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"Preparing High Frequency Estimates for Revised NIPA Institutional Sectors"

By

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Abstract

A key component of the Bureau of Economic Analysis (BEA) Strategic Plan for fiscal years 2004 – 2008 is to improve institutional sectoring within the National Income and Product Accounts (NIPAs). The goal is to develop NIPA institutional sectors that will be more consistent with sectors as defined by the *System of National Accounts, 1993* (*SNA*) sectors. Four major tasks that will facilitate this project include: (1) Creating a separate sector for non-profit institutions serving households (NPISH); (2) including private quasi-corporations in sectors for financial and non-financial corporations; (3) developing a household sector that excludes NPISH and includes non-corporate enterprises; and (4) reassigning government quasi-corporations from the government sector to corporate sectors. This paper explores the challenges of operationalizing these sector revisions and suggests methods for preparing high frequency measures of output, income, and saving for the revised NIPA sectors. It also discusses the difficulties that will be encountered in preparing high-frequency estimates for certain sectors.

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Introduction

1. The United States (U.S.) Bureau of Economic Analysis (BEA) publishes a number of high-frequency (quarterly) estimates of output, income, saving, and net lending or borrowing in the U.S. National Income and Product Accounts (NIPAs). However, BEA does not publish a complete set of quarterly estimates of the output, income, and saving for all institutional sectors identified in the *System of National Accounts, 1993* (SNA). Moreover, the definitions of institutional sectors in the presently published NIPAs do not precisely match institutional sectors as defined in the SNA.

2. One of the most important goals specified in BEA's Strategic Plan for fiscal years 2004-2008 is developing information to allow NIPA sectoral accounts to be restated on a basis that is more consistent with that outlined in the SNA.[1,2] During the 2003 comprehensive NIPA revision, BEA adopted several definitional and presentational changes that moved the NIPAs toward the SNA: For example, SNA-consistent measures of insurance and banking services, a new measure of general government output, and presentational changes that made specific NIPA series and tables more consistent with SNA series and tables.[3] Yet considerable differences remain between the NIPAs and the SNA.[4,5] A key difference between the NIPAs and SNA is sectoring.[6] The NIPA personal sector comprises households and nonprofit institutions serving households (NPISH), while the SNA separates them. [7] The NIPA business sector would have to be refined and disaggregated to resemble the SNA's financial and non-financial corporate sectors. Finally, the NIPA government sector is different from the SNA's government sector in significant ways. Assuming that important sectoring differences between the NIPAs and the SNA can be resolved, attention can then turn to producing annual and high frequency estimates for the NIPAs that are consistent with those required by the SNA.

3. The SNA comprises current accounts, accumulation accounts, and balance sheets. The NIPAs, on the other hand, comprise production, appropriations, and

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[1] See "BEA's Strategic Plan for FY 2004 – FY 2008" at:
http://www.bea.gov/bea/about/strat_plan_FY04_08.pdf.
[2] BEA makes extensive efforts to meet international guidelines when providing estimates to the Organisation for Economic Cooperation and Development (OECD). See the OECD publication entitled *National Accounts of OECD Countries: Main Aggregates*, Volume 1.
[3] For more details, see Moulton and Seskin (2003) and Mayerhauser, Smith, and Sullivan (2003).
[4] See Harrison (1991), Lal (2003), and Moulton (2002).
[5] Some of the NIPA-SNA differences described in the papers cited in the previous footnote may be resolved when the scheduled 2008 revision of the *SNA* is released.
[6] NIPA institutional sectors include domestic business, personal (including households and nonprofit institutions serving households), general government, and rest-of-the-world sectors, while the SNA includes nonfinancial and financial corporations, households, nonprofit institutions, general government, and rest-of-the-world sectors.
[7] For details about recent BEA efforts to separate the NIPA Personal Sector into two sectors (a Households Sector and a Nonprofit Institutions Serving Households Sector), see Mead, McCully, and Reinsdorf (2003).

saving-investment accounts, which are roughly consistent, in content and result, with the SNA's current accounts and a portion of the SNA's accumulation accounts.[8]   Consequently, discussions in this paper will be restricted to requirements for those SNA accounts that have a close NIPA analogue.[9]

4. The four major sections of this paper separately examine the major sectoring differences between the NIPAs and SNA just highlighted, they describe the revisions required to make the NIPA sectors more consistent with SNA sectors, and they discuss how high-frequency estimates might be prepared for these revised sectors (See Figure 1). In this context, the first section considers the creation of a nonprofit institutions serving households (NPISH) sector. Section two discusses refining BEA's business sector and then splitting it into financial and nonfinancial corporations sectors. Section three focuses on requirements for preparing high-frequency estimates for an SNA-aligned household sector. Section four considers the government sector.

NPISH Sector

5. One of the major tasks associated with making the NIPAs more consistent with the SNA is the removal of NPISH transactions from the personal sector and the creation of a separate NPISH sector. This development would not only allow for separate examinations of the economic activity associated with households and NPISH in the U.S., but it would also provide for international comparability of national accounts. This section discusses efforts required to create a complete set of NPISH national accounts for the NIPAs on a quarterly basis. [10]

6. Although the current definition of NPISH used in the NIPAs is unlikely to change immediately for a number of reasons, improvements to the sectoring of the accounts and an increase in the frequency of available NPISH estimates might still be possible with additional research. A key remaining task for developing a production account is determining the most appropriate use of data from various sources. High frequency estimates will also be made possible by identifying indicator series that can be used appropriately to prepare quarterly estimates through the interpolation and extrapolation of annual estimates.

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[8] Annual and quarterly financial accounts and balance sheet information are provided in the U.S. Federal Reserve Board's *Flow of Funds Accounts*.

