Some Information on the (Nonbank, Noninsurance)

Financial Services Industries

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Finance and insurance account for over 8 percent of gross domestic product (GDP) and the share of these rapidly expanding industries is growing—it was only 6 percent 15 years ago (Table 1). In the old SIC, finance and insurance was composed of six industries: depository institutions (banks, SIC 60), nondepository credit institutions (SIC 61), security and commodity brokers, dealers, exchanges and services (SIC 62), insurance carriers (SIC 63), insurance agents, brokers and service (SIC 64), and holding and other investment offices (SIC 67).

Brookings Measurement Workshops have previously covered banking[1] and insurance.[2] Banking and insurance account for about three-quarters of the finance total, but the other two industries (nondepository financial institutions and financial and commodity brokers) have far higher output growth rates (Table 2). Additionally, these are the industries where new financial products arise. For these reasons, it is important to examine the data for "nonbank, noninsurance financial services," which is the topic of this workshop.

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[1] http://www.brook.edu/dybdocroot/es/research/projects/productivity/workshops/19981120.htm
[2] http://www.brook.edu/dybdocroot/es/research/projects/productivity/workshops/19980421.htm

I. Recent growth and productivity trends.

Table 3 presents an overview of the three financial services industries. As the table indicates, all three have experienced very rapid output growth in recent years. For example, securities industry real output in 2000 was over seven times as high as it was in 1987 (an index number of 287.1, compared with an index of 39.3)

Financial services industries not only have high output growth in recent years, they have very high productivity growth rates. Indeed, their productivity growth rates are at or near the top of all services industries (Triplett and Bosworth, 2002). Table 4 and Charts 1 and 2 present the data. We also present in Table 4 data for banks (depository institutions, SIC 60), partly for comparison, and partly because in our previous paper we combined depository and nondepository financial institutions because of certain data problems.

Though much recent analysis of productivity acceleration in the U.S. uses 1995 as the "break year" (Jorgenson and Stiroh, 2000, Oliner and Sichel, 2000, Stiroh, 2001), examination of the data for the financial industries suggests that 1992 is a better year to mark productivity acceleration.[3] The choice of break year has no important substantive implications: Numerical magnitudes of the average annual growth rates are affected by it, but the qualitative results and conclusions are not.

As Table 4 shows, output per worker (our measure of labor productivity, or LP) grew after 1992 at 3.5 percent for banks, 6.3 percent for nondepository institutions, and 16 percent per year for brokers. All of these rates are substantially higher than LP growth in these industries in the previous period (1987-92). The table also shows value added (GDP originating) per worker, which also grows rapidly in each of the three industries, though at a somewhat lower rate (brokerage only marginally so), and which also accelerates after 1992. For the rest of the paper, we stay with the standard output per person measures.

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[3] In our earlier paper, we followed previous research in using 1995 as the break. For this reason, the growth rates in Table 4 of this paper differ from those for financial services industries in Table 3 of Triplett and Bosworth (2002).

We use the standard Solow labor productivity decomposition model, in which LP growth is accounted for by changes in inputs and multifactor productivity (MFP). In banking, investment in information technology (IT) capital has yielded substantial, and somewhat accelerating, contribution to labor productivity (1.8 points out of the 3.5 per cent average increase). For example, IT capital accounts for half of LP growth in banking after 1992. IT is a smaller factor for the other two, indeed it is nil for brokerage.[4]

Contracting out, as indicated by the positive contribution of intermediate input deepening, makes a strong contribution to LP in all three industries. Indeed, in nondepository industry intermediate input deepening contributed a remarkable 5/6 of the industry LP growth.

Multifactor productivity (MFP) makes a substantial contribution to LP growth in all three industries. In banking and in brokerage, post-1992 labor productivity acceleration was accompanied by substantial acceleration in MFP (in banks, MFP went from negative to positive); for nondepository institutions, MFP slowed somewhat after 1992, but it was already relatively high (at 1 percent per year) before 1992 and remains substantial.

Thus, in a general way, the trends for financial services industries repeat the trends for services industries as a group, as reported in Triplett and Bosworth (2002). For services industries as a group, LP and MFP accelerated in the 1990's. Capital services from IT equipment made a substantial contribution to LP growth, but not to acceleration, because the contribution of IT services to LP in services industries was prominent before the 1990's acceleration. And in a number of services industries, though not all, intermediate input deepening was associated with improvements in LP.

