Towards Completing the Picture of Financial Activity in National Accounts

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For Presentation at "W(h)ither the SNA?"

Conference sponsored by the

International Association for Research in Income and Wealth and the OECD

Paris, April 16-17

The financial crisis has highlighted the need for economic statistics to provide more complete information on the activities and positions of financial corporations. Progress towards this objective is proceeding on many fronts, including work on the objectives laid out in the recommendations of the G20 Data Gaps Initiative (Burgi-Schmelz *et al.*, 2011, and Heath, 2013). Recommendation 15 focuses on compiling a sequence of "sectoral accounts" running from the production account to the balance sheet. Eurostat publishes annual and quarterly sectoral accounts for European countries, including financial transactions and financial balance sheets, while the ECB provides quarterly sectoral accounts for euro area countries. In the US statistical system the sectoral accounts are known as "integrated macroeconomic accounts", but in the research literature the US implementation of the sectoral accounts has also been called the "US-SNA" (Eichner, Kohn and Palumbo, 2015) or just "the integrated accounts" (Jorgenson and Landefeld, 2006).

In this paper, we propose some changes to the SNA to provide more complete information on financial transactions. Providing more complete information will often require presentation of alternative definitions or approaches in supplementary lines or supplementary tables. Supplementary information has a fundamental role in presenting a complete picture of macroeconomic developments. The internal consistency requirements of the core system of accounts have great advantages for organizing the data in a logically coherent framework and for detection of errors and omissions, but they limit the flexibility of the core system to incorporate new kinds of information and to depict a transaction differently when the perspective changes from one side of that transaction to the other. Different questions require different answers, so to provide the information that is precisely suited to answering the full range of valid questions flexibility is required. The need for a supplementary or alternative measure should thus not be understood as implying that measure in the core national accounts is, in some sense, wrong.

Our proposals concern four areas: holding gains, the inclusion of saving by corporations in the income of their owners, creditors' losses from bad debt, and accounting for deposit insurance. The discussion of holding gains include changes to the core accounts implied by the discussion of clarifying the line between price changes that count as holding gains and price changes that arise because of a change in an item's characteristics or condition brought about by production. Similarly, the discussion of expected losses from default implies a change in the core accounts in its treatment of borrower FISIM.

I. HOLDING GAINS AND LOSSES

A. Reporting Disposable Income plus Holding Gains

Holding gains are excluded from the definition of income in national accounts because they do not arise from production, or even a transaction in the case of unrealized holding gains. Yet activities that generate holding gains have become a central part of operations of financial institutions, as traditional financial intermediation has receded in importance (Stauffer and Meier, 2001). Indeed, a diagnosis of a decrease in profitability may paradoxically occur just when corporations are benefitting from large holding gains on their productive assets if the analysis of their economic is based on a measure of income that excludes holding gains (Durant, Cette and Villetelle, 2011).

Furthermore, corporations often include realized holding gains in their reported income from operations, and difficulties in distinguishing holding gains are a factor contributing to the statistical discrepancy between the income-approach and production-approach estimates of GDP (Rassier, 2013). Also holding gains can be used to cover expenses of paying pension benefits or providing insurance coverage, and they are treated by households as at least partly substitutable for ordinary income. Finally, holding gains are a major source of change in wealth for households and realized holding gains are responsible for some of income taxes that are subtracted to arrive at disposable income.

The importance of holding gains and the tendency of economic agents to regard holding gains as a substitute for ordinary income have led to calls for a change in the treatment of holding gains in national accounts. Changing the definition of income in national accounts to include holding gains is, however, not an option. Recording income not connected to the production of an asset or a transaction (such as a sale of a good or service or the receipt of a payment) would undermine the consistency of the quadruple recording system used in the accounts. Furthermore, if holding gains were to be included in income as measured in national accounts, the conceptual identity between the income-based measure of GDP and the measure of GDP based on production or final expenditures would break down.

To meet users' need for a measure of resources that includes holding gains and that is close to the concept of income used in business accounting, a combined measure of income and gains and losses can be presented as supplementary information. This would complement the total of saving and other sources of change in wealth that is already supposed to be available in the balance sheet account. An example of this sort of measure presented in supplementary lines of a table comes from the table on defined benefit pension plans in the US national income and product accounts (NIPAs), table 7.21. They show the implied funding of pension benefits from holding gains as an item that is added to household saving to arrive at change in wealth.

B. Clarifying the Boundary between Holding Gains and Production

A rising price for an existing item need not be caused by a physical transformation to represent production; services that make an item more accessible or more useful to buyers may raise its selling price. As a result, apparent holding gains can actually be sales of services.

The discussion of storage of seasonal commodities in the SNA (6.143 and A6.15-A6.18) is an important illustration of the phenomenon of apparent holding gains. In the SNA the general rule is that changes in inventory prices are holding gains, and hence must be excluded from the measure of production. Yet storage of seasonal items while their price undergoes a predictable increase due to seasonality is treated as a service. This storage is necessary for the seasonal item to be available when demand is high or physical production impossible.[1]

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[1] Hicks (1946, 178-179) defined income as a concept that includes expected gains and losses, and an approach that includes expected holding gains in income is discussed in Hill and Hill (2003). Treating a predictable price increase during storage as production could be viewed as taking this approach, but it is more precise to call price changes linked to production apparent holding gains, not true holding gains.

The practical implications of regarding storage of seasonal commodities as production are not explored in the SNA. The usual procedure for measuring change in inventories at current prices values inventory additions and withdrawals at the price in effect when they occur. Applying this procedure to seasonal items would mean that the production associated with their storage went unmeasured. The usual procedure must, therefore, be modified to use a *seasonally adjusted* price index to measure the difference between the price when the seasonal item enters storage and the price when it exits. With a seasonally adjusted price index, if the price follows its usual seasonal pattern, the cumulative change in inventories over a yearly cycle in which the physical amount added and withdrawn from inventories are the same will equal zero. The value of production over the course of the year will then consist of the value originally produced and put into storage and the value of the storage services measured using the normal seasonal price change.

Liquidity Services of Market Makers

The case of storage of seasonal items in the SNA shows that payments for services may be embedded in a difference between buying and selling prices that has the appearance of a holding gain. Financial services are another place where apparent holding gains occur.

In the case of banks, the SNA has long recognized that amounts reported as one thing may actually represent something else. Banks tailor loans terms to the situation of the borrower and provide liquidity services to depositors while investing in illiquid assets themselves. As a result, the SNA recognizes that interest rates paid by borrowers include components that substitute for explicit fees for services, and imputed interest is also recorded as paid to depositors and used by them for implicit purchases of services. These implicit sales of financial intermediation services are known as "financial intermediation services indirectly measured", or FISIM.

In the case of borrower FISIM, some of the interest paid by loan customers is reclassified as purchases of services. The 2008 SNA recognizes that amounts reported by financial institutions as trading gains can also include amounts that represent payments for services. One such case is market-making in securities. Instead of charging an explicit commission to the client, the securities dealer buys from the customer at a lower price and/or sells to the customer at a higher price. (Foreign exchange dealers also use this business model.) Market makers whose implicit sales of services are embedded in the prices of their trades with clients are producers of services of market liquidity services demanded by the clients. As part of these services, the market makers may manage their inventories to enable clients to make trades when desired at relatively stable prices.[2]

The definition of services in the SNA explicitly includes facilitation of exchange of financial assets (6.17), and the presence of such services is recognized in the treatment of the activity of acting as counterparty for clients who wish to buy or sell financial instruments or foreign exchange (6.170-6.174). When the institution buys, the 2008 SNA measures the service charge as the average of the bid and ask prices less the purchase price. When the institution sells, the service

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[2] Comerton-Forde et al. (2010) find that volatility rises and liquidity suffers when market makers on the New York Stock Exchange face financing constraints on holding inventories.

charge is measured as the selling price less this same average price. With these procedures, the change in value treated as production will always be positive.

Economists at the Bank of England have argued that the SNA measure of market making services is too narrow both because it is impractical to separate holding of positions for own-account trading from the customer-driven business and because the own-account activities help to reduce the spreads paid by customers. A market maker might reduce the bid-ask spreads to reflect the value of information contained in customer order flows (Wallace, 2001, p. 3). Also, as quoted by Stauffer and Meier (2001):

> *While it may be conceptually possible to regard position taking initiated by the intermediary as something separate from the temporary holding of positions resulting from customer driven business, the reality is that no such distinction can be made in practice. Moreover, since all own account trading relies upon the intermediary's market intelligence and investment strategy, it is reasonable to regard revenue generated by this wider aspect of own account trading as equally linked to the primary activity of market making, because of its scope for spreading overheads and thereby contributing to a competitive narrowing of dealing spreads"* (C.B. Wright, "Recording the earnings from FX and securities dealing in the balance of payments and the national accounts", Bank of England, 2000).

Yet even though treating all of the holding gains of market makers as output of services may be more accurate than just trying to measure the services by the gains generated by bid-ask spreads, the estimates based on this approach should be regarded as upper bounds that probably overstate this output. If the market maker holds corporate equities, some of the holding gains will come from the production of those corporations linked to income that is reinvested. More generally, average gains from own-account trading will, in theory, contain a risk premium element that compensates the owners of the market making corporation for exposure to the riskiness of this activity.[3] The returns that compensate for the riskiness of own-account trading are not available to subsidize the cost of providing liquidity services to customers.

Also, as a practical matter, outcomes for trading gains may be volatile in risky situations, which could occasionally lead to negative or extreme values. This may necessitate the use of averaging techniques or special treatment for outliers.

Liquidity Services of Underwriters of Securities Issues

Apparent holding gains also occur in activities of underwriting of securities issues. Rather than acting as middle man and charging a commission that is paid by the issuer, the financial institution bringing the security issue to market may buy the securities at a discount with the intention of selling them to customers over time at a profit. (Similarly, mortgage originators who do not wish to hold the mortgages themselves obtain payment for their service of originating the mortgage by selling it for more than the amount disbursed to the borrower.)

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[3] Compensation for bearing risk is included in the prices of all kinds of goods and nonfinancial services. Wang (2003) argues that this compensation for risk belongs in the value added of the producer of the goods and services, rather than in the financial intermediation services used by that producer in connection with its loans. See also Wang, Basu and Fernald (2009), Basu, Inklaar and Wang (2011), and Inklaar and Wang (2012), and Colangelo and Inklaar (2012).

An Empirical Example

An empirical illustration of the liquidity services from market making and underwriting of securities issuance by large deposit-taking institutions and securities and derivative dealers in France is shown in table 1. The estimates of the production of these services are based on information in the financial statements of these institutions, but the estimates of who consumes these services rely on some assumptions. Sectors that consume services of securities issuance are mainly general government and non-financial corporations. The investors who use liquidity services of market makers in secondary markets could come from any sector, however. The consumer of the services may even be a small financial institution obtaining services from large one. To estimate each sector's consumption of liquidity services in secondary markets, we allocate the overall total amount of these services consuming sectors based on the absolute value of the transactions in bonds and shares in the financial accounts, using the most disaggregated level available.[4]

The market output of explicitly priced services and FISIM of financial intermediaries (excluding insurance and pension funds) in France is shown for reference at the top of table 1. It ranges from 94 billion euros to 128 billion euros over 2003-2013. The production of liquidity services in secondary markets and for securities issuance is usually less than 1 percent of this amount. The jump in 2010 comes from an improvement in reporting. The decline in 2012 in the provision of liquidity services is caused by securities issuance activities moving to foreign branches.

Data from the US also show that liquidity services in secondary markets in the US are a relatively small share of the output of the security broker and dealer industry. In detailed breakdowns of the income of the US security broker-dealer industry from (available without charge for 2001 to 2010 from the Securities Industry and Financial Markets Association), trading gains from market making in over-the-counter securities (in which market maker sells directly to customers and buys directly from them) are consistently positive on an annual basis, though on a quarterly basis there are three negative quarters during the financial crisis. In the ten years covered by the data these trading gains range between 1.5 percent and 9 percent of the value of commissions received by the industry.