[9] Generally, the NIPAs reflect transactions that appear in the following SNA accounts: The production account (I), the primary (II.1) and secondary (II.2) distribution of income accounts, the use of income account (II.4), and the capital account (III.1). See Figure 2.

[10] BEA presented a preliminary set of estimates for the income and outlays of nonprofit institutions serving households in an article by Mead, McCully, and Reinsdorf (2003). The accounts presented in the article became a permanent part of the National Income and Product Accounts as tables 2.9 and 7.20 during BEA's 2003 Comprehensive Revision. These accounts are based on guidelines established for satellite accounts that are presented in the United Nations (U.N*.) Handbook on Nonprofit Institutions in the System of National Accounts*

7.   Next, we discuss the differences between the NIPA and SNA definitions of NPISH. Afterwards, we consider the challenges and expectations for providing a complete set of NPISH accounts in the NIPAs and the data that are required to produce quarterly NPISH estimates. Then we delineate the benefits that are expected to accrue from continued efforts to create a NIPA NPISH sector.

NIPA and SNA sectors

8.   The sectors currently used in the NIPAs do not provide all of the accounts for a separate NPISH sector. In most tables, the transactions of NPISH are included with those of households in the personal sector. However, there are a number of places in the NIPAs where separate estimates for the transactions of NPISH or households are available.   Separate annual estimates for the generation, allocation, distribution, redistribution, and use of household and NPISH income are available in NIPA table 2.9. Separate estimates of gross value added for NPISH are also available in NIPA table 1.3.5.

9.   One primary criterion for an institutional unit to be classified as a NPISH in the SNA is that it must be classified as a nonprofit institution. In order for a unit to be classified as a nonprofit institution, it must meet the following three criteria. First, it must be a legal entity that was created by law and recognized by institutions other than itself. Second, it must be controlled by a group of members whose rights are defined in articles of association or similar types of agreements. Third, it cannot have members who can lay claim to profits or surpluses that the institution generates. Although these requirements are usually associated with legal entities whose activities are frequently exempt from various forms of taxation, such exemptions are not necessary to be classified as a nonprofit institution in the SNA [SNA, § 4.54-56].

10. As previously implied, not all nonprofit institutions in the SNA are classified as NPISH.   One additional criterion for NPISH status is that the nonprofit institution is a non-market producer. In other words, it must sell the goods that it produces at prices that are not economically significant.[11] The SNA specifies that nonprofit institutions that are market producers and primarily provide services to business should be assigned to the corporate sectors of the accounts [SNA, § 4.59]. A second criterion for NPISH status is that the nonprofit institution is not financed and controlled by a government. The SNA specifies that the transactions of non-market producers that are financed and controlled by a government be classified with the related government unit [SNA, § 4.62].

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[11] The SNA defines "economically significant" prices as ones that influence the quantities of goods supplied and demanded [SNA, § 4.58]. This definition has proven to be problematic both in its interpretation and implementation. The *European System of Accounts 1995* suggests the use of a "50 percent rule" to implement the SNA rule when preparing national accounts. The 50 percent rule specifies that institutions should be treated as market producers when receipts from their sales cover more than 50 percent of their operating costs.

11. The general nature of non-market production creates difficulties in the measurement of the value of the final goods and services produced by NPISH. For market producers, such as financial and non-financial corporations, sales usually exceed operating costs. On the other hand, this relationship is often the reverse for non-market producers: Receipts from the sale of program services are usually not expected to cover operating expenses. Indeed, most NPISH rely on contributions, government grants, or interest and dividend income to cover their expenses. Because sales of program services are usually below the costs of producing these services, sales are not a good measure of the value of NPISH output. The SNA addresses this issue by specifying that the output of NPISH be measured as the total expenses incurred in its production [SNA, § 6.91]. This convention provides a more meaningful measure of the value of their output.

12. Although the measurement of NPISH output is similar in the NIPAs and in the SNA, the definitions for this sector differ substantially for the two accounting frameworks. BEA has not yet systematically reviewed its NPISH sectoring rules in light of SNA recommendations. It is clear, however, that the NIPA NPISH sector is probably larger than for many other countries because it includes hospitals and educational institutions that, in the accounts of many other countries, may be classified as nonprofit institutions serving government or as non-financial corporations. BEA recognizes that it is difficult to compare nonprofit sectors across countries because of differences among countries both in classification and in actual institutional arrangements for funding and control. To resolve these sectoring issues, BEA plans to undertake a very careful review of sector boundaries generally, and the NPISH sector boundary specifically.

Creating an SNA-like NPISH sector

13. Data availability is the main constraint imposed upon the development of a full set of current accounts for a NIPA NPISH sector as defined by the SNA. For many of its current estimates, BEA must rely on the use of aggregate tabulations of data that are collected by other administrative, statistical, and private institutions. Although BEA interacts with many of these institutions to acquire the data necessary to maintain and update its accounts, BEA does not have control over the related data collection and preparation processes. Also, it is often the case that alternative data sources can be used to produce a particular estimate. In cases where potential estimates based on alternative data sources are noticeably different, choices must be made as to the best use of available data.

14. Given these concerns about source data, BEA will continue to conduct research to identify the best possible data sources and to improve NIPA sectoring. Nevertheless, early progress can likely be made on an annual production account that uses BEA's current definition of NPISH. As mentioned previously, a key remaining task for the completion of this account involves

determining how to handle differences in source data. Specifically, the NIPA output estimates for NPISH are primarily based on data from the Census Bureau, whereas estimates for the related compensation component of value added are primarily based on data from the Bureau of Labor Statistics (BLS).[12] Information on employment from these two data sources differs slightly; these differences should be reconciled before a production account is prepared for the NIPAs.

