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U.S. Bureau of Economic Analysis: Developing Estimation of Trade in FISIM Methodology Consistent with National Account Methodology

Prepared by the U.S. Bureau of Economic Analysis

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Introduction

The Bureau of Economic Analysis (BEA) currently estimates financial intermediation services indirectly measured (FISIM) in its National Income and Product Accounts (NIPAs) for inclusion in its estimates of gross domestic product (GDP). The NIPA methodology includes a calculation for domestic production provided to rest of world (i.e., exports), but includes no corresponding import estimate. In BEA's balance of payments (BOP) accounts, financial intermediation services are currently commingled with interest receipts and payments in estimates of primary income. To align BEA's BOP accounts more closely with international guidelines, BEA began developing a methodology to measure FISIM exports and imports using U.S. Treasury Department surveys of cross-border financial assets and liabilities. BEA formed a FISIM working group to ensure this new methodology aligned with the methodology already used in the NIPAs and in BEA's other economic statistics.

Brief Introduction to Current NIPA Methodology[1]

In BEA's current NIPA methodology, FISIM generated by depository institutions–including commercial banks, credit unions, and savings institutions–is computed using the reference rate approach. In this method, the imputed service price per volume of dollars on deposit or lent is the spread between the rate of interest paid on the deposited money or the rate of interest earned on the funds lent, and the reference rate. The total imputed value of services associated with deposit and loan portfolios are the product of the deposit and loan balances and the appropriate spreads. Thus, to compute FISIM, we require (1) the balances of loans and deposits on banks' balance sheets, (2) the rates of interest earned on loans and paid on deposits, and (3) a reference rate. Output of FISIM is then allocated to domestic sectors and rest of world (ROW) via sectoring ratios derived from a variety of data sources.

The NIPA methodology computes interest rates on various types of loans and deposits to arrive at a gross FISIM estimate. For example, real estate loan rates and commercial and industrial loan rates are computed as book rates from regulatory data sources. The reference rate is based on an average of the 5-year U.S. Treasury rate and a composite Treasury rate computed from "call reports," which are described in the next section. To ensure that short-run changes in the reference rate vis-à-vis loan and deposit rates do not cause spurious variation in the FISIM sector allocations, this rate is stabilized using a moving average of user cost prices of loan assets and liabilities relative to the reference rate. This procedure ensures that the proportion of FISIM allocated to deposits and loans exhibits only a tapered

[1] For details, see Kyle K. Hood, "Measuring the Services of Commercial Banks in the National Income and Products Accounts," Survey of Current Business 93 (February 2013) and Dennis J. Fixler, Marshall B. Reinsdorf, and George M. Smith, "Measuring the Services of Commercial Banks in the NIPAs," Survey of Current Business 83 (September 2003).

response to short-run reference rate fluctuations that are not reflected in loan and deposit rate fluctuations.[2]

The purpose of this paper is to provide an overview of BEA's efforts to develop a FISIM methodology that is consistent with BPM6 standards and with FISIM methodologies used across BEA's national, regional, industry, and international accounts. The remainder of the paper describes the current and proposed data sources, the proposed methodology, and presents prototype statistics based on the BEA proposed methodology for calculating FISIM exports.

Current and Proposed Data Sources

Consolidated Reports of Condition and Income (Call Reports)

The call reports are quarterly regulatory reports that U.S.-chartered commercial banks are required to file with the Federal Financial Institutions Examination Council (FFIEC). The reports collect a different level of detail depending on bank structure and size, though for all sizes the call report is a thorough description of a bank's balance sheet and income statement. Individual bank call reports are publicly available.

The most detailed information (FFIEC form 031) is collected from U.S.-chartered depository institutions with any foreign office, where "foreign" offices are defined as branches or consolidated subsidiaries in a foreign country, international banking facilities (IBFs), and Edge and Agreement Subsidiaries. These banks are required to provide separate information for their domestic operations in addition to their consolidated operations that include foreign activity. In Q4 2017, 68 banks filed this report compared with a total of 5,721 reporting institutions. Form 031 reporters accounted for about 66% of the $17.4 trillion in total worldwide assets of U.S.-parent banks. The current version of form 031 is over 80 pages and contains about 20 different schedules, such as the Income Statement, Income from Foreign Offices, Balance Sheet, Loans and Leases, and Deposit Liabilities. U.S. banks with no foreign operations report on form 041 or form 051.