C. Summary

Although a definition of income that includes holding gains is not suitable for national accounts purposes, some of the needs for a broader definition of income can be met by reporting a combined concept of income and holding gains as supplementary information. In some cases, however, income arising from production of services might easily be mistaken for holding gains. Physical transformation of an item is not necessary for production to have occurred: differences between buying and selling prices may be attributable to services that make the item accessible in time, place, form or arrangement that is convenient for the buyer. We have provided some

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[4] For sectors that use the market liquidity services for securities issuance, the estimates are based on the flows of issuance of bonds and shares on the liability side. For sectors that use market liquidity services on secondary markets, the estimates are based on flows of bonds, shares and derivatives on the assets side.

examples of liquidity services in the buying and selling of financial assets that superficially appear to be holding gains.

II. SHOULD CORPORATIONS HAVE SAVING?

A. Theory

Hicks (1948, p. 178) provides a definition of income that equals consumption plus capital accumulation, and hence includes holdings gains. He specifically excludes windfall gains, though, counting only holding gains that represent a permanent increase in the sum of the discounted future flows of income. Reinvested earnings on equities increase the net assets of the corporation and hence increase in its future income, so they may pass Hick's test.

Even though corporate earnings that are retained and reinvested increase the assets represented by a share, in national accounts investors' holding gains are measured as if the characteristics of a share are unchanged. The usual treatment of retained corporate earnings is to record them as saving of corporations, keeping them out of the income recorded for shareholders. To account for the change in the quantity of assets per share, the earnings that are reinvested by the corporation would be treated as though they had been distributed to investors and then reinvested by them.

The limited liability enjoyed by corporate shareholders provides a justification for this treatment of retained corporate earnings. Limited liability gives corporations an independent identity from their owners and means that in a bankruptcy situation the negative net worth of the corporation will not be passed through to shareholders. A further justification for excluding retained earnings from the income of shareholders in corporations with widely dispersed ownership is that those shareholders have no direct control over the uses of the retained earnings.

Nevertheless, an alternative approach that reroutes the retained earnings to shareholders who then reinvest them would have its advantages. As owners of the corporation, the shareholders generally benefit from all of its earnings regardless of whether they are distributed. It seems reasonable to presume that money that is reinvested in the business or used for share buybacks is of equivalent value to investors as money used for dividends. Also, a strict definition of a holding gain excludes price changes attributable to a change in an item's characteristics, such as the growth in the assets represented by a share due to reinvested earnings. Finally, foreign direct investors are already treated as receiving and then reinvesting retained earnings, so extending this approach would result in symmetric treatment of direct and portfolio investors and of resident and foreign direct investors.

On a practical level, rerouting retained earnings to shareholders would also help to avoid distortions in national income of both countries involved when resident corporations engage in corporate inversions.[5] It may also avoid some paradoxes that occur when defined benefit pension

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[5] Multinational corporations sometimes change their country of residency by "inverting" their corporate structure, with the former parent becoming the subsidiary and the former subsidiary in a lower tax jurisdiction becoming the

plans and insurance companies use holding gains to cover the costs paying benefits or claims and of providing services.

Cases of Foreign Direct Investment and Public Corporations

The earnings of a corporation with a controlling shareholder are at the disposal of that shareholder. The controlling shareholder may even be obliged to stand behind the debts of the corporation for reputational reasons. If so, the shareholder does not have limited liability in an economic sense.

One circumstance in which the SNA does reroute retained earnings to the controlling investor is that of foreign direct investment or FDI. Retained earnings of foreign corporations included in FDI (typically foreign affiliates of multinational corporations) are treated as though they had been distributed and then reinvested by the shareholder (*SNA* 3.64 and 7.137-7.139). The reasoning behind this treatment of retained earnings is that in the case of FDI there is usually a controlling shareholder who has effective access to the earnings of the corporation (7.138).

The SNA also mentions as a research agenda item an extension of the approach that is followed in the case of FDI to public corporations (7.140). These corporations are controlled by the government, so accepting the proposal to reroute retained income of public corporations to the government would improve the logical consistency of the system of accounts. The consistent principal would be that the retained earnings are rerouted in cases of a controlling shareholder. Also, in the case of public corporations, the limited liability justification for allowing corporations to have saving may not apply: in most cases the government that controls the public corporation is expected to stand behind its debts. Finally, as a practical matter, governments sometimes receive dividends, or in-kind assistance, from public corporations that cause the public corporations to have negative saving. Failure to take account of this negative saving can give an unrealistic picture of the government's fiscal situation.

One way to report a measure of government saving with retained earnings of public corporations would be present a set of accounts for the public sector (which consolidates the government and public corporations) and for private corporations. This alternative way of classifying public corporations is needed to have a complete picture of an economy in which public corporations play a significant role. Placing these accounts in supplementary tables will allow the core accounts to continue showing a division of the economy into different sectors including government, nonfinancial corporations, and financial corporations.[6] Additional supplementary tables will then show the income of final holders of corporate equity with retained earnings on that equity. The resident final holders of corporate equities are households, NPISHs and government.

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parent. The undistributed income of the inverted corporation then becomes part of the national income of the country of the former subsidiary even though the corporation continues to be managed from its original jurisdiction.

[6] In the US NIPAs, current surplus of government enterprises is included in government receipts, and most public corporations are treated as government enterprises. In the French national accounts, government owned enterprises are categorized into non-financial corporations and financial corporations according to their activity

B. Importance of Holding Gains on Equities as a Driver of Household Wealth

Retained earnings can have little relation to the change in shareholder wealth over short periods of time, but over the long run retained earnings tend to be the main driver of holding gains on equities over the long run. For example, the 2104 Blue Book of the Office of National Statistics shows that in the UK over the years 2006-2013, the cumulative net saving of private non-financial corporations was 539.6 billion pounds, while the change in the market value of their equity over those years was 614.1 billion pounds. Furthermore, looking at the financial account and balance sheet of the household and NPISH sector, net acquisitions of financial assets in 2006-2013 were 679 billion pounds, but the change in the market value of financial assets over those years was 496 billion pounds more, at 1175 billion pounds. Holding gains on equities therefore seem to play a large role in the growth of the market value of household sector assets.[7]

In countries where households have large direct or indirect holdings of corporate equity, holding gains on equities are quite important as a source of gains in household wealth. In the UK, for example, over the period 2007-2013 net acquisitions of financial assets less liabilities averaged £31 billion per year, but the change in financial net worth averaged £120 billion per year. Although holding gains on equities issued by UK corporations were modest, UK households have relatively large holdings of equities issued in other countries that did enjoy holding gains. Thus holding gains on equities are an important part of the cause of the growth in financial net worth not explained by net acquisitions of financial assets. Certainly they exceed the average net saving of households and NPISHs over the period of not much more than £20 billion per year.

The story for the US is similar. In the period of 2005-2013, holding gains on financial assets of households and NPISHs, which come mainly from equities, averaged 1.4 trillion dollars, twice as much as saving plus net investment in consumer durables and net capital transfers of about 700 billion dollars (table 2). And the contribution of holding gains on equities to growth in wealth of US households was even greater compared to saving in earlier periods (Reinsdorf, 2006, p. 12, and Reinsdorf, 2004, p. 24).

C. Examples of Rerouting Retained Earnings to Shareholders

Rerouting Retained Earnings to Households in France

Households are the principal final holder of equity shares in France, so in periods when corporations have significant amounts of retained earnings, the main effects of rerouting these retained corporate earnings in France will be an increase in households' property income and saving. In calculating these effects, we must take into account entitlements to benefit from the retained profit of companies either by direct holding of shares or by indirect holding of shares through financial institutions. To estimate the latter it is necessary to decide whether the final investor—in this case a household—is really entitled to the returns from the assets of the financial institution through which the asset is held.

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[7] Holding gains on listed equities issued in the UK were quite modest over these years, but UK household had large gains on their holdings of foreign issued equities and unlisted equities.

For investments in equity through mutual fund shares, the answer is straightforward: the investors are entitled to the returns on the funds' assets, after deduction of administrative expenses. Retained earnings corresponding to the equities the fund holds are thus to be allocated to the final investor. To "see through" mutual fund shares representing ownership of corporate equities, we replace the investments in non-monetary mutual funds of households by the structure of the assets of the resident non-monetary mutual funds. [8] This is a rough estimate, and an institutional calculation by the Banque de France would be of much higher quality because of the use of security by security data of mutual funds and other institutional sectors. For example, Birouk and al. (2014) pass through mutual fund shares held by insurers to ultimate owners in this more precise way and the estimates below for households' holding of shares through insurers also uses such a methodology.

Determining whether the final investor (household) is really entitled to the proceeds from the assets of the financial institution is less straightforward in the case of investments in insurance companies. Whether pass through of the retained earnings is appropriate depends on the legal characteristics of the insurance contract, the latter being specific to jurisdictions or even policyholders.

In France there are two main types of life insurance contracts for investment purposes. The first type may be called "with profit insurance". The typical policyholder is entitled to a fixed annual interest rate plus 85 percent of the returns on the insurer's assets. The returns include realized holding gains and losses whose timing is at the discretion of the insurance company. The entitlement to the insurer's return is defined in a very loose way: the 85 percent of the yearly return on assets has to be either distributed or accumulated in a special provision,[9] which, in most cases, has to be released to the policyholder within eight years. (The asset returns and special provision are defined for groups of policyholders, not on a contract by contract basis.)

The second type of contract is called "unit linked". Policyholders are entitled to the returns of the asset (usually a mutual fund share) specified in the contract, and its value at termination. The insurer may provide a guarantee. Typically the guarantee is that the policyholder will receive at least the premium paid after a certain period.

With both type of contracts, the policyholders clearly have a claim on the asset returns. We will therefore include the equity held by life insurers in the allocation of retained corporate earnings to households. In the case of "with profit insurance", we allocate only 85 percent of the retained profits.[10]

The treatment of equity shares held by non-life insurers is a more ambiguous question. The SNA routes property income from technical reserves of nonlife insurers to policyholders as premium

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[8] Monetary mutual funds are not allowed to invest in shares.

[9] "Provision pour participation aux bénéfices"

[10] Besides households, a small amount of the retained earnings should be allocated to the rest of the world. Also, in very marginal cases, non-financial companies may subscribe a death insurance contract to insure again the death of a key manager. This is non-material at the aggregated level.

supplements (17.15), so a consistent treatment of equity shares held in technical reserves would be to reroute the retained earnings on shares linked to technical reserves of nonlife insurers.
On the other hand, non-life policyholders have a more limited entitlement to the returns on the insurer's general assets than life insurance policyholders. We therefore include only 15 percent of retained earnings on equities held by nonlife insurers in the allocation of retained earnings to shareholders for France.

With these treatments of mutual funds and insurance, the indirect holdings of shares by households and NPISH, on average in 2010-2013, amount to 32 percent of households' total holdings of shares. As shown in table 3, the indirect portion of their holdings trends down throughout the period because of a decrease in the holding of shares through "with profit insurance" contracts and the stagnation of unit linked contracts. The period of relative disinvestment from shares by life insurers coincides with the European sovereign debt crisis, and it may also reflect the insurers' adaptation to the higher impact of equity volatility in the new market-based and risk-based prudential regulation. The decline in shareholdings through life insurance contrasts with the steady rise in shares held by households directly.

Retained earnings benefitting households in France are calculated by assuming that these households have the same ratio of retained earnings per 1 euro worth of shares as the one observed for French insurers[11]. As shown in the bottom three rows of table 3, in 2010 retained earnings benefitting households are significant compared to property income from dividends and from premium supplements, and they also have an appreciable effect on the measure of household gross saving. Retained earnings are quite sensitive to economic activity, however, and a high value in 2010 overstate their importance compared to the long run, as illustrated in figure 1 for the period of 1995-2013. Estimated based on this longer history of reinvested earnings rate on shares held by insurers (1995-2013), retained earnings benefitting households represent 5.5 percent of dividends received, 5.3 percent of premium supplements, and 1.4 percent of household savings, much lower than the respective averages for the period 2010-2013 of 9.0 percent, 8.7 percent and 2.3 percent.

Empirical Example based on the Data for United States

Users of the national accounts may be able to use published figures for net saving of private corporations to approximate the effect of rerouting retained earnings to shareholders in the household and NPISH sectors. However, a better estimate would account for cross-border share ownership, government ownership of shares in private corporations, and households' ownership of shares in public corporations. In addition, distinguishing retained earnings linked to shares held by pension plans is useful for analytical purposes even though households are the ultimate beneficiaries of the pension plans.

