditure.

## The Modified Basic Prices Valuation of Goods and Services

- The CSNA definition of modified basic price as the price receivable by the producers from the purchasers for a unit of a good or service produced as output minus any tax payable on that unit as a consequence of its production or sale (i.e. taxes on products).
- The CSNA has adopted this definition as it is felt that adopting the SNA 93 basic prices definition (i.e. including any subsidies receivable by the purchaser), would mean that the transactions would be reported at *"assumed prices, a feature that is not very convincing"*,



## Basic Prices Again

- The advantage of the CSNA approach is that the valuation of transactions is transparent and verifiable from enterprise records, a feature not available in SNA93.

27

## Net Valuation of the Services of Travel Agencies and Tour Operators

- The value of tour operators' and travel agencies' margins are valued separately (unbundled) from the services that they are associated with (transportation, accommodation, tour packages.). This requirement derives from the need for a consistent treatment between tourism services acquired directly, and services of the same type acquired through tour operators or travel agencies.



## **Definition of Business Expenses**

**TSA defines business expenses, which includes accommodation and transportation as part of intermediate consumption, while expenditure on meals for business purposes is treated as remuneration of employees.**