15. There are at least two developments that might prove useful in the completion of a production account for the NPISH sector. First, the Institute for Civil Studies at The Johns Hopkins University is now linking data provided on nonprofit institutions' Internal Revenue Service (IRS) information returns to the employment data that are available from BLS.[13] Second, BLS and the Census Bureau are comparing aggregate tabulations that are based on their separate business master files to develop further insight into the differences between estimates of employment that are produced from these two data sources. The final results from both of these efforts may provide useful insights for the appropriate use of source data for preparing estimates of NPISH output.

High frequency estimates

16. The previously described data limitations affect the development of quarterly estimates of NPISH transactions. However, these data limitations may be overcome by using indicator series to interpolate and extrapolate quarterly estimates from annual estimates. Following SNA rules, annual NIPA estimates of NPISH output are derived as the cost of production; that is the sum of intermediate consumption expenditures (P.2), Compensation of employees (D.1), Consumption of fixed capital (CFC, K.1), and the net of Other taxes and Subsidies on production (D.29 plus D.39), which are primarily based on Census Bureau quinquennial economic census and annual economic surveys.[14] Annual estimates of NPISH income (B.6) are prepared as the sum of Income receipts on assets (Property income, D.4) and Transfer payments from business and government (Other current transfers, D.7).[15] Annual estimates of NPISH saving are calculated as NPISH Income less NPISH Final consumption expenditures (P.3, which is consistent with estimates of NPISH output). The following paragraph discusses certain just-described annual series that are difficult to measure directly on a quarterly basis; appropriate indicator series are sought for

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[12]The Census Bureau is part of the U.S. Department of Commerce. One of the Census Bureau's primary tasks is collecting economic statistics through surveys. BLS is part of the U.S. Department of Labor. One of BLS' main tasks is collecting statistics on employment and compensation.

[13] Further information on this project is available at http://www.jhu.edu/~ccss/research/employ.html. The IRS, part of the U.S. Department of the Treasury, establishes and maintains guidelines and procedures for collecting taxes for the Federal government.

[14] The accounting codes in parentheses are from the SNA.

[15] The components of NPISH income are derived from a variety of sources; see McCully, Mead, and Reinsdorf (2003), p. 14-15.

these series so that quarterly NPISH estimates of output, disposable income, and saving can be prepared by interpolating related annual estimates.

17. Series that are most difficult to measure directly on a quarterly basis include: Income receipts on assets (Property income, D.4), Transfer payments from corporations and households (a portion of Other current transfers, D.7), and receipts from sales (Market output, P.11, which is used to calculate Entrepreneurial income, B.4, and Final consumption expenditures, P.3).[16] Currently, estimates of Income receipts on assets are primarily based on data from the information returns filed annually by tax-exempt institutions. Estimates of Transfer payments from corporations are primarily based on data from income tax returns filled annually by corporations, and estimates of Transfer payments from households are primarily based on annual data from the American Association of Fundraising Counsel (AAFRC) Trust for Philanthropy. Estimates of receipts from sales are primarily based on tabulations from the Census Bureau Services Annual Survey.

18. One positive development that will assist in the preparation of quarterly NPISH estimates is a new Services Quarterly Survey that is being developed by the Census Bureau.[17] This survey will gather data on the revenue of services industries that will be tabulated by both tax status and industry classification. Although the data collected via this new survey are expected to help improve the quality of many of the quarterly estimates provided for the NIPAs, they are unlikely to resolve all issues associated with the source data needed to prepare a complete set of quarterly NPISH estimates. The survey data will be tabulated for tax-exempt organizations by industry, but the data collected by the survey will be limited to receipts. Also, the survey coverage will be limited to a subset of the NPISH currently covered in the NIPAs. Nevertheless, these data may be very useful in preparing quarterly NPISH estimates when they are used in conjunction with other available source data.

Benefits of an SNA-like NPISH sector

19. A number of benefits are expected from developing a complete set of quarterly NPISH estimates for the NIPAs. The estimates would provide a means for measuring the size of the NPISH sector in relation to other sectors. The estimates would permit comparison of the structure of NPISH production with the structure of production for other sectors. Also, the estimates would permit measurement of the effects of policy changes on the NPISH sector over time.

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[16] Because NPISH and households are combined, transfers between households and NPISH (part of D.7) are netted when calculating income for the combined sector. Also, income derived from Sales to other sectors (Entrepreneurial income, B.4) is netted against purchases from other sectors.

[17] More information about the Services Quarterly Survey is available at:
http://help.econ.census.gov/BHS/QSS/index.html.

20.   The current NIPA definition of NPISH is somewhat consistent with the definition suggested for a NPISH satellite account in the United Nations' *Handbook on Nonprofit Institutions in the System of National Accounts.* Therefore, even if the NIPA definition of NPISH remains somewhat different from that used in the SNA for the immediate future, development of a separate NIPA NPISH sector could permit improved cross-country comparisons because selected nations may produce NPISH satellite accounts.

Nonfinancial and Financial Corporate Sectors

21.   BEA faces two main challenges in developing annual and quarterly estimates for the nonfinancial and financial corporate sectors that are consistent with SNA institutional sectors: (1) The NIPA definition of the corporate sector differs from the SNA definition; and (2) data are limited for preparing estimates for certain components.   Notably, the NIPA domestic business sector is comprised of corporate business, sole proprietorships and partnerships, other private business, and government sponsored enterprises. As a first step, it will be important to group or classify appropriate institutional units in the NIPA business sector before attempting to disaggregate this sector into nonfinancial and financial corporate sectors. It is worth mentioning that the derivation of NIPA institutional sectors reflects the availability of source data.