Detail on bank assets and liabilities from the call reports are used to calculate the loan and deposit stock for FISIM estimation in the NIPA methodology. Detail on bank income and expenses are used to calculate interest rates.

Report of Assets and Liabilities of U.S. Branches and Agencies of Foreign Banks (FFIEC 002)

The FFIEC also collects information from foreign-owned U.S. bank branches on form FFIEC 002. Like the call reports, individual reports are publicly available. This form collects balance sheet information like that of the call report but does not collect any income information. Another difference is that FFIEC 002 reports are collected by branch whereas the call report is consolidated. As of Q4 2017, there were about 200 reporters with $2.5 trillion in assets in U.S.-based branches.

[2] See Kyle K. Hood, "Measuring the Services of Commercial Banks in the National Income and Products Accounts," Survey of Current Business 93 (February 2013). While the effects of short-run reference rate fluctuations are muted, any long-term shifts in the proportion of services allocated to borrowers and depositors will be captured within about three years.

Balance sheet statistics from the FFIEC 002 are used to estimate loan and deposit stocks in the NIPA methodology for domestic production of FISIM, but as they do not contain income or expense information, they are not part of loan and deposit interest rate computations.

Treasury International Capital (TIC) System

The TIC reporting system collects information on cross-border investment flows and positions between U.S. residents and foreign residents, excluding direct investment. It serves as the U.S. government's main source of information on international financial flows and positions for financial intermediation, trade credit, and portfolio investment.

Commercial banks, bank holding companies, and other financial corporations file TIC B forms (Reports by Financial Institutions of Liabilities to, and Claims on, Foreign Residents by U.S. Residents) and other commercial enterprises and various other entities file TIC C forms (Reports of Liabilities to, and Claims on, Unaffiliated Foreign Residents by U.S. Resident Non-Financial Institutions). Filing the surveys is required by law for entities that meet the criteria for who must report. The B and C forms are collected at least quarterly. Surveys covering the most critical information are reported monthly.

The B form statistics are relevant to both FISIM exports and imports. The C form statistics are a component in the proposed FISIM import estimation. The B forms collect the reporter's own and its customers' claims on and liabilities to foreign residents by country of the counterparty, broken down into both U.S. dollars and foreign currency. The B forms also collect data by the time remaining to maturity for the claims and liabilities from the largest reporters. The C forms collect financial and commercial liabilities to and claims on foreign residents by country. TIC forms do not collect any income information.

TIC statistics are a component of the Federal Reserve's Flow of Funds statistics that are used in the NIPAs to calculate the sectoring ratios, but they are not directly used in the current NIPA methodology. The proposed methodology directly uses the TIC as a data source.

Data Source Consistency

The TIC B form instructions specifically reference call report definitions when describing claims and liabilities as many of the TIC reporters are required to file the regulatory FFIEC forms. U.S.-chartered depository institutions that file TIC surveys should also file an FFIEC call report. Foreign-owned depository institutions in the U.S. should also file an FFIEC 002 report.

Though the reporters overlap, the specific survey questions rarely do. The TIC only collects cross-border activity while FFIEC forms generally consolidate cross-border with all foreign operations including activities of foreign affiliates. The two most consistent statistics between the data sources are total assets held in IBFs and total liabilities held in IBFs. Comparing the aggregates of these statistics, internal BEA research indicates that it is likely call report and FFIEC 002 reporters also file TIC surveys and that they are reporting similar numbers.

Proposed Methodology

BEA is developing a FISIM methodology that uses the TIC statistics directly to measure cross-border loan and deposit service transactions to replace the current rest-of-world estimate produced by the NIPA methodology. To maintain consistency with the current NIPA methodology, the proposed methodology considers depository institutions as producers of FISIM. This is a narrower scope than recommended by BPM6 standards that more broadly include all financial corporations (BPM6 10.127).[3] It excludes interbank activity under the assumption that such activity is performed at the reference rate with no service component, which is in line with general international practice (BPM6 10.132).