In appendix 1 we explain and illustrate the steps necessary to estimate the retained earnings that benefit each kind of final shareholder in the US. An assumption in making these estimates is that

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[11] In the long run, this ratio is close to the average of retained earnings received by residents on shares held abroad and retained earnings received by the rest of the world on shares held in France (see figure 1). It is also smoother. It should also be close to what a household investment may look like, knowing that households' accounts don't isolate any reinvested earnings.

the ratio of retained earnings to the value of the shares is the same in the portfolio held by each sector, such as households, pension funds or the rest of the world. Another assumption is the ratio of retained earnings to share values is the same for the foreign issues held by US residents as for the US issues. This assumption allows the retained earnings of foreign corporations linked to shares held by US residents to be calculated based on the ratio of retained earnings to share values of US corporations. In general, retained earnings are allocated to sectors that invest in shares in proportion to the equity assets that they hold. Finally, in cases of long or complex chains of ownership the data may not allow us trace back to the ultimate beneficial owner; for example, shares that are indirectly owned by US residents through investments in offshore hedge funds may appear to be owned by the rest of the world.

The results of the steps discussed in appendix 1 are shown in table 4. The retained earnings routed to households directly or through investment funds and insurance reserves are shown on the first row, while the amounts from annuities from life insurance companies, defined benefit pension plans and defined contribution pension plans are shown on the next three rows. Taking into account the retained earnings on shares held indirectly through annuity reserves and pension funds shows that the retained earnings that ultimately benefit US households exceed the retained earnings of US corporations by about 10 percent in 2007, falling to 4.4 percent in 2013. This reflects the fact that the value of the equities held by US households, including those held indirectly, is higher than the value of equities issued by US corporations.[12]

Effects of Equities Issued or Held by the Rest of the World

The retained earnings on portfolio investment in equities of foreign corporations allocated to US residents have been over 200 billion per year since 2010 (second panel of table 4). Even so, they are less than or approximately equal to the dividend income from direct and portfolio investment combined, and smaller than retained earnings on foreign direct investment. On the other hand, the retained earnings of US corporations allocated to the investors from the rest of the world (third panel of table 4) have been larger than dividends paid to the rest of the world and also larger than retained earnings on direct investment by the rest of the world in the US in every year since 2010. They are also growing rapidly, so the gap between inflows and outflows of retained income is closing. The gap was 80.4 billion at its peak in 2010 but only 36.5 billion in 2013.

The net retained earnings on portfolio investment rerouted to US residents result in a slightly higher measure of US national saving, as shown in the fourth panel of table 4. In 2011, the alternative measure of national saving is positive 44.3 billion dollars, while the standard treatment of retained earnings implies that national saving was negative.

Effect on defined benefit pension plans

Defined benefit (DB) pension plans promise to pay benefits during retirement based on a formula, such as final pay times years of service times a replacement factor. The present value of the future

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[12] The role of corporate inversions on the excess holdings would be an interesting question to investigate. Another question is the effect of ownership of US issues by offshore hedge funds that are owned by US residents.

benefits that have been accrued by the plan participants is called the plan's actuarial liability in pension accounting. The actuarial liability of the pension plan is equal in value to the benefit entitlements of the households participating in the pension plan.

Benefit entitlements grow in value through additional service to the employer and through the unwinding of the discounting applied to future benefits. Assuming a constant rate of interest, the increase in value when the interval over which a given stream of payments is discounted shortens by a year is equal to the interest rate times the opening value of the stream of payments. We can therefore measure the interest income of households who participate in DB pension plans by multiplying the opening value of the benefit entitlement by the interest rate that was assumed in the actuarial calculations. In effect, participants in DB pension plans accrue interest on their benefit entitlement wealth that is payable by the pension plan.

In the SNA, employer imputed contributions are defined such that actual contributions and employer imputed contributions together cover the cost to the pension plan of the additional service credited to employees.

On the other hand, the resources that the pension plan has at its disposal for paying the interest that accrues on households' benefit entitlements are likely to fall short of the amount needed. In the SNA these resources consist of the property income that the pension plan receives from its assets, which are likely to be primarily stocks and bonds. If the pension plan is underfunded (meaning that its liability for benefit entitlements is greater than the value of its assets) the plan has a claim on the employer for the amount of the underfunding. Although the SNA does not do this, it is logical to impute interest payable by the employer on this claim.[13] With this imputation, the gap between the property income payable by the pension plan and the property income received by the plan equals the value of the pension plan's assets times the difference between the interest rate assumed in the actuarial calculations and the plan's dividend and interest yield rate. If the plan's assets include equities, this gap is likely to be positive. Investors in common stocks accept a low dividend yield rate because they usually expect to receive part of their investment returns from holding gains.

The use of holding gains to fund pension benefits presents the national income accountant with a choice between two unsatisfactory alternatives. Consider a pension plan that relies on holding gains to cover part of its interest expense. For the households participating in this plan to have saving equal to their change in wealth (assuming that the actuarial projections and assumptions are not revised), their property income will have to include all the interest accruing on their benefit entitlements, including the part that is funded via holdings gains on pension plan's assets. Yet paying this property income will make the saving of pension plan negative. Allowing saving of DB pension plans to be negative would distort the measure of the saving of the financial corporation sector (which contains DB pension plans), and users of the national accounts may find negative saving of pension plans whose net worth is always zero hard to accept. What is more, a policy of allowing negative saving for DB pension plans may lead to an understatement of

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[13] The SNA (17.69) calls this kind of interest "investment income". But, even though a special term for the effect of the unwinding of a discount factor is appropriate, the term "investment income" is used elsewhere with a different meaning.

employer pension expenses and an overstatement of employers' saving. In particular, shortfalls in pension plans' property income often arise because the employer has not made sufficient contributions to allow the plan to accumulate assets equal to its actuarial liability. In these cases the pension plan has a claim on the employer in the amount of the underfunding, and the pension plan will need to receive interest on this claim from the employer to avoid negative saving. Not allowing pension plans to have negative saving will prevent this interest from being overlooked.

In case of the DB pensions of the US, rerouting earnings largely eliminates the need to decide whose saving to understate.[14] Dividend yields on equity investments are low because holding gains are expected to contribute to returns on equities, so the difference between the amount needed to pay all of the interest accruing on the benefit entitlement and the property income received by the pension fund represents the expected holding gains implied by the interest rate assumption. In NIPA table 7.21, the gap between the interest payable on the funded benefit entitlements and the investment income generated by the pension plans' assets is labeled as "Implied funding of benefits from holding gains", and this line is reproduced at the top of the DB pension plan panel of table 4. Adding in the earnings linked to the equities held by the pension plan largely eliminates the gap except in the financial crisis period. Setting aside the crisis period of 2007-2008, the gap between the interest payable on benefit entitlements and investment income received by DB pension plans shown in the fourth panel of table 4 has an average near zero (+4.4 billion to be precise.)

Effect on household saving

In the NIPAs the investment income that households get from DB pension plans is set equal to the investment income that the plans receive (including the interest on their claim on the employer). As a result, the part of the pension benefits that is expected to be funded via holding gains is excluded from household income. Yet the mechanism for funding the benefits does not matter to the households who are accruing the pension benefits. Including retained earnings on shares held by DB pension plans in the income of the pension plan would allow much of this excluded amount to be included in the income of these households.

The fifth panel of table 4 shows the effect of adjusting personal income and personal saving from the NIPAs to include retained earnings that directly or indirectly benefit households including the retained earnings received by DB pension plans. In recent decades the US personal saving rate reported in the NIPAs has been low by both historical and international standards. Retained earnings that benefit households tend to be of approximately the same magnitude as personal saving in the NIPAs, so adding retained earnings doubles, or nearly doubles, saving (except in 2008). The effect on the US saving rate is also dramatic, raising it to levels that would no longer be considered low.

The final panel of table 4 shows the effect of including retained earnings on investment income to households from insurance companies. The effect on premium supplements for nonlife insurance is quite small because premium supplements for most nonlife insurance go mainly to private

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[14] The years when retained corporate earnings were depressed because of the financial crisis are an exception.

enterprises and because nonlife insurers have relatively modest holdings of equities. On the other hand, the effect on investment income from life insurance companies (including income associated with annuities) is more substantial. Starting in 2010, the retained earnings on insurance and annuities from life insurers amount to around 25 to 30 percent of the investment income that is currently measured in the NIPAs.

D. Summary

An alternative approach in which retained earnings of corporations are included in the income of the shareholders rather than treated as saving by corporations provides important insights into the sources of change in wealth of shareholders and avoids some paradoxes, distortions and inconsistencies. A supplementary public sector account was discussed as a way of presenting the saving of general government with the saving of public corporations treated as part of the income of the government. Also, the gap between the accruals of benefit entitlements by the households participating in the defined benefit pension plans of the US and the income that those pension plans can use to pay those benefits was largely eliminated when the retained earnings on shares held by pension plans was added to their income.

III. ADJUSTING THE INCOME AND ASSETS OF CREDITORS FOR BAD DEBT LOSSES

In the SNA, bad debt losses are not taken into account when measuring the interest income of lenders. If a debt is renegotiated to a lower value, the SNA treats the agreed amount of loan forgiveness as a capital transfer (12.39). The SNA records loan write-offs or write-downs that are not linked to an agreement of debt forgiveness in the "other change in volume of assets" (OCVA) account (12.40). In practice, capital transfers are rarely recorded in connection with write-downs and write-offs either because of lack of an agreement of loan forgiveness or because of lack of information on such agreements.

The SNA's approach to bad debt expenses is necessary to avoid distorting the picture of the debtor's saving and net worth—failing to make payments that are due should not count as saving on the part of the debtor. Nevertheless, losses from default (called "credit losses" in the industry) are such a fundamental part of the lending business that a realistic picture of the income, net worth and leverage of financial corporations that engage in lending cannot ignore them.

One step that can be taken within the framework of the core national accounts is to exclude the component of the interest rate that is intended to cover the losses that are expected at the time the loan is made from the measure of borrower FISIM. Lenders are able to extend credit to risky classes of borrowers whose probability of default can be predicted with reasonable statistical accuracy by increasing the contractual rate of interest to be paid by the borrowers in the class sufficiently to cover the expected losses from defaults (which equal the expected size of the loss given default times the probability of default). In other words, when calculating the rate of interest charged on a loan, banks take into account the risk of default in addition to their own financing costs and the maturity of the loan. The contractual rate of interest is not expected to be earned by the bank over the entire life of the loan, as defaults may occur several years after the loan was originated.

The component of loan interest that is used to cover losses from default is not available to cover the costs of producing services, so it should be excluded from borrower FISIM. Hood (2013) calls the component of the interest rate that is intended to cover the losses that are expected at the time the rate is set the default margin.[15] The default margin is excluded from the measure of borrower FISIM in the US national accounts. However, because of the need to measure the saving of the debtor correctly, the decrease in the measure of FISIM to remove the component of interest that is needed to cover expected default losses has to be implemented in a way that does not change the measure of the bank's disposable income. The reduction in the measure of borrower FISIM to exclude the default premium from output is therefore offset by a matching increase in the measure of "SNA interest" received by the bank, where "SNA interest" is defined in 6.164. This is done by subtracting a measure of borrower FISIM that excludes the default margin from a gross measure of the interest paid by the borrower (which includes the default margin) to obtain the "SNA interest" residual.[16]

Adjusting the measure of borrower FISIM to exclude the default premium would be an important improvement to the core accounts. For example, after the financial crisis the unadjusted measures of FISIM showed that banks in the US, France, and the UK (and probably other countries, as well) had rising output even though the banks were reducing their lending and reporting declines in income. In the case of the US, Hood (2013) shows that the exclusion of the default premium from FISIM results in a more plausible picture of bank output in the aftermath of the crisis.

Besides adjusting the measure of FISIM for expected default losses, showing the measure of lenders' income that excludes the default premium would provide important information. This can be done in a supplementary account, because source data to estimate expected default losses may not be widely available, necessitating a heavy reliance on assumptions. FISIM is already an imputation that requires assumptions, but extending the reliance on assumptions in many countries to the income and saving of lenders and the saving of borrowers would reduce international comparability of some important measures.