22.   The NIPA definition of the corporate sector includes certain non-corporate enterprises (NCEs), which are normally assigned to the household sector in the SNA, and excludes certain quasi-corporations that are normally included in the SNA corporate sectors.

23.   An SNA corporate entity is defined as "a legal entity, created for the purpose of producing goods or services for the market, that may be a source of profit or other financial gain to its owner(s); it is collectively owned by shareholders who have the authority to appoint directors responsible for its general management" (SNA §4.23). Another feature, which is implied by the SNA, is that a corporation has many shareholders. One type of U.S. corporations is an 'S corporation," which can have no more than 75 shareholders and usually has only a few shareholders.[18] Although there are good arguments for and against classifying S corporations in an SNA household sector, BEA must complete its own review of sector boundaries before determining S corporations' appropriate classification.

24. Tabulations of annual corporate tax returns permit the separate identification of certain measures of S corporation activity, including: (a) Separately identifiable detailed subcomponent estimates of tax-based net income for nonfinancial and financial S corporations; (b) interest income; (c) dividend income; and (d) tax

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[18] See the U.S. Code, Title 26, Subtitle A, Chapter 1, Subchapter S.

depreciation (what BEA defines as capital consumption allowance, CCA).[19] However, BEA does not now have annual or quarterly estimates of the economic depreciation (CFC, K.1) for S corporations, which are required to prepare estimates of output for S corporation.

25. Another difference between NIPA and SNA definitions of the corporate sector is the treatment of partnerships. NIPA partnership income is combined with the income of sole proprietorships and included in the NIPA business sector. In the SNA, the income of partnerships may be included in either the corporate sectors or in the household sector. Also, SNA corporate income includes the income of quasi-corporations. Quasi-corporations include "unincorporated enterprises, including unincorporated partnerships, owned by households that are operated as if they were privately owned corporations" (SNA §4.50). Although many U.S. partnerships (especially small ones) could be assigned to an SNA household sector, many of the largest U.S. partnerships would probably be considered quasi-corporations. Annual industry tabulations are available for the detailed subcomponents of net income and related measures of all U.S. partnerships. However, tabulations of detailed subcomponents of net income are not available for general partnerships, domestic limited partnerships, and domestic limited liability partnerships—entities that may meet the definition of quasi-corporations. A closer analysis of these three types of U.S. partnerships will be required to determine if each qualify as quasi-corporations. If it is determined that they qualify as quasi-corporations, then annual estimates of tax-based income for quasi-corporation partnerships could be developed. However, as is the case for S corporations, neither annual nor quarterly estimates of CFC (K.1) for quasi-corporate partnerships are available. In fact, presently, the NIPAs do not include separate estimates of CFC for partnerships nor for sole proprietorships. However, BEA expects to develop separate annual estimates of CFC for partnerships and sole proprietorships over the coming years.

26. Having improved the classification of institutional units in the NIPA business sector, BEA could then disaggregate the sector into nonfinancial and financial corporate sectors to become more consistent with the SNA. Considering corporate business specifically (as opposed to just partnerships), the NIPAs now include annual and quarterly measures of nonfinancial and financial corporate value added, income, and undistributed profits (corporate net "saving"). However, BEA does not now produce annual or quarterly nonfinancial or financial corporate output measures. In the future, BEA may be able to prepare annual measures of nonfinancial and financial corporate output by interpolating and

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[19] The Statistics of Income (SOI) Division of the IRS is the source of tax return tabulations. Generally, the following subcomponent estimates required to calculate output, income, and saving of S corporations are available from the annual tabulations of tax returns: Output (P.1), Intermediate consumption (P.2), Compensation of employees (D.1), Other taxes and subsidies on production (D.29 and D.39), Entrepreneurial income (B.4), Property income (D.4), Social contributions (D.61), Social benefits (D.62), Other current transfers (D.7), and Final consumption expenditures (P.3). This subcomponent detail is also generally available from annual IRS tabulations for partnerships (see paragraphs 34).

extrapolating tabulations of economic census data by legal form (available every five years). Alternatively, it might be possible to prepare annual measures of corporate output using IRS corporate tax returns that are modified to reflect international and domestic sales separately. High-frequency estimates of corporate output could be prepared by interpolating and extrapolating the just-described annual measures.

27. Given source data limitations for NCEs, the definitions of corporations in the NIPAs is unlikely to change immediately; however, BEA could undertake several actions to facilitate the deve lopment of a set of accounts for nonfinancial and financial corporations that are more consistent with SNA sector definitions. These actions include: (a) Obtain separate tabulations for S corporations' tax returns so that their activity can be readily identified; (b) obtain separate tabulations of sole proprietorships and partnerships' tax returns; (c) study available partnership data and determine whether quasi-corporate partnerships can be identified; and (d) develop methods to prepare corporate output measures from economic census data. These developments plus a willingness by the IRS to revise corporate tax returns to capture domestic and international sales separately might enable BEA to derive annual estimates for the nonfinancial and financial corporate sectors that are consistent with SNA definitions once annual CFC estimates for S corporations and quasi-corporate partnerships can be developed.

28. Quarterly estimates for the nonfinancial and financial corporate sectors that are consistent with SNA definitions await the development of annual estimates. However, BEA can facilitate the development of quarterly estimates consistent with SNA definitions by developing methodologies to interpolate and extrapolate annual detailed sub-component estimates of the net income of partnerships, the net income of sole proprietorships, the net income of S corporations, and the output of nonfinancial and financial corporations. BEA would then be prepared to derive quarterly estimates of output, income, and saving for nonfinancial and financial corporate sectors once quarterly estimates of CFC for S corporations and quasi-corporate partnerships become available.

