Fair Value Accounting and Measures of U.S. Corporate Profits for Financial Institutions

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Abstract

Quarterly source data are used to measure quarterly corporate profits in the U.S. national accounts. Consistent with international guidelines, the source data are adjusted to remove holding gains and losses; however, fair value accounting (FVA) practices call into question the completeness of the adjustments. This paper evaluates quarterly source data on financial institutions and the resulting published quarterly corporate profits series to identify FV gains and losses that may generate measurement error during the 2008 financial crisis. The core results of the paper reveal significant FV losses reported in the quarterly source data during the recessionary period 2007Q4 to 2009Q2. In addition, evidence suggests that not all FV losses are removed, which has a negative effect on the resulting published series. The results indicate that source data currently available to measure quarterly corporate profits for financial institutions are inadequate without significant efforts made to adjust the data, which are often not practical or possible during a typical estimation cycle. The extent of the inadequacy was highlighted during the 2008 financial crisis. Thus, quarterly source data based on surveys designed for statistical purposes would be a valuable alternative to source data currently available to measure quarterly U.S. corporate profits for financial institutions.

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1. Introduction

Under U.S. financial accounting rules, fair value accounting (FVA) is a practice in which an asset or liability is treated as sold at fair value even when no sale takes place. As a result, related holding gains and losses may be recognized in a firm's income statement. In contrast to financial accounting rules, international guidelines on national economic accounting require statisticians to exclude holding gains and losses from production and income statistics because holding gains and losses reflect changes in prices but do not arise from production. Thus, where U.S. production and income statistics rely on data sourced from financial accounting records, adjustments are required to remove holding gains and losses attributable to FVA practices.

Given the size of financial assets and liabilities subject to FVA at some U.S. financial institutions, potentially misleading effects of FVA on measured performance of firms and the contribution of FVA to the 2008 financial crisis have been areas of increased scrutiny by academics and policymakers. Some authors argue that FVA may generate a feedback effect that exacerbates declines in security prices when the prices reflect illiquid markets rather than expected future earnings (Allen and Carletti 2008; Bhat, Frankel, and Martin 2011; Ellul et al. 2015; Heaton, Lucas, and McDonald 2010; Merrill et al. 2012; Plantin, Sapra, and Shin 2008). Other authors argue that FVA played little or no role in the financial crisis (Barth and Landsman 2010; Laux and Leuz 2009, 2010; Securities and Exchange Commission 2008; Shaffer 2010).[1] These arguments aside, challenges associated with identifying and tracking FV gains and losses in U.S. financial-based source data during the financial crisis call into question the completeness of the adjustments for holding gains and losses that are required for national economic accounting purposes (Rassier 2012).

[1] In addition to papers that explore the contribution of FVA to the financial crisis, a number of papers explore other causes and consequences of the financial crisis (Brunnermeier 2009; DeYoung and Torna 2013; Diamond and Rajan 2009; Gorton 2009; Kacperczyk and Schnabl 2010; Krishnamurthy 2010; Shleifer and Vishny 2011).

In the U.S. National Income and Product Accounts (NIPAs), expenditure-based gross domestic product (GDP^E) and its components reflect the production of goods and services for final consumption and investment; income-based gross domestic product (GDP^I) and its components reflect the related income generated in production. Consistent with international guidelines, the U.S. Bureau of Economic Analysis (BEA) makes a point of removing holding gains and losses from source data. In the case of quarterly GDP^E, BEA generally measures components with source data based on surveys that are designed to be consistent with national economic accounting concepts. In the case of quarterly GDP^I, BEA measures some components with survey-based source data and other components with financial-based source data. In particular, the corporate profits component of GDP^I is measured on a quarterly basis with financial data reported on firms' quarterly income statements. Some of the financial data include holding gains and losses attributable to FVA practices.[2]

As a simple illustration, imagine during a given accounting period a firm uses cash to purchase equity securities for trading purposes. Under international guidelines for national economic accounts and under U.S. financial accounting rules, the securities are recognized as an asset at market value on the acquisition date. At the end of the accounting period, any change in value is recorded under the U.S. rules as a gain or loss in the firm's income statement, regardless of whether the securities have been sold. In contrast, the international guidelines treat the change in value as a revaluation, which by design does not affect income because there is no corresponding production. Thus, using the firm's income statement to measure corporate profits that are consistent with the international guidelines requires an adjustment to remove the holding gain or loss.

[2] In addition to quarterly financial data used to measure quarterly corporate profits, BEA measures annual corporate profits using data reported on firms' annual corporate income tax returns. While corporate income tax returns also include FV gains and losses, the scope of this paper is limited to quarterly measures.

Approximately 10 percent of GDP^I is attributable to corporate profits in recent periods. However, during the recession that began in the fourth quarter of 2007 and ended in the second quarter of 2009 (i.e., 2007Q4 to 2009Q2), corporate profits as a share of GDP^I decreased to as little as 4.6 percent in 2008Q4. Shares for the other components of GDP^I either increased or remained relatively steady. In addition, shares of corporate profits earned by domestic financial corporations and domestic non-financial corporations are approximately 30 percent and 70 percent, respectively, in recent periods.[3] However, also in 2008Q4, corporate profits earned by financial corporations decreased to negative 15.2 percent and corporate profits earned by non-financial corporations increased to 115.2 percent.

While there should be no surprise that aggregate GDP decreased during the recession, the disproportionate decrease in corporate profits relative to the other components of GDP^I is worthy of further scrutiny in light of source data that include FV gains and losses. Likewise, the significant decline in the share of corporate profits measured for financial institutions provides incentive for further inquiry because the removal of FV losses by BEA was particularly important but challenging for financial institutions during the recession. Thus, declines in corporate profits for financial institutions may reflect FV losses to the extent that losses were not identified in quarterly financial-based source data.

This paper evaluates quarterly financial-based source data and the resulting published quarterly U.S. corporate profits series for financial institutions. The primary objectives are to identify FV gains and losses in the source data that may generate measurement error in quarterly corporate profits indicator series and to determine whether variation in the resulting published quarterly corporate profits statistics reflects holding losses during the 2008 financial crisis. To

[3] In the U.S. NIPAs, financial corporations include financial institutions and insurance firms as well as bank holding companies and other holding companies.

that end, the paper reports results from two quarterly data sources for the first quarter of 2005 to the fourth quarter of 2012 (i.e., 2005Q1 to 2012Q4): quarterly financial reports filed with the Securities and Exchange Commission (SEC) and quarterly call reports filed with the Federal Deposit Insurance Corporation (FDIC). In addition, the paper presents results of statistical analyses performed on the published quarterly corporate profits series to determine whether empirical patterns observed in the series hold up under statistical scrutiny. While failure to completely remove FV gains and losses may not have a significant effect on aggregate GDP[I], the effect on corporate profits could be significant, and corporate profits alone are an important and closely watched statistic.[4]

A secondary objective of the paper is to question the complete exclusion from production and income statistics of holding gains and losses related to some types of services. Some financial institutions appear to generate FV gains to fund operations in lieu of charging explicit service fees that would otherwise be charged for services such as financial advisory or market making; however, the international guidelines on national economic accounting exclude holding gains and losses from production and income statistics regardless of the underlying use of the funds. Thus, using a small sample of individual financial institutions, the paper considers an alternative to the complete exclusion of holding gains and losses related to some types of services.

The core results of the paper reveal significant FV losses reported in the quarterly source data on financial institutions during the recessionary period 2007Q4 to 2009Q2. In addition, evidence suggests that not all FV losses are removed, which has a negative effect on the resulting published quarterly corporate profits series for financial institutions. Furthermore, the statistical

[4] While no previous paper looks at the effects of FVA practices in financial-based source data on aggregate measures of corporate profits, previous papers such as Konchitchki and Patatoukas (2014) look at the predictive power of accounting earnings for aggregate measures of GDP.

analyses performed on the published series confirm the empirical patterns observed in the series—i.e., variation in published quarterly corporate profits statistics for financial institutions appears to reflect holding losses during the 2008 financial crisis. The paper concludes that source data currently available to measure quarterly corporate profits for financial institutions are inadequate without significant efforts made to adjust the data, which are often not practical or possible during a typical estimation cycle. The extent of the inadequacy was highlighted during the 2008 financial crisis. Thus, quarterly source data based on surveys designed for statistical purposes would be a valuable alternative to source data currently available to measure quarterly U.S. corporate profits for financial institutions.

The paper is organized in four sections that follow. The next section presents a summary of the treatment of corporate profits and holding gains and losses in the *System of National Accounts 2008*. The third section outlines the measurement framework for corporate profits in the U.S. NIPAs and discusses characteristics of data sources underlying the corporate profits measures. The fourth section presents empirical results. The last section concludes.

2. Corporate Profits and Holding Gains and Losses in the *SNA*

The *System of National Accounts 2008* (*SNA*) is the international source for guidelines on national economic accounts. To provide some context for corporate profits in national economic accounts generally and in the U.S. NIPAs specifically, this section provides a brief summary of the *SNA* with emphasis on the *SNA* treatment of corporate profits and holding gains and losses.[5]

[5] The summary is simplified in five ways. First, the summary is limited to gross measures without including net measures. In the *SNA*, the difference between gross and net is consumption of fixed capital (i.e., economic depreciation). Second, the summary omits potential flows to and from rest of world. Third, the summary does not distinguish institutional units or institutional sectors. In the *SNA*, institutional units are individual agents within the economy, such as incorporated enterprises and persons, and institutional sectors include groups of institutional units such as the corporations sector and the households sector. Fourth, the summary assumes output prices reflect taxes and subsidies on products and other taxes and subsidies on production (i.e., producers' prices). The *SNA* distinguishes two categories of taxes and subsidies: 1) taxes and subsidies on products apply to each unit of a good or service, such as sales and excise taxes, and 2) other taxes and subsidies on production apply to factors employed

The *SNA* includes a sequence of accounts that reflect stocks of assets and liabilities and related economic flows. There are three categories of accounts in the *SNA* (in this order): 1) current accounts, 2) accumulation accounts, and 3) a balance sheet. Current accounts reflect flows related to current production and income earned in current production. Each of the current accounts yields a balancing item or residual that is carried forward to the next account in the sequence. Accumulation accounts reflect changes in assets, liabilities, and net worth as a result of saving from production and changes in volume and prices that do not arise from production. Balance sheets reflect stocks of assets and liabilities and their changes; the difference between assets and liabilities is net worth.

2.1. Corporate Profits in the SNA

To understand the role of corporate profits in the *SNA* requires only a summary limited to the production account and the primary distribution of income account, which are both current accounts shown in figure 1. The production account yields value-added as a residual between output and intermediate consumption of materials, energy, and purchased services. Value-added is referred to in the *SNA* as gross domestic product or GDP. Value-added is carried forward to the primary distribution of income account, which shows the generation of income from production and the allocation of income to the primary factors involved in production: labor and capital. Income accrues to primary factors of production as a result of their direct contribution to production or through the ownership of assets used in production.

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in production, such as property and payroll taxes. To the extent that output prices reflect taxes and subsidies, taxes less subsidies are deducted from value-added in order to prevent overstating operating surplus. Fifth, the summary only reflects operating surplus that accrues to incorporated enterprises. In the *SNA*, "operating surplus" is the surplus from production accruing to incorporated enterprises or to unincorporated enterprises in the case of owner-occupied housing, and "mixed income" is the surplus from production accruing to unincorporated enterprises owned by households. Thus, the summary assumes production only takes place within corporations, which facilitates the focus on corporate profits.

In concept and by construction, value-added equals the primary income generated in production. The generation of income account, which is one of two subaccounts in the primary distribution of income account, shows value-added used up by producers through payments of compensation to employees and payments of taxes on production to governments (net of subsidies on production received from governments). Property income payments and receipts are excluded from the generation of income account because not all property income is attributable to assets used in production. For example, households pay and receive property income on financial assets, which does not affect production. The balancing item in the generation of income account is operating surplus, which is the surplus from production prior to any adjustments for property income payments and receipts.

The second subaccount in the primary distribution of income account is the allocation of primary income account. The allocation of primary income account records receipts of primary income and also records property income payments and receipts. The allocation of primary income account is split into an account for entrepreneurial income and an account for the allocation of other primary income. Entrepreneurial income reflects operating surplus received by corporations, adjusted by property income payments and receipts attributable to corporations. Thus, entrepreneurial income is equivalent in concept to corporate profits. Entrepreneurial income is carried forward to the allocation of other primary income account, which also records primary income received by labor, taxes less subsidies on production, and property income payments and receipts attributable to institutional sectors other than corporations.[6] The balancing item in the allocation of other primary income account is national income. In contrast

[6] While this summary does not distinguish institutional sectors, entrepreneurial income is calculated in the *SNA* only for financial corporations and non-financial corporations even though unincorporated enterprises of other institutional sectors such as households may also engage in market production. Because the summary assumes that production only takes place within corporations, any operating surplus and property income attributable to other institutional sectors is out of scope.

to value-added, which focuses on the residence of producing units (i.e., domestic production), national income focuses on the residence of units that receive the income generated in production.