The solution to the need for a measure of creditor income that reflects the amounts that are likely to be collected is to show a provision for expected losses from defaults arising during the accounting period. This provision can serve as adjustment item for shifting from the perspective that is most suitable for analyzing the situation of the debtor to one that is best suited for analyzing the situation of the creditor. A creditor who has a large portfolio of loans is virtually certain to suffer at least some losses, but this does not mean that the debtors can anticipate that they will be relieved from their repayment obligations. Showing provisions for losses from defaults and treating them as an adjustment item will allow national income to be calculated as the sum over all the sectors despite the apparent inconsistency between the ways that borrowers' payments and lenders' receipts are measured: national

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[15] Hood (2013) uses the interest income accrued by the lender, which excludes interest treated as uncollectable, to measure the loan interest rate. Since most losses of interest are accounted for in the effective interest rate, the default premium primarily covers losses of principal. If, on the other hand, a contract rate of interest is used, then the default margin will need to cover losses of both principal and interest.

[16] Wang, Basu and Fernald (2009) also adjust for the default margin, but in addition, they include a risk premium in the reference rate used to measure borrower FISIM. This risk premium provides compensation to the investors in the bank for the varying utility costs of losses in different states of the economy, so it belongs in the measure of the bank's income.

income will equal the sum of the balance of primary incomes over every resident sector plus the total provisions for expected bad debt expenses that have been excluded from the income of creditors.[17]

A measure of the income of lenders that is adjusted to reflect expected losses would be consistent with the concept of expected income that Hicks viewed as relevant for business decision making. Under the expected income approach, the "SNA interest" received by the bank will not become larger when the component of loan interest that covers expected losses from default is excluded from the measure of borrower FISIM, as was the case in Hood (2013). The disparity between the treatment of default losses in measuring the disposable income of the banking industry, where they are ignored, and the treatment of claims in measuring the income of the nonlife insurance industry, where they are deducted, would also be avoided.

An example of an expected income concept similar to that of Hicks is found in the SNA in the treatment of expected claims in nonlife insurance. Gross premiums from policyholders are divided into a component that pays for services and a component consisting of current transfers to cover the cost of expected ("adjusted") claims (17.21, 17.27). The "net premium', which covers the expected cost of claims, is treated as a current transfer to the insurer, so the difference between expected and actual claims represents net transfers from policyholders to insurance corporations (17.35). The disposable income of the policyholders is therefore reduced by the amount needed to cover the expected losses compared to what it would have been if the entire gross premium had been treated as a payment for insurance services.

This exclusion of the default premium when measuring the income of lenders would also be consistent with a correct measure of the value of loan assets in the business's balance sheet account. In the balance sheet account for the lender, the provision for the currently expected bad debt expenses over the remaining life of the loan should be positive if the currently expected bad debt expenses are higher than the anticipated losses that were reflected in the interest rate when the loans were originated. In principle, no downward adjustment to the value of the loan is needed if the contractual rate of interest on the loans includes a component that covers the cost of losses of principal and interest that are currently expected based on the latest information. This is similar to valuing the loan at its predicted market value, as in the creditor approach (17.261-17.262).

The SNA already advises showing a provision for the expected losses from default over the life of the loan in the supplementary information on the balance sheet account for lenders (10.211 and 13.67), and the Monetary and Financial Statistics Manual (IMF, 2000) has detailed recommendations on showing interest arrears on loans and expected loan losses as memorandum items disaggregated by sector for use in obtaining alternative valuations of loan portfolios (MFSM, 2000, paragraphs 207 and 390). Furthermore, the proposed new version of the *Monetary and Financial Statistics Manual and Compilation Guide* records a provision for default losses as a balance sheet liability that reduces the equity of the lending corporation (2.232 and 5.230).

 In implementing these recommendations it is important to take into account the present value of any interest rate component that may be present to cover the expected losses, which would increase the

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[17] But if there is a provision for bad debt losses on debt owed by the rest of the world, it should be excluded from national income. Expected default losses on cross-border lending would then be an adjustment item in adding up the national income of every country to find world income.

interest margin above the cost of funding and of management. Also, in contrast to the balance sheet provision, the economic view of the interest rate setting process implies that the provision as a charge against income for losses arising during the accounting period will be positive even in normal times.

A. Examples based on Credit Card Lending

Default margins tend to be relatively small on loans that are secured by good collateral. For example, the aggregate call report data for US banks in 2013 show interest from loans of 431 billion dollars and net charge-offs (write-offs) of 50 billion dollars. If we take net-charges as an indication of the size of the expected default losses, accounting for these losses would reduce interest income from loans by almost 12 percent. Total loans are 7.246 trillion dollars, so the effective rate of interest (which excludes interest that is not accrued on nonperforming loans) is 5.9 percent and the net charge-off rate is 0.7 percent.

Default margins can be much larger than this in cases of unsecured lending. Credit cards in the UK provide a stark example of need to take default margins into account when measuring lender's FISIM and disposable income. Barwell and Burrows (2011, p. 28) show write-off rates that for credit card debt in the UK in 1994-2007 that ranged from a low of 1.25 percent in 1996 to nearly 7.5 percent in 2007, with a mean of around 3.5 percent. They also show that the interest rate on credit card debt in the UK generally had a margin over the inter-bank rate or reference rate of between 6 and 8 percentage points, with an average of around 7 percent. Thus, on average, around half of the margin on credit card loans that would now be counted as FISIM (that is, as an implicit payment for services) is actually needed to cover losses from default.

The elevated default losses in 2007 also provide an example of an instance when a balance sheet provision is needed to value the loan portfolio. In normal times the value of loan asset can be measured by the outstanding balances because the amounts that can be expected to be collected as a result of the default margin are sufficient to covers the default losses that can be expected over the remaining life of the loan. In the 2007, however, the total margin, even before considering the amount needed to cover the cost of the services included in FISIM, is not enough to cover the default rate. A provision for the revised expectations of default losses would be needed to value the loan assets correctly in 2007.

Credit cards in the US provide another example of relatively large default losses. Credit cards in the US have benefitted from a long history of development and experimentation, founded on aggressive competition across banking institutions, that has enabled credit to be made available to a very wide spectrum of consumers, even those with poor credit records. At the end of 2013, total credit card loans of US commercial banks were, according to aggregate call report data, net charge-offs on credit card loans were 22 billion dollars, or 3.3 percent of the loan balances of 659 billion dollars. The average effective interest rate (calculated as interest accrued divided by loan balances and hence net of uncollectable interest) on domestic credit card loans was 11.8 percent. If we use the net charge-off rate as an estimate of ex ante default margin, then the interest rate on domestic credit card loans is reduced to 8.5 percent.

To examine credit card lending in the US in more detail, we constructed a data set of the call reports from 2001 to 2013 from US banks that were predominantly credit card banks (at least 70 percent or more of their loans in credit cards) or that had large credit card portfolios (at least $10 billion). These banks represent more than 85 percent of all bank credit card balances in the US.

We then estimated the default margin as a moving average of net charge off rates using techniques and assumptions described in appendix 2.

As shown in table 5, over the entire period from 2001 to 2013, the credit card interest rate averaged 12.84 percent. The average reference rate (interest expense rate) was 3.21 percent, implying net interest margin of 9.63 percent. The average default margin was 5.66 percent, leaving a margin of 3.98 percent to pay for the services comprised by borrower FISIM.

Table 6 translates these rates into dollar terms based on credit card loans at domestic offices of US banks. In 2013 interest from domestic credit cards is $71.8 billion for the banks in our dataset. The provision for default losses implied by the default margin is $31.2 billion, leaving $40.6 billion in adjusted interest income from credit card lending. The interest expense implied by the reference rate is $4.6 billion, and after rounding up borrower FISIM is $36.1 billion, not much bigger than the provision for default losses. Looking at averages over the 13 year period, interest on domestic credit card balances averages $42.6 billion annually, the provision for default losses averages $19.5 billion, and adjusted interest income from credit card lending is $23.1 billion. With an interest expense implied by the reference rate of $8.5 billion, borrower FISIM is just $14.6 billion. Services to credit card borrowers would be overstated by more than double were the expected default losses to be ignored.[18]

B.   Example based on Loans from Financial Institutions in France

We use loans from monetary financial institutions in France for a more general example of accounting for expected losses from default. In this case, we calculate the expected losses from defaults based on final losses of the year and net provisioning for losses on loans of the year, as the sort of data on historical patterns of realized credit losses on different types of loans used by Hood (2013) were not available. Estimates of expected losses based on net provisions taken by banks may be overstated compared to a measure based on the history of *ex post* losses if the banks are excessively prudent or attempt to build up excess reserves for credit losses for purposes of smoothing their reported income. Net provisions for credit losses may also be sensitive to economic activity: usually, risks build up unnoticed in "boom" periods, when credit growth is fast, and are recognized in "bust" periods, when banks are restricting credit. In France during the period of observation, provisioning has predicted the increase in losses due to the crisis quite well (figure 2).

In business accounting, general provisions for credit losses may be taken based on past experience, and specific provisions are taken on loans identified as troubled or nonperforming. The provisions reduce the bank's reported income when they are taken. Subsequently, steps to recover the amounts in default, such as contacting the borrower or the guarantor of the debt, may result in a

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[18] The jump that is evident in the line for 2010 in table 5 reflects that fact that previously roughly half of credit card balances were held in securitized pools, off of bank balance sheets. In 2010, banks were required to place these balances back on their balance sheets. With securitization, banks receive income from providing services through profits on the sale of the securities and fees charged to securitization pools. To the extent that services are not fully measured for off-balance sheet intermediation, when loans providing services to household are held off bank balance sheets, financial services may be understated.

recovery of the amounts that were expected to go unpaid. The provision will then be reversed, increasing the bank's reported income.

Data by type of borrower that can be used to allocate the realized credit losses and net provisioning for future losses between borrowing sectors are not available in the profit and loss account, but we can split up the losses using as a proxy for this data the structure by Basel portfolio of expected losses (internal model portfolio) and provisions (standard portfolios). This is a rough approximation, as Basel portfolios are only available on consolidated accounts that include foreign subsidiaries. Also, the Basel portfolios do not precisely match the institutional sectors of national accounts. (The main divergences are the inclusion of small businesses with households in the retail portfolio, and the inclusion of central banks in general government.)

As shown in Table 7, on average over 2008-2013, expected default costs represent 3 percent of the total interest received on loans from financial institutions. Taking account of expected default losses would therefore reduce by 0.2 percentage points the apparent average interest rate of 5.5 percent. Their effect on the measure of the production of financial institutions is more significant, averaging 7.5 percent of the total output, including FISIM. Thus, neglect of default losses would cause a non-trivial overstatement of the output of FISIM.

For reference table 7 also shows approximate estimates of the effect of measuring the interest paid by nonfinancial corporations and households excluding the amounts used by the lender to cover expected losses. The debt that is never collected, perhaps because it is discharged in bankruptcy, does serve as a kind of resource for the debtor, but it should be classified as a gain from an OCVA, or perhaps an "other change in volume of liabilities", not as saving. Households appear to be relatively risky borrowers (though it should be noted that the period under scrutiny is one of especially high risk) Their expected costs from defaults average 0.4 percent of outstanding loans and 5 percent of interest paid, compared to 0.2 percent and 3.1 percent, respectively, for non-financial corporations. Taking account of default losses lowers an apparent cost of debt of 7.0 percent for non-financial corporations by 0.2 percentage points, and an apparent cost of debt of 7.1 percent for households by 0.4 percentage points.

C. Summary

Lenders are able to make loans to risky borrowers by including the expected losses in the interest rate charged on the loan. To measure the saving of the borrower correctly, all of the interest on the loan must be counted as an interest expense, but measures of income and assets that take expected losses into account are needed to have a complete picture of the situation of the lender. Measures of interest that exclude expected losses are also suitable for calculations of borrower FISIM. In our numerical examples for credit cards the expected losses are quite substantial, and even for loans in general they have significant effects on measures of borrower FISIM and the interest income of lenders.

IV. ACCOUNTING FOR DEPOSIT INSURANCE

The SNA is silent on how to account for the transactions of a formal deposit insurer with a trust fund that receives premiums and from which claims are paid when banks fail. Here, as an example

of a possible treatment, we offer a suggestion for recording the transactions of the US Federal Deposit Insurance Corporation (FDIC). A key issue in the US national accounts is an asymmetry in the current treatment of premiums and claims that tends to cause an overstatement of government saving. In particular, the premiums are treated as income of the FDIC, but the amounts disbursed to protect depositors from losses when banks fail are not treated as either current transfers or capital transfers. Furthermore, recording current or capital transfers to insured depositors at failing banks would merely replace this asymmetry with a different asymmetry, because the depositors are not treated as paying the premiums.