29. An interim step would be to develop a more complete set of accounts for the non-financial and fina ncial corporate subsectors as currently defined in the NIPA business sector. Many sub-component estimates of output, income, and saving for these accounts are already available on a quarterly basis, but these estimates could be supplemented with additional quarterly estimates developed from tabulations of IRS tax returns. Further, data from the economic census and the Federal Reserve Board of Governors' Flow of Funds Accounts could be used to develop additional estimates that are needed for a complete set of current accounts.

Household Sector

30. The challenges that BEA faces in developing annual and quarterly estimates for a household sector that is more consistent with the SNA are similar to the challenges that BEA faces in developing corporate sector accounts on an SNA basis: (a) The NIPA definition of the household sector differs from the SNA definition; and (b) data needed to estimate certain series to complete estimates of output, income, saving, and net lending or borrowing for the household sector are not available. The NIPA household sector as it is currently defined does not include the activity of certain NCEs; including the activity of sole proprietorships, the activity of certain partnerships that are not classified as quasi-corporations, and the activity of S corporations.[20] Of course, BEA cannot properly classify these institutional units until after completing its review of sector boundaries.

31. BEA's development of a more complete set of annual and quarterly estimates of the household sector that is more consistent with SNA sector definitions will mirror the progress toward developing corporate sector estimates that are SNA consistent. The elements needed to construct more complete household sector estimates are identical to the elements needed to construct SNA corporate sectors: (a) The separate tabulation of detailed components of net income for S corporations, for total partnerships, and for sole proprietorships; (b) the identification of the detailed components of net income for quasi-corporate partnerships; and (c) the corresponding annual and quarterly measures of CFC for S corporations, total partnerships, for sole proprietorships, and for quasi-corporate partnerships.

Government Sector

32. There are three major sectoring differences between the NIPA and SNA government sectors. The SNA general government sector reflects the following sub-sectors: Central government, state government, local government, and social security funds (SNA §4.114). The current NIPA general government sector, on the other hand, comprises the Federal (central) government, state and local governments, and certain transactions for government enterprises (including quasi-corporations).[21] Notably, the Federal and state and local NIPA sub-sectors include social insurance (security) funds; the latter do not constitute

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[20] As discussed previously in this paper, NPISH transactions would also be removed from the currently defined NIPA personal sector to make the latter consistent with the SNA household sector.

[21] Currently, the NIPAs do not reflect separate state and local government subsectors. Although such sectoring is ideal, the data required to prepare separate estimates of state and local government receipts and expenditures on a high frequency basis are not available. However, BEA periodically prepares separate annual estimates of state and local government receipts and expenditures; see Baker, (2003). For purposes of this paper, we do not discuss preparation of separate state and local government estimates on a high frequency basis. Also, the NIPAs reflect mixed treatment of government enterprises; see *A Guide to the NIPA's*, pp. M-20-21.

a separate sub-sector.[22] Consequently, to make the NIPAs more consistent with the SNA, market quasi-corporations that are controlled by government would have to be removed from the government sector and assigned to a NIPA financial or nonfinancial corporate sector, and Federal and state and local social (security) insurance funds would have to be reconstituted as a separate sub-sector.[23]

33.   Ideally, two other NIPA-SNA differences would be resolved: (1) The identification and recognition of nonprofit institutions serving government (NPISG), which are not separately identified and recognized in the NIPAs currently, but are in the SNA (SNA §4.113 (C)); and (2) the administrative operations and output of autonomous, funded pension funds for government employees should be recorded in the "insurance corporation and pension funds sub-sector" (SNA Annex IV, §49.(a))—currently, they are accounted for in Federal and state and local sub-sectors in the NIPAs.

34.   Given that the SNA permits the consolidation of general government and social security funds (SNA §4.115, §4.131) and BEA's decision to forego the preparation of separate state and local government accounts (see footnote 309), there are three primary requirements for making the NIPAs consistent with the SNA: (1) Reassigning market quasi-corporations from the government sector to NIPA financial or nonfinancial corporate sectors; (2) identifying nonprofit institutions that are controlled and mainly financed by government for purposes of preparing separate estimates of them; and (3) reassigning the administrative operations and output of autonomous, funded private pension plans for government employees from the general government sector to an insurance corporation and pension funds pension sub-sector within a financial corporate sector.   In general, there are several problems associated with such sectoral revisions, which are outlined in the next three sections.

Quasi-corporations

35.   There should be little difficulty in identifying the institutional units that are currently classified in the NIPAs as Federal government enterprises. Currently, there are only 15 such market quasi-corporations and the required source data are available from the Federal budget or from annual financial reports with which to construct current accounts for these units.[24]   Also, although the NIPAs consolidate the gross fixed capital formation (GFCF) of general government and

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[22] Note that an acceptable SNA sectoring convention permits social security funds to remain consolidated with the three levels of government (see SNA §4.115).
[23] The earlier section of this paper entitled "Nonfinancial and Financial Corporate Sectors" indicates that separate nonfinancial and financial corporate sectors do not now exist in the NIPAs. For purposes of this section of the paper, we assume that such sectors exist.
[24] Most Federal quasi-corporations produce annual financial reports, which are used to prepare estimates of the NIPA "Current surplus (deficit) of government enterprises." See Appendix A for a list of Federal government enterprises.

the quasi-corporations that it controls, BEA has separate estimates of the stock and flow of this capital for purposes of estimating GFCF and CFC.