2.2. Holding Gains and Losses in the SNA

Figure 1 also includes the revaluation account, which is an accumulation account. In the *SNA*, production and income measures do not include holding gains and losses on assets and liabilities. Holding gains and losses result from merely holding assets and liabilities without any economic transformation—i.e., they reflect changes in prices but do not arise from production. Thus, rather than including holding gains and losses in the production and income accounts, the *SNA* records holding gains and losses in a separate account called the revaluation account.

Holding gains and losses include gains and losses attributable to FVA practices. The *SNA* does recommend recording memoranda in the balance sheets to reflect FV losses associated with non-performing loans. Likewise, the research agenda to the *SNA* suggests a wider use of FVA for loans. However, no mention is made to expand the production and income accounts to include FV gains generated in lieu of charging explicit service fees as a regular course of business to fund operations.[7]

3. Corporate Profits in the U.S. NIPAs

In the U.S. NIPAs, production is measured with two approaches that are conceptually equivalent to value-added in the *SNA* and that are also recognized approaches in the *SNA*. First, U.S. GDP^E is estimated based on an expenditure approach in which final consumption expenditures and investment expenditures are extrapolated forward from the U.S. benchmark

[7] In addition to guidance on FVA for loans, the *SNA* is either too vague or inconsistent in the treatment of holding gains and losses for investment income included in the implicit service charges of insurance firms and pension administrators, which are not a result of FVA practices but do call into question the inclusion of holding gains and losses in production and income statistics (United Nations Statistical Division 2014).

input-output accounts on a quarterly basis with revisions incorporated annually. The U.S. benchmark input-output accounts yield a balanced framework approximately every five years that includes production measured by value-added, final expenditures, and income. Second, U.S. GDP^I is based on an income approach that includes compensation, taxes less subsidies on production, and operating surplus. Rather than calculating operating surplus as a residual in the generation of income account, BEA calculates operating surplus as a sum of independently estimated components that include corporate profits, proprietors' income, and property income attributable to private enterprises. Compensation, taxes less subsidies on production, and the components of operating surplus are measured in the U.S. NIPAs annually and extrapolated forward on a quarterly basis. Like U.S. GDP^E, improvements are introduced to U.S. GDP^I during annual revisions and during benchmark revisions approximately every five years.

3.1. Measurement of U.S. Corporate Profits

Recall an identity exists in the *SNA* between value-added in the production account and the generation of income in the primary distribution of income account. The identity can be written to separately reflect corporate profits and net corporate property income.[8] In particular, value-added (V) can be written as the sum of compensation (W), corporate profits (Π), net corporate property income (R), and taxes (T) less subsidies (S) on production. If value-added and the income components are measured without error in accordance with economic accounting principles, the accounting identity is as follows:

$$V^* = W^* + \Pi^* + R^* + T^* - S^*. \quad (1)$$

The left side of equation (1) reflects production, and the right side reflects the related income generated in production.

[8] Recall the simplifying assumption that production takes place only within corporations in order to facilitate the focus on corporate profits. Thus, the exposition here leaves out proprietors' income of unincorporated households and imputed rental income for owner-occupied housing.

The asterisks in equation (1) indicate actual values without measurement error. In practice, the production and income components in equation (1) are generally measured with some amount of random error (ε) attributable to imperfect data sources and estimation methodologies. The objective of national economic accounting statisticians is to minimize ε. Corporate profits in equation (1) can be measured either directly or residually. If corporate profits are measured directly, measurement error is attributable to corporate profits as follows:

$$\left(V + \varepsilon^V\right) = \left(W + \varepsilon^W\right) + \left(\Pi + \varepsilon^\Pi\right) + \left(R + \varepsilon^R\right) + \left(T + \varepsilon^T\right) - \left(S + \varepsilon^S\right). \quad (2)$$

If corporate profits are measured residually, measurement error related to production and the other income components is attributable to corporate profits as follows:

$$\Pi = V - W - R - T + S + \left(\varepsilon^V - \varepsilon^W - \varepsilon^R - \varepsilon^T + \varepsilon^S\right). \quad (3)$$

Thus, corporate profits are subject to measurement error whether measured directly or residually.

In practice, the net measurement error in equation (2) (i.e., $\varepsilon^W + \varepsilon^\Pi + \varepsilon^R + \varepsilon^T - \varepsilon^S - \varepsilon^V$) is referred to as the statistical discrepancy. Consistent with equation (2), quarterly corporate profits published in the U.S. NIPAs are measured directly using data sourced from quarterly financial accounting records that reflect FV gains and losses. If FV gains and losses are not completely removed from the source data, ε^Π in equation (2) and the statistical discrepancy are affected according to the *SNA* requirement to exclude holding gains and losses. Thus, the primary objective of this paper is to identify FV gains and losses that may contribute to ε^Π in equation (2).

3.2. FV Gains Generated in Lieu of Explicit Service Fees

A secondary objective of the paper is to question the complete exclusion from production and income statistics of holding gains and losses related to some types of services. If some financial institutions generate FV gains to fund operations in lieu of charging explicit fees that

would otherwise be charged for services, the *SNA* requirement to exclude all holding gains and losses is subject to question because FV gains and losses may reflect expected returns that are not reflected in traditional accounting measures. For example, a financial services firm that commits capital and assumes risks associated with market making activities on behalf of clients may receive some income from service fees or from bid-ask spreads but may also receive some income from FV gains. In the absence of FV gains, either higher fees or bid-ask spreads would be required to compensate for the services provided or the firm may simply not provide the services.[9]

For services in which FV gains and losses (*H*) are generated in lieu of charging explicit fees, the accounting identity in equation (1) can be rewritten as follows:

$$V^* + H^* = W^* + \Pi^* + R^* + T^* - S^* + H^*. \quad (4)$$

In equation (4), *H* results from an implicit service charge and is shown with value-added on the left and with the income components on the right simply to demonstrate the effect on production and income that would be necessary to maintain the accounting identity, and thus, to have a neutral effect on the statistical discrepancy. In other words, any value-added that does result from the implicit service charge is absorbed by payments for labor and capital. In addition, value-added is only affected by the implicit service charge to the extent that output generated by financial institutions is not purchased as intermediate consumption by other firms rather than as final consumption by households or governments. In other words, final consumption of services that are compensated through FV gains and losses may be zero. If so, the related income generated in production is also zero.

[9] Durant et al. (2015) also provide a brief discussion of the boundary between holding gains and production. In addition, Cette et al. (2011) explore the effect of the inclusion of holding gains and losses on measures of profitability for non-financial institutions.

From a practical perspective, the challenge is determining an implicit service charge based on FV gains and losses. Thus, equation (2) should be rewritten as follows to reflect the measurement error associated with determining *H* in equation (4):

$$\left(V+\varepsilon^{V}\right)+\left(H+\varepsilon^{H}\right)=\left(W+\varepsilon^{W}\right)+\left(\Pi+\varepsilon^{\Pi}\right)+\left(R+\varepsilon^{R}\right)+\left(T+\varepsilon^{T}\right)-\left(S+\varepsilon^{S}\right)+\left(H+\varepsilon^{H}\right). \quad (5)$$

However, establishing a method to measure *H* and minimize ε^{H} in equation (5) is left for future work.[10]

3.3. Source Data for U.S. Corporate Profits

BEA generally uses data sourced from financial accounting records for quarterly indicators of corporate profits.[11] In particular, BEA uses the following quarterly source data for the period 2005Q1 to 2012Q4: 1) quarterly financial reports (QFRs) published by the U.S. Census Bureau, 2) quarterly financial reports filed with the Securities and Exchange Commission (SEC), 3) quarterly call reports filed with the Federal Deposit Insurance Corporation (FDIC), and 4) property and casualty insurance data reported by Insurance Services Office, Inc. (ISO).

Census Bureau QFRs

Census Bureau publishes QFRs for firms classified to information, manufacturing, mining, retail and wholesale trade, and professional, scientific and technical industries. BEA uses the QFRs to construct quarterly indicators for corporate profits. QFRs include a sample of publicly owned and privately owned firms and also include adjustments to remove holding gains

[10] Attributing an implicit service charge by financial institutions based on FV gains and losses for services such as financial advisory or market making is conceptually equivalent to the *SNA* recommendation to attribute an implicit service charge by banks based on interest rate spreads on loans and deposits for financial intermediation services indirectly measured (FISIM). However, the measurement of an implicit service charge based on FV gains and losses is less obvious than an implicit service charge for FISIM. For the U.S., Fixler, Reinsdorf, and Smith (2003), Corrado, Reinsdorf, and Hood (2012), and Corrado, Hood, and Reinsdorf (2014) present the measurement of FISIM for commercial banks, other depository institutions, and non-depository institutions, respectively. In addition, Diewert (2014) considers the inclusion in the *SNA* of output related to financial transactions for non-financial institutions.

[11] For more information on corporate profits in the U.S. NIPAs, see Bureau of Economic Analysis (2014) and Bureau of Economic Analysis (2002).

and losses for use in the U.S. NIPAs. Thus, this paper excludes an assessment of QFRs in order to focus on other data sources that are more likely to include FV gains and losses.

Quarterly SEC Financial Reports

Unaudited quarterly financial reports are filed by publicly owned firms with the SEC. BEA extracts income statement data from Compustat for firms classified to some construction, financial, real estate, transportation, utilities, and other industries. For firms classified to financial industries, quarterly indicators for corporate profits come from Compustat for NAICS 52229 (other non-depository credit intermediation), NAICS 523 (securities, commodity contracts, and other financial investments and related activities), NAICS 52411 (direct life, health, and medical insurance carriers), and NAICS 52599 (other financial vehicles). The Compustat database does not provide a field to distinguish FV gains and losses included in earnings. Thus, for quarters with substantial changes in market values of securities, BEA can only resort to a small sample of quarterly financial reports filed with the SEC by individual financial institutions to adjust for FV gains and losses.

Quarterly FDIC Call Reports

Depository institutions are required to file quarterly call reports with the FDIC. FDIC publishes financial data in their Statistics on Depository Institutions (SDI) for all FDIC-insured institutions. BEA extracts income statement data from SDI for firms classified to some agriculture, financial, and other industries. For the financial industries, quarterly indicators for corporate profits come from SDI for NAICS 521 (monetary authorities-central bank), NAICS 5221 (depository credit intermediation), and NAICS 5223 (activities related to credit intermediation). The SDI provides fields to distinguish FV gains and losses on securities. However, FV losses (gains) recognized as impairments (recoveries) are indistinguishable from

other non-interest expenses. Thus, for quarters with substantial FV losses (gains) charged to impairments (recoveries), BEA must resort to some other source such as quarterly financial reports filed with the SEC to adjust for impairments (recoveries).

Quarterly ISO Insurance Data

ISO reports quarterly data on underwriting income, investment income, and catastrophe losses for property and casualty insurance firms. BEA uses the ISO data to construct quarterly indicators of corporate profits for NAICS 524126 (direct property and casualty insurance carriers). The ISO data exclude FV gains and losses. Thus, this paper excludes an analysis of ISO data in order to focus on the SEC data and the FDIC data.

3.4. FVA under U.S. Financial Accounting Rules

Under U.S. generally accepted accounting principles (GAAP), FVA is required on a recurring basis (i.e., periodically) for some financial assets and liabilities and may be elected for other financial assets and liabilities. Non-financial assets and liabilities are generally accounted for at historic cost with no adjustments for FV gains and losses. However, when the value of a non-financial asset is considered to be "other-than-temporarily" impaired, FV gains and losses are recognized in net income. Since gains and losses associated with other-than-temporary impairment (OTTI) are only recognized on a non-recurring basis, non-financial assets are outside the scope of the present paper. Thus, the focus here is on financial accounting rules that require or allow FVA for financial assets and liabilities.[12] Table 1 provides a summary of FVA under U.S. GAAP.[13]

[12] Financial accounting rules for FV measurement are provided in *Statement of Financial Accounting Standards* (*SFAS*) number 157 or topic 820 in the new *Accounting Standards Codification (ASC)*.

[13] While International Financial Reporting Standards (IFRS) are outside the scope of this paper, the U.S. rules and IFRS rules generally converge on FVA. The IFRS measurement and recognition requirements on FVA can be found in *International Accounting Standard* 39. Barth and Landsman (2010) provide a summary of FVA rules under U.S. GAAP and IFRS.

U.S. GAAP distinguishes three classes of debt and equity securities: 1) debt securities intended to be held to maturity (HTM securities), 2) debt and equity securities bought primarily for short-term trading purposes (trading securities), and 3) debt and equity securities that are available for sale but not classified in the previous two classes (AFS securities).[14] HTM securities are accounted for at historic cost. FVA is required on a recurring basis for trading securities and AFS securities. Trading securities include mortgage-backed securities that are held for sale in conjunction with mortgage banking activities.[15] Realized and unrealized FV gains and losses generated by trading securities are required under financial accounting rules to be included with earnings in the income statement. Realized FV gains and losses generated by AFS securities are required to be included in earnings, but unrealized FV gains and losses generated by AFS securities are required to be included directly in the other comprehensive income (OCI) portion of shareholder's equity rather than in earnings.

