

## Household liability data in the Consumer Expenditure Survey

*Liability data from the Consumer Expenditure Survey (CE), the Survey of Consumer Finances, and an analogous aggregate measure show that the major types of household debt balances and payments are measured reasonably well in the CE; thus, CE data may be used to examine household debt and its relation to household economic decisions*

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The Consumer Expenditure Survey (CE) is the only household survey that records both a wide variety of household expenditures and the household's balance sheet. Although its primary purpose is to provide weights for the market basket used to construct the Consumer Price Index (CPI) the CE has been used extensively by researchers to study household consumption and saving, distributions of personal income and wealth, the effect of income taxes, and issues related to the poor and the elderly.

Several studies have validated the quality of CE data. As the Bureau of Labor Statistics (BLS) notes, "consumer expenditure surveys are specialized studies in which the primary emphasis is on collecting data related to family expenditures for goods and services used in day-to-day living."<sup>1</sup> With this description in mind, many studies seeking to validate CE data focus on the ability of the data to replicate aggregate expenditure measures, such as personal consumption expenditures (PCE) reported quarterly by the Bureau of Economic Analysis (BEA). In general, these studies conclude that annual aggregate expenditures reported in the CE are below those reported by the BEA.<sup>2</sup>

Although validation studies have been conducted on expenditure data in the CE, there does not appear to be any study that has validated CE liability data. This article seeks to bridge that gap by comparing household debt payments and balances measured in the

CE with those measured in the Survey of Consumer Finances (SCF). A triennial survey conducted by the Federal Reserve, the SCF collects high-quality data on household wealth and liabilities, as well as rich covariates such as household demographics and income data. The accuracy of the SCF has been established in several studies. For example, a year-2000 study showed that several balance sheet categories measured by the SCF lined up well with those in the Federal Reserve System's Flow of Funds Accounts,<sup>3</sup> and another study compared estimates of income and wealth from the SCF with administrative tax data and found that the two sources compared favorably.<sup>4</sup> On the basis of this research, and because of its focus on measuring the household balance sheet, the SCF data are presumed to be accurate in this article, which then goes on to compare SCF debt payment and balance information with the same information in the CE.

In general, the results of the comparison provide good evidence that balance and payments for the major types of household debt are measured reasonably well in the CE. The article also compares the trend in payments on household debt relative to household income, as measured in the CE, with the trend in an analogous aggregate statistic, the household debt service ratio, as measured by the Federal Reserve System. The trend in the CE debt payment-to-income ratio over the past 15 years is quite

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similar to that of the aggregate debt service ratio.

### Measurement of debt in the CE

The BLS has conducted the CE consistently since the early 1980s to provide weights for the market basket the Agency uses to construct the CPI. The CE interviews a consumer unit five times, once every 3 months. The first interview is conducted to establish contact with, and collect data on, the interviewee; the subsequent four interviews are carried out to collect most of the expenditure data. After the fifth interview, the consumer unit leaves the sample and new units are added to the sample. As part of its expenditure data collection, the BLS asks households to report their payments on mortgages and vehicle loans, as well as credit card debt balances. From this information, the majority of household debt payments can be estimated. In this study, debt payments of the 1992 to 2007 waves of the CE were compared with debt payments measured in the SCF, which has been systematically collecting such data since 1992.<sup>5</sup>

Many of the types of debt covered by the CE have counterparts in the SCF. Both surveys report payments on first-lien mortgages, home equity loans, and lines of credit on the household's primary residence. However, for debt collateralized by other properties, the SCF reports only total payments, while the CE breaks these payments down by type of loan (first lien, home equity loan, and so forth). Both the CE and the SCF include payments on vehicle loans and the amount of credit card debt, which can be used to estimate the required monthly payment. Finally, the CE has only limited information on other types of consumer loans, such as the balance of credit extended by medical service providers and "other credit sources," whereas the SCF provides more detail, breaking payments down by type of loan (student loan, installment loan, personal loan, and other lines of credit). Because it is difficult to reconcile both the concept and measurement of the "other loans" category between the two surveys, only payments on loans secured by real estate and automobiles and payments on credit card loans are included in the comparison presented here. Still, these two types of loans account for about 85 percent of total debt