FISIM Export Balances

For FISIM export balances (presented in Figure 3 below), we exclude the TIC B reporting for broker/dealers and other non-depository institutions to derive positions of U.S.-resident depository institutions. We then identify their deposit liabilities to foreign-resident non-bank counterparties for estimation of depositor services exports and their loan claims on foreign-resident non-bank counterparties for estimation of creditor services exports. Deposit liabilities are more straightforward to estimate as they are separately identified on the TIC BL forms (columns 1 and 5 in Figure 1). Loan claims are included in a residual column on TIC BC forms (columns 3 and 5 in Figure 2). While loan claims are a major portion of this residual, estimation requires imputation and exclusion of non-FISIM related claims reported in this category.

Figure 1. Sample TIC BL-1 survey form that collects information on cross-border liabilities.

To Foreign Official Institutions		To Foreign Banks		To All Other Foreigners		Grand Total (sum of columns 1 – 6)	"Of Which" Items	
Non-Negotiable Deposits & Brokerage Balances	Other	Non-Negotiable Deposits & Brokerage Balances	Other	Non-Negotiable Deposits & Brokerage Balances	Other		Own Foreign Offices	Repurchase Agreements
1	2	3	4	5	6	7	8	9

Figure 2. Sample TIC BC survey form that collects information on cross-border claims.

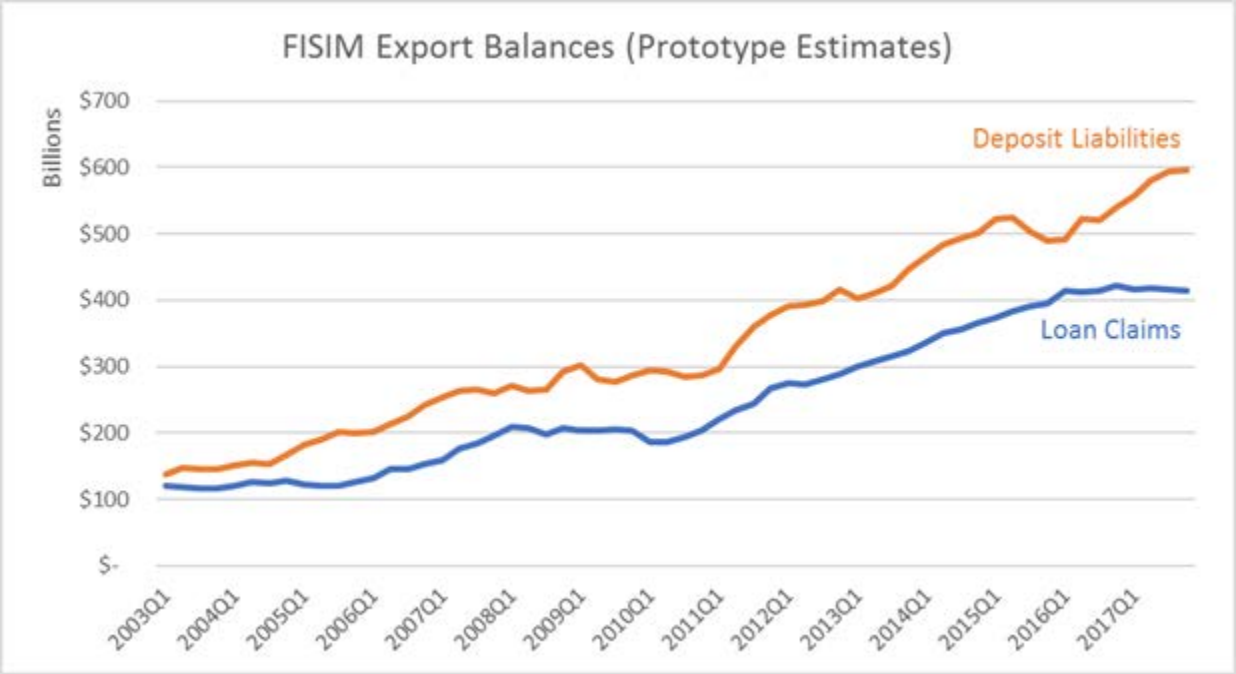
Foreign Economies and Organizations	Claims on Foreign Banks and Foreign Official Institutions			Claims on All Other Foreigners		Grand Total (sum of columns 1 – 5)	"Of Which" Items		
	Non-Negotiable Foreign Deposits	Negotiable CDs and All Short-Term Negotiable Securities	Other	All Short-Term Negotiable Securities	Other		Foreign Official Institutions	Own Foreign Offices	Resale Agreements
CODE	1	2	3	4	5	6	7	8	9