U.S. GAAP also requires FVA on a recurring basis for derivative assets and liabilities, including derivatives that qualify as hedges.[16] FV gains and losses generated by derivative assets and liabilities and derivatives qualified as hedges are required to be included with earnings in the income statement. In the aggregate, gains or losses associated with derivative assets should be offset by gains or losses associated with derivative liabilities. However, earnings available in disaggregated source data may include FV gains and losses associated with derivative instruments. Likewise, gains or losses associated with hedged assets or liabilities are presumably offset only to the extent of the gains or losses on the qualified derivative. Thus, earnings

[14] Financial accounting rules for investments in debt and equity securities are provided in *SFAS* number 115 or *ASC* topic 320.
[15] Financial accounting rules for certain mortgage banking activities are provided in *SFAS* number 65 or *ASC* topic 948-310.
[16] Financial accounting rules for derivative instruments and hedging activities are provided in *SFAS* number 133 or *ASC* topic 815.

reported in financial statements may include FV gains and losses associated with derivative instruments and financial assets and liabilities that have not been offset by hedges.

In addition to requiring FVA for investment securities and derivative instruments, U.S. GAAP allows companies to elect a fair value option (FVO) for other financial assets and liabilities, such as receivables, payables, and debt instruments.[17] A FVO election is generally applied to an individual instrument and is irrevocable. In addition, similar to trading securities and derivative instruments, FV gains and losses associated with an election are required to be included with earnings in the income statement. The FVO has been broadly available since 2008, so earnings reported in recent financial statements may include FV gains and losses associated with the financial assets and liabilities covered by the accounting rules.

4. Results

The primary objectives of this paper are to identify FV gains and losses in source data that may generate measurement error in quarterly U.S. corporate profits indicator series for financial institutions and to determine whether variation in the resulting published quarterly corporate profits statistics reflect holding losses during the 2008 financial crisis. The secondary objective is to question the complete exclusion from production and income statistics of holding gains and losses related to some types of services.

The discussion of the results is divided into four subsections: 1) provide context based on published quarterly corporate profits statistics and other components of GDP, 2) report unadjusted and adjusted series for two quarterly data sources on financial institutions—SEC and FDIC, 3) present results of statistical analyses performed on published quarterly corporate profits

[17] Financial accounting rules for the FVO for financial assets and liabilities are provided in *SFAS* numbers 159 and 65 or *ASC* topics 825 and 948-310, respectively.

series, and 4) discuss FV gains and losses that appear to be generated in lieu of charging explicit service fees.

The analysis is subject to two important caveats. First, the paper only evaluates quarterly financial-based source data without evaluating annual tax-based source data, which are used to determine the annual level of corporate profits.[18] Second, the adjustments for each source of data are determined based on a small sample of some of the largest financial institutions, which yields adjustments that are inevitably incomplete.

4.1. Published Quarterly U.S. Corporate Profits

Figure 2 reports published quarterly U.S. domestic corporate profits from 2005Q1 to 2012Q4 for all corporations and separately for financial corporations and non-financial corporations. Measures for financial corporations and non-financial corporations decrease to a low in 2008Q4 and 2009Q2, respectively. The decrease for financial corporations clearly drives the decrease for aggregate domestic corporate profits. Figure 3 shows published corporate profits for financial corporations and non-financial corporations as a share of the aggregate. Corporate profits for financial corporations are roughly 30 percent of aggregate corporate profits outside the recession, but the percentage decreases to a low of negative 15.2 percent in 2008Q4 with offsetting increases for non-financial corporations.

Figures 4 and 5 provide a breakdown of the component shares of U.S. GDP^I and U.S. net operating surplus, respectively. In figure 4, corporate profits are approximately 10 percent of GDP^I except during the recessionary period 2007Q4 to 2009Q2. Corporate profits fall to as little

[18] While this paper does not evaluate annual tax-based source data, the tax-based data are affected by FV gains and losses on hedging transactions that are required to be reported as ordinary income on corporate income tax return form 1120. A tabulation of hedging transactions reported on schedule M-3 of form 1120 indicates significant losses during the recessionary period. However, the tabulation does not indicate how much is reported as ordinary income and how much is reported as capital gains and losses and also does not indicate how much is reported for financial institutions and non-financial institutions.

as 4.6 percent of GDP^I in 2008Q4, which is offset by increases in other components of GDP^I. Likewise, corporate profits are approximately 40 percent of net operating surplus in figure 5 except during the recessionary period when the percentage falls to 22.2 percent in 2008Q4.

Figures 6 and 7 present components of GDP relative to non-financial assets for financial corporations and non-financial corporations, respectively. The series in figures 6 and 7 come from data published in the NIPAs, Integrated Macroeconomic Accounts (IMAs), and International Transactions Accounts (ITAs). Components of expenditure-based GDP include household consumption from the NIPAs, investment from the IMAs, and net exports from the ITAs. Components of income-based GDP include corporate profits from the NIPAs, and compensation, taxes less subsidies, and other gross operating surplus from the IMAs. Non-financial assets include structures, equipment, and intellectual property products for financial corporations plus inventories for non-financial corporations from the IMAs.

The objective of figures 6 and 7 is to demonstrate the unique patterns for each of the underlying components of GDP relative to a common scaler. Aggregate expenditure-based GDP and aggregate income-based GDP relative to aggregate non-financial assets are included for reference. Each of the components for non-financial corporations in figure 7 generally follows the pattern of aggregate GDP. Each of the components for financial corporations in figure 6, with the exception of corporate profits, more or less follows the pattern of aggregate GDP with some slight variation in other components over the sample period. In contrast to all other components of GDP for financial corporations and non-financial corporations, the pattern of corporate profits relative to non-financial assets for financial corporations in figure 6 demonstrates the same dramatic decline that is shown in figures 2 and 3.

Figures 2 through 7 reveal two interesting patterns. First, corporate profits experience a disproportionate decline relative to other components of GDP during the recessionary period 2007Q4 to 2009Q2. Second, the disproportionate decline in corporate profits is driven largely by decreases for financial corporations. Given the inclusion of mortgage-backed securities in the accounting for trading securities and given the concentration of debt and equity securities purchased and sold for finance-related activities, financial institutions are particularly affected by FVA practices.[19] For U.S. NIPA purposes, the removal of FV gains and losses was particularly important but challenging for financial institutions leading up to the cyclical peak in 2007Q4 and during the subsequent recession because of the lack of transparent data on FV gains and losses included in earnings reported in quarterly financial statements. Thus, declines in quarterly corporate profits for financial institutions during the recession may reflect FV losses to the extent the losses were not identified by BEA, but the patterns shown in figures 2 through 7 are not enough to conclude that published quarterly corporate profits include FV gains and losses.

4.2. Quarterly Source Data

BEA uses quarterly source data for two purposes in measures of U.S. corporate profits. First, the data are used to derive indicators to extrapolate national totals of quarterly corporate profits for current quarterly estimates of corporate profits and for first annual estimates.[20] Second, BEA uses the data to interpolate quarterly corporate profits between annual estimates of corporate profits that are measured with annual tax-based source data during annual revisions after the first annual estimate. Figures 2 through 7 for the period 2005 to 2012 are compiled

[19] Financial accounting rules for FVA have been under increasing scrutiny since the recessionary period 2007Q4 to 2009Q2 and the related subprime mortgage crisis because of the volatile impact the rules have on earnings during times of market volatility (Allen and Carletti 2008; Barth and Landsman 2010; Bhat, Frankel, and Martin 2011; Ellul et al. 2015; Heaton, Lucas, and McDonald 2010; Laux and Leuz 2009, 2010; Merrill et al. 2012; Plantin, Sapra, and Shin 2008; Securities and Exchange Commission 2008; Shaffer 2010).

[20] Annual tax-based source data are only available with a two-year lag.

from data published in the 2015 U.S. NIPA annual revision (McCulla and Smith 2015), which includes annual corporate profits measured with tax-based source data and quarterly corporate profits measured with financial-based source data. The results reported next focus on the quarterly source data for some financial institutions that underlie BEA's quarterly corporate profits indicator series, and thus, also underlie published U.S. NIPA measures of quarterly corporate profits.

Figure 8 reports unadjusted and adjusted quarterly net income series from GAAP-based source data that BEA uses to derive indicators to extrapolate and interpolate quarterly profits for financial institutions. The unadjusted series are taken directly from data sources including SEC financial reports and FDIC call reports. The adjusted series are the difference between the unadjusted series and adjustments for FV gains and losses and other holding gains and losses, provisions for credit losses, and income taxes. The adjustments are tabulated and itemized in appendix table I for each period.

Figure 8 includes all firms classified to NAICS 5221 (depository credit intermediation) that are required to file quarterly call reports with the FDIC and all firms classified to NAICS 52229 (other non-depository credit intermediation), NAICS 523 (securities, commodity contracts, and other financial investments and related activities), NAICS 52411 (direct life, health, and medical insurance carriers), and NAICS 52599 (other financial vehicles) that are required to file quarterly financial reports with the SEC. Figure 8 demonstrates three points. First, firms generally assess the value of their financial assets and liabilities only once each year. For many firms, the assessment is at the end of the calendar year. Thus, the dips in the fourth quarters of 2007, 2008, and slightly in 2009 are presumably attributable to FV losses in addition to any changes in actual economic activity. Second, the difference between the unadjusted series

and the adjusted series in figure 8 demonstrates that adjustments related to FV losses are significant during the recession. In 2008Q4, adjustments related to FV losses are almost $130 billion – or almost 20 percent of aggregate domestic corporate profits published in the U.S. NIPAs – which is determined by adding gains on trading securities, gains on investments, other gains, and recoveries (impairments) in appendix table I. The third point from figure 8 is that the dramatic decline during the recession disappears after the series is adjusted, and the lowest point in the adjusted series shows up in 2008Q3 rather than 2008Q4. Corporate profits published for financial institutions in the U.S. NIPAs are well below zero in 2008Q4 while the adjusted series in figure 8 is far above zero, which suggests the published series may reflect FV losses.

In addition to the results shown in figure 8, the underlying details in appendix table I reveal considerable impairments reported for 2008Q3 to 2009Q4. Based on annual reports filed with the SEC, the impairments generally appear to be attributable to FV losses on assets and liabilities assumed under acquisitions completed in the previous 12 months, which is permitted under financial accounting rules. Thus, impairments are a significant source of FV losses.

4.3. Statistical Analyses

The empirical patterns observed in figures 2 through 7 indicate that published quarterly U.S. corporate profits may reflect holding losses related to FVA practices used by financial institutions during the 2008 financial crisis. This section presents results of statistical analyses performed on the published quarterly corporate profits series. The analyses include mean comparison tests and OLS regressions. The data series include the components of GDP for financial corporations and non-financial corporations – i.e., consumption, investment, net exports, compensation, taxes less subsidies, corporate profits, and other gross operating surplus – and include revaluations on financial assets held by financial corporations and non-financial

corporations, which reflect holding gains and losses but should not affect measures of production and income. Aggregate data series include the sum of financial corporations and non-financial corporations. In all cases, relative measures are calculated with division by assets—components of GDP are scaled by non-financial assets and revaluations of financial assets are scaled by financial assets.

Table 2 reports summary statistics that include relative standard deviations (i.e., standard deviation divided by the mean) for all GDP component series in figures 6 and 7 that do not contain negative values. For all measures that have a relative standard deviation, corporate profits demonstrate higher volatility with the exception of other gross operating surplus for financial corporations. Revaluations of financial assets are also included in table 2 but are affected by negative values because of holding losses during the financial crisis. Table 3 reports correlation coefficients among the relative measures in table 2. The components of GDP are generally highly correlated among aggregate measures and measures for non-financial corporations but less correlated among measures for financial corporations. Revaluations of financial assets are highly correlated with aggregate corporate profits and corporate profits for financial corporations but are not correlated with corporate profits for non-financial corporations. The only other significant correlations with the revaluations are taxes less subsidies for financial corporations, which is a relatively low correlation, and other gross operating surplus for non-financial corporations, which is a low correlation.

Table 4 includes mean comparison tests between financial corporations and non-financial corporations for each of the relative measures reported in table 2. The means on financial corporations are significantly higher for all components of GDP except other gross operating

surplus, which is significantly higher for non-financial corporations. There is no significant difference for revaluations on financial assets.

Tables 5 through 8 present results for a number of regressions. The purpose of the regressions is to assess the explanatory power of revaluations of financial assets on corporate profits and the other components of GDP. Since production and income measures should not include holding gains and losses by design, revaluations should not affect the components of GDP except through spurious correlation. As demonstrated in table 3, the only component of GDP that is highly correlated with revaluations is corporate profits for financial corporations. Regressions provide a more robust test of the explanatory power of revaluations. If regressions of corporate profits on revaluations demonstrate that revaluations reasonably explain corporate profits, the result lends evidence to conclude that the empirical patterns observed for corporate profits in figures 2 through 7 are a result of holding losses during the financial crisis.