36.   However, certain data problems must be resolved if market quasi-corporations that are controlled by state and local governments are to be reassigned from the government sector to the financial and nonfinancial corporate sectors. Specifically, currently available data from the U.S. Census Bureau on quasi-corporations that are controlled by state and local governments do not now include sufficient information to prepare a complete set of output, income, and saving accounts as prescribed by the SNA.[25] Therefore, it may be necessary to collect new data so that the following efforts can go forward.[26] First, market and non-market quasi-corporations must be separately identified. Second, sufficient information must be gleaned from the data to prepare current account estimates for these market quasi-corporations.

NPISG

37. Preliminary research indicates that there are very few Federal government NPISG. Consequently, there should be little difficulty in confirming coverage of these institutional units in the current data that are used to estimate Federal government output, income, and saving; or absent such coverage, collecting the required data directly.[27]

38.   NPISG that are controlled and financed mainly by state and local government present a completely different quandary. It will likely take extensive research to determine whether state and local government NPISG are accounted for appropriately in currently available Census Bureau data, or whether it will be necessary to begin collecting data for these institutional units. If the latter case, then care must be taken to collect the following information: (a) Current account measures of the Gross output, Value added, Intermediate consumption, Sales, and Own-account investment for these NPISG; (b) current account information on the financial flows between NPISG and the state and local government that controls and mainly finances them; and (c) information on GFCF by these NPISG.

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[25] Recently recognized Governmental Accounting Standards Board (GASB 34) reporting requirements may increase the amount of information that is available for state and local government quasi-corporations.
[26] Currently, research is underway at BEA to identify methods for disaggregating available data on state and local government quasi-corporations. Some of the issues that surface when attempting to identify state and local government quasi-corporations, such as what is a market quasi-corporation and what constitutes control of a quasi-corporation are discussed in two recent papers by John Pitzer (2004a,b).
[27] The two primary data sources for NPISG are the *Federal Budget*, which presents the receipts and expenditures of the Federal government in great detail, and the *Monthly Treasury Statement*, which provides a monthly summary of Federal government receipts and expenditures on a somewhat more aggregated basis.

39. Assuming that BEA is able to obtain all of the information and data required to separate Federal government and state and local government market quasi-corporations from general government and to identify NPISG that are controlled and mainly financed by Federal and state and local government, efforts can then be undertaken to prepare high frequency estimates of output, income, and saving for these institutional units.

Funded pension funds for government employees

40. During the 1999 comprehensive NIPA revision, BEA reclassified the economic flows of government employee retirement plans (pension funds) from the general government sector to the household sector.[28] However, BEA deferred "a decision on sector reclassification, pending a review of differences in classification between the NIPAs and the SNA.[29] Currently, BEA estimates the administrative expenses incurred by these pension funds and excludes them from general government final consumption.[30] However, the output of these pension funds remains in the general government sector.

41. Annual source data are generally available with which to estimate the output of pension funds for government employees.[31] Data on pension funds for Federal government employees are available from the *Federal Budget* and the *Monthly Treasury Statement*. Data on pension funds for state and local government employees are available from *Surveys of Government Finances*. BEA prepares estimates for certain expenses that are not available from these sources.[32]

High-frequency estimates of output, income and saving

NPISG: Federal and state and local

42. Because NPISG are accounted for in the general government sector, estimates of NPISG's output, income, and saving must be estimated on a consistent basis with the estimates prepared for general government. In constructing a Final consumption expenditure measure for general government (P.3), BEA prepares estimates of Gross output (P.1) (the sum of Value added

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[28] See Moulton, Parker, and Seskin (1999).

[29] Ibid. Footnote 11, p. 11.

[30] Estimates of administrative expenses for government employee pension funds are subtracted from general government gross output as a "sale to other sectors"; namely, the household sector, which is assumed to purchase pension fund administrative services.

[31] According to the SNA, the output of pension funds is assumed to be a service charge to beneficiaries of the funds, which is equal to: Total actual contributions earned (D.61), plus total imputed contributions supplements (D.44), less benefits due (D.62), less net increases in pension reserves (D.8). Note that the output of pension funds excludes holding gains or losses (SNA, Annex IV, §19).

[32] Specifically, BEA imputes charges for the unpriced brokerage services received by pension funds for government employees.

(B.1g) (Compensation of employees (D.1) and CFC (K.1)), plus Intermediate consumption (P.2) (goods (durable and nondurable) and services purchased)), then subtracts the value of Own-account investment (Output for own final use, P.12), and Sales to other sectors (Market output, P.11).[33] BEA would adopt the same approach to measuring Final consumption expenditures for NPISG and would, therefore, have a measure of NPISG output.

43. In constructing receipt (income) measures of general government, BEA sums estimates of Current tax receipts (D.2), Income receipts on assets (Property income D.4), and Current transfer receipts (D.7). Only the sum of Income receipts on assets (D.4), Other current transfer receipts (D.7), and Sales to other sectors (P.11, Market output) would be applicable as income for NPISG.

44. Finally, in constructing a net saving measures for general government, BEA subtracts from the previously defined receipts (income) measure the following expenditure items: Final consumption expenditures (P.3), Current transfer payments (D.7), Interest payments (in D.4), Subsidies (D.3), and adds Wage accruals less disbursements.[34] To calculate net saving for NPISG, BEA would subtract NPISG's consumption expenditures, current transfers, and Interest payments from NPISG's Income.