The current NIPA methodology consolidates FISIM generated by repurchase and resale (reverse repurchase) agreements prior to allocating FISIM to domestic sectors. BPM6 guidelines treat repurchase and resale agreements as a loan or deposit when cash is involved (BPM6 5.52 – 5.53) and recommends they be included in FISIM estimation (BPM6 10.132). BEA is researching options that would allow the computation of FISIM to measure gross cross-border flows of FISIM generated by these

[3] It is also a narrower scope than SNA 2008, which includes institutional units other than depository institutions. Nevertheless, the narrower scope derives from the focus on loans and deposits, which are the purview of depository institutions.

agreements while remaining consistent with the NIPA methodology. One proposal under consideration is to treat this activity separately and apply a different set of deposit, loan, and reference rates more consistent with short-term maturities present in the repo market.

Figure 3.



Source: BEA calculations from TIC data.
Note: Loan claims are loans made by a U.S.-resident bank to a foreign entity and deposit liabilities are deposits made by a foreign entity into a U.S.-resident bank.

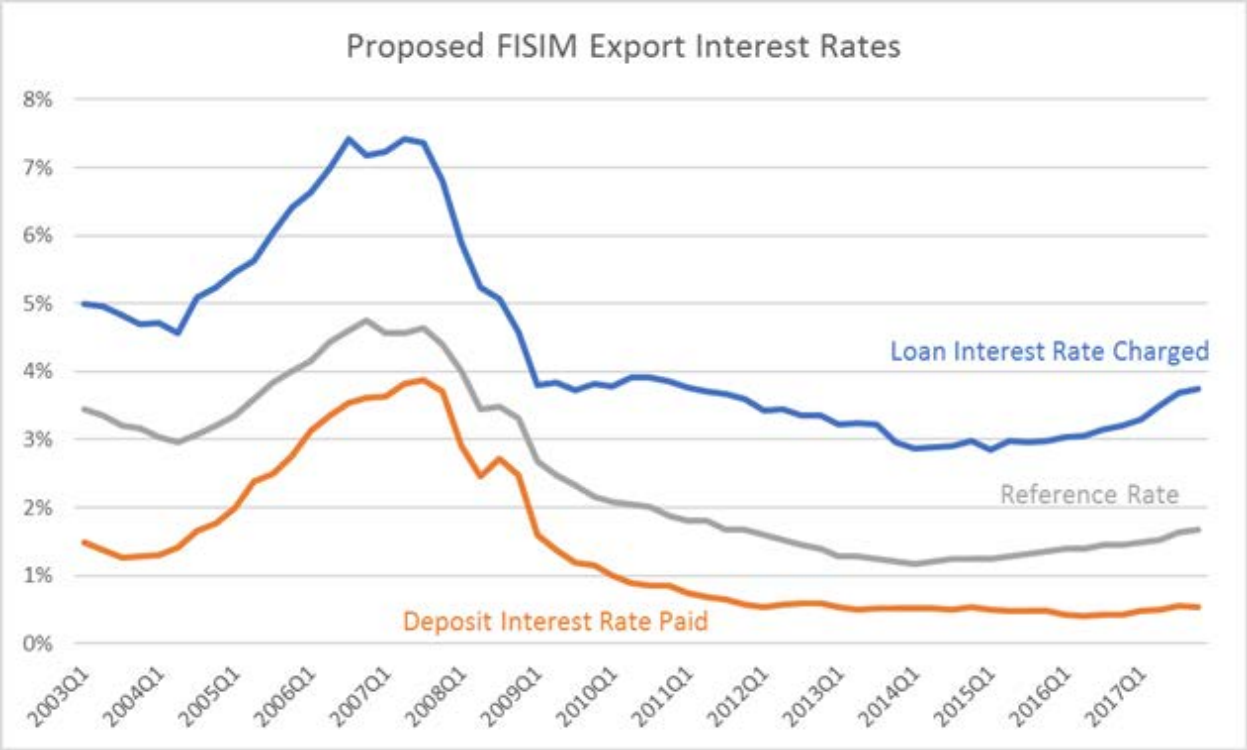
FISIM Export Interest Rates

For the interest rate charged on loans (presented in Figure 4 below), the proposed methodology uses the commercial and industrial (C&I) rate used in the NIPA methodology. This C&I rate is a book rate calculated from the call reports. It is risk-adjusted to account for loan write-offs and loan-loss provisions. This rate is used because most cross-border loan activity is assumed to be commercial activity.