The regressions include the estimation of published quarterly corporate profits relative to non-financial assets at time *t*, denoted π_t, using published quarterly revaluations of financial assets relative to financial assets and using other published components of GDP relative to non-financial assets at time *t*, denoted h_t and x_t, respectively. The following equation summarizes the estimation of corporate profits:

$$\pi_t = \beta_0 + \beta_1 h_t + \beta_2 x_t + \varepsilon_t . \quad (6)$$

In addition to estimating corporate profits, the analysis includes estimations of the other components of GDP using only revaluations to confirm whether revaluations have any explanatory power for those components since the other components of GDP are less likely to be subject to measurement error related to FVA practices. The following equation summarizes the estimation of the other components of GDP:

$$x_t = \beta_0 + \beta_1 h_t + \varepsilon_t . \quad (7)$$

Equations (6) and (7) are estimated separately for relative aggregate measures, relative measures for financial corporations, and relative measures for non-financial corporations.

Tables 5, 6, and 7 present results from the estimation of equation (6). The analysis includes a parsimonious approach in which revaluations of financial assets are included alone on the right side (column 1) and the components of GDP are included one by one (columns 2 through 7) before all components of expenditure-based GDP and income-based GDP are included together (columns 8 and 9, respectively). The results presented in tables 5, 6, and 7 generally reflect the correlations reported in table 3. In particular, revaluations have a positive explanatory effect on corporate profits for all but one regression using aggregate measures and for all regressions using measures for financial corporations. In contrast, revaluations have no statistically significant explanatory effect on corporate profits for all but two regressions using measures for non-financial corporations. In addition, the r-squared values indicate that the explanatory power is generally higher for regressions using aggregate measures and measures for financial corporations than for regressions using measures for non-financial corporations.

The results in table 6 indicate that revaluations of financial assets generally have more explanatory power than the other components of GDP for financial corporations. In column 8 of table 6, the coefficient on revaluations is statistically significant at the 1 percent level while the coefficients on consumption and net exports are statistically significant at the 10 percent level—the coefficient on investment is not significant. In column 9 of table 6, the coefficient on revaluations is also statistically significant at the 1 percent level while the only other statistically significant coefficient is on other gross operating surplus at the 5 percent level.

In contrast to financial corporations, the results in table 7 indicate that revaluations of financial assets generally have less explanatory power than the other components of GDP for non-financial corporations. In column 8 of table 7, the coefficient on revaluations is statistically significant at the 1 percent level and the coefficients on all of the components of expenditure-based GDP are also statistically significant at the 1 percent level. The coefficient on revaluations in column 6 is statistically significant at the 10 percent level. However, the magnitudes of the coefficients on revaluations for non-financial corporations in columns 6 and 8 are approximately 6 times lower and 9 times lower, respectively, than the magnitudes of the coefficients on revaluations for financial corporations.

Table 8 presents results from the estimation of equation (7), which are consistent with the correlations reported in table 3. Revaluations of financial assets generally have no statistically significant explanatory effect on the other components of GDP. In addition, the r-squared values indicate that the explanatory power of revaluations is very low for aggregate measures and measures for financial corporations and non-financial corporations.

The results in tables 5 through 8 suggest that holding losses during the financial crisis consistently explain variation in corporate profits for financial corporations but much less so for non-financial corporations. Likewise, holding losses do not explain much variation in the other components of GDP, which are less likely to be subject to measurement error related to FVA practices, for either financial corporations or non-financial corporations. Overall, the statistical analyses confirm the empirical patterns observed in figures 2 through 7—i.e., variation in published quarterly corporate profits statistics for financial corporations appears to reflect holding losses during the 2008 financial crisis.

4.4. FV Gains Generated in Lieu of Explicit Service Fees

The secondary objective of this paper is to question the complete exclusion from production and income statistics of holding gains and losses related to some types of services. The point of considering an alternative can be demonstrated by looking at financial data reported to the SEC for firms classified to NAICS 523 (securities, commodity contracts, and other financial investments and related activities). Table 9 shows annual consolidated income statements for a small sample of firms classified to NAICS 523.[21]

Firms classified to NAICS 523 and included in table 9 engage primarily in three categories of activities: 1) investment banking, 2) wealth management, and 3) trading and investing. Investment banking activities include services such as financial advisory on mergers and acquisitions, corporate restructuring, and underwriting. Wealth management activities include services such as brokerage, investment advisory, financial planning, and asset management. Trading and investing activities include services such as market making, proprietary trading, and investing. In the case of investment banking and wealth management, revenues are generally generated by charging explicit service fees and commissions but may also include some FV gains. Revenues may also be generated through service fees and commissions for trading and investing activities. However, as discussed below, firms in NAICS 523 also appear to rely on FV gains in lieu of charging explicit service fees for services that they may not otherwise provide.

In table 9, investment banking revenues, service fees, commissions, and other revenues are all positive and relatively steady over the eight-year period. Investment banking revenues decline in 2008, which is a result of reduced economic activity according to the firms' annual

[21] The sample of firms includes Morgan Stanley, Goldman Sachs, and Merrill Lynch. The same point can be demonstrated with quarterly financial data, but annual data allow a more simplistic exhibition for the eight-year sample period.

reports. Service fees, commissions, and other revenues also change slightly in 2008. However, trading and investing revenues decline sharply in 2007 and 2008 and are actually negative in 2008. Trading and investing revenues are comprised primarily of FV gains and losses. As a result, the declines in 2007 and 2008 are attributable in large part to FV losses as explained in the notes to the firms' financial statements.

The effects of completely removing trading and investing revenues to avoid the inclusion of FV gains and losses are demonstrated in the italicized lines of table 9. Total non-interest revenues and net revenues decrease every year except 2008 due to negative trading and investing revenues in that year. Total non-interest expense does not change in any year except 2008 due to impairments that were booked as expenses. Most important, earnings before income tax are negative in each year as demonstrated at the bottom of table 9, which would presumably yield an inaccurate measure of economic profits since the firms would have no incentive to continue operating. In other words, at least some of the FV gains generated by trading and investing appear to be generated in lieu of charging explicit service fees. Thus, in contrast to the recommendations of the *SNA*, the complete removal of FV gains and losses is subject to question in the case of trading and investing activities.

From an economic accounting perspective, positive returns to the factors of production other than entrepreneurial capital should be offset by negative returns to entrepreneurial capital in 2007 and 2008. Likewise, positive returns to the factors of production other than entrepreneurial capital should be supplemented by positive returns to entrepreneurial capital in 2005, 2006, 2009, 2010, 2011, and 2012. Thus, if FV gains and losses are completely removed, corporate profits in the income accounts do not accurately reflect the returns accruing to entrepreneurial capital. While the focus here is on corporate profits, output and any related

value-added in the production account also need to include FV gains generated in lieu of charging explicit service fees in order to ensure a neutral effect on the statistical discrepancy.

5. Conclusions

This paper evaluates quarterly financial-based source data and the resulting published quarterly U.S. corporate profits series for financial institutions. The primary objectives are to identify FV gains and losses in the source data that may generate measurement error in quarterly corporate profits indicator series and to determine whether variation in the resulting published quarterly corporate profits statistics reflects holding losses during the 2008 financial crisis. A secondary objective of the paper is to question the complete exclusion from production and income statistics of holding gains and losses related to some types of services that appear to be compensated by FV gains in lieu of charging explicit service fees.

The core results reveal four observations. First, published quarterly U.S. corporate profits experience a disproportionate decline relative to other components of GDP during the recessionary period 2007Q4 to 2009Q2, which is driven largely by decreases for financial institutions. Second, adjustments required to remove FV losses for financial institutions are significant during the recessionary period – almost 20 percent of total corporate profits published in the U.S. NIPAs for 2008Q4 – and impairments for financial institutions are a significant source of FV losses. Third, the observed empirical patterns in the source data and in the resulting published series suggest that published quarterly corporate profits statistics for financial institutions appear to reflect holding losses during the financial crisis, which is confirmed by statistical analyses performed on the published quarterly corporate profits series. Finally, completely removing FV gains and losses for firms engaged in trading and investing activities yields persistently negative measures of earnings before income tax. Thus, firms engaged in

trading and investing activities appear to generate FV gains in lieu of charging explicit service fees.

The results indicate that source data currently available to measure quarterly corporate profits for financial institutions are inadequate without significant efforts made to adjust the data, which are often not practical or possible during a typical estimation cycle. The extent of the inadequacy was highlighted during the 2008 financial crisis. Thus, quarterly source data based on surveys designed for statistical purposes would be a valuable alternative to source data currently available to measure quarterly U.S. corporate profits for financial institutions.

The paper offers at least two avenues for future work. First, expanding the analysis to include annual tax-based source data will facilitate a complete evaluation of the underlying source data and a complete adjustment for published measures of U.S. corporate profits. While BEA has limited access to confidential tax-based source data, future work with a sample of data is feasible under recent agreements between BEA and the U.S. Internal Revenue Service. Second, the research agenda of the *SNA* suggests research on the concept of income for future revisions of the *SNA*, including a clarification of the role of holding gains and losses in production and income measures. Thus, a future paper that develops the idea of attributing an implicit service charge by financial institutions based on FV gains and losses related to some types of services would presumably be a meaningful contribution to the *SNA* research agenda.