45. To the extent that the data just discussed for measuring NPISG's operations are included in the Federal and state and local source data, high frequency estimates are already being prepared. However, if NPISG are not fully accounted for in the source data, an effort must be undertaken to gather required source data and to integrate estimates for NPISG into the NIPAs.[35]

Quasi-corporations

46. Currently, BEA measures the current surplus (deficit) of Federal government enterprises (market quasi-corporations) as operating revenue plus subsidies less current expenses. Annual estimates of operating revenue, subsidies, current expenses, and GFCF are available from enterprises' annual reports or from the Federal budget. These data are sufficient to prepare annual Federal NIPA estimates; high-frequency estimates are prepared primarily by interpolating and extrapolating the annual estimates without an indicator series. However, when

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[33] As part of the 2003 comprehensive NIPA revision, BEA adopted this methodology for estimating general government output and consumption expenditures and gross investment (see Moulton and Seskin (2003), pp. 30-1). Also, see NIPA table families 3.9.x and 3.10.x on BEA's Web site: www.bea.gov.

[34] "Wage accruals less disbursements" is a timing adjustment to ensure that estimates of compensation of employees remain on an accrual accounting basis. See "A Guide to the NIPAs" on BEA's Web site at: http://www.bea.gov/bea/an/nipaguid.htm.

[35] When assessing prospects for preparing these estimates, BEA will weigh the costs against the benefits of new data collection efforts. Existing data suggest that the value added of NPSIGs is small; therefore, extensive efforts may not be warranted to collect detailed source data to prepare NIPA estimates of NPSIGs.

these market quasi-corporations are reassigned to NIPA financial or nonfinancial corporate sectors, detailed estimates for the series will be required if annual and high frequency estimates are to be prepared on an SNA basis: (1) Output (P.1); (2) Intermediate consumption (P.2); (3) Value added (B.1g, including Compensation of employees (D.1), CFC (K.1), and Other taxes and subsidies on production (D.29 and D.39)); (4) Property income (D.4); (5) Current taxes on income and wealth (D.5); (6) Social contributions (D.61); (7) Social benefits other than social transfers in kind (D.62); and (8) Other current transfers (D.7).

47. While it should be feasible to capture these 8 data series from annual reports or the Federal budget to prepare annual estimates, it appears unlikely that data to prepare high-frequency estimates will be available without initiating a new survey. Consequently, we suggest constructing high-frequency estimates by extrapolating annual estimates using an autoregressive integrated moving average (ARIMA) or trend process, then preparing quarterly interpolations of the extrapolated annual values using appropriate indicator series that may be identified through research.

48. As with Federal government enterprises, BEA measures the current surplus (deficit) of state and local government enterprises (market quasi-corporations) as operating revenue plus subsidies less current expenses. Annual estimates of operating revenue, subsidies, current expenses, and GFCF are available on a lagged basis from the Census Bureau's *Census of Government Finances* or *Annual Survey of Government Finances*. These data are sufficient to prepare annual state and local NIPA estimates; high frequency NIPA estimates are interpolations and extrapolations without indicator. However, the 8 data series identified in paragraph 46 will be required to prepare estimates of state and local market quasi-corporations when they are reassigned to NIPA corporate sectors. At the moment, the Census Bureau data do not reflect all of the required 8 data series. Clearly, an effort must be undertaken to begin to collect the most essential of these data series so that estimates can be prepared on an SNA basis.

49. Because a subset of the 8 data series is available from the Census Bureau, we suggest that annual and high-frequency estimates be prepared by filling in available data series into the SNA accounts, preparing constrained imputed values for the remaining data series, then extrapolating the annual estimates using an ARIMA or trend process, and, finally, interpolating the annual extrapolations using appropriate indicator series that can be identified through research.[36]

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[36] By "constrained imputed values" we mean to impute subaggregate or aggregate values, which are constrained to be consistent with available aggregates or subaggregate values.

Funded pension funds for government employees

50. As previously noted, annual source data are generally available with which to estimate the output of government employee pension funds. This is only partly true for high frequency estimates. Quarterly source data are available for estimating the output of Federal government employee pension funds, mainly from the *Monthly Treasury Statement*. However, no such data are available to estimate the output of state and local government employee pension funds.

51. In the absence of these data, currently, BEA prepares high frequency estimates of "actual contributions earned" by state and local government employee pension funds for the NIPAs. To prepare high frequency estimates of output for these funds, BEA must estimate the three remaining components that are required to compute output: Total contribution supplements (D.44); benefits due (D.62); and increases in net pension reserves (D.8). It should not be too difficult a task to develop reliable trend estimates for these three series.[37]

52. Given estimates of output, BEA must obtain estimates of the 8 series identified in paragraph 46 above in order to prepare estimates of income and saving for institutional units in the insurance corporations and pension funds sub-sector of the financial corporations sector. As was the case for Federal and state and local government enterprises (quasi-corporations), it is likely that source data are available, which BEA can use to prepare annual estimates of output, income, and saving for the insurance corporations and pension funds subsector. However, such data are not likely to be available to prepare high-frequency estimates. Thus, high-frequency estimates may be prepared using the same techniques that were described for Federal and state and local quasi-corporations (see paragraphs 47-49).

Benefits of the transformation

53. There are at least two major benefits of revising NIPA sectors to make them more consistent with the SNA and of preparing new estimates of output, income, and saving as described above. First, SNA-NIPA consistency can facilitate across-country comparisons. Second, the cross-country comparability facilitates improved analysis and decision-making by policy makers and business interests alike.