For the deposit interest rate paid (presented in Figure 4), the proposed methodology uses the simple mean of three published deposit rates from Bankrate.com: interest checking, 3-month CD rate, and 2-year CD rate. BEA research indicates that this equal-weight breakdown is a reasonable approximation of deposit liability maturities currently reported on TIC surveys and closely follows a book deposit rate calculated from call reports. TIC statistics separately identify interest-paying and non-interest-paying deposit balances. For non-interest-paying deposits, FISIM earned will be estimated using the reference rate.

The proposed methodology continues to use the NIPA reference rate that is described in the introduction to current NIPA methodology (presented in Figure 4).[4] The use of the NIPA reference rate is appropriate because it reflects the maturity structure underlying the proposed deposit and loan rates and achieves the desired consistency of FISIM estimation within BEA.

Figure 4.



Source: FFIEC call reports and BEA calculations (loan and reference rate), Bankrate.com (deposit rate)

BPM6 guidelines recommend separate reference rates for each foreign currency that accounts for a "significant proportion of loans or deposits" (BPM6 10.130). Using currency information collected on the TIC surveys, BEA found that over 90% of the deposit base and over 80% of the loan base is denominated in U.S. dollars with no individual currency dominating the residual. Therefore, the BEA FISIM working group has recommended using a single U.S.-dollar-based reference rate in the proposed methodology as no other individual currency accounts for significant activity.

FISIM Export Prototype Estimates

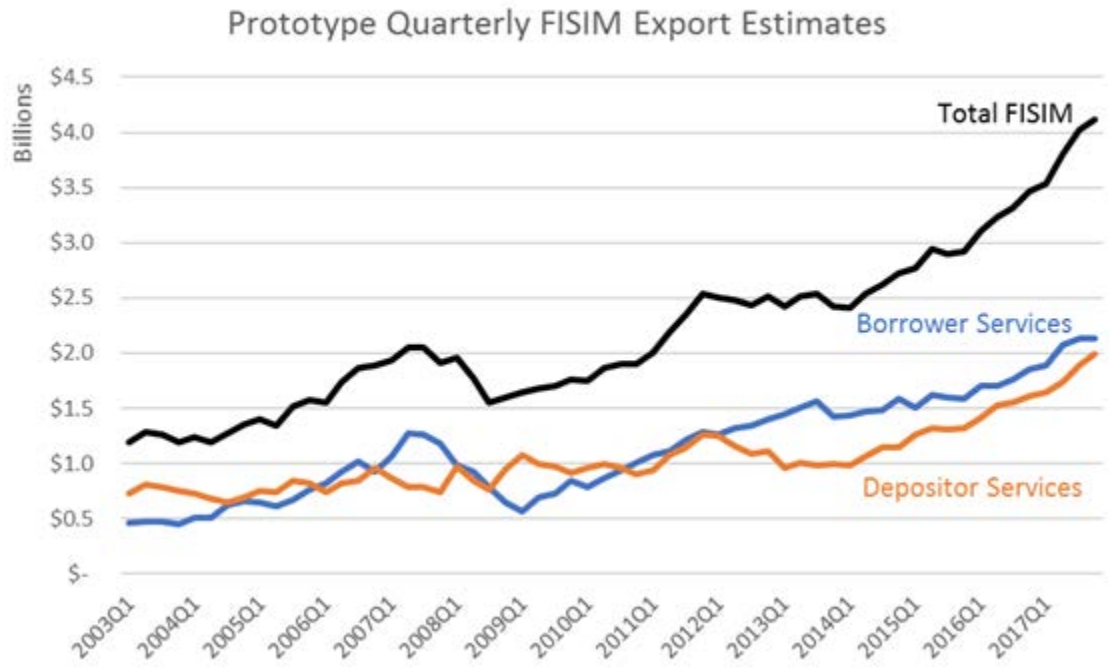
The prototype estimates (presented in Figures 5-7 below) calculate FISIM using U.S.-resident bank loan claims on nonresident nonbanks and deposit liabilities to nonresident nonbanks from TIC statistics using the interest rates presented above.[5] The methodology converts all foreign currency assets and liabilities to U.S. dollars and applies U.S. dollar interest rates.