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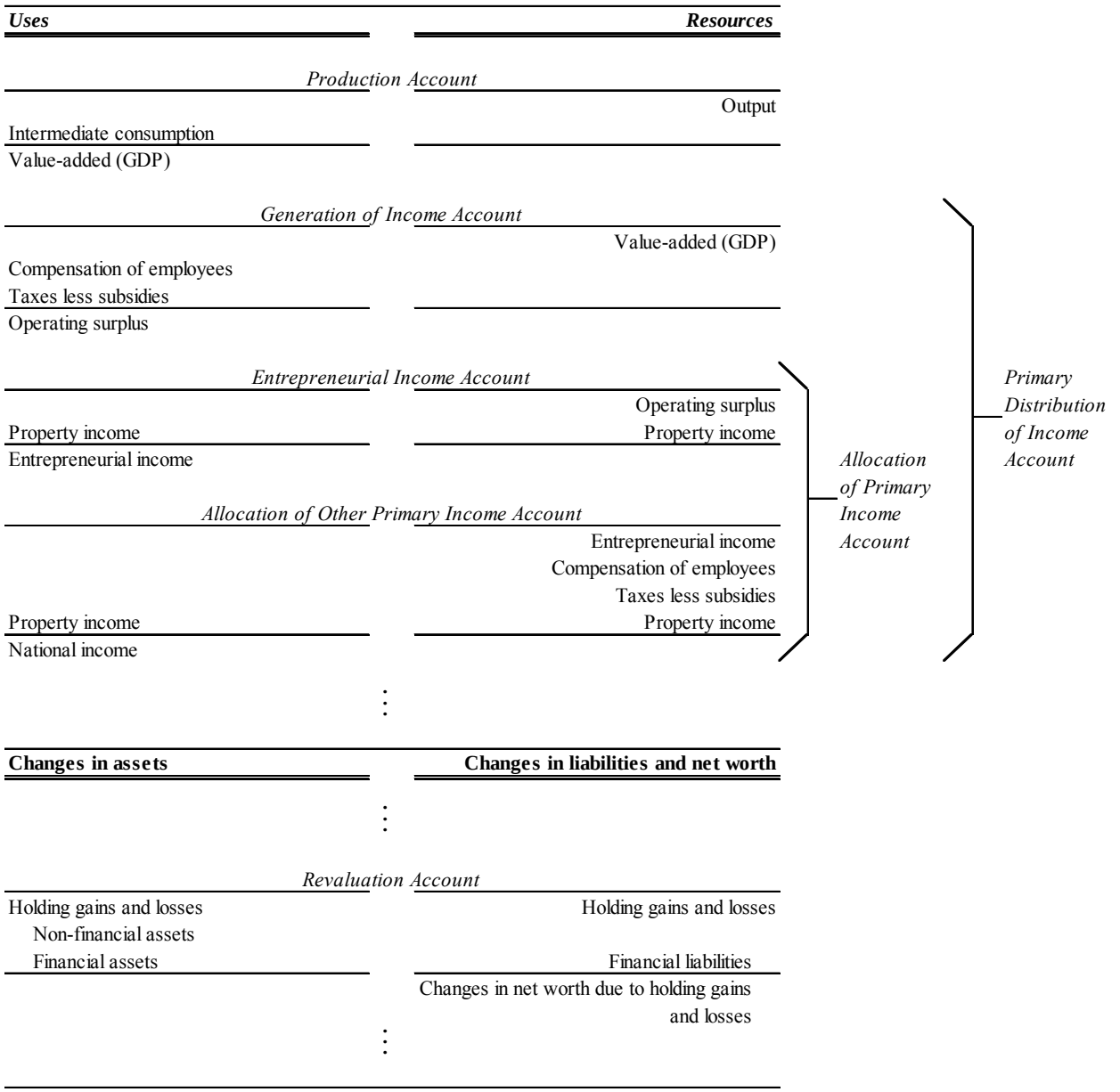
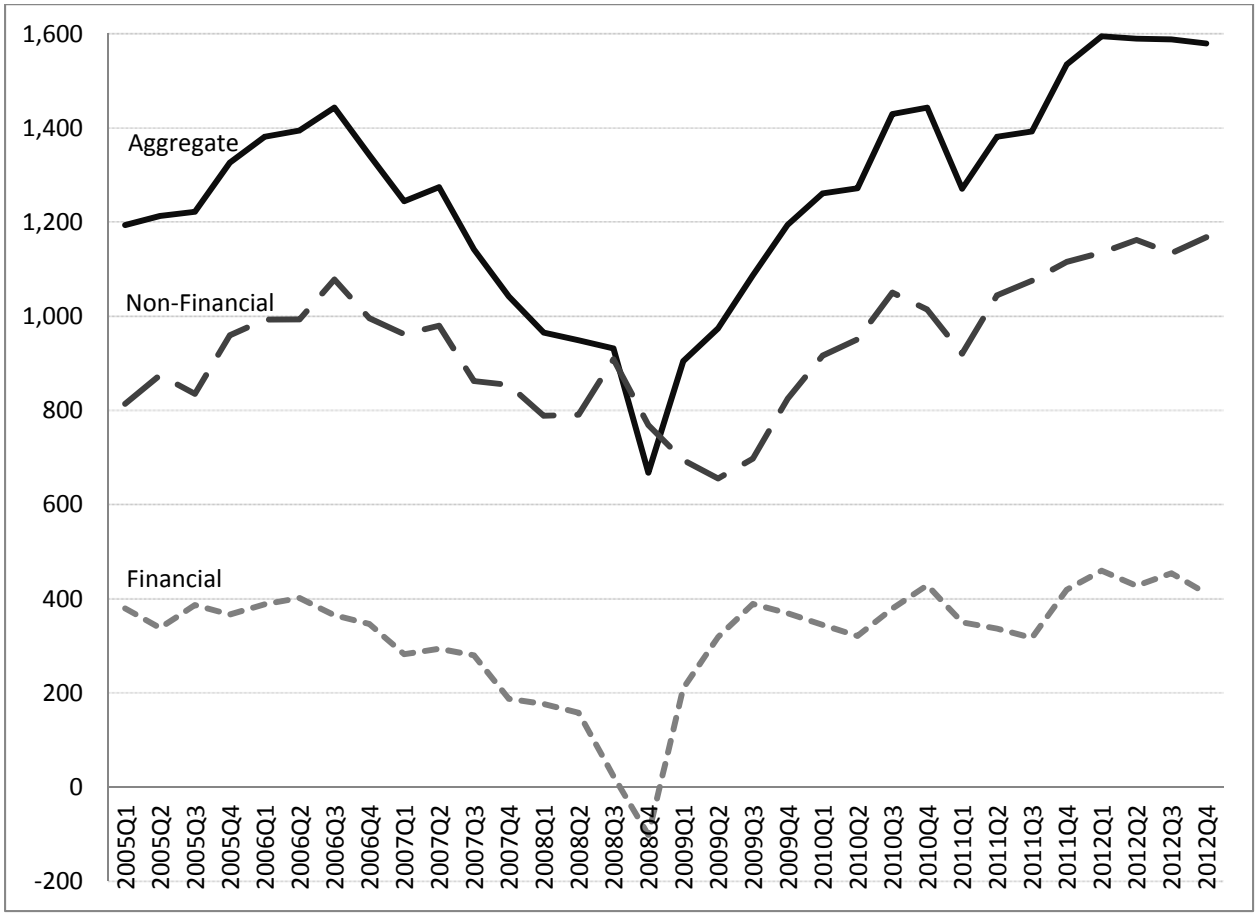
Figure 1
Summary Production, Primary Income, and Revaluation Accounts of the *SNA*



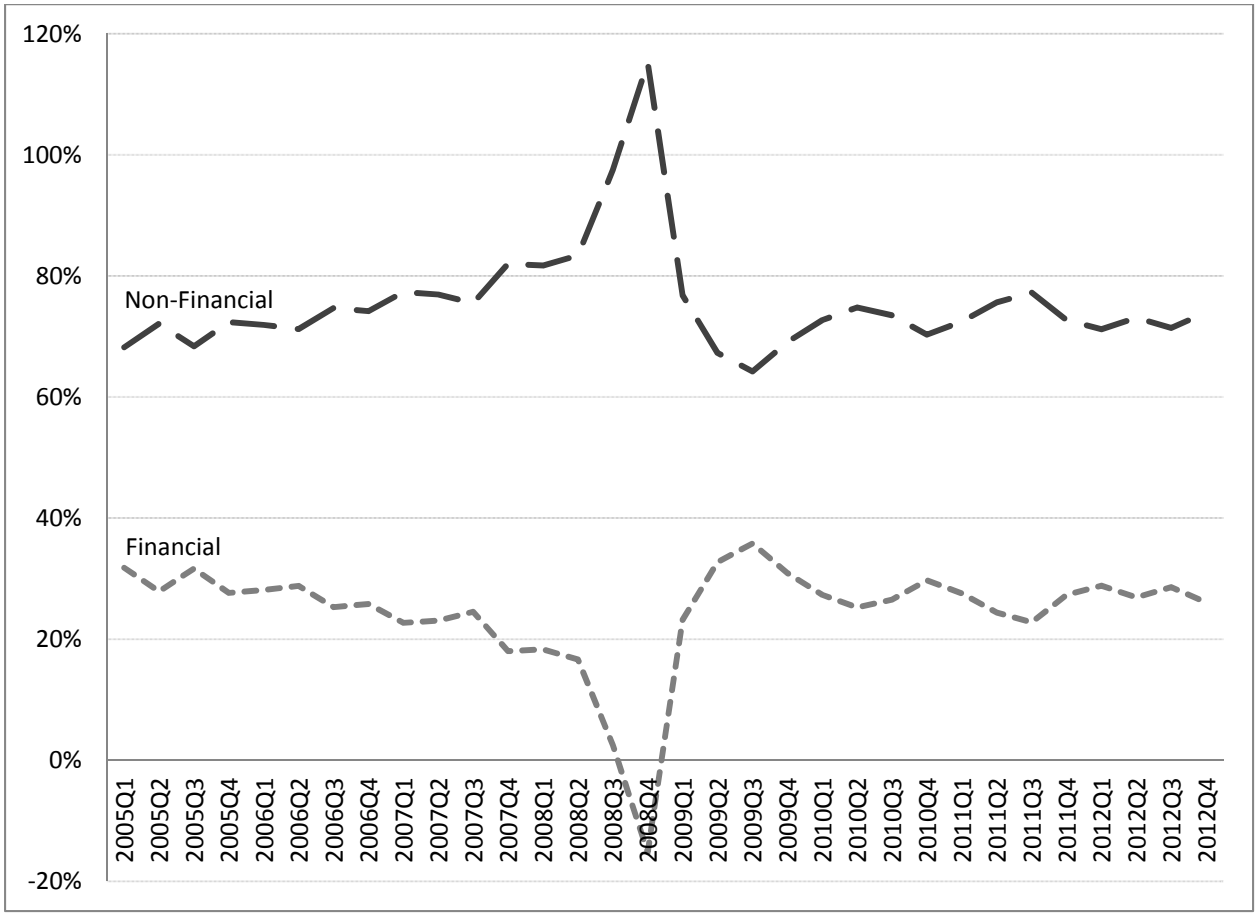
Source: Adapted by the author from the *SNA*.
Note: The summary is simplified in five ways. First, the summary is limited to gross measures without including net measures. Second, the summary omits potential flows to and from rest of world. Third, the summary does not distinguish institutional sectors. Fourth, the summary assumes output prices reflect taxes and subsidies on products and other taxes and subsidies on production (i.e., producers' prices). Fifth, the summary only reflects operating surplus that accrues to incorporated enterprises.

Figure 2
Published U.S. Domestic Corporate Profits with IVA and CCAdj ($bil)



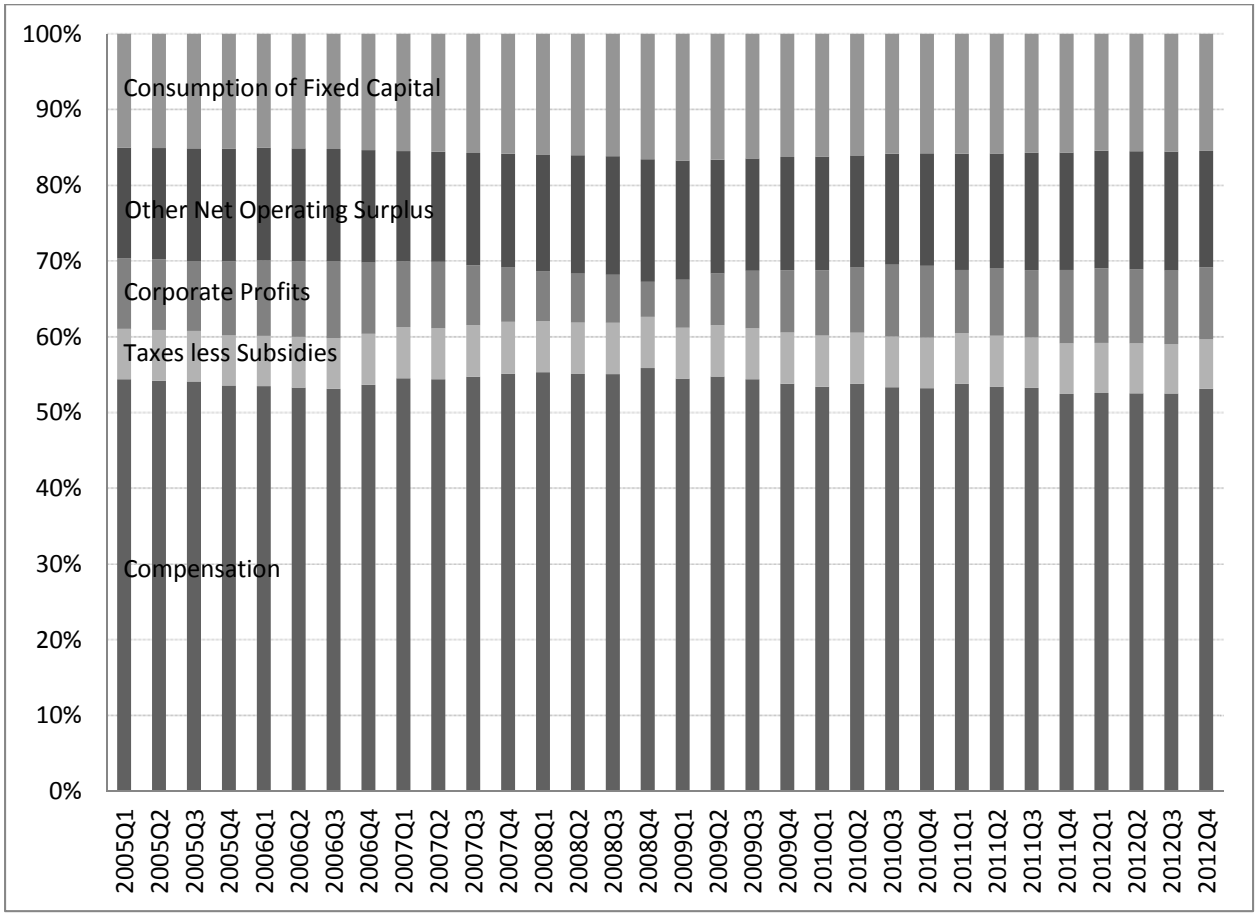
Source: Data are from BEA NIPA table 6.16.