54. Specifically, as a result of the sector revisions and the related high-frequency estimates, policy makers and business decision makers will be able to view the operations of general government, including the operations of NPISG,

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[37] The three series are expected to be characteristically smooth; volatility would only be expected in response to sharp movements in returns on pension fund investments. Also, the expectation would be that the pattern of these series would be relatively consistent with comparable series for pension funds for private-sector employees.

unencumbered by the effects of quasi-corporations that now cloud the government sector accounts.[38]

Conclusion

55. This paper catalogued requirements for developing SNA-consistent sectors, then discussed requirements for preparing estimates of output, income, saving, and net lending or borrowing for the sectors. It focused on the most significant NIPA-SNA sectoral differences: (a) Creating a separate NPISH sector; (b) splitting the NIPA business sector into separate nonfinancial and financial corporate sectors; (c) aligning S corporations, sole proprietorships, and certain partnerships with the NIPA business or the household sector based on a review of sector boundaries; (d) separately identifying a NPISG subsector within the general government sector; (e) reassigning the administrative operations and output of funded pension plans from the general government sector to an insurance corporations and pension funds subsector; and (f) reassigning government market quasi-corporations from the general government sector to nonfinancial or financial corporate sectors. Based on the foregoing analysis, it appears that achieving parts a through d may be difficult in the short-run; however, achieving parts e and f may be feasible in the near term--with the possible exception being the reassignment of state and local quasi-corporations from general government to the corporate sectors. These outcomes are primarily the result of existing data limitations.

56. While data limitations have generally helped shape current NIPA sectoring and constitute a barrier to revising these sectors and to preparing high-frequency estimates, it is clear that BEA can make progress in making the NIPAs more consistent with the SNA and in preparing high-frequency sectoral estimates. Having identified in this paper the major difficulties in preparing these estimates, BEA can now develop a research plan, which should usher up good approaches for preparing these estimates in the short-run using existing data, and for preparing ideal estimates in the long-run when appropriate data can be collected. The relevant caveat, of course, is time and resources; most worthwhile national accounts improvement projects require a deliberate schedule and sufficient resources.

57. However, the time and resources expended to produce these improvements should be highly valued. From the U.S. point of view alone, high-frequency sectoral estimates of output, income, and saving will facilitate previously impossible intra- and inter-sectoral analyses, which should enhance policy makers' and business decision makers' ability to understand the economy. Similar outcomes will be realized for the international community because direct

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[38] The economic transactions of government employee pension funds are already excluded from the government sector accounts; therefore, they do not now inhibit analyses.

cross-country sector analysis will be possible when these estimates become available.

58.   Nevertheless, developing improved sectors and producing high-frequency estimates for them will not signal the end of efforts to make the NIPAs more consistent with the SNA, nor to increase the NIPAs' functionality.   On the contrary, there are numerous other areas within the NIPAs that can be modified to achieve consistency with the SNA 1993. In addition, it is highly likely that the forthcoming, revised SNA in 2008 will suggest new areas where the NIPAs should be modified and improved.

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Figure 1.—NIPA Sector Revisions

Subsectors for Reassignment	NIPA Sectors Before Revisions				NIPA Sectors After Revisions					
	Business	Household	Government	Rest of the World	Nonfinancial Corporations	Financial Corporations	Government	Household	NPISH	Rest of the World
(A) NPISH		(A)							(A)	
(B) S Corporations	(B)							(B)		
(C) Sole proprietorships	(C)							(C)		
(D) Partnerships, Limited Partnerships, and Limited Liability Partnerships	(D)				(D)	(D)		(D)		
(E) NPISG							(E)			
(F) Pension Funds Administration			(F)			(F)				
(G) Government Quasi-Corporations			(G)		(G)	(G)				

Figure 2.—SNA versus NIPA Accounts

| Main Accounts | System of National Accounts | | National Income and Product Accounts |
	Sub Accounts	Components	
Current	Production	Gross value added and consumption of fixed capital by sector.	National aggregates with some sector detail. (NIPA Summary Account 1)
	Distribution and use of income, including saving	Generation of income within sectors and payments to factors of production supplied by other sectors. Shows taxes and transfers. Use of income provides a derivation of saving as the difference between disposable income and consumption.	National aggregates with some sector detail. (NIPA Summary Accounts 2, 3, 4, and 5)
Accumulation	Capital	Capital expenditures for structures, equipment, and software and net lending/net borrowing of funds.	National aggregates with some sector detail. (NIPA Summary Accounts 6 and 7)
	Financial	Details how net lending/net borrowing is satisfied through increases in financial assets and incurrence of liabilities.	
	Other changes in volume of assets	Changes in net worth that arise from factors unrelated to revaluation and net saving, such as bad debts, accounting changes, etc.	
	Revaluation	Nominal changes in net worth arising from holding gains/losses. Splits gains/losses into real and relative price changes.	
Balance Sheet	Opening position	Beginning period value of assets, liabilities, and net worth.	
	Changes in stock positions	Summary of changes in net worth due to (a) capital formation, (b) net lending/borrowing, (c) other changes in volume, and (d) revaluation.	
	Closing position	End of period value of assets, liabilities, and net worth.	

Adapted from Table 1 of Albert M. Teplin, Rochelle Antoniewicz, Susan Hume McIntosh, Michael Palumbo, Genevieve Solomon, Charles Ian Mead, Brent Moulton, and Karin Moses (2004), "Integrated Macroeconomic Accounts for the Untied States: Draft SNA-USA." A paper presented at the Conference on Research in Income and Wealth, Architecture of National Accounts, in Washington, D.C. on April 16-17, 2004

Appendix A.--Federal Government Enterprises

1. U. S. Postal Service
2. Federal Crop Insurance Corporation Fund
3. Federal Housing Administration Fund
4. National Flood Insurance Fund
5. Overseas Private Investment Corporation
6. Bonneville Power Administration
7. Lower Colorado River Basin Development Fund
8. Southeastern Power Administration
9. Southwester Power Administration
10. Tennessee Valley Authority
11. Upper Colorado River Basin Fund
12. Western Area Power Administration Marketing Fund
13. Veterans Canteen Service
14. Government Printing Office Sales Fund
15. Military Post Exchange and Restaurants