[4] This reference rate is also used in BEA's estimation of FISIM in foreign affiliates statistics (FATS).

[5] Some of the components used in the proposed methodology were first collected in 2014, so earlier estimates use a backcasting methodology that is subject to change. Repurchases and resell agreements are also currently

The prototype estimates are similar in aggregate to the current ROW estimate produced by the NIPA methodology

Figure 5.



omitted while their treatment is discussed by the working group. These two aspects are not expected to significantly change the level of final estimates.

Figure 6.

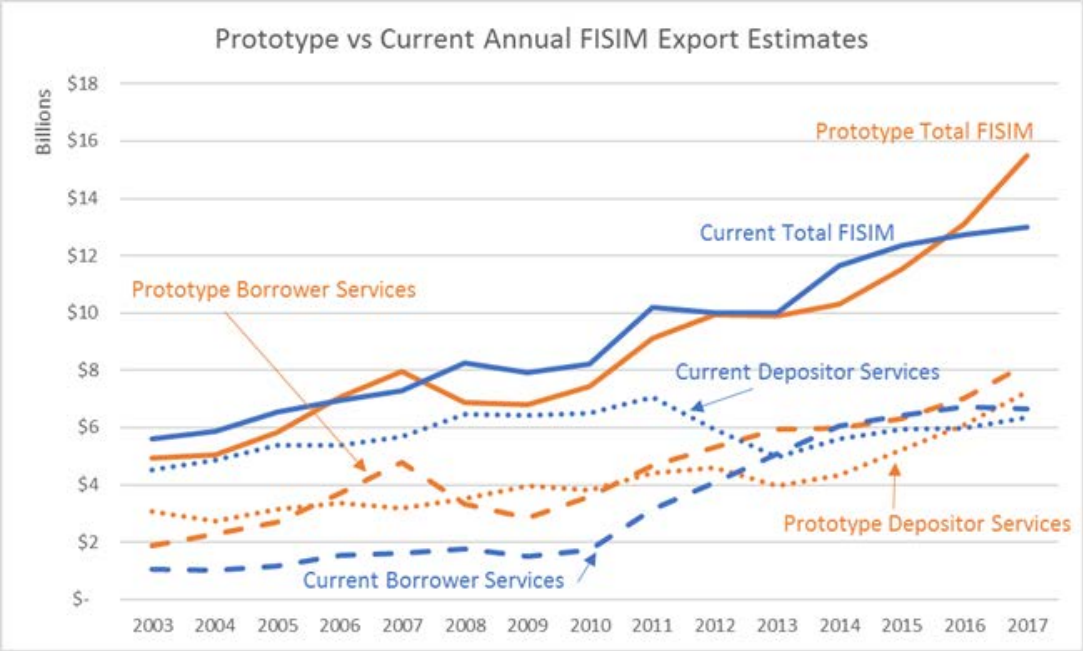


Table 1. Annual Percent Changes for Prototype and Current FISIM Export Estimates[6]