Figure 3
Shares of Published U.S. Domestic Corporate Profits with IVA and CCAdj



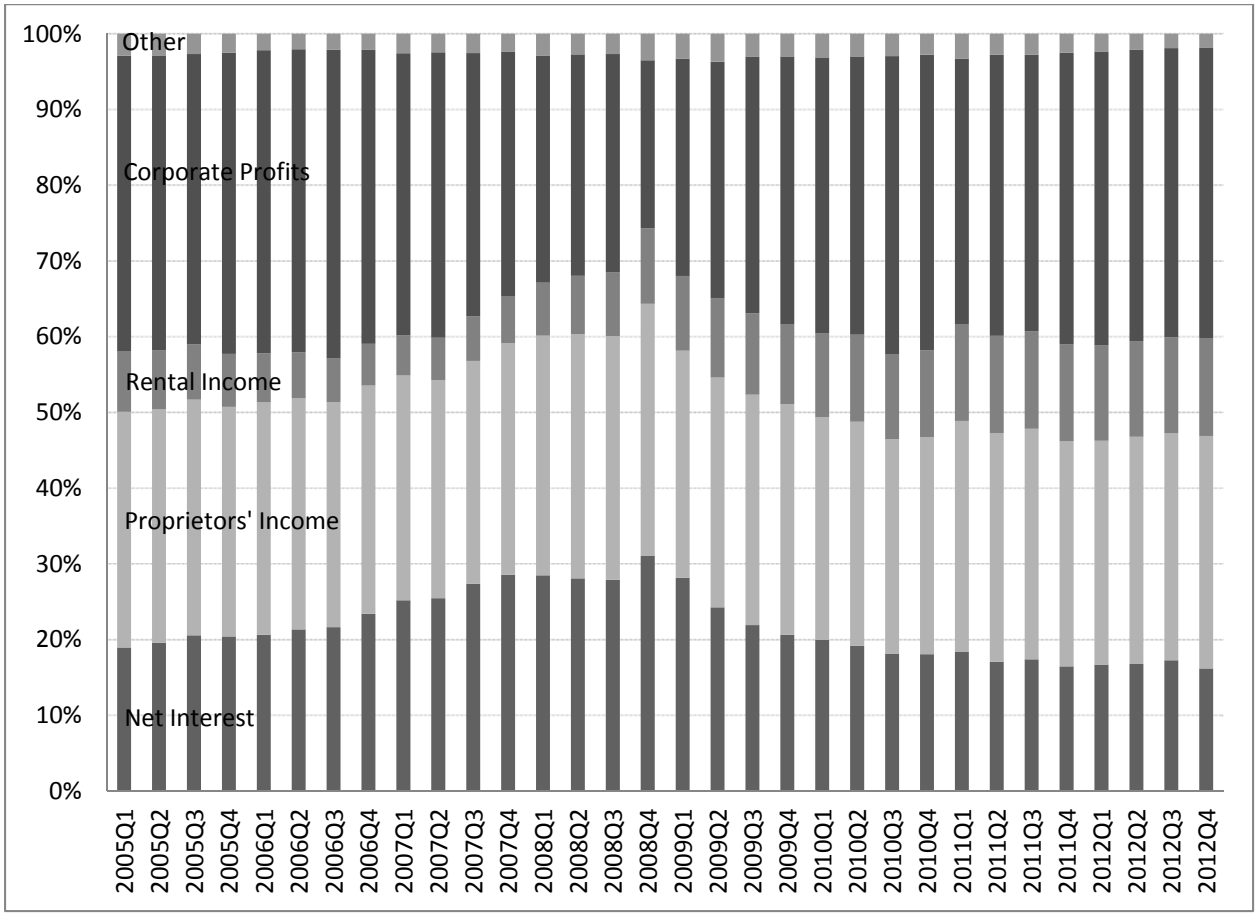
Source: Author's computations based on data from BEA NIPA table 6.16.

Figure 4
Component Shares of Published U.S. Income-Based GDP



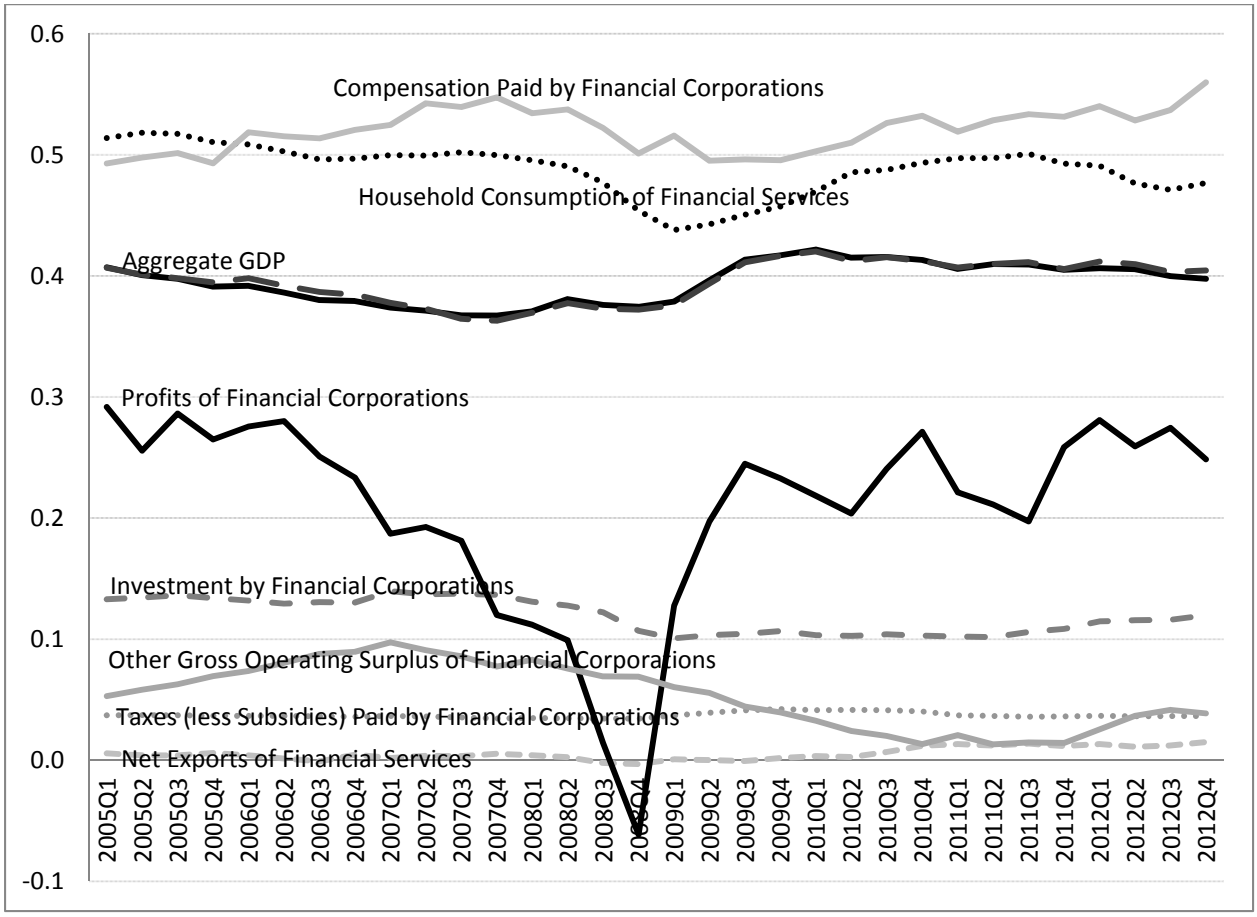
Source: Author's computations based on data from BEA NIPA table 1.10.

Figure 5
Component Shares of Published U.S. Net Operating Surplus



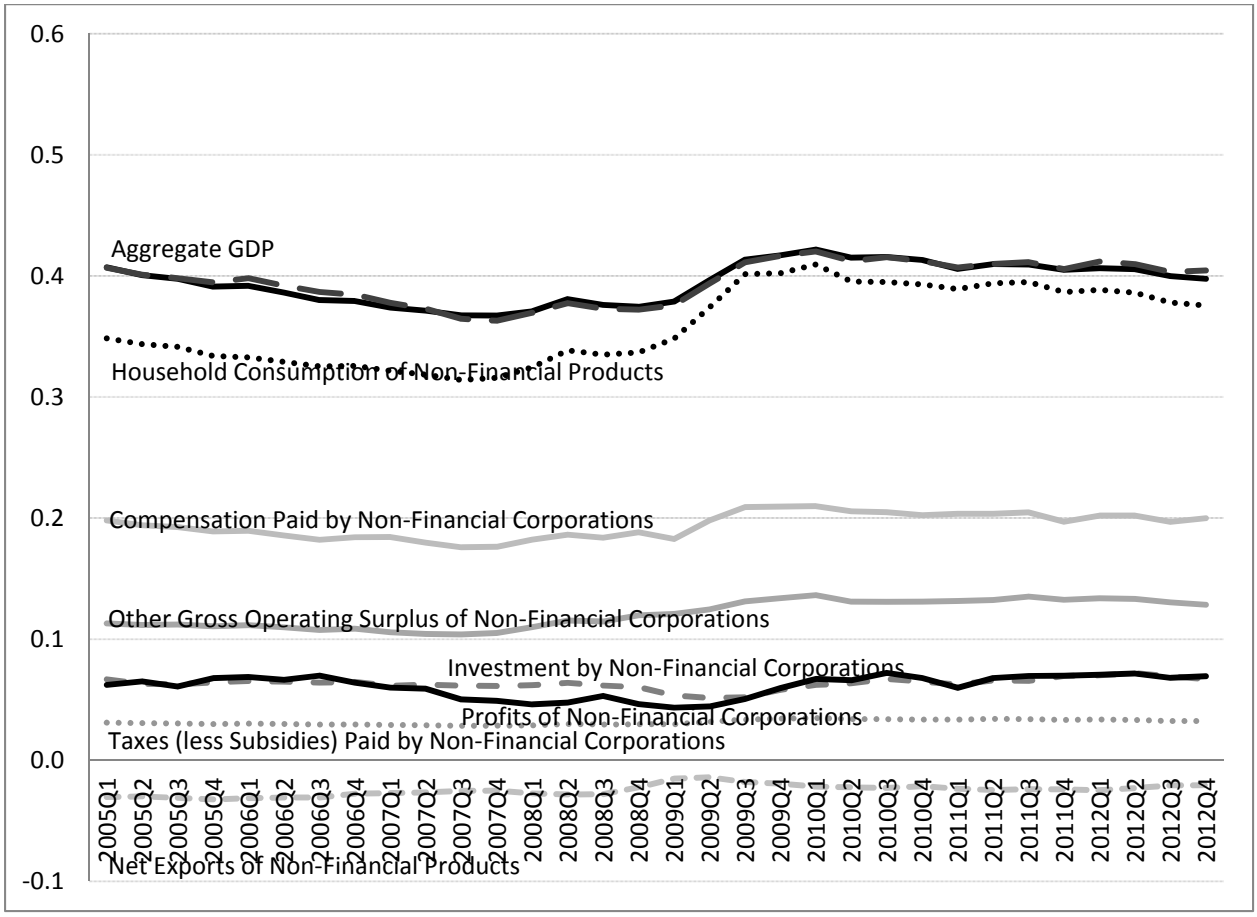
Source: Author's computations based on data from BEA NIPA table 1.10.

Figure 6
Components of GDP Relative to Non-Financial Assets for U.S. Financial Corporations



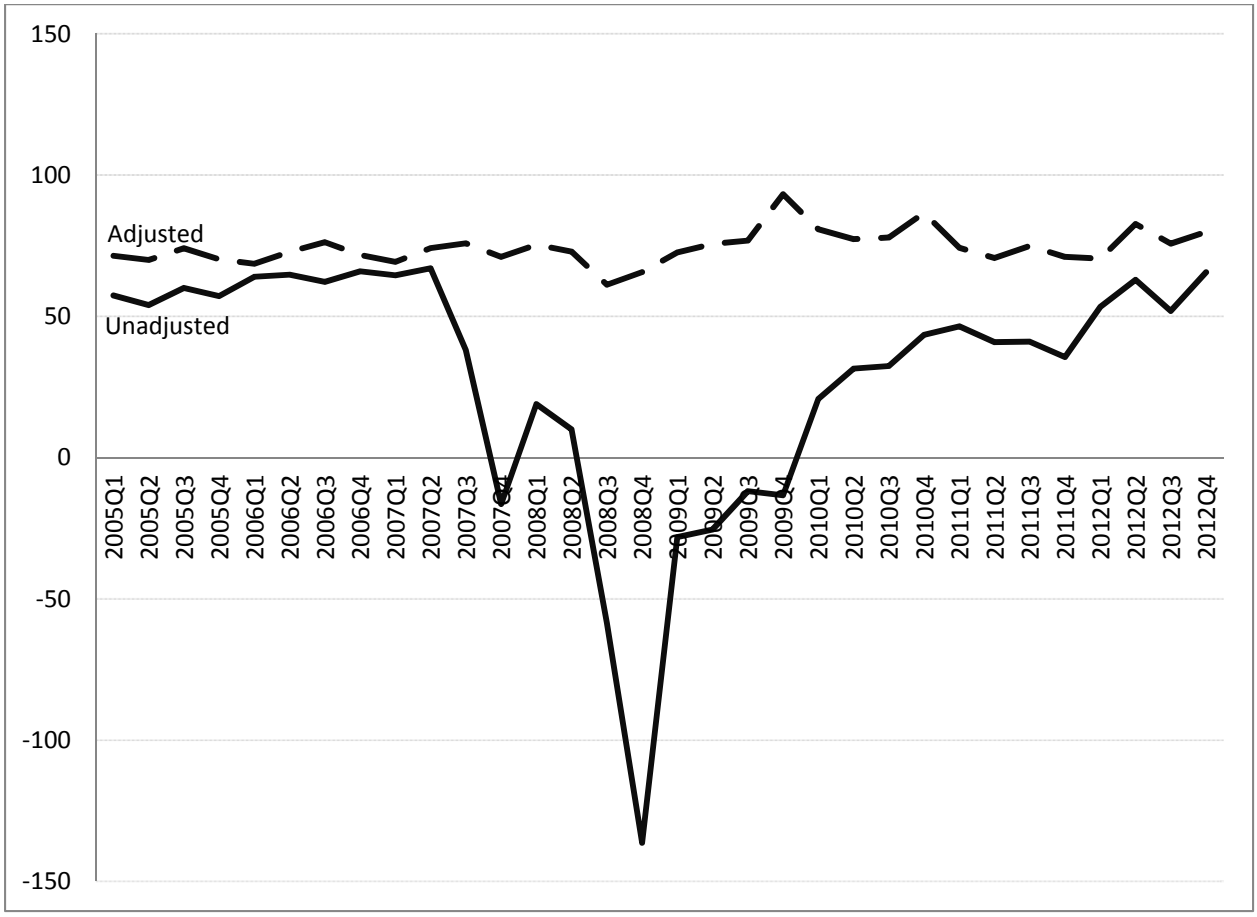
Source: Author's computations based on data from BEA NIPA tables 1.5.5 and 1.10, BEA IMA tables S.4.q, S.5.q, S.6.q, S.7.q, and S.8.q, and ITA table 1.2.
Note: The aggregate GDP series are scaled by non-financial assets for financial corporations, non-financial corporations (including non-financial, non-corporate business for all components except corporate profits), and general government. The components of GDP are scaled by non-financial assets for private financial corporations. Non-financial assets include structures, equipment, intellectual property products, and inventories, if relevant.