A special feature of deposit insurance is that the insurance premiums are typically paid by the depository institution on behalf of the insured depositor. In effect, the deposit insurance coverage is purchased by the bank and given to the depositor as an in-kind payment for the use of the depositor's money in a manner similar to the services comprised by depositor FISIM. Like the funds to cover the cost of consuming depositor FISIM, the funds to purchase this insurance on behalf of the depositors come from the margin between the reference rate and the deposit rate. [19] To reroute the premium payments through depositors, the imputed interest paid to depositors by the bank will continue to be calculated as the product of the deposits and the margin between the reference rate of interest and the rate actually paid to the depositors. Not all of this imputed interest will be treated as used by the depositors to purchase FISIM from the bank, however; now part of it will be treated as used to pay the deposit insurance premiums.

A key question is whether the depositor insurer should be treated like a nonlife insurance company or like the administrator of a trust fund that belongs to the depositors. In the case of the US Federal Deposit Insurance Corporation (FDIC), the latter approach would be consistent with the institutional arrangements. At the margin, premiums added to the reserves that the FDIC holds in the insurance fund will either be used as prepayments of insurance service charges (measured by the administrative expenses of the FDIC) or will be paid out to depositors as claims for losses. Following the US banking crisis of the 1980s, a target for the deposit insurance fund, specified as a fixed percent of insured deposits or reserve ratio, was established by legislation. From 1991 until 2010, the FDIC followed a policy of increasing premium charges to a level that would very quickly restore the insurance fund to the target value whenever the fund fell below the target, and of reducing the premiums to zero for most banks whenever the fund rose above the target. This made the premium charges extremely volatile (Ellis, 2013, chart 3). In 2010 the FDIC received authority to determine premium charges in a more flexible way and to set a new target for the reserve ratio. The FDIC adopted a target reserve ratio of 2 percent of insured deposits because this reserve ratio would have just been sufficient to keep the deposit insurance fund from falling below zero after the financial crisis of 2008 and would also have been sufficient in earlier banking crises (Ellis, 2013).

Letting the deposit insurance fund belong to the depositors implies a similarity between deposit insurance and life insurance in the treatment of premium payments and benefits as financial transactions (17.8). In particular, premiums that are not needed to cover the administrative expenses of the deposit insurer but that rather serve to increase the insurance fund balance represent financial transactions, not current transactions. They therefore do not add to the saving

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[19] In the US, the deposit insurance premiums are often just 1 percent of depositor FISIM, so the effect will be small.

of the deposit insurer or the government that owns the insurer. Also, the insurance service charges paid by the depositors are measured by the administrative expenses of the deposit insurer. The depositors pay these changes using the imputed interest that they receive from the bank if the current period premiums are large enough to cover the administrative expenses of the deposit insurer, or using the insurance fund if the premiums are insufficient to cover the insurer's administrative expenses. Saving of depositors is therefore negative if insurer's administrative expenses are greater than the premiums, and positive if the premiums include amounts added to the deposit insurance reserves.[20] In the case of positive saving, the overall consumption of services of the depositors will be lower than if FISIM were the only used for the imputed interest income received by depositors.

To be consistent with these treatments of premiums and administrative expenses of the deposit insurer, benefits paid by the insurer to protect depositors at failing banks from losses must be treated as financial transactions, rather than as transfers to depositors. If the deposit insurance fund is the property of the depositors, the losses caused by bank failures represent OCVAs for the depositors even if they are borne by the deposit insurance company. Provisions for expected losses from bank failures should therefore be shown as a memorandum item for the depositors.

In exceptional circumstances, the losses in banking crisis might be so large that the depositor insurance becomes insolvent. In 1989, for example, the insurer of deposits at US savings and loan associations (the FSLIC) was declared insolvent and the remaining claims were paid with general government funds. Benefits paid from general government funds to depositors at failing banks would be recorded as either current or capital transfers. The treatment as a capital transfer is appropriate would be appropriate if the banking crisis were viewed as analogous to the kind of major catastrophe that gives rise to the treatment as capital transfers of nonlife insurance benefits (17.40).

V. CONCLUSION

This paper has discussed four sets of proposals for better elucidating the role of finance in the economy. For holding gains and losses, a supplemental measure of income plus holding gains or losses was proposed and clarifications of the boundary between holding gains and price changes attributable to production were also discussed. These ideas will provide more complete information on the resources available to market makers, and pension funds and insurance companies and will allow the liquidity services of market makers and securities issue underwriters to be measured. The measurement of liquidity services was illustrated using data from France.

The next set of proposals involved rerouting the saving of corporations to the shareholders in a supplementary set of accounts. The case for doing this is particularly strong in situations where a controlling shareholder is present, such as FDI (where it is already done) and public corporations. A supplementary presentation of the accounts that locates public corporations in a public sector is

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[20] As an example of a case where depositors would have positive saving, in 2009 the FDIC received $46 billion in prepayments of three year's worth of deposit insurance premiums (Ellis, 2013). Note that interest earned by the deposit insurance fund must be routed to the depositors and treated as premium supplements paid by them.

recommended as a way of presenting a consolidated measure of the saving of public corporations and the general government sector. Another supplementary presentation of the accounts would treat the retained earnings that are shown as saving of corporations in the core national accounts as having been distributed to shareholders and reinvested by them. An illustration using data from the US showed that this presentation would largely solve the problem of having to choose between showing the saving of defined benefit pension plans as negative, or excluding pension benefits funded by holding gains from household income.

A third set of proposals aims at providing measures of the income of lenders that take into account expected losses arising from defaults. By showing a provision for losses from default, all the interest owed by borrowers can be accrued when measuring the saving of borrowers, but the saving of lenders can be measured based on just the amounts that are expected to be collectable. When banks shift into riskier types of lending, such as credit card lending, their income growth will be overstated for some purposes without a provision for their higher expected losses. Their output growth will also be overstated if interest needed to cover expected losses is included in purchases of borrower FISIM.

Finally the paper discussed a proposal for measuring the operations of a formal deposit insurance scheme that collects premiums and pays claims from accumulated reserves but that does not operate like a market producer. In particular, to avoid the overstatement of government net lending in the US national accounts caused by the treatment of deposit insurance premiums as income for the government without a treatment of claims as transfers paid by the government we proposed a treated of the deposit insurance trust fund as belonging to depositors.

Besides these specific proposals, a more general message of this is the need for memorandum items or supplementary accounts to provide a complete picture of key macroeconomic developments. The consistency constraints of a coherent set of core national accounts have great advantages, but they limit the flexibility of those accounts to provide all the relevant information. Labor statistics provides an example of an area that has more flexibility and where the need for alternative measures has long been accepted. In addition to the standard measure of the unemployment rate, information is provided on measures of labor under-utilization that provide alternative treatments of discouraged workers, marginally attached workers, and workers in involuntary part-time employment.

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Table 1: Implicitly priced market liquidity services of financial institutions in France
(€ billions unless stated differently)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
production in national accounts	94	96	97	102	108	105	119	126	122	124	128
plus holding gains generated by intermediation	*0,154*	*0,086*	*0,103*	*0,083*	*0,130*	*0,359*	*0,251*	*1,365*	*1,365*	*0,719*	*0,555*
as a % of production	0,2%	0,1%	0,1%	0,1%	0,1%	0,3%	0,2%	1,1%	1,1%	0,6%	0,4%
split accross buying sectors											
financial institution to the exclusion of insurance and pension funds	*0,031*	*0,019*	*0,017*	*0,021*	*0,032*	*0,138*	*0,031*	*0,360*	*0,429*	*0,146*	*0,130*
insurance and pension funds	*0,010*	*0,006*	*0,005*	*0,004*	*0,005*	*0,021*	*0,024*	*0,299*	*0,024*	*0,056*	*0,050*
non financial corporations	*0,009*	*0,005*	*0,004*	*0,003*	*0,007*	*0,041*	*0,028*	*0,112*	*0,144*	*0,102*	*0,033*
general government	*0,018*	*0,008*	*0,006*	*0,002*	*0,004*	*0,052*	*0,049*	*0,247*	*0,230*	*0,122*	*0,062*
housholds	*0,002*	*0,000*	*0,001*	*0,000*	*0,001*	*0,005*	*0,003*	*0,024*	*0,013*	*0,012*	*0,007*
rest of the world	*0,086*	*0,048*	*0,071*	*0,054*	*0,081*	*0,103*	*0,117*	*0,323*	*0,525*	*0,281*	*0,273*

Table 2: Sources of Change in Wealth of the US Household Sector,
Annual Averages for 2005-2013

	Annual average in billions of dollars	Percent of Disposable Personal Income
Saving, investment in durables, and capital transfers	713.9	6.4
Difference between financial and capital account estimates of net lending, and other changes in volume of assets	463.2	4.2
Holding gains on real estate and other nonfinancial assets	-55.6	-0.5
Holding gains on financial assets	1421.6	12.8
Total change in net worth	**2543.1**	**22.9**

Source: Derived from Integrated Macroeconomic Accounts of the US, table S.3a

Table 3: Direct and indirect holdings of shares and allocation of reinvested earnings to households and NPISH in France

Billions of euros, unless stated otherwise

		2010	2011	2012	2013
direct holding of shares by households and NPISH		**798**	**753**	**891**	**986**
quoted		161	135	153	182
unquoted		636	619	738	804
indirect holding of shares by households and NPISH through mutual funds		**140**	**130**	**152**	**167**
indirect holding of shares by households through insurance		**269**	**254**	**243**	**256**
direct holding on equity in with profit insurance					
	listed	54	48	45	52
	unlisted	63	67	56	33
indirect holdings of equities (listed) through with profit insurance		46	33	31	33
direct holding on equity in unit linked insurance					
	listed	3	3	4	5
	unlisted	0	0	0	1
indirect holdings of equities (listed) through unit linked insurance		68	60	60	68
direct holding on equity in non life insurance					
	listed	7	6	6	7
	unlisted	26	34	39	55
indirect holdings of equities (listed) through non life insurance		2	1	1	2
reinvested earnings to households and NPISH		**9,65**	**2,75**	**3,14**	**3,20**
through direct holding of shares		6,67	1,92	2,28	2,36
through shares held in mutual funds		1,17	0,33	0,39	0,40
through insurance		1,80	0,50	0,47	0,44
as a % of dividends received by households		**19,33**	**4,99**	**6,19**	**6,11**
as a % of premium supplements received by households		**17,13**	**5,06**	**5,90**	**6,10**
as a % of households savings		**4,75**	**1,34**	**1,56**	**1,60**

Table 4: Retained Earnings Routed to Final Holders
Billions of US Dollars

	2007	2008	2009	2010	2011	2012	2013
Households and NPISH, excluding from pensions and annuities	**182.0**	**111.8**	**356.3**	**537.3**	**483.1**	**464.4**	**440.2**
Reserves for annuities from life insurance companies	15.9	10.8	37.7	55.5	50.2	48.7	44.2
Defined benefit pension funds	55.2	36.2	119.7	170.2	146.4	136.0	123.2
Defined contribution pension funds	38.5	24.6	80.8	120.4	105.8	99.2	95.0
Households and NPISH, including from pensions	**291.6**	**183.4**	**594.5**	**883.3**	**785.5**	**748.2**	**702.6**
State and local governments[a]	**2.7**	**1.8**	**6.0**	**8.7**	**7.7**	**7.4**	**6.8**
Final US holdings, excluding Federal government	**294.4**	**185.2**	**600.5**	**892.0**	**793.3**	**755.7**	**709.4**
LESS: Net receipts of retained earnings from the ROW	29.8	17.9	47.6	80.1	59.4	44.8	36.4
Retained earnings on US issues, NIPAs	**264.6**	**167.3**	**552.9**	**811.9**	**733.9**	**710.9**	**673.0**
Effect on equity-related property income received from the ROW:							
Retained earnings on US portfolio investment in the ROW	75.0	49.1	158.5	252.9	224.2	213.9	201.4
Dividends received from the ROW	249.0	316.4	237.2	248.0	298.6	321.7	286.8
Reinvested earnings on US direct investment abroad	261.4	265.6	260.9	336.6	345.7	322.7	370.2
Total distributed and retained earnings on US direct and portfolio investment abroad	585.4	631.1	656.6	837.5	868.5	858.3	858.4
Effect on equity-related property income paid to the ROW:							
Retained earnings on ROW portfolio investment in the US	45.2	31.1	110.9	172.8	164.9	169.1	165.0
Dividends received from the ROW	108.6	135.9	119.0	126.6	143.7	144.8	154.0
Reinvested earnings on US direct investment abroad	48.5	39.4	21.9	62.8	78.7	97.7	100.1
Total distributed and retained earnings on US direct and portfolio investment abroad	202.3	206.4	251.8	362.2	387.3	411.6	419.1
Effect on net national saving							
National saving, net of CFC, NIPAs	236.5	-89.5	-295.8	-126.1	-15.1	295.4	406.8
Net national saving with retained earnings	266.3	-71.6	-248.2	-46.0	44.3	340.2	443.2

