Discussion of Diewert-Fox: Money and the Measurement of Total Factor Productivity

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Purpose and Motivation

- Consider liquid assets from the perspective of productivity analysis
- High cash balances were noted as a policy concern during the financial crisis, i.e., that firms were holding cash rather than undertaking new investment
- Authors suggest high cash holdings means . . . “the economy is not using its full capacity” and that TFP may not be measured correctly
Approach

- Review conceptual issues that arise when adopting the view that real money balances should be added to the production function
- Conduct empirical exercise where real money balances are added to other inputs and analyze results (impact on measured TFP)
Authors discuss role of money in production function, noting in particular the empirical literature that began in the late 1960s/early 1970s and centered on testing where real money balances enhanced the technical efficiency of the economy.

Authors don’t take a stand on this literature, except to say that regardless of purpose, cash and liquid assets have an opportunity cost in terms of investment, productivity and economic growth.

Additional clarity on dimension of this proposition would be nice—does it refer to firms, sectors, or to the functioning of the economy as a whole?
Data and Facts

Authors use data for the U.S. nonfinancial corporate and noncorporate business sectors from the BEA/FRB Integrated Macroeconomic Accounts (IMAs)

Some facts about the assets of the U.S. noncorporate business sector:

- About 75 percent of total assets are nonfinancial assets, 90 percent of which are real estate holdings
- About 25 percent of the sector’s financial assets are currency and deposits, short-term bank loans exceed that amount by about 50 percent
- Inventory holdings are very small, whereas trade receivables (and trade payables) are much larger
- The leverage ratio of this sector was elevated during the financial crisis
- Net investment (nominal) contracted for three years and the residential component is still below its pre-crisis peak
Facts, continued

Corporate sector:

- About 50 percent of this sector’s total assets are nonfinancial assets, about 1/2 of which are real estate/structures
- Nearly 1/3 of total financial holdings consists of U.S. DIA and probably another 10 percent are intangible assets recorded after M&A
- At year-end 2013, inventories were 12 percent of total nonfinancial assets, and trade receivables and payables still larger
- Currency and deposits about 7 percent of total financial assets
- Leverage is low for the sector as a whole
- Domestic net investment contracted for one year during the Great Recession; (net) dividends were cut back for two years but expanded thereafter
- U.S. DIA was generally maintained during the Great Recession
Some choices and considerations:

- Money balances (currency and deposits, taken together) are used.
- To deflate money balances, alternative deflators depending on the predominant reason for holding cash balances are considered:
  - A consumption price if funds are for paying dividends.
  - A wage rate if funds are for covering wage commitments.
  - An intermediate inputs price index if funds are for paying suppliers.
- To calculate user costs, ex post and smoothed inflation rates are considered.
Results

- The asset share for money balances is very small.
- As a result, adding real money balances to inputs makes very little difference to measured TFP growth (virtually no difference for the corporate sector).
- Is this because the authors have asked an uninteresting question or is something astray in their approach or implementation?
The role of **finance** in economic growth or the impact of **corporate finance** on productivity?

- In the usual view, a country’s financial institutions influence its economic efficiency, an influence naturally associated with TFP
  - Money and finance are seen as “lubricating the wheels of commerce”
  - e.g., consider the “dependence on external finance” that Rajan and Zingales (1998) link (positively) to cross-country differences in productivity growth
- Cash management is an aspect of corporate finance, the prudent practice of which is arguably important for productivity
A topic in the development literature, e.g., David Weil discusses this in his AEA lectures on economic growth. Write

\[ Y = AF(K, L) \text{ where } A = Technology \ast Efficiency \]

The idea is that, while the application of technology may indeed differ across countries, it hard to fathom that technology explains the very large differences we see in \( A \). According to The Conference Board’s *Total Economy Database*, \( A \) for the Euro Area is 25 percent less than \( A \) for the United States. That is not technology (innovation or diffusion).
Corporate finance examines **working capital**, the difference between current (i.e., short-term) assets and current liabilities:

- Current assets include **inventories**, cash and liquid assets, and trade receivables.
- Current liabilities include trade and current debt payables (bank loans, lines of credit, commercial paper, and other short-term debt instruments).

Consider the proposition that financial working capital is a productive asset to be included in growth accounting.
As a starting point, consider modeling nonfinancial business.

- Let working capital, not inventories alone, enter the production function where working capital is inventories plus financial working capital.
- For well-managed firms, the values for current assets and current liabilities will roughly cancel out (or inventories and financial working capital will roughly cancel out).
- Financial capital is then an unlikely source of long-term economic growth.
- But swings in inventories and financial working capital will, in all likelihood, surface in cyclical episodes and in financial and liquidity crises.
Consider now the modeling of aggregate activity with financial working capital as an asset

- Assume that domestic financial business is the source of working funds for nonfinancial business
- . . . and that financial business assets and liabilities are on a consolidated basis

Current financial assets and liabilities “cancel out” in aggregation

As a result, financial working capital does not affect the productive capacity of the economy

. . . although it might change picture of industries and reveal transmission mechanism of financial shocks
Implications for the SNA

Assume that in the SNA
(a) capital income has \textit{ex post} price and quantity elements and (b) that industry capital income includes all forms of remuneration to capital (i.e., production subsidies are included). Then

- Services from financial working capital are a rightful component of capital services for industries and sub-sectors of the economy
  - ... so too are \textit{net} positions in long-term financial assets (e.g., DIA and FDI)
- When considering aggregate impacts, financial assets and liabilities must be consolidated (just as we net out intermediate goods) and thus the aggregate implications are nil
- In implementing the notion of money in a production function, Diewert-Fox consider only money balances, rather than using all current financial assets and liabilities
Thank you