	Total ROW FISIM		Borrower FISIM		Depositor FISIM	
	Prototype	Current	Prototype	Current	Prototype	Current
2004	2.10%	4.60%	23.50%	-5.00%	-10.80%	6.80%
2005	15.60%	12.00%	16.70%	16.50%	14.60%	11.10%
2006	20.70%	5.80%	37.40%	32.90%	6.50%	0.00%
2007	12.90%	5.10%	29.60%	4.60%	-5.50%	5.20%
2008	-13.50%	13.00%	-30.00%	8.30%	11.30%	14.40%
2009	-1.20%	-3.80%	-15.30%	-13.80%	12.10%	-1.00%
2010	9.30%	3.70%	27.20%	14.80%	-3.50%	1.10%
2011	22.60%	24.10%	30.10%	80.10%	15.50%	9.10%
2012	9.20%	-2.00%	13.60%	29.60%	4.60%	-15.90%
2013	-0.40%	0.10%	11.60%	24.80%	-14.30%	-16.70%
2014	4.20%	16.10%	0.50%	19.10%	9.70%	13.00%
2015	11.90%	6.40%	5.70%	6.60%	20.40%	6.10%
2016	13.80%	2.90%	11.40%	4.80%	16.70%	0.80%
2017	17.90%	2.10%	17.00%	-1.40%	19.10%	6.10%

[6] These estimates can be found on lines 174 and 180 of NIPA Table 7.12. Imputations in the National Income and Product Accounts.

The annual movements in the prototype estimates occasionally differ from those in the currently published NIPA estimates. Most notably, the prototype estimates decline in 2008 during the financial crisis, primarily caused by a shrinking spread between the loan and reference rates. The prototype estimates display faster growth in FISIM since 2015 as the estimated deposit stock increases and the overall spread between the loan and deposit rates begins to widen.

FISIM Import Estimation

The working group is currently examining the measurement of FISIM for imported services. BEA's methodology for calculating non-direct-investment primary income in the international accounts uses the TIC investment flows and positions as well as reports from the Federal Reserve Board, the Bank for International Settlements, and partner country central banks to estimate position balances. These positions by country of counterparty are also broken out by type of asset and liability and bank/nonbank participants. The working group proposes to identify FISIM-relevant positions among these already-established stock estimates for the import methodology. In addition, the working group is examining how the FISIM imports would be incorporated into the NIPAs.

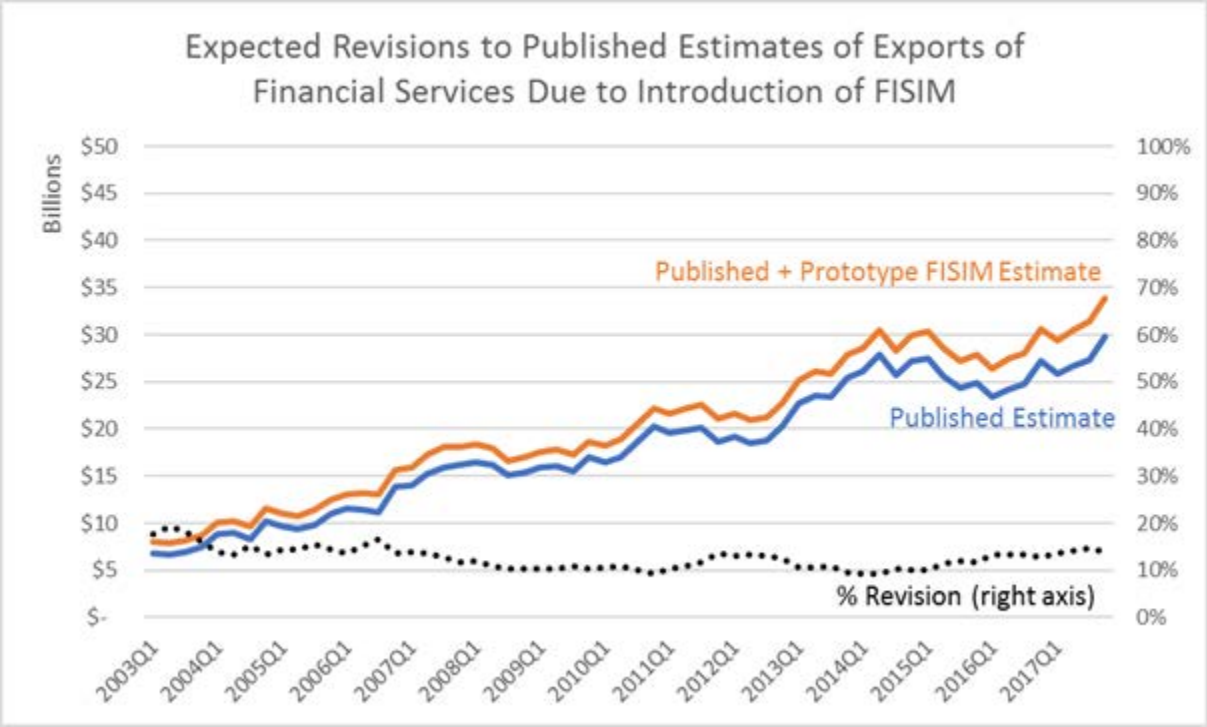
Most of the current effort to estimate FISIM imports is devoted to identifying appropriate interest rates for import estimation. As indicated by the TIC statistics, most of the relevant positions are in U.S. dollars, as was the case for exports.