Table 4, continued

	2007	2008	2009	2010	2011	2012	2013
Effect on sources of change in DB pension wealth:							
Implied funding of pension benefits from holding gains[b]	157.2	136.0	119.4	132.4	146.2	147.4	172.2
Less: Retained earnings on shares held by DB plans	55.2	36.2	119.7	170.2	146.4	136.0	123.2
Implied funding of benefits from holding gains with retained earnings rerouted to shareholders	102.0	99.8	-0.3	-37.8	-0.2	11.4	49.0
Effect of DB pension plans on personal saving, NIPAs	587.5	634.5	675.0	683.5	685.6	700.8	690.2
Effect on personal saving with retained earnings	642.7	670.7	794.7	853.7	832.0	836.8	813.4
Effect on personal saving rate:							
Personal saving rate, NIPAs	3.0	4.9	6.1	5.6	6.0	7.2	4.9
Retained earnings on shares benefitting households	291.6	183.4	595.0	883.7	785.8	748.4	702.7
Personal saving with retained earnings	601.9	725.6	1266.5	1511.3	1496.6	1644.4	1310.7
Personal saving rate with retained earnings	5.6	6.5	11.0	12.5	11.9	12.5	9.9
Effect on premium supplements of households:							
Household nonlife premium supplements , NIPAs[c]	12.3	11.6	9.5	7.5	8.0	8.0	8.4
With retained earnings	13.0	12.1	11.4	9.8	9.9	9.8	10.0
Investment income from life insurance company reserves[d]	245.5	240.0	227.5	224.3	230.6	236.6	234.9
With retained earnings	267.4	254.9	278.9	299.5	298.0	301.3	293.1

a. Retained earnings on shares allocated to the federal government are assumed to be zero.
b. From line 30 of table 7.21, the table on DB pension plans in the NIPAs.
c. NIPA table 7.12, line 181.
d. NIPA table 7.11, line 45, adjusted down for the proportion of the life insurance reserves in Financial Accounts table L.115 that is allocated to depository institutions in table L.110.

Table 5: US Credit Card Implied Service Rate and Related Data, 2001-2013
(percents)

	Interest Rate	Reference Rate	Net Interest Margin	Net Charge-off Rate	Default Margin	Implied Service Rate
2001	14.02	5.43	8.59	5.35	5.35	3.23
2002	12.92	3.58	9.34	6.54	5.65	3.69
2003	11.87	2.78	9.08	5.64	5.65	3.44
2004	11.92	2.76	9.16	4.87	5.45	3.71
2005	11.77	4.35	7.42	4.83	5.30	2.12
2006	14.68	6.83	7.86	4.09	4.99	2.86
2007	13.35	6.26	7.09	3.94	4.73	2.36
2008	12.75	3.72	9.03	5.75	4.99	4.04
2009	12.42	1.68	10.74	9.39	6.09	4.65
2010	12.72	1.29	11.43	9.46	6.93	4.50
2011	13.69	1.24	12.45	6.51	6.83	5.62
2012	12.28	0.97	11.30	3.97	6.11	5.19
2013	12.56	0.80	11.77	3.50	5.46	6.31
Average	**12.84**	**3.21**	**9.63**	**5.68**	**5.66**	**3.98**

Table 6: US Credit Card Services and Loss Provisions
(Billions of current dollars)

	Credit Card Interest Received	Provision for Default Losses	Interest Income, net of Default Loss Provision	Interest Expense implied by Reference Rate	Borrower FISIM
2001	23.1	8.8	14.3	9.0	5.3
2002	25.8	11.3	14.5	7.2	7.4
2003	24.5	11.7	12.9	5.7	7.1
2004	31.7	14.5	17.2	7.3	9.9
2005	32.9	14.8	18.1	12.2	5.9
2006	32.1	10.9	21.2	14.9	6.3
2007	34.5	12.2	22.3	16.2	6.1
2008	35.5	13.9	21.6	10.4	11.3
2009	36.5	17.9	18.6	5.0	13.7
2010	71.3	38.9	32.5	7.2	25.2
2011	64.0	31.9	32.1	5.8	26.3
2012	70.2	34.9	35.2	5.6	29.7
2013	71.8	31.2	40.6	4.6	36.1
Average	**42.6**	**19.5**	**23.2**	**8.5**	**14.6**

Table 7: Cost of bad debt losses on loans from monetary financial institutions in France compared with interest, income and loan balances
(In € billions unless stated differently)

	2008	2009	2010	2011	2012	2013
Financial institutions						
Outstanding loans	5108	5049	5176	5889	5748	5572
"SNA interest" received	324	202	151	180	171	139
Output of FISIM	106	120	127	123	126	129
Adjustment for expected bad debt losses	7	10	8	10	13	8
Corrected Output	100	110	119	114	113	121
Receipts of SNA interest + FISIM	430	322	278	303	297	268
Adjusted for expected bad debt losses	424	312	270	293	284	260
Business accounts						
Cost of expected losses, as percent of total interest received	1.6	3.1	2.9	3.3	4.4	3.0
Cost of expected losses, as percent of borrower FISIM	6.6	8.3	6.3	8.1	10.3	6.2
Cost of expected losses, as percent of loans outstanding	0.1	0.2	0.2	0.2	0.2	0.1
Borrowers						
Nonfinancial corporations						
Outstanding debt	1887	1829	1847	1994	2025	2037
"SNA interest" paid	115	87	68	80	72	60
Consumption of borrower FISIM *(needs checking)*	*38*	*52*	*57*	*55*	*53*	*56*
Adjustment for expected bad debt losses	4	6	4	5	7	5
Gross disposable income, national accounts	173	165	191	191	185	182
Gross disposable income plus OCVA for expected losses[a]	177	171	195	196	192	187
Business accounts						
Compensation for expected losses, as percent of interest paid	2.6	4.3	3.2	3.7	5.6	4.3
Compensation for expected losses, as percent of loans outstanding	0.2	0.3	0.2	0.3	0.3	0.2
Households						
Outstanding debt	955	1004	1057	1111	1135	1158
"SNA interest" paid	65	57	72	67	54	53
Consumption of borrower FISIM	0	11	17	13	17	17
Adjustment for expected bad debt losses	2	4	4	4	5	3
Adjusted gross disposable income, national accounts	1579	1592	1663	1666	1681	1698
Gross disposable income plus OCVA for expected losses[a]	1581	1596	1667	1670	1686	1701
Business accounts						
Compensation for expected losses, as percent of interest paid	3.1	5.9	4.5	5.0	7.0	4.3
Compensation for expected losses, as percent of loans outstanding	0.2	0.4	0.4	0.4	0.5	0.3

a. This concept could be labeled as "Gross disposable income less other changes in volume of liabilities"

Figure 1: Reinvested Earnings on shares held by residents, rest of the world, insurers (Percents)
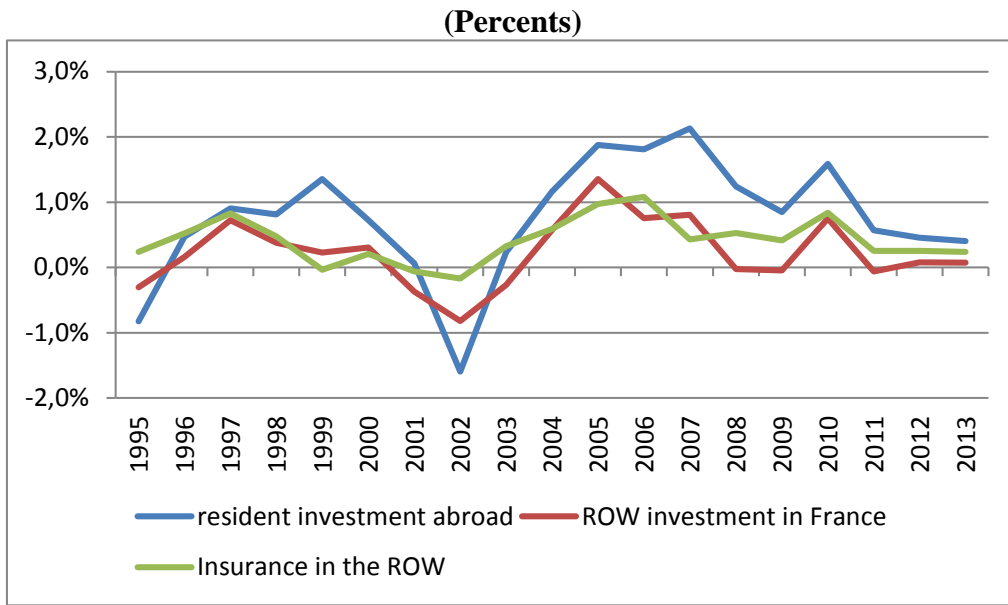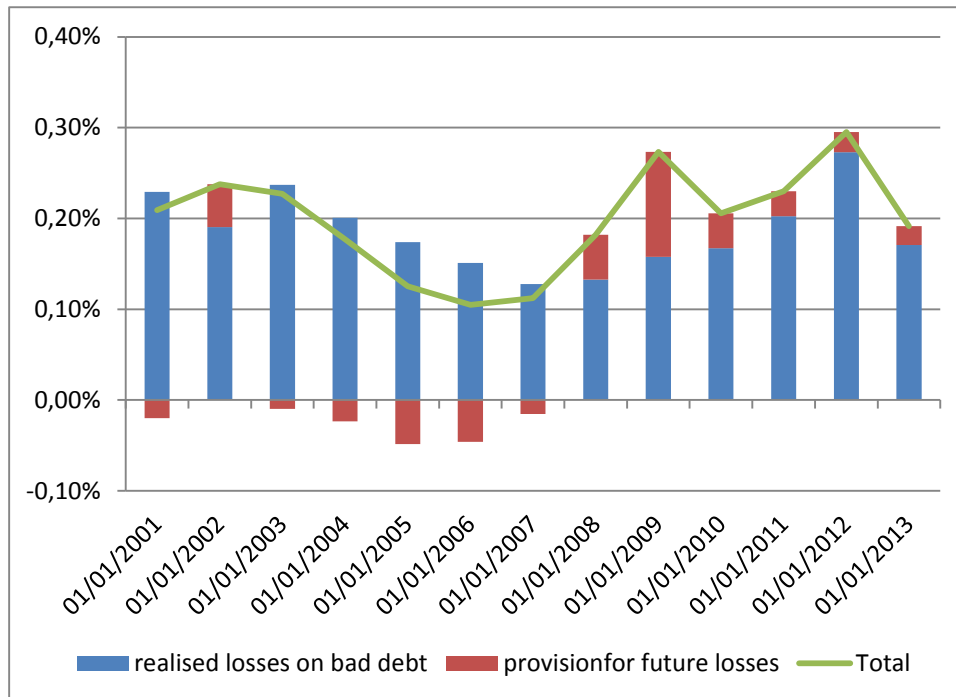

Figure 2: Annual realized losses on bad debt and annual provision for future expected losses (As a percent of total outstanding loans of financial institutions)

**APPENDIX 1: STEPS TO REROUTE RETAINED EARNINGS TO ULTIMATE BENEFICIARIES
ILLUSTRATED WITH US DATA**

Including retained earnings of corporations in the income of the shareholders would be a simple matter if all the outstanding shares were directly owned by households resident in the same country as the corporation issuing the shares. We would just have to add the net saving of corporations to household income. In the case of private saving the US, this addition is already done: NIPA table 5.1 reports the combined saving of persons and private enterprises as "net private saving".[21]

Shareholders may, of course, be other corporations, governments, or non-residents. It is also useful to distinguish pension plans as a distinct sector from households. Unfortunately, estimating a separate ratio of retained earnings to the value of shares held for each sector would be a difficult task, so in our empirical illustration using US data, we estimate single national ratio in a given year. This leads to the same results as allocating the national total of retained earnings in proportion to the values of the equities held by each sector.

Besides shares in domestic corporations held by non-resident portfolio investors, cross-border shareholdings include shares in foreign corporations held by residents. For our US example, we assume that the ratio of retained earnings to share value is the same for foreign equities held by US residents as for US equities held by US residents. Although this is a strong assumption, obtaining data on retained earnings on cross-border portfolio investment positions is difficult.[22] Under the simplifying assumption that ratios of retained earnings to share values do not vary, ratios of the value of shares held by US residents to the value of shares issued by US corporations can be used to gross up the retained earnings of US corporations to account for net holdings of ROW equities by US residents.

Finally, in the case of the United States, another measurement challenge is that the data on shareholdings do not separate C-type corporations, which are have many shareholders and are generally publically traded, from S-type corporations, which have a small number of shareholders and are not traded in securities markets. Such a split would allow for a more precise allocation of retained corporate earnings because only the C-type corporations have large amounts of retained income. For tax purposes, S corporations are treated like partnerships in that all of their income is passed through to the income tax returns of their shareholders. Because the shareholders pay tax on the S corporation's income regardless of whether it is distributed, S corporations distribute nearly all of their income. (In the years 2005-2011, based on data on S Corporation tax returns from the IRS Statistics of Income tables, accessed at www.irs.gov/uac/SOI-Tax-Stats-S-Corporation-Statistics , the ratio of dividends to after tax income was 87 percent, on

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[21] The personal sector of the NIPAs combines households and nonprofit institutions serving households. For convenience in this paper we will refer to household/NPISH sector of the NIPAs as simply the household sector.

[22] Data challenges in estimating cross-border investment positions are discussed in Damgaard and Elkjaer (2014), and challenges in estimating income are discussed in Damgaard, Laursen and Wederkinck (2011). Although US investors seem to earn a higher rate of return on outward FDI than rest-of-the-world (ROW) investors do on FDI in the US, a similar asymmetry may not exist for listed shares.

average.) Indeed, the losses of the S corporations with negative income often exceed the undistributed income of the profitable S corporations, so the overall amount of undistributed income of S corporations may be negative (FAQ 318 on the BEA website). We therefore assume that the retained earnings of S corporations are zero and exclude these equities from the allocation of retained earnings. Without this exclusion of S corporations, too large a share of the economy's retained earnings would be allocated to households as direct holders of equities.[23]

Estimating Direct and Indirect Ownership of Corporate Equities by Final Holders

Although the ratio of retained earnings to equities is may vary across sectors because of differences in price-earnings ratios and dividend payout rates, as an approximation, the retained earnings of resident private corporations can be allocated to final owning sectors based on the value of their shareholdings. Final holders of corporate equity have both directly held shares and shares held indirectly through investment funds and technical reserves of insurance companies. The sectors treated as final owners are households and NPISHs (called "households" for convenience), governments, DB and DC pension plans and the rest of the world (ROW).[24] In the SNA the transactions of the pension plan sector are separately identified for analytical purposes even though their income is ultimately distributed to households.

Appendix table A-1 shows the corporate equity assets of all the sectors that are shown as direct holders of equities in the Financial Accounts of the United States (published by the Federal Reserve Board at: www.federalreserve.gov/releases/z1/). These sectors include some financial corporations, such as security brokers and dealers. Note that table A-1 excludes closed-end mutual funds and exchange-traded funds (ETFs) from corporate equities directly held by households and nonprofit institutions serving households because these funds are on their own line. This differs from the presentation in the table on the balance sheet of households with equity detail in the Financial Accounts of the US, table B.100.e. In table B.100e, the value of directly held corporate equities *includes* closed-end and exchange-traded funds.

As explained in the previous section, retained earnings of S corporations are close to zero, so we exclude S corporations from the equity positions used to allocate retained earnings. The US Financial Accounts do not separately identify equity in S corporations, but book values of equity in S corporations are available the in tax return data published the Statistics of Income (SOI) division of the Internal Revenue Service. (See table 7 of the SOI release on S corporations at http://www.irs.gov/uac/SOI-Tax-Stats-S-Corporation-Statistics). To estimate the value of unlisted shares, the Federal Reserve Board applies industry-specific ratios of market value to book value for listed shares from Standard and Poor's Compustat database to the book value of the unlisted shares, then discounts by 25 percent to allow for their lack of liquidity (http://www.federalreserve.gov/apps/fof/). We implement a simplified version of this method that does not take industry into account, and multiply the book value for the S corporations by the average ratio of market to book value for the S&P 500 for the year, then discount by 25

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[23] Note if retained earnings are allocated based on dividends instead of based on equity assets, failing to exclude dividends paid by S corporations would severely distort the results.

[24] Note that the figures for corporate equities held by or issued by the ROW that we use in allocating retained earnings cover only portfolio investment.

percent. The estimates of equity in S corporations, which we remove from the holdings of households published in the Financial Accounts, are shown in the second row of table A-1.

Equities held indirectly via Investment Funds

For our empirical example using data from the US example, to account for indirect holdings of equities, we first allocate those held by investment funds to the shareholders in these funds including insurance companies, then allocate equities held as part of insurance company reserves to policyholders.

Investment funds in the US include closed-end mutual funds, exchange-traded funds and open-end mutual funds, which are simply known as "mutual funds" in the Financial Accounts of the US. Investment funds distribute the investment income that they receive to their shareholders. (The part of the income that the funds receive that is used to pay administrative expenses, including the fee of the investment advisor, is treated as having been distributed to the shareholders and used by them to purchase services.)

As a first step in adding the undistributed income on the shares held by investment funds to the income distributed to the investors in those funds, we allocate the equities held by mutual funds to their shareholders either in a proportional manner or based on detailed information on equities held indirectly by households in table B.100.e of the Financial Accounts of the US. Table B.100.e also allocates all of the equities held by closed-end funds and ETFs to households.

The results of this allocation of equities held indirectly via investment funds are shown in table A-2. In table A-2, the portion of the value equities held by open-end mutual funds that remains after those assigned to households are removed is allocated to the other sectors that hold mutual fund shares in proportion to the value of their holdings. Non-residents are among the holders of mutual fund shares issued in the US. The equities held by the mutual funds bought by foreign investors can be assumed to be the same mix of US-issued equities and equities from the rest of the world held by US investors in the aggregate. Under this assumption, removing the shares that are indirectly owned by the rest of the world from the estimate of the value of shares held by US residents has no effect on the overall composition of the equities held by US residents.

Table A-2 also allocates the equities held by funding corporations that were created by the monetary authority during the financial crisis to the monetary authority. The monetary authority effectively owns these funding corporations.

Technical Reserves at Insurance Companies

In the SNA, rerouting transactions are recorded for property income on reserves of insurance companies (*SNA* 3.62-3.65). Nonlife insurance companies (called property-casualty insurance companies in the US financial accounts) use property income from invested premiums to help cover the cost of providing services and paying claims. Unearned premiums and claims outstanding, which are known as technical reserves, can be viewed as belonging to policyholder (6.188). Property income from investments funded from technical reserves is shown as paid to policyholders and returned to the insurance companies as premium supplements. However, the Financial Accounts of the US show policy payables (claims that have not been reported or that

have not been settled) but not unearned premiums, so our estimates of technical reserves of property-casualty insurers omit unearned premiums.

Premium supplements help to cover costs of producing insurance services and paying claims, which reduces the direct premium payments that policyholders need to make to purchase insurance cover. In theory, to arrive at a full measure of insurance services, holding gains that are part of the investment returns used to cover costs of services and claims payments should be included in premium supplements (*SNA* 17.18). In practice, however, the methods that are used to measure premium supplements simply reroute the actual property income on technical reserves without the holding gains.[25]

In our illustration for the case of the US, we therefore add undistributed earnings to the investment income received by policyholders on technical reserves. Higher estimates of insurance services consumed by households and government imply higher estimates of GDP, but higher estimates of insurance services consumed by corporations and other businesses, including owner-occupied housing, merely reallocate the value added away from the consuming industries and to the insurance industry.

In contrast to technical reserves for nonlife insurance, which just generate investment income that helps to pay for insurance coverage, reserves for life insurance are a means of building wealth. In the SNA (6.192), life insurance is considered to be a kind of saving vehicle. As a result, reserves for life insurance tend to be much larger than those of nonlife insurance, and they are a more fundamental component of household wealth. Household sector assets in the Financial Accounts of the US include in reserves for life insurance.[26]

Having allocated indirect holdings of equities via investment funds as shown in table A-2, we next allocate equities held as part of technical reserves of life insurance companies and non-life insurance companies to policyholders. The results are reported in table A-3. A combined total of the equities that households hold indirectly via life insurance and annuities purchased from life insurers is published in table B.100e of the Financial Accounts. In table A-3, we divide the published total into separate components for life insurance and annuities based on the composition of life insurer's liabilities for their general account and for their separate accounts (tables L.115.g and L.115.s of the Financial Accounts).

The balance sheets of many depository institutions include life insurance policy assets, and the Financial Accounts show reserves for life insurance policies with depository institutions as the beneficiary. For life insurance policy assets of depository institutions, we allocate the equities held by life insurers based on the share of technical reserves on these policies in the liabilities of

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[25] Even if holding gains are included in premium supplements, a problem will remain. Including holding gains in the imputed payments of property income to policyholders but not in the property income that the insurer receives from its investments will cause an understatement of the net property income of the insurer. But measuring this net property income correctly is less critical than measuring output of insurance services.

[26] The Financial Accounts do not include technical reserves for property-casualty insurance in household wealth. The Financial Accounts do not have a measure of the unearned premiums part of these reserves, and policy payables for property-casualty insurance merely offset losses. Counting the policy payables as assets of policyholders without deducting the associated losses from their assets would be inconsistent.

life insurers. For equities directly held by non-life insurance companies, we use policy payables to estimate technical reserves and allocate equities held by these insurers based on policy payables as a share of overall liabilities. Table A-3 also further reallocates the equities held indirectly by the monetary authority to the federal government of the United States. The federal government is the ultimate residual claimant on the earnings of the monetary authority.

Shares held by Corporations and Shares issued in the Rest of the World

The value of any shares that a corporation holds is reflected in the value of the equity it has issued, so values of shares held by corporations do not need to be added when calculating the total value of the equities held by final investors. The value of equities held by US final investors differs from the value of equity issued by US corporations, however. Some US issues are held by the rest of the world and the holdings of US residents include shares issued in the rest of the world.

To calculate the value of the shares issued by US corporations from the value of shares held by final holders, the value of the shares issued in the rest of the world must be subtracted and value of the shares in issued by the US corporations that are held by the rest of the world must be added. US residents have larger portfolio investment in shares issued by the rest of the world than nonresidents do in shares issued by US corporations, so the value of shares issued by US corporations is smaller value than the value of the shares held by US residents.

Estimating Claims of Final Shareholders to Undistributed Corporate Earnings

The average of the opening and closing balance sheets is more suitable for allocating the flow of undistributed earnings during a year than the closing balance sheet alone. Table A-4 therefore shows replaces the year-end positions shown in table A-3 with averages of the ending positions in the prior and current year.

Table 2 in the main text shows the allocation of the undistributed corporate earnings to final holders of equities based on the average positions of table A-4. Note that we do not allocate any undistributed earnings on shares held directly or indirectly by the federal government. Those shares were acquired during the financial crisis to rescue corporations that were unable to meet their obligations. In the crisis period, these corporations did not have positive earnings. When they again became profitable, they were either privatized or they began to distribute nearly all of their earnings to the government.

To allocate the undistributed corporate earnings, we multiply the overall ratio of undistributed earnings to the average value of shares issued by the average value of the shares held by each sector. The ratios of undistributed earnings to the average value of the shares issued by US corporations (excluding S corporations) range from 1.2 percent in the crisis year of 2008 to 5.7 percent in 2010. (In 2010 dividends remained depressed even though earnings had rebounded.)

Table A-1: Direct Holders of Corporate Equities in the Financial Accounts of the US

	2007	2008	2009	2010	2011	2012	2013
Households and NPISHs, equities of C corporations	7233.8	3843.7	5011.1	6128.1	5915.8	6556.5	7986.4
Households and NPISHs, equities of S corporations	1959.0	1370.5	1487.0	1601.0	1600.1	1873.5	2923.1
State and local governments	141.7	91.0	111.8	126.3	125.2	140.7	167.6
Federal government	0	188.7	67.4	49.9	57.8	39.9	35.1
Depository institutions	88.8	33.8	63.6	73.7	67.4	71.3	101.3
Property-casualty insurance companies	231.3	190.1	215.6	214.8	220.8	252.2	309.7
Life insurance companies	1464.6	1001.7	1208.5	1402.6	1390.2	1545.1	1794.4
Defined benefit pension funds	3168.8	2013.6	2504.2	2816.7	2668.7	2984.7	3567.6
Defined contribution pension funds	1197.3	766.3	932.6	1104	1068	1196.4	1514.6
Mutual funds	5476.9	3014.1	4136.2	4762.7	4427.2	5109.4	6852.2
Closed-end funds and exchange-traded funds	718.9	546.3	757.4	950.8	959.7	1193.9	1541.8
Security brokers and dealers	224.8	109.2	124.2	117.2	103.2	126.7	172.4
Funding corporations	0	0	25.1	26.4	0	0	0
Total holdings of US residents	**21905.9**	**13169.0**	**16644.7**	**19374.2**	**18604.1**	**21090.3**	**26966.2**
Total holdings of US residents excluding S corporations	**19946.9**	**11798.5**	**15157.7**	**17773.2**	**17004.0**	**19216.8**	**24043.1**
LESS: Net holdings of foreign issues by US residents	2291.8	823.2	1336.9	1684.2	1104.2	1358.5	1280.5
Holdings of foreign issues by U.S. residents	5248.0	2748.4	3995.3	4900.2	4501.4	5311.5	6444.2
Holdings of U.S. issues by foreign residents	2956.2	1925.2	2658.4	3216.0	3397.2	3953.0	5163.7
EQUALS: Total US issues excluding S corporations	**17655.1**	**10975.3**	**13820.8**	**16089.0**	**15899.8**	**17858.3**	**22762.6**

Table A-2: Holdings of Equities, including through Investment Companies or Funding Corporations[a]

	2007	2008	2009	2010	2011	2012	2013
Households and nonprofit institutions serving households	11171.5	6214.7	8221.3	9886.4	9497.6	10876.1	13773.4
State and local governments	180.2	111.3	140.8	161.6	158.6	177.6	215.8
Federal government	0	188.7	67.4	49.9	57.8	39.9	35.1
Depository institutions	111.0	45.9	91.9	101.8	91.9	97.7	137.0
Property-casualty insurance companies	239.5	194.4	221.3	221.0	225.9	258.7	318.9
Life insurance companies	1596.5	1069.4	1292.7	1496.8	1474.6	1632.4	1904.1
Defined benefit pension funds	3616.1	2253.0	2819.8	3159.6	2954.9	3248.2	3908.2
Defined contribution pension funds	2522.0	1475.5	1947.4	2282.1	2137.9	2389.4	3129.6
Security brokers and dealers	224.8	109.2	124.2	117.2	103.2	126.7	172.4
Monetary authority	0	0	25.1	26.4	0	0	0
Nonfinancial corporate business via mutual funds	124.6	59.5	96.8	113.0	93.3	98.7	125.5
US holdings adjusted for US mutual funds held by the ROW	**19786.2**	**11721.5**	**15048.7**	**17615.9**	**16795.7**	**18945.3**	**23719.9**
Foreign issues directly held by U.S. residents	5248.0	2748.4	3995.3	4900.2	4501.4	5311.5	6444.2
LESS: **Foreign issues held by mutual funds held by ROW**	38.5	16.1	26.2	39.8	50.4	68.4	77.2
EQUALS: **Adjusted holdings by US residents of ROW issues**	**5209.5**	**2732.3**	**3969.1**	**4860.4**	**4451.0**	**5243.1**	**6367.0**
ROW direct holdings of US Issues	2956.2	1925.2	2658.4	3216.0	3397.2	3953.0	5163.7
PLUS: **ROW holdings of US issues via mutual funds**	122.2	60.9	82.8	117.5	157.9	203.1	245.9
EQUALS: **Adjusted ROW holdings of US Issues**	**3078.4**	**1986.1**	**2741.2**	**3333.5**	**3555.1**	**4156.1**	**5409.6**
US Issues	**17655.1**	**10975.3**	**13820.8**	**16089.0**	**15899.9**	**17858.2**	**22762.6**

a. S corporations are excluded

Table A-3: Holdings of Equities, including through Insurance Technical Reserves[a]

	2007	2008	2009	2010	2011	2012	2013
Households and nonprofit institutions serving households	12686.6	7210.8	9483.4	11345.6	10933.9	12474.8	15648.0
State and local governments	181.4	112.3	141.7	162.7	159.6	178.6	217.0
Federal government with monetary authority consolidated	0	188.7	92.5	76.3	57.8	39.9	35.1
Defined benefit pension funds	3616.1	2253.0	2819.8	3159.6	2954.9	3248.2	3908.2
Defined contribution pension funds	2522.0	1475.5	1947.4	2282.1	2137.9	2389.4	3129.6
Total, final holders	**19006.1**	**11240.3**	**14484.8**	**17026.2**	**16244.1**	**18330.9**	**22937.9**
Less: Adjusted holdings by US residents of ROW issues	5242.1	2767.5	4014.5	4905.2	4492.6	5292.7	6424.3
Plus: Adjusted ROW holdings of US Issues	3086.2	1993.5	2750.9	3343.8	3566.3	4171.3	5426.6
Value of Final Holdings of US Issues	**16850.2**	**10466.4**	**13221.3**	**15464.8**	**15317.8**	**17209.6**	**21940.2**
Holdings by Corporations of Equity in other Corporations	**804.8**	**508.9**	**599.4**	**624.0**	**582.1**	**648.5**	**822.4**
Depository institutions	115.9	49.8	94.5	104.6	94.9	100.9	140.4
Property-casualty insurance companies (own funds)	112.6	81.2	100.3	97.3	95.5	114.8	150.9
Life insurance companies (own funds)	124.7	108.5	69.7	73.4	76.0	72.5	75.2
Security brokers and dealers	224.8	109.2	124.2	117.2	103.2	126.7	172.4
Nonfinancial corporate business	226.8	160.1	210.8	231.5	212.5	233.6	283.5
Total holdings of US residents	**19810.9**	**11749.2**	**15084.2**	**17650.3**	**16826.2**	**18979.4**	**23760.3**
Less: Adjusted holdings by US residents of ROW issues	5242.1	2767.5	4014.5	4905.2	4492.6	5292.7	6424.3
Plus: Adjusted ROW holdings of US Issues	3086.2	1993.5	2750.9	3343.8	3566.3	4171.3	5426.6
US Issues, after adjustment for mutual fund shares of ROW	**17655.0**	**10975.3**	**13820.8**	**16089.0**	**15899.9**	**17858.2**	**22762.6**
Undistributed earnings of US corporations, NIPAs	**264.6**	**167.3**	**552.9**	**811.9**	**733.9**	**710.9**	**673.0**
as a percent of opening value of final holdings of US issues	1.6	1.0	5.4	6.2	4.8	4.7	3.9

a. S corporations are excluded.

Table A-4: Corporate Equity Assets of Final Holders: Average of Opening and Closing Values

	2007	2008	2009	2010	2011	2012	2013
Households and NPISH	**12631.8**	**9948.7**	**8347.1**	**10414.5**	**11139.7**	**11704.4**	**14061.4**
Defined benefit pension plans	3524.1	2934.5	2536.4	2989.7	3057.2	3101.5	3578.2
Defined contribution pension plans	2459.1	1998.7	1711.5	2114.8	2210.0	2263.7	2759.5
State & local governments	175.0	146.9	127.0	152.2	161.1	169.1	197.8
Federal government, including through monetary authority	0.0	94.4	128.1	58.7	53.9	48.9	37.5
Final US holdings	**18790.1**	**15123.2**	**12850.0**	**15729.8**	**16622.0**	**17287.5**	**20634.4**
LESS: US holdings of ROW issues	**4784.7**	**4004.8**	**3391.0**	**4459.8**	**4698.9**	**4892.6**	**5858.5**
ROW holdings of US Issues	**2884.7**	**2539.9**	**2372.2**	**3047.4**	**3455.0**	**3868.8**	**4799.0**
Consolidated US issues	**16890.1**	**13658.3**	**11831.3**	**14317.3**	**15378.1**	**16263.7**	**19574.9**
Undistributed earnings of US corporations, NIPAs	**264.6**	**167.3**	**552.9**	**811.9**	**733.9**	**710.9**	**673.0**
as a percent of average of opening and closing final holdings	1.6	1.2	4.7	5.7	4.8	4.4	3.4
Ratio of average US final holdings to average US issues	1.112	1.107	1.086	1.099	1.081	1.063	1.054
Undistributed earnings on shares held by US final holders	**294.4**	**185.2**	**600.5**	**892.0**	**793.3**	**755.7**	**709.4**

APPENDIX 2: CALCULATIONS FOR EXAMPLE OF US CREDIT CARD LENDING

The data for US credit card lending example in tables 3 and 4 are taken from individual bank Call Reports banks from credit card banks (defined as having 70 percent or more of their loans in credit cards), and banks with credit card portfolios, of $10 billion or more. These banks represent more than 85 percent of all bank credit card balances in the US.

The Call Reports do not provide an item for credit card interest income on a consolidated worldwide basis, only reporting credit card interest income for domestic offices (DCIC). Domestic office credit card balances represent between 80 and 90 percent of consolidated credit card balances. The Call Reports do report average credit card balances for domestic offices (DCC) as well as year-end credit card balances (DCCF). Average credit card interest rates are calculated as DCCI/DCC.

On the other hand, charge-offs and recoveries on credit cards, which we will need to calculate default margin, are available only on a consolidated basis, that is, including both domestic offices and foreign offices. Net charge-offs (CCCN) = charge-offs (CCCO) – recoveries (CCR). Moreover, the Call Reports do not report average credit card loan balances on a consolidated basis, but only year end balances (CCF). For this reason, we must estimate annual average consolidated credit card balances (CC) by multiplying year end consolidated credit card balances (CCF) by domestic credit card average balances (DCC) divided by domestic year end balances (DCF) (we are thus assuming that the ratio of year end balances to average balances is the same for consolidated credit cards as for domestic credit cards). We calculate the net charge-off rate by taking the sum of net charge-offs (CCCN) and dividing by the estimate of annual average consolidated credit card balances (CC). We calculate the interest expense rate as the total of all interest expenses (LE) for these banks in a given year as a ratio of average loan balances for all types of loans for these banks (L).

The credit card default margin was initiated in 2001 at the default margin in 2001. As this default margin, 5.35 %, was not very different from the average net charge-off rate (5.68 %) or the default margin (5.66%) over the entire period, this seems like a reasonable starting point. Thereafter, each year's default margin is calculated by taking the previous year's default margin and adding to it one-fourth of the difference between the current year charge-off rate and the previous year's default margin. This is roughly numerically equivalent to taking the previous quarter's default margin and adding to it 0.075 times the difference between the current quarter's charge-off rate and the previous quarter's default margin, the procedure followed by the US Bureau of Economic Analysis in measuring borrower FISIM.

In terms of the item codes on the Call Reports, the variables are defined as below. All of the variables come from fourth quarter, which means that the flow variables cover the entire year.

$DCCI_t = RIADB485_{t4q}$ is interest income for domestic credit cards for the year
$DCCF_t = RCONB538_{t4q}$ is the end of period level of domestic credit card loans.
$CCF_t = RCFDB538_{t4q}$ is the end of period level of consolidated bank credit card loans.
$CCCO_t = RIADB514_{t4q}$ is charge-offs for consolidated credit cards
$CCR_t = RIADB515_{t4q}$ is recoveries for consolidated credit cards
$LE_t = RIAD4073_{t4q}$ is interest expense for all borrowings
$DCC_t = \Sigma RCONB561_{t1q-t4q}/4$ is the annual average for domestic credit card loans
$L_t = \Sigma RCFD3360_{t1q-t4q}/4$ is the annual average for all loans, consolidated.
The Credit Card Interest Rate = DCCI/DCC
Credit Card Net Charge-off Rate = (CCCO-CCR)/(CCF * DCC/DCCF)