Financial services industries are notorious for producing output that is hard to measure. Their output measurement in national accounts is also wrapped up in the national accounting conventions on the treatment of interest, but that is not the topic of today's workshop (see the previous Brookings workshops on banking and insurance, and Triplett, 2001).

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[4] This is partly because the capital share is small. See the last section of this paper.

In 1999, BEA made a number of changes to GDP methodology that increased output growth in financial services industries (Moulton, Parker and Seskin, 1999), and the revised BEA industry database incorporated these GDP changes in 2000 (Lum, Moyer and Yuskavage, 2000). Considering that financial services output is hard to measure, it is well worth asking whether the post-1992 acceleration in these financial services industries is somehow caused by changes in statistical methodology. This is of course a question that can also be asked of services industry productivity measures, generally, a question we are currently exploring. The rest of the paper presents what we have been able to draw together on measurement issues in financial services industries.

II.   What do these financial services industries produce?

Before you can measure something, you have to know what it is. Taxonomy is the first step in measuring output. Until recently, the taxonomy step has been neglected for services industry output.

In the old US SIC system, the financial services "products" listed in the SIC manual were mostly types of companies. Examples, taken from the 1987 SIC manual include: "Morris plans not engaged in deposit banking, mutual benefit associations, intermediate investment banks, and mortgage companies, urban." Morris plans were not an active part of finance in 1987, so the list was substantially out of date.[5] But the thin list of financial industry products (indeed all services industry products) contrasts with the long list of products listed in manufacturing industries—as an example, SIC 3523 farm machinery and equipment has a product list that expands across two columns, beginning with "ammonia applicators" and ending with "windrowers." Services industry and services product classifications were so undeveloped that they could not yield data that were useful for economic analysis.

Harry Freeman has noted that defining financial services is not an easy task:

It is always difficult to determine the meaning of financial services company. What does that mean? Everybody talks about banks, insurance companies, and securities

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[5] Phillips and Mushinski (2001) remark: "Today, there are still two chartered banks in the U.S. with Morris Plan in their name, but they are small community savings banks and no longer operating strictly on the Morris Plan principles." In other words, "Morris plan banks not engaged in deposit banking" existed in the SIC manual, but not in the U.S. economy!

companies, and they are part of it. But what about H&R Block, which is one of the largest accounting firms in the United States and operates in about twenty countries? This is a financial services company. . . . Credit card processors, such as MBNA, Reuters Information, Standard & Poor's, which operates in 100 countries or something like that, and asset management companies are all financial services companies. (Freeman, 2000, page 457).

A great amount of work on this taxonomy problem has been conducted recently as part of the international collaboration that created the North American Industry Classification System (NAICS). We first describe the changes to industry definitions, which differ from the SIC industries tabulated in tables 1-4, because the new product lists cannot be fitted into the old SIC structure for finance.

In NAICS, the old SIC financial services industries have been rearranged somewhat. The former depository institutions (SIC 60) and nondepository institutions (SIC 61) are combined in NAICS "Credit Intermediation and Related Activities (NAICS 522), but they are still distinguished at the four digit level as NAICS 5221 (Depository Credit Intermediation, or banks) and NAICS 5222 (Nondepository Credit Intermediation). Some activities have been moved out of the old SIC banking industry into the new nonbanking parts of finance, so the old industry boundaries do not match the new ones. In addition, there is "Activities Related to Credit Intermediation" industry (NAICS 5223) which includes loan brokers, clearinghouses, and so forth.

NAICS still distinguishes "Securities, Commodity Contracts, and Other Financial Investments and Related Activities" in NAICS 523, which includes security brokerage as well as investment banking, commodity contracts and exchanges, portfolio management, and a variety of other activities. This industry sector is similar to the old SIC 62, with the addition of some activities: The biggest change was moving the management of pension funds out of insurance, where it was in the SIC, into the portfolio management portion of NAICS 523.[6]

Changes are deeper than the industry group table indicates. For example, SIC 6153 (short-term business credit institutions, except agricultural) has been split in NAICS among four other industries:

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[6] The correspondence between the SIC and NAICS structures for financial services is shown at the old SIC 4-digit level on the Census Bureau web site at: www.census.gov/epcd/naics/NAICS52.HTM#N523.