Impact of Revisions

Balance of Payments Accounts

FISIM imports and exports are currently captured indistinguishably within BEA's primary income statistics. The newly identified service component will be removed from "other investment income" under "primary income" and will be published as a new subcomponent of trade in financial services. Exports and imports of goods and services will increase over currently published levels while the impact on the balance on goods and services will depend on the final proposed estimates of exports and imports. BEA will also update its primary income methodology to reflect the newly adopted interest rates so the combined impact on the current account aggregates and balance will not be known until all methodologies are finalized.

Figure 7.



The prototype quarterly FISIM export estimates presented in Figures 5-7 would result in upward revisions to the current financial services exports estimate ranging between 9%-19% from 2003-2017, with the mean revision of 12.6%. FISIM would account for 12.4% of total financial services exports for 2017. The mean absolute revision to quarterly growth rates is 0.75 percentage points from a pre-revision mean absolute quarterly percent change of 5.6%. The mean absolute revision to annual growth rates in 2003-2017 is 1.4 percentage points from a pre-revision mean absolute annual percent change of 12.1%. The mean revision to quarterly estimates of exports of services would be 1.5%, and less than 0.5% to exports of goods and services. FISIM would account for 1.9% of exports of services and 0.65% of exports of goods and services in 2017.

National Income and Product Accounts

BEA's NIPAs will use the proposed FISIM export estimate for its ROW sector estimate. Working group research has shown that some of the FISIM activity captured in the proposed methodology is not captured in the current NIPA methodology. Estimates of this newly-identified activity will be added to the current NIPA gross estimate, the proposed ROW estimate will be allocated directly to FISIM exports; and the remaining FISIM estimate will be allocated to domestic sectors using domestic sectoring ratios only. The impact on GDP will depend on final estimates, but the working group expects revisions to be positive due to the newly-identified FISIM activity.

After resolving the remaining questions about the export methodology, the FISIM working group's next focus is estimating FISIM imports and introducing them into the NIPA methodology. The working group expects most FISIM imports will be allocated to intermediate consumption at a higher rate than is allocated for domestic production in general, where about 80% is allocated to intermediate sectors. More research is necessary to determine how FISIM imports will be allocated in a supply-use framework.

Conclusion

BEA expects to introduce BPM6-compliant estimates of trade in FISIM into its BOP accounts with its 2019 annual update. A FISIM working group has identified a consistent FISIM methodology across BEA's national, regional, industry, and international accounts. The working group has established the fundamental framework for a FISIM export estimation methodology and is working on recommendations for implementation. The working group will continue to develop a FISIM import estimation methodology for incorporation into BEA's accounts.