Figure 7
Components of GDP Relative to Non-Financial Assets for U.S. Non-Financial Corporations



Source: Author's computations based on data from BEA NIPA tables 1.5.5 and 1.10, BEA IMA tables S.4.q, S.5.q, S.6.q, S.7.q, and S.8.q, and ITA table 1.2.
Note: The aggregate GDP series are scaled by non-financial assets for financial corporations, non-financial corporations (including non-financial, non-corporate business), and general government. The components of GDP are scaled by non-financial assets for private non-financial corporations (including non-financial, non-corporate business for all components except corporate profits). Non-financial assets include structures, equipment, intellectual property products, and inventories, if relevant.

Figure 8
Aggregate GAAP-Based Net Income for NAICS 5221, 52229, 523, 52411, 52599 ($bil)



Source: Author's computations based on consolidated quarterly financial reports filed with FDIC (NAICS 5221) and the SEC (NAICS 52229, 523, 52411, 52599). See appendix table I.

Table 1
Summary of FVA under U.S. GAAP

Type of Financial Instrument	*Scope*	*Accounting Treatment with no Impairment*	*Accounting Treatment with OTTI*	*SFAS#*
HTM securities	Debt securities with intent and ability to hold to maturity	Amortized cost with gains and losses included in earnings	FV with losses included in earnings	115
Trading securities	Debt and equity securities bought and held to sell in the near term	FV with realized and unrealized gains and losses included in earnings	FV with losses included in earnings	115
AFS securities	Debt and equity securities not classified as HTM or trading	FV with unrealized gains and losses included in OCI and realized gains and losses included in earnings	FV with losses included in earnings	115
HFI loans	Direct investment in a loan that is held for investment	1) Amortized cost with realized gains and losses included in earnings or 2) FVO	Probable credit losses included in earnings	65
HFS loans	Direct investment in a loan that is held for sale	1) LCMV with realized and unrealized gains and losses included in earnings or 2) FVO	FV with losses included in earnings	65
Derivatives not designated as hedges	Financial assets and liabilities generated in a derivative	FV with gains and losses included in earnings	N/A	133
Derivatives designated as FV hedges	Derivatives to hedge exposures to change in FV of assets or liabilities	FV with gains and losses included in earnings to the extent the hedges are not effective at offsetting changes in FV	N/A	133
Derivatives designated as cash flow hedges	Derivatives to hedge exposures to variable cash flows of forecasted transactions	FV with ineffective portion of gains and losses reported in earnings and effective portion of gains and losses included initially in OCI and reclassified to earnings when the forecasted transaction affects earnings	N/A	133
Derivatives designated as foreign currency hedges	Derivatives to hedge exposures to changes in foreign currency exchange rates	FV with gains and losses included in OCI	N/A	133
Other financial assets and liabilities	Financial assets and liabilities elected for fair value	FVO	N/A	159

Source: Author's summary of *SFAS* and *ASC*.

Table 2
Summary Statistics

	Mean	*Std. Dev.*	*Rel. Std. Dev.*	*Min.*	*Max.*
Panel A: Relative Aggregate Measures					
Consumption	0.367	0.030	8.2	0.324	0.413
Investment	0.066	0.005	6.8	0.055	0.074
Net Exports	-0.023	0.005	N/A	-0.030	-0.013
Compensation	0.213	0.011	5.1	0.195	0.229
Taxes less Subsidies	0.032	0.002	6.6	0.029	0.035
Corporate Profits	0.075	0.015	19.5	0.037	0.090
Other Gross Operating Surplus	0.117	0.009	7.7	0.103	0.129
Revaluations of Financial Assets	0.001	0.014	N/A	-0.034	0.020
Panel B: Relative Measures for Financial Corporations					
Consumption	0.488	0.021	4.3	0.438	0.518
Investment	0.119	0.014	11.8	0.101	0.140
Net Exports	0.005	0.005	N/A	-0.003	0.015
Compensation	0.520	0.018	3.5	0.493	0.560
Taxes less Subsidies	0.037	0.002	6.0	0.034	0.042
Corporate Profits	0.208	0.081	N/A	-0.061	0.292
Other Gross Operating Surplus	0.054	0.027	50.0	0.013	0.097
Revaluations of Financial Assets	0.001	0.016	N/A	-0.039	0.023
Panel C: Relative Measures for Non-Financial Corporations					
Consumption	0.359	0.032	8.9	0.314	0.409
Investment	0.063	0.005	7.4	0.051	0.072
Net Exports	-0.025	0.005	N/A	-0.032	-0.014
Compensation	0.194	0.010	5.3	0.176	0.210
Taxes less Subsidies	0.031	0.002	6.7	0.028	0.035
Corporate Profits	0.061	0.009	15.1	0.043	0.072
Other Gross Operating Surplus	0.121	0.011	9.4	0.104	0.136
Revaluations of Financial Assets	-0.000	0.005	N/A	-0.010	0.012

Note: The sample period includes 32 quarters for 2005-2012. Aggregate components of GDP in panel A are scaled by non-financial assets for financial corporations and non-financial corporations (including non-financial, non-corporate business for all components except corporate profits). Aggregate revaluations of financial assets in panel A are scaled by financial assets for financial corporations and non-financial corporations. Components of GDP for financial corporations in panel B are scaled by non-financial assets for financial corporations. Revaluations of financial assets for financial corporations in panel B are scaled by financial assets for financial corporations. Components of GDP for non-financial corporations in panel C are scaled by non-financial assets for non-financial corporations (including non-financial, non-corporate business for all components except corporate profits). Revaluations of financial assets for non-financial corporations in panel C are scaled by financial assets for non-financial corporations.

Table 3
Correlation Coefficients

		(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
Panel A: Relative Aggregate Measures									
(1)	Consumption	1.00							
(2)	Investment	0.02	1.00						
(3)	Net Exports	0.62***	-0.48***	1.00					
(4)	Compensation	0.98***	0.03	0.55***	1.00				
(5)	Taxes less Subsidies	0.99***	0.07	0.55***	0.98***	1.00			
(6)	Corporate Profits	0.46***	0.59***	-0.15	0.49***	0.53***	1.00		
(7)	Other Gross Operating Surplus	0.96***	0.02	0.69***	0.92***	0.93***	0.33*	1.00	
(8)	Revaluations of Financial Assets	0.19	0.02	0.07	0.20	0.23	0.52***	0.06	1.00
Panel B: Relative Measures for Financial Corporations									
(1)	Consumption	1.00							
(2)	Investment	0.65***	1.00						
(3)	Net Exports	0.28	-0.23	1.00					
(4)	Compensation	0.16	0.13	0.53***	1.00				
(5)	Taxes less Subsidies	-0.33*	-0.55***	-0.04	-0.43**	1.00			
(6)	Corporate Profits	0.37**	0.06	0.48***	-0.09	0.42**	1.00		
(7)	Other Gross Operating Surplus	0.18	0.80***	-0.65***	-0.03	-0.50***	-0.31*	1.00	
(8)	Revaluations of Financial Assets	0.07	0.03	0.20	-0.04	0.42**	0.67***	-0.11	1.00
Panel C: Relative Measures for Non-Financial Corporations									
(1)	Consumption	1.00							
(2)	Investment	0.10	1.00						
(3)	Net Exports	0.60***	-0.45***	1.00					
(4)	Compensation	0.96***	0.12	0.45***	1.00				
(5)	Taxes less Subsidies	0.99***	0.20	0.49***	0.96***	1.00			
(6)	Corporate Profits	0.39**	0.76***	-0.29*	0.45***	0.50***	1.00		
(7)	Other Gross Operating Surplus	0.97***	0.15	0.64***	0.90***	0.95***	0.35**	1.00	
(8)	Revaluations of Financial Assets	-0.25	0.04	-0.16	-0.23	-0.24	0.11	-0.29*	1.00

Note: The sample period includes 32 quarters for 2005-2012. Statistical significance at the 1-percent, 5-percent, and 10-percent levels are indicated by ***, **, and *, respectively. Relative measures are calculated as described in the note for table 2.

Table 4
Mean Comparison Tests on Relative Measures for Financial and Non-Financial Corporations

	Financial ($\mu_{(1)}$)	*Non-Financial* ($\mu_{(2)}$)	*P-Value* H_0: $\mu_{(1)} - \mu_{(2)} = 0$ H_A: $\mu_{(1)} - \mu_{(2)} \neq 0$
Consumption	0.488	0.359	0.000
Investment	0.119	0.063	0.000
Net Exports	0.005	-0.025	0.000
Compensation	0.520	0.194	0.000
Taxes less Subsidies	0.037	0.031	0.000
Corporate Profits	0.208	0.061	0.000
Other Gross Operating Surplus	0.054	0.121	0.000
Revaluations of Financial Assets	0.001	- 0.000	0.568

Note: The sample period includes 32 quarters for 2005-2012. Components of GDP for financial corporations are scaled by non-financial assets for financial corporations. Revaluations of financial assets for financial corporations are scaled by financial assets for financial corporations. Components of GDP for non-financial corporations are scaled by non-financial assets for non-financial corporations (including non-financial, non-corporate business for all components except corporate profits). Revaluations of financial assets for non-financial corporations are scaled by financial assets for non-financial corporations.

Table 5
Estimation of Corporate Profits using Relative Aggregate Measures

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
Consumption		0.180***						0.287***	
		(0.060)						(0.049)	
Investment			1.865***					1.268***	
			(0.218)					(0.233)	
Net Exports				-0.620				-1.166***	
				(0.464)				(0.409)	
Compensation					0.541***				-0.736
					(0.172)				(0.955)
Taxes less Subsidies						3.027***			12.909**
						(0.788)			(5.982)
Other Gross Operating Surplus							0.483**		-1.485**
							(0.201)		(0.644)
Revaluations of Financial Assets	0.559**	0.482**	0.547***	0.574**	0.474**	0.450**	0.539**	0.456***	0.273
	(0.223)	(0.193)	(0.166)	(0.221)	(0.195)	(0.183)	(0.210)	(0.113)	(0.174)
Intercept	0.074***	0.008	-0.050***	0.060***	-0.041	-0.022	0.018	-0.142***	-0.006
	(0.000)	(0.022)	(0.015)	(0.012)	(0.037)	(0.025)	(0.023)	(0.025)	(0.059)
Adjusted R^2	0.269	0.402	0.605	0.306	0.423	0.449	0.357	0.779	0.556
Number of Observations	32	32	32	32	32	32	32	32	32

Note: Newey-West (1987) standard errors are reported in parentheses. Statistical significance at the 1-percent, 5-percent, and 10-percent levels are indicated by ***, **, and *, respectively. Corporate profits are scaled by non-financial assets for financial corporations and non-financial corporations. Other aggregate components of GDP are scaled by non-financial assets for financial corporations and non-financial corporations (including non-financial, non-corporate business). Aggregate revaluations of financial assets are scaled by financial assets for financial corporations and non-financial corporations.

Table 6
Estimation of Corporate Profits using Relative Measures for Financial Corporations

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
Consumption		1.221***						1.256*	
		(0.004)						(0.667)	
Investment			0.253					-0.651	
			(0.691)					(1.029)	
Net Exports				5.638***				3.793*	
				(1.736)				(2.227)	
Compensation					-0.260				-0.329
					(0.631)				(0.779)
Taxes less Subsidies						5.784			-0.468
						(3.821)			(5.919)
Other Gross Operating Surplus							-0.724**		-0.751**
							(0.311)		(0.359)
Revaluations of Financial Assets	3.429***	3.309***	3.424***	3.066***	3.416***	3.085***	3.299***	3.076***	3.305***
	(1.010)	(0.809)	(1.020)	(0.699)	(1.063)	(0.986)	(0.920)	(0.625)	(0.916)
Intercept	0.203***	-0.392**	0.173**	0.174***	0.339	-0.011	0.243***	-0.352	0.433
	(0.012)	(0.191)	(0.083)	(0.016)	(0.331)	(0.143)	(0.019)	(0.232)	(0.594)
Adjusted R^2	0.455	0.557	0.457	0.581	0.458	0.476	0.512	0.640	0.517
Number of Observations	32	32	32	32	32	32	32	32	32

Note: Newey-West (1987) standard errors are reported in parentheses. Statistical significance at the 1-percent, 5-percent, and 10-percent levels are indicated by ***, **, and *, respectively. Corporate profits and other components of GDP for financial corporations are scaled by non-financial assets for financial corporations. Revaluations of financial assets for financial corporations are scaled by financial assets for financial corporations.

Table 7
Estimation of Corporate Profits using Relative Measures for Non-Financial Corporations

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
Consumption		0.129**						0.183***	
		(0.048)						(0.029)	
Investment			1.497***					0.993***	
			(0.158)					(0.133)	
Net Exports				-0.557				-0.821***	
				(0.358)				(0.199)	
Compensation					0.448***				-0.757
					(0.155)				(0.521)
Taxes less Subsidies						2.449***			11.526***
						(0.600)			(3.514)
Other Gross Operating Surplus							0.341***		-1.095***
							(0.124)		(0.388)
Revaluations of Financial Assets	0.214	0.430	0.159	0.125	0.438	0.477*	0.454	0.351***	0.300
	(0.315)	(0.293)	(0.241)	(0.332)	(0.286)	(0.258)	(0.312)	(0.126)	(0.284)
Intercept	0.061***	0.015	-0.034***	0.047***	-0.026	-0.016	0.020	-0.088***	-0.022
	(0.002)	(0.017)	(0.010)	(0.010)	(0.030)	(0.019)	(0.015)	(0.010)	(0.032)
Adjusted R^2	0.012	0.199	0.591	0.089	0.251	0.308	0.172	0.776	0.484
Number of Observations	32	32	32	32	32	32	32	32	32

Note: Newey-West (1987) standard errors are reported in parentheses. Statistical significance at the 1-percent, 5-percent, and 10-percent levels are indicated by ***, **, and *, respectively. Corporate profits for non-financial corporations are scaled by non-financial assets for non-financial corporations. Other components of GDP for non-financial corporations are scaled by non-financial assets for non-financial corporations (including non-financial, non-corporate business). Revaluations of financial assets for non-financial corporations are scaled by financial assets for non-financial corporations.

Table 8
Estimation of GDP Relative Components other than Corporate Profits

Dependent Variable:	*(1) Consumption*	*(2) Investment*	*(3) Net Exports*	*(4) Compensation*	*(5) Taxes less Sub*	*(6) Other GOS*
Panel A: Relative Aggregate Measures						
Revaluations of	0.428	0.006	0.024	0.157	0.036	0.043
Financial Assets	(0.388)	(0.068)	(0.055)	(0.138)	(0.027)	(0.106)
Intercept	0.366***	0.066***	-0.023***	0.213***	0.032***	0.116***
	(0.005)	(0.001)	(0.001)	(0.002)	(0.000)	(0.002)
Adjusted R^2	0.037	0.000	0.005	0.039	0.054	0.004
Number of Observations	32	32	32	32	32	32
Panel B: Relative Measures for Financial Corporations						
Revaluations of	0.098	0.022	0.064	-0.052	0.060**	-0.180
Financial Assets	(0.275)	(0.149)	(0.073)	(0.189)	(0.024)	(0.310)
Intercept	0.488***	0.119***	0.005***	0.521***	0.037***	0.054***
	(0.004)	(0.003)	(0.001)	(0.003)	(0.000)	(0.005)
Adjusted R^2	0.006	0.001	0.039	0.002	0.177	0.011
Number of Observations	32	32	32	32	32	32
Panel C: Relative Measures for Non-Financial Corporations						
Revaluations of	-1.670	0.037	-0.161	-0.500	-0.107	-0.705*
Financial Assets	(1.183)	(0.148)	(0.151)	(0.381)	(0.080)	(0.359)
Intercept	0.359***	0.063***	-0.025***	0.194***	0.031***	0.121***
	(0.006)	(0.001)	(0.001)	(0.002)	(0.000)	(0.002)
Adjusted R^2	0.061	0.001	0.026	0.052	0.057	0.086
Number of Observations	32	32	32	32	32	32

Note: Newey-West (1987) standard errors are reported in parentheses. Statistical significance at the 1-percent, 5-percent, and 10-percent levels are indicated by ***, **, and *, respectively. Relative measures are calculated as described in the note for table 2.

Table 9
GAAP-Based Income Statement Data with FVA Adjustments for NAICS 523 ($bil)

	2005	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*
Revenues								
Investment Banking	11.0	15.0	19.5	13.0	15.6	15.2	14.5	14.6
Trading and Investing	27.0	44.8	19.0	-28.4	41.7	44.4	32.7	30.4
Service Fees and Commissions	28.7	29.3	33.3	32.2	28.5	31.3	33.1	31.9
Other	0.5	0.5	1.2	6.1	0.8	1.2	0.2	0.6
Total Non-Interest Revenues	67.3	89.7	72.9	22.9	86.6	92.2	80.5	77.5
Less: FVA Revenue Adjustment	*27.3*	*47.9*	*19.2*	*-27.0*	*40.6*	*44.7*	*31.6*	*29.7*
Gains on Trading Securities	*24.6*	*41.4*	*19.5*	*-22.9*	*36.6*	*38.9*	*29.7*	*27.3*
Other Gains	*2.7*	*6.5*	*-0.4*	*-4.1*	*4.7*	*6.0*	*2.0*	*2.4*
Recoveries (Impairments)	*0.0*	*0.0*	*0.0*	*0.0*	*-0.7*	*-0.2*	*-0.1*	*0.0*
Equals: Adjusted Total Revenues	*39.9*	*41.8*	*53.7*	*49.8*	*46.0*	*47.5*	*48.9*	*47.8*
Interest and Dividends Income	76.0	117.8	163.0	109.7	36.9	29.0	28.6	23.5
Interest Expense	64.4	108.2	150.7	98.2	25.0	22.8	23.7	20.5
Net Interest Income	11.6	9.6	12.3	11.5	11.9	6.1	4.9	3.0
Net Revenues	78.9	99.3	85.2	34.4	98.5	98.3	85.4	80.5
Less: FVA Revenue Adjustment	*27.3*	*47.9*	*19.2*	*-27.0*	*40.6*	*44.7*	*31.6*	*29.7*
Equals: Adjusted Net Revenues	*51.6*	*51.4*	*66.1*	*61.3*	*57.9*	*53.6*	*53.8*	*50.8*
Non-Interest Expenses								
Compensation and Benefits	35.4	47.3	52.6	38.0	44.0	46.8	44.3	43.2
Occupancy and Equipment	3.2	3.3	3.9	4.6	5.5	5.9	5.8	5.4
Brokerage and Exchange Fees	3.0	4.4	5.8	6.1	4.6	4.7	5.2	4.7
Communication and Technology	3.5	3.5	3.9	4.2	4.1	4.4	4.4	4.3
Marketing and Business Development	2.1	1.8	2.2	1.9	1.2	1.5	1.7	1.6
Professional Services	3.1	3.3	3.9	3.7	3.0	3.7	3.8	3.7
Other	4.3	4.2	4.7	13.1	6.6	8.2	12.5	8.2
Total Non-Interest Expenses	54.7	67.8	77.0	71.6	69.1	75.2	77.8	71.0
Less: FVA Expense Adjustment	*0.0*	*0.0*	*0.0*	*7.2*	*0.0*	*0.0*	*0.0*	*0.0*
Recoveries (Impairments)	*0.0*	*0.0*	*0.0*	*7.2*	*0.0*	*0.0*	*0.0*	*0.0*
Equals: Adjusted Total Expenses	*54.7*	*67.8*	*77.0*	*64.4*	*69.1*	*75.2*	*77.8*	*71.0*
Earnings before Income Tax	24.2	31.5	8.2	-37.2	29.4	23.1	7.7	9.5
Less: FVA Revenue Adjustment	*27.3*	*47.9*	*19.2*	*-27.0*	*40.6*	*44.7*	*31.6*	*29.7*
Plus: FVA Expense Adjustment	*0.0*	*0.0*	*0.0*	*7.2*	*0.0*	*0.0*	*0.0*	*0.0*
Adjusted Earnings before Income Tax	*-3.1*	*-16.4*	*-11.0*	*-3.0*	*-11.1*	*-21.6*	*-23.9*	*-20.2*

Source: Author's computations based on consolidated annual financial reports filed with the SEC.

Appendix Table I
Adjustments to GAAP-Based Net Income for NAICS 5221, 52229, 523, 52411, 52599 ($bil)

	05Q1	*05Q2*	*05Q3*	*05Q4*	*06Q1*	*06Q2*	*06Q3*	*06Q4*
Gains on Trading Securities	13.1	7.7	14.1	11.0	19.0	18.1	14.8	16.7
Gains on Investments	-1.7	-0.7	-1.6	-1.9	0.8	1.7	-4.7	-1.8
Other Gains	0.8	1.0	2.4	4.1	0.9	1.7	3.4	4.6
Recoveries (Impairments)	2.0	2.8	2.5	2.3	2.2	2.5	2.9	2.1
Provisions for Credit Losses	-8.4	-8.9	-12.3	-11.3	-7.7	-8.6	-10.0	-12.8
Income Tax Benefit (Expense)	-19.7	-17.9	-19.1	-17.3	-19.9	-23.6	-20.4	-14.5
Total Adjustments	-14.0	-16.0	-14.1	-13.0	-4.6	-8.1	-14.1	-5.7

	07Q1	*07Q2*	*07Q3*	*07Q4*	*08Q1*	*08Q2*	*08Q3*	*08Q4*
Gains on Trading Securities	26.2	24.6	3.8	-41.9	-1.9	-2.8	3.2	-46.3
Gains on Investments	-0.4	2.9	-3.4	-12.2	-9.1	-3.8	-24.9	-50.3
Other Gains	0.5	0.2	-2.7	-2.5	-1.3	-1.0	-0.9	-0.5
Recoveries (Impairments)	2.8	2.4	1.3	-2.9	0.9	-2.2	-7.9	-30.3
Provisions for Credit Losses	-12.9	-15.2	-23.6	-42.3	-42.8	-54.5	-69.4	-95.1
Income Tax Benefit (Expense)	-20.9	-22.1	-13.1	14.4	-2.3	1.5	-19.9	20.5
Total Adjustments	-4.7	-7.1	-37.8	-87.5	-56.4	-62.9	-119.8	-202.0

	09Q1	*09Q2*	*09Q3*	*09Q4*	*10Q1*	*10Q2*	*10Q3*	*10Q4*
Gains on Trading Securities	24.8	15.4	18.7	7.3	28.9	19.6	14.7	5.9
Gains on Investments	-6.1	-1.8	-6.6	-2.0	-4.1	-0.2	1.9	5.7
Other Gains	0.0	-6.1	-0.1	0.9	1.2	1.4	-0.8	2.0
Recoveries (Impairments)	-16.9	-6.2	-3.1	-29.2	-0.2	-0.4	-2.2	-3.2
Provisions for Credit Losses	-98.1	-101.4	-98.8	-88.8	-76.6	-55.8	-48.6	-43.1
Income Tax Benefit (Expense)	-4.4	-0.9	1.2	5.3	-9.3	-10.4	-10.4	-10.4
Total Adjustments	-100.8	-101.1	-88.7	-106.6	-60.1	-45.8	-45.4	-43.1

	11Q1	*11Q2*	*11Q3*	*11Q4*	*12Q1*	*12Q2*	*12Q3*	*12Q4*
Gains on Trading Securities	22.4	17.7	17.3	4.9	16.5	10.5	11.6	11.4
Gains on Investments	0.2	-3.8	-7.0	0.8	3.8	-2.7	1.4	1.4
Other Gains	1.7	1.1	-0.3	0.5	1.0	1.4	0.2	-0.1
Recoveries (Impairments)	-2.5	-0.7	0.6	-1.7	-1.8	-0.3	-5.5	-1.0
Provisions for Credit Losses	-35.5	-30.0	-30.4	-30.6	-20.8	-13.7	-19.0	-15.0
Income Tax Benefit (Expense)	-14.1	-14.1	-14.1	-9.5	-15.8	-14.9	-12.5	-11.1
Total Adjustments	-27.8	-29.8	-33.9	-35.5	-17.0	-19.7	-23.8	-14.3

Source: Author's computations based on consolidated quarterly financial reports filed with FDIC (NAICS 5221) and the SEC (NAICS 52229, 523, 52411, 52599).
Note: "Other Gains" includes extraordinary items, discontinued operations, and minority interests.