NAICS 52221 (credit card issuing), NAICS 52222 (sales financing), NAICS 52232 (financial

transactions processing, reserve, and clearinghouse activities, and NAICS 52391 (miscellaneous

intermediation). Each of those four industries also contains components taken from another old four

digit SIC industry. For example, the old SIC tried to distinguish establishments that issued credit cards

to individuals from establishments that issued credit cards to businesses, and put them in separate

industries (SIC 6141 and 6153, respectively), presumably based on whether the credit card company's

sales volume was greater for business customers or for household customers. In other cases, this "class

of customer" basis for classification proved unworkable from the collection standpoint, and was mostly

irrelevant for analyzing the activities of producing units. NAICS puts all establishments issuing credit

cards as their primary activity in the same industry (NAICS 52221).

Compared with the old SIC system, NAICS has more elaborated, clearer and more up-to-date

descriptions of the detailed industries that are included in financial services. For example, the old SIC

6153 (short-term business credit institutions, except agricultural) was described as "establishments

primarily engaged in extending credit to business enterprises for relatively short periods." The

description just repeated the title! The NAICS industry descriptions are, generally, more informative

than those in the old SIC, though it is a matter of degree.

Along with greatly expanded articulation of financial services industries, the work on NAICS

included commitment to expand the list of products in these industries. Price indexes, for example, are

constructed by comparing prices of detailed products that are produced in industries, not by pricing

some aggregate industry output, and deflation is generally conducted by BEA at the product level.

Having an agreed product list for services industries so that Census and BLS are collecting information

on the same detail (i.e., the P's and Q's match!) is essential to producing useful industry data.

The extended product (or service) taxonomy applies to these new NAICS industries. A preliminary product list that corresponds to the three NAICS financial services industries that are the topic of this workshop are available on the Census web site.[7]

How does BEA measure output for these industries? How has methodology changed?

Table 5 summarizes BEA methods for estimating real output and value added for financial services industries (we include banking in this table). The table summarizes the status of the BEA industry program at two points in time that are the relevant points for the present discussion, namely 1996 and 2000.

In 1996, the GDP-by-industry data were updated and improved (Yuskavage, 1996). By 1996, output (in national accounts jargon, "gross output") information was included in the GDP-by-industry database for 44 industries, but the complete database was constructed only for what is essentially value added (which BEA formerly, and confusingly, called "gross product").

In 2000, two additional improvements were made. First, double deflation methodology for value added was extended to all 61 industries in the BEA program, which also meant (second) that measures of output were also developed for all 61 industries. With this change, input and output measures became available for an additional 17 services industries, which permitted industry productivity analysis for these industries, such as the studies by Stiroh (2001) and Triplett and Bosworth (2002).

Two of these 17 industries were financial industries, banks and nondepository institutions. Output data for brokerage were available in the earlier period, and the 2000 methodology required few changes from what was used previously. In the following, we first review the depository and nondepository institutions industries, then brokerage.

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[7] The full product list may be obtained at http://www.census.gov/eos/www/napcs/napcs.htm . This list is provisional, so the statistical agencies welcome comments on the adequacy of this list from participants in the workshop. (contact john.burns.murphy@census.gov).

A. Measurement Issues: Depository (banks) and Nondepository Institutions Industries (SIC 60 and SIC 61)

As Table 5 shows, in 1996 output for both banking (SIC 60) and nondepository (SIC 61) industries was still extrapolated by the BEA labor measure, persons engaged in production (PEP). In the census or benchmark year, the level of banking output (the output that was extrapolated) consisted of interest received minus interest paid (viewed in U.S. national accounts as a proxy for unpriced *depositor* services), plus direct fee revenues. For nondepository institutions, calculating benchmark year output was more complicated, but its extrapolation was the same, by labor input.

Considering that annual real output measures were constructed by extrapolating labor input in both cases, it is not surprising that measured labor productivity for these two industries did not increase in the old BEA data.   It is somewhat surprising that measured labor productivity growth was actually negative in the old BEA data, although it seemed to accelerate after 1992 (that is, labor productivity growth became less negative).

In the 2000 revision to the BEA industry database, labor extrapolation of output was replaced by direct deflation. A number of methodological and measurement changes in the benchmark GDP revision released in October, 1999 impacted the output measures for financial services industries in the 2000 version of the BEA industry database. These changes affected the current price output (sometimes called "nominal output") measures as well as what BEA calls the "chain" output measures (sometimes called "real output"). A partial list of these GDP changes include:

- the treatment of "own-account" software as investment (this was part of the capitalization of all software expenditures as investment in GDP).

- a redefinition of the output of "regulated investment companies" (which means mutual funds).

- a new measure of banking output that explicitly measured transactions, such as checks cleared, deposits, ATM transactions, and so forth, in the form of a quantity index of banking operations.

As the following paragraphs explain, all three of these changes raised the rate of output growth in financial services industries.

Financial industries (and insurance) are major producers of own-account software. When these expenditures are treated as investment in the BEA industry accounts, it raises both the industry's consumption of IT capital services and the industry's output (because the industry is treated as producing software as well as financial services). The methodological change was extended back, so the time series is consistent before 1992 and after. However, because software expenditures grew rapidly after 1992, capitalizing own-account software raised financial industry output measures much more after 1992 than before.

A second major change was the substitution by BEA of a direct measure of banking output for the old extrapolation procedure. BEA effectively adopted a quantity index that had long been produced by the BLS productivity program for its banking industry labor productivity program. The new series raised the rate of output grow in banking and banking productivity growth. Thus, the methodological change raised output growth. Output growth also accelerated after 1992 (Table 2), but the methodology is consistent before 1992 and after. Acceleration was not caused by the methodological change; on the other hand, the output and productivity growth in banking would not have been apparent without the change in output measurement methodology.

The definition of output for mutual funds and the methodology for producing real output were also changed. Under the old methodology, the current price output of mutual funds was their net property income; output is now defined as the mutual funds' operating expenses. In GDP, this change affects mainly personal consumption expenditures, but also government to a lesser degree. Seskin (1999) notes that the change raised GDP in some years and lowered it in others. In personal

consumption expenditures, the mutual fund changes are combined with the banking change noted above into "services furnished without payment by financial intermediaries except life insurance." This component of PCE increased 0.8% in 1996 and 1.9 % in 1997, in the old BEA data. In the new data, increases were 5.2% and 14.7 %, respectively, so the methodological changes contributed strongly to post-1992 growth.

Evaluation of the mutual fund change at the industry level is complicated. In the old SIC, mutual funds were part of SIC 672, investment offices, and were folded into SIC 67 with holding companies. Because there is no natural measure of output for holding companies, the data for SIC 67 are very problematic and were excluded from our earlier study (Triplett and Bosworth, 2002). For the same reason, we are not considering SIC 67 here. In NAICS, mutual funds are in NAICS 525, Funds, Trusts, and Other Financial Vehicles, and Holding Companies are elsewhere. As we understand it, the redefinition of mutual funds' output pertains mainly to SIC 67 (and NAICS 523). Mutual funds can be part of a future productivity study of financial services, when U.S. industry data have been converted to NAICS classifications.

However, the investment management activities of mutual funds were placed in a different two-digit SIC from the operation of the funds themselves, and remain separated in NAICS. Management of mutual funds is in the securities industry, SIC 62, specifically, SIC 6282, Investment Advice. The placement of mutual fund management is in an equivalent place in NAICS, the portfolio management industry (NAICS 52392), which is part of the securities sector (NAICS 523). We discuss the output of the securities industry in the next section.

Changes in output measures for the nondepository institutions industry were not connected to the GDP revision. By 2000, its output was no longer extrapolated by labor inputs. Additionally, motor vehicle leasing was explicitly recognized in the new output measures for this industry, and this component increased rapidly in the 1990's. The mortgage banking portion of the industry also showed rapid growth in the 1990's (communication with Robert Yuskavage). As the result of the several

changes, output growth in nondepository institutions was revised upward, from 4 ½ per cent per year
in the old (labor extrapolated) data to 9 ½ per cent in the new BEA industry data, over the 1987-97
period (communication with Robert Yuskavage). As in the banking changes, these methodological
changes were extended backward, so no break in methodology is associated with the substantial post-
1992 acceleration in real output and in productivity in this industry.

As Table 6 suggests, the combination of all these changes raised substantially the output
growth rate and therefore the value added growth (and also the productivity growth rates) in depository
and nondepository financial institutions industries. No breaks in methodology, however, occur in
1992. Accelerations that are shown in the data for these two industries appear to reflect the real
economic changes they were experiencing. It is important to note, however, that these accelerations
would not have been visible in the old data, where real output growth was extrapolated by labor input.

B. Measurement Issues: Securities and Brokerage

The Securities and Brokerage industry has two major components, brokers/dealers and
investment bankers (SIC 6211, 75 percent of total revenue) and portfolio advice (SIC 6282, 25
percent). Portfolio advice and management for a fee is illustrated by firms such as Fidelity Investment,
where an explicit fee for management is charged to each account and fund management may be
separated (that is, in a different establishment) from other activities of the fund, such as sales.

BEA computes brokerage output with double deflation that employs a number of measures to
cover the range of activities that are grouped in SIC 62. These are listed in Table 5. As a major part of
the output measure, BEA uses an aggregate measure of the number of security trades and new issues to
compute a real output index; this is supplemented by other measures, such as an implicit price deflator
for security commissions, as indicated in Table 5.

Methodological changes in the 2000 BEA database were small for this industry. As table 4
shows, brokerage LP and MFP are very high, indeed the highest for any services industry (Triplett and
Bosworth, 2002, table 3). However, Table 6 suggests that the new BEA data record only modestly

greater acceleration in this industry than was in the old data. The relevant measurement question for this industry, then, concerns not methodological changes, for there were none of consequence, but possible bias to the BEA procedures.

A more refined deflator was developed by McKinsey Global Institute for their productivity study. MGI desegregated brokerage trades to take account of the different service levels, ranging from custom investment advice to simple online order execution. In addition, they developed an explicit output measure for SIC 6282 by weighting the growth in the real value of assets under management of different types of accounts by the average management fee. The MGI output measure shows a growth rate very similar to that of BEA for 1987-95 (4.5 per cent per year), but a lower rate of growth after 1995 (16.7 per cent for the 1995-99 period). Both BEA and MGI measures yield a very large acceleration in labor productivity.

MGI also found that the productivity growth acceleration was concentrated in the security brokers/dealers component, with a trivial contribution from investment advice.

Beginning in 2000, a PPI index for brokerage was published. It is now used for deflation by BEA. This does not affect the measurement of brokerage output for the period we studied. (information on the PPI index for brokerage is contained in Irwin Gerduk's presentation to the workshop).

C. Conclusions on Output Measures.

Comparison of the new and old BEA database for these three industries can only be based on value added (GDP originating), because gross output for banks and nondepositories was not part of the database before 2000. The relevant data are in Table 6.

Not surprisingly, the biggest changes occur in the two industries (SIC 60 and 61) that were formerly extrapolated by labor input. The methodological change doubled the growth of value added for nondepositories in both periods, and converted a negative change (in both periods) to a positive for

banks. Small revisions also occurred in brokerage that were not associated with methodology, and for the record the brokerage revisions increased the acceleration.

We conclude that output measures for two of these three industries (depository and nondepository institutions) are substantially improved in the 2000 BEA industry database. The improvements were carried back before the 1992 beginnings of output and productivity accelerations, so the accelerations are not an artifact of the data (as they would be if the improvements had not have been carried back). However, the accelerations are apparent only in the new data, they would not have been evident with the former BEA methodology, so they are a product of the data improvements in the sense that they would not have been apparent but for data improvements that more accurately measure the outputs of these industries. We have not assessed whether there is remaining bias to the new output measures. There is no doubt that they are improvements over what was done before (labor extrapolation). But the present banking output measure in particular probably does not pick up all the changes that are associated with improved productivity in banking, and the complexity of nondepository institutions output almost assures that gains can be made with further research.

For brokerage, there is no question of data consistency. The only study we know that attempted to assess the accuracy of the BEA output data (the MGI study) found some overstatement, but it was small. Using the MGI output quantity indexes would not revise our conclusions that the brokerage industry experienced very rapid and accelerating LP after 1992.

IV. Input measurement: Capital shares and allocation of self employment income

If output is measured accurately, then the LP acceleration in services that we documented in our earlier paper (and in Table 1) is not subject to measurement error, at least from this source. However, we also found MFP acceleration in these industries, particularly in brokerage. That

conclusion is affected by measurement of inputs, even if there were no output measurement questions. If capital input is mismeasured, for example, the mismeasurement will spill over into MFP.

As discussed in our prior paper, the allocation of the income of the self employed between capital and labor income creates considerable difficulty for some of the service industries. In the BEA industry database, all of self-employment income is treated as property income. Yet, some of it must be labor income. If we impute to the self-employed the labor earnings of employed persons in their industry, this sometimes produces negative shares for property income.

For example, in security dealers and brokers, the self-employed amount to roughly a seventh of employment (table 7). Thus, in Table 8, the property income share of brokerage industry output (measured net of indirect business taxes) is already very low (2.5 percent in 2000). If we re-allocate self-employment income to labor income based on earnings in the industry, the capital share in this industry becomes negative (middle column of table 8). Conversely, if we assume that the self-employed earn a return on capital that is the same as that of other firms in the industry, the wage becomes implausibly low.

The BLS productivity group resolves the problem with a parallel calculation of a normal rate of return on capital for unincorporated enterprises within the sector. They take account of the implied returns to both labor and capital in making their adjustment for the income of the self-employed, and control the total to the actual self-employed income. This yields the third column of table 8. We used the BLS estimates for Security Brokers/Dealers as the capital and labor shares for our productivity estimates. Note additionally that the BLS capital share is the share of capital services in output, which differs from the BEA capital income share. Moreover, the BLS capital shares for brokerage are far more stable than the BEA shares (compare the left-hand and right-hand set of columns in Table 8).

However, as indicated in our earlier paper, we do not have a consistent BLS estimate for non-depository institutions. Data problems between this industry and the banking industry make separate capital share calculations problematic, so in our previous paper we combined depository and non-

depository institutions, because the combined data seem more reasonable.[8] Because of this, in the

productivity calculations for Table 4, we reverted to the simple assumption of an equivalent wage, that

is, we used shares from the middle column of Table 8 for these industries.

An additional problem should be noted. The BEA industry database includes indirect business

taxes (IBT) in output. For our work, we removed all IBT, so output is measured in what is sometimes

referred to in the national accounts literature as "at factor cost." In its productivity estimates, BLS

removes sales and excise taxes, but leaves taxes on property (including motor vehicle taxes) in the

total—it adds them to the cost of inputs. Either treatment is problematic, to an extent.

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[8] BLS procedures result in a negative labor share for the nondepository institutions industry.

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Table 1. Share of Gross Domestic Product

SIC		1987	1992	1997	2000
	Finance	6.3%	6.6%	7.8%	8.3%
60	Depository institutions	3.0%	3.3%	3.3%	3.7%
61	Nondepository institutions	0.4%	0.4%	0.6%	0.6%
62	Security and commodity brokers	0.9%	0.9%	1.5%	1.5%
63-64	Insurance carriers, agents and brokers	1.6%	1.9%	2.4%	2.4%
67	Holding and Other Investment Offices	0.45%	0.11%	0.09%	0.16%

Source: Bureau of Economic Analysis, GDP by Industry file. Available at:
http://www.bea.doc.gov/bea/dn2/gpo.htm . Accessed October 11, 2002.

Table 2. Output Growth of Financial Industries

SIC		1987-1992	1992-2000
60	Depository institutions	0.7%	2.9%
61	Nondepository institutions	2.6%	13.1%
62	Security and commodity brokers	4.9%	24.4%
63	Insurance carriers	-1.1%	1.0%
64	Insurance agents, brokers, and services	-2.3%	2.4%

Source: Authors' calculations based on Bureau of Economic Analysis, GDP by industry file.

Table 3. Economic Structure of Financial Industries, 1987, 1997, and 2000

	1987		1997		2000	
	Depository Institutions					
Nominal Values	billion $	%	billion $	%	billion $	%
Gross Output	203.3	100.0	383.5	100.0	477.1	100.0
Value Added	143.9	70.8	273.9	71.4	366.5	76.8
Compensation	57.9	28.5	87.6	22.8	99.8	20.9
Indirect Taxes	6.7	3.3	7.5	1.9	8.7	1.8
Property Income	79.3	39.0	178.9	46.7	257.9	54.1
Intermediate Inputs	59.4	29.2	109.5	28.6	110.6	23.2
Real Values (1996=100)						
Gross Output	87.6		102.9		113.6	
Value Added	91.5		102.1		119.6	
Intermediate Inputs	77.0		104.7		97.6	
Persons Engaged in Production (millions)	2.16		1.927		1.906	
	Nondepository Institutions					
Nominal Values	billion $	%	billion $	%	billion $	%
Gross Output	36.0	100.0	131.5	100.0	149.4	100.0
Value Added	17.9	49.6	49.9	37.9	59.0	39.5
Compensation	11.9	32.9	29.5	22.4	41.5	27.8
Indirect Taxes	1.6	4.5	4.1	3.1	5.2	3.5
Property Income	4.4	12.2	16.3	12.4	12.3	8.2
Intermediate Inputs	18.2	50.4	81.6	62.1	90.5	60.5
Real Values (1996=100)						
Gross Output	43.7		121.4		114.4	
Value Added	57.2		136.6		132.9	
Intermediate Inputs	35.6		113.3		41.5	
Persons Engaged in Production (millions)	0.361		0.563		0.667	
	Security Dealers and Brokers					
Nominal Values	billion $	%	billion $	%	billion $	%
Gross Output	61.9	100.0	206.5	100.0	342.5	100.0
Value Added	41.3	66.6	120.8	58.5	144.2	42.1
Compensation	32.6	52.6	79.4	38.5	131.2	38.3
Indirect Taxes	0.7	1.2	3.4	1.6	4.4	1.3
Property Income	8.0	12.9	38.0	18.4	8.5	2.5
Intermediate Inputs	20.6	33.4	85.7	41.5	198.4	57.9
Real Values (1996=100)						
Gross Output	39.3		125.9		287.1	
Value Added	38.4		118.8		269.1	
Intermediate Inputs	41.5		138.0		314.9	
Persons Engaged in Production (millions)	0.522		0.679		0.873	

Source: BEA GDP by Industry file.

Table 4. Output per Worker, Value Added per Worker, Input, and MFP Growth, 1987-2000
annual percentage change

	1987-92	1992-2000
	Depository Institutions	
Gross Output		
Output per worker	2.2	3.5
Intermediate Inputs	0.2	1.2
Capital Contribution	2.7	1.9
IT Contribution	1.3	1.8
MFP	-0.7	0.4
Value Added (GDP originating)		
Value Added per worker	2.8	3.3
Capital Contribution	3.7	2.6
IT Contribution	1.8	2.5
MFP	-0.9	0.6
	Nondepository Institutions	
Gross Output		
Output per worker	0.2	6.3
Intermediate Inputs	-1.4	5.1
Capital Contribution	0.6	0.4
IT Contribution	0.7	0.5
MFP	1.1	0.8
Value Added (GDP originating)		
Value Added per worker	3.1	4.2
Capital Contribution	1.3	1.2
IT Contribution	1.4	1.3
MFP	1.8	2.9
	Security Dealers and Brokers	
Gross Output		
Output per worker	5.5	16.3
Intermediate Inputs	2.6	6.9
Capital Contribution	0.9	0.2
IT Contribution	0.3	0.0
MFP	1.9	8.7
Value Added (GDP originating)		
Value Added per worker	4.7	16.2
Capital Contribution	1.3	0.3
IT Contribution	0.4	0.1
MFP	3.3	15.9

Source: Authors' calculations. The estimates for Security dealers and brokers are based on income shares from the BLS productivity office; those for Nondepository institutions are based on adjusted income shares from the BEA data set.

Table 5

Non-Bank Financial Services Methodologies for Real Output
and Value Added, BEA GDP-by-Industry

Source and Date	GDP – Originating	Gross Output (Q = quantity index; P = deflated)
Yuskavage (1996, Tables 7& 8)		
Depository (banks)	Extrapolate by L	Not Available
Nondepository	Extrapolate by L	Not Available
Brokerage	Double deflation	Securities (Q): no. of trades Mutual Funds (P): IPD for commissions Underwriting (Q): no. new registrations Other Revenue, 1977-87 (P): BEA price index for merger fees All other components (P): GDP deflator
Lum, Moyer and Yuskavage (2000, Table K)		
Depository (banks)	Double deflation	NIPA price index for imputed services (implied by BLS Q index for banking)
Nondepository	Double deflation	PCE price index for priced services, wages and salaries PCE price index for vehicle leasing
Brokerage	Double deflation	Same as 1996, except: other revenue (post - 1987): composite PCE price index for brokerage

Sources:

Robert E. Yuskavage: "Improved Estimates of Gross Product by Industry, 1959-94." *Survey of Current Business*, Aug. 1996, pp. 133-155.

Sherlene K. S. Lum, Brian C. Moyer and Robert E. Yuskavage, "Improved Estimates of Gross Products by Industry for 1947-98." *Survey of Current Business*, June, 2000, pp. 23-54.

Table 6. Value Added Growth, Old and New BEA Data

SIC		1987-1992		1992-1997	
		Old	New	Old	New
60	Depository Institutions	-1.5	1.2	-0.8	1.0
61	Nondepository Institutions	2.3	5.5	6.8	12.8
62	Security Brokers	4.5	4.2	19.5	20.3

Source: Old Data (1987-1991), Lum and Yuskavage (1997); Old Data (1992-1997), Lum and Moyer (1998); New Data, GDP by Industry File, Accessed October 2002

Table 7: Self-employment in the Financial Service Industries

(Self-employed as a share of persons engaged in production)

	1987	1992	1997	2000
Depository institutions	0.1%	0.1%	0.1%	0.2%
Nondepository institutions	1.4%	3.4%	2.8%	3.3%
Security and commodity brokers	14.0%	13.2%	11.5%	14.2%

Source: Authors' calculations based on BEA GDP by Industry file.

Table 8. Alternative Labor and Capital Shares of Output (at Factor Cost)

	Intermediate Inputs	BEA Shares, No Adjustment for the Self-employed		BEA Shares, Portion of Self-employed Income Allocated to Labor		BLS Shares	
		Labor	Capital	Labor	Capital	Labor	Capital
Security and commodity brokers							
1987	33.7	53.2	13.0	61.9	4.4	59.9	6.4
1992	37.4	53.2	9.4	61.3	1.3	53.8	8.9
1997	42.2	39.1	18.7	44.2	13.6	52.3	5.5
2000	58.7	38.8	2.5	45.2	-3.9	36.5	4.9
Nondepository institutions							
1987	52.8	34.5	12.8	35.0	12.3		
1992	45.4	38.5	16.1	39.9	14.7		
1997	64.1	23.2	12.8	23.8	12.1	(see text)	
2000	62.7	28.8	8.5	29.7	7.6		
Depository institutions							
1987	30.2	29.4	40.3	29.5	40.3		
1992	26.0	27.4	46.6	27.5	46.6		
1997	29.1	23.3	47.6	23.3	47.6	(see text)	
2000	23.6	21.3	55.1	21.3	55.0		

Notes:

Output at factor cost is gross output excluding indirect business taxes.

BEA shares, no adjustment for the self-employed:

$$L_{sh} = COMP \big/ (GO - IBT) \quad \text{and} \quad K_{sh} = PTI \big/ (GO - IBT)$$

BEA shares, portion of self-employed income allocated to labor:

$$L_{sh} = \left(COMP * \frac{PEP}{FTE} \right) \big/ (GO - IBT) \quad \text{and} \quad K_{sh} = 1 - L_{sh} - II_{sh}$$

BLS Shares:

$$L_{sh} = 1 - K_{sh} - II_{sh} \quad \text{and} \quad K_{sh} = KINC \big/ (GO - IBT)$$

Definitions: L_{sh} is the labor share of output at factor cost and K_{sh} is the capital share of output at factor cost. The following data are obtained from the BEA GDP by Industry files: COMP is compensation of employees, PTI is property-type income, PEP is persons engaged in production, FTE is fulltime equivalent employees, GO is gross output, and IBT is indirect business taxes. KINC is capital income from the BLS capital services series.

Chart 1
Gross Output Growth, Nondepository Institutions

Chart 2
Gross Output, Security Dealers