Research Agenda

1) Timing of transactions: Change in private inventories vs. government fixed investment

2) Work-in-progress: What it means for the measurement of government value added

3) Government inventories
Timing of transactions:
Change in private inventories vs. government fixed investment
Timing of transactions: Change in private inventories vs. government fixed investment

- BEA measures government fixed investment generally on a delivery basis
- BEA measures work-in-progress as part of change in private inventories
- When equipment is delivered to the government, BEA records government fixed investment and a decrease in private inventories
- GDP for any one period is measured only as the work-in-progress for that period
Assumptions

- Contractors report work-in-progress to the Census Bureau for their Manufacturers’ Shipments, Inventories and Orders statistics
Question

• Do contractors report work-in-progress to Census for aircraft, missiles, vehicles and other equipment?

• Studies before the 1999 comprehensive revision indicated that some contractors do not report work-in-progress to Census
  – B-2 bomber, built by Northrop Grumman
    • BEA developed estimates of work-in-progress to augment statistics reported by the Census Bureau
    • No adjustments were made to delivery-based government investment
Example: Contractors reporting as expected

• Defense Department buys a plane for $40 million
• Assume it takes the contractor 1 year to build
• Work-in-progress is equally split over 4 quarters
• GDP is correct

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**Example: Contractors not reporting**

- Defense Department buys a plane for $40 million
- Assume it takes the contractor 1 year to build
- Work-in-progress is equally split over 4 quarters
- GDP is understated in q1, q2 and q3 and overstated in q4

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Research Agenda: Timing

- Reassess the contractor reporting requirements

- Identify systems that are not reported to Census as work-in-progress

- Focus on larger defense programs

- Develop adjustments for the inventory estimates
  - Disbursements data by program from Department of Defense
  - Other data sources?
Topic 2

Work-in-progress:
What it means for the measurement of government value added
Work-in-progress: What it means for the measurement of government value added

- Government fixed investment is recorded on a delivery basis
  - Exceptions:
    - Ships
    - Structures
Ships

- Defense shipbuilding was never recorded as work-in-progress in the estimates for change in private inventories.
- Prior to the recognition of government fixed investment, work-in-progress for defense ships was recorded as defense purchases.
- Recognition of government investment during the 1995-96 comprehensive revision replaced ship purchases with ship fixed investment.
  - Measured as work-in-progress.
Consumption of Fixed Capital (CFC)

• With the introduction of government fixed investment, BEA recognized consumption of fixed capital as a partial measure of the services produced by the stock of investment

• Example: A battleship patrols the ocean, carrying sailors and marines who are producing defense services for the country
  – Compensation of the sailors and marines is part of the cost of producing that service
  – Using the ship is another cost of producing that service
    • Measured in part by CFC
CFC and the SNA

• The SNA does not address the issue of CFC for military ships
  – 1993 SNA does not recognize most military equipment as investment
• The SNA does suggest that CFC is accounted for over the whole period a fixed asset is available for productive purposes
• The SNA recommends recording work-in-progress as change in inventories until the equipment or structure is completed
Ship CFC

- Based on capital stock estimates where ship fixed investment is measured on a work-in-progress basis
- Ships require considerable time to build and are expensive
- Example:
  - Arleigh Burke destroyer
    - Costs about $1 billion
    - Built in about 3 years
  - Current NIPA methodology would show CFC, or government services, for up to 3 years before this ship is actually put into service
Research Agenda: Work-in-progress

- Determine data sources available to measure ships on a delivery basis

- Assess the impact on the estimates to determine if a modified methodology creates statistically significant differences

- Determine accounting for work-in-progress in the structure of the government accounts
  - Change in government inventories
Topic 3

Government Inventories
Government Inventories

• SNA recommends presenting inventories as part of the capital account

• Definition:
  – Stocks of outputs that are still held by the units that produced them prior to their being further processed, sold, delivered to other units or used in other ways
  
    – Stocks of products acquired from other units that are intended to be used for intermediate consumption or for resale without further processing
War and Government Consumption Expenditures

• Recent wars
  – Gulf War, 1991
  – Afghanistan, 2001
  – Iraq, 2003

• Common question about the NIPA's
  – Why don’t government consumption expenditures show a significant increase when the U.S. goes to war?
War and Government Consumption Expenditures

• Response
  – War is being fought from inventories

  – Until inventories are sufficiently depleted to necessitate a ramp up in production of these commodities, it is unlikely that a user would notice anything in government consumption expenditures

  – Exceptions:
    • Compensation
    • Travel and transportation
    • Petroleum
Consumption Expenditures & Gross Investment

Consumption expenditures & gross investment

Consumption expenditures

Gross output of general government

Value added

Compensation

Consumption of fixed capital

Intermediate goods and services purchased

Durable goods

Nondurable goods

Services

Less: Own-account investment and sales to other sectors

Gross investment

Structures

Equipment and software

Consumption expenditures & gross investment

Consumption expenditures

Gross output of general government

Value added

Compensation

Consumption of fixed capital

Intermediate goods and services used

Durable goods

Nondurable goods

Services

Less: Own-account investment and sales to other sectors

Gross investment

Fixed investment

Structures

Equipment and software

Change in government inventories
Examples: Compare and Contrast

- Ammunition
  - An intermediate good used in the production of defense services
- Corn
  - A commodity that the Department of Agriculture acquires and sells as part of its farm support programs, specifically the Commodity Credit Corporation (CCC)
- Assume that the government acquires the commodity in the period when it is produced
## Ammunition

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Ammunition

• Ammunition worth 50 is manufactured in periods t1 and t2
• In t2, war begins and ammunition inventories are drawn down
• The decrease in inventories is offset by an increase in nondurable goods used
• GDP is equal to 50 in both periods, recording only the amount of ammunition manufactured
• Government consumption expenditures would appear larger than in the current NIPA’s
## Corn

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Corn

• Corn worth 35 and 5 is grown in periods t1 and t2, respectively
• In t2, the government sells corn of 25 to wholesale and retail establishments
• No impact on government consumption expenditures
• Instead, change in private inventories is increased
• GDP is equal to 35 and 5, respectively, recording only the amount of corn grown
What do these examples show?

- Recognizing an inventory measure for government would provide useful additional information about government transactions.

- Different types of government inventories have different impacts on government consumption expenditures.
What’s currently available?

• BEA has information for a limited number of inventory transactions
  – Farm products held by the CCC
  – Crude oil held by the Strategic Petroleum Reserve (SPR)

• BEA has no information for most inventory transactions
  – Defense supplies and materials
  – Strategic and Critical Material stockpile
A Government Inventory Measure

• For an inventory measure to be truly useful, supplies and materials that are actively used in the production of government services need to be measured
• An inventory measure showing only items such as CCC and SPR provides little additional information than what can be seen in the current NIPA’s
• BEA has not produced an inventory measure in the past because of data problems for supplies and materials
• Technology changes, combined with attempts to improve government financial statements, may provide prospects for new and improved source data
Will we have the data that we need?

- Currently, BEA classifies missiles as fixed investment
  - The Canberra II Group, which is discussing the next SNA volume, proposes that most missiles should be classified as inventories
- For war losses, an adjustment is made to reduce capital stocks
- BEA receives very detailed information about the production and delivery of most types of missiles
- However, BEA was unable to obtain information about war losses because the data were classified
Research Agenda: Government Inventories

• Focus initially on defense inventories

• Work with the Department of Defense to identify data sources

• Develop a methodology for the measurement of inventories
Research Agenda: Government Capital Account

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Government Division

Government Statistics Users Conference
Washington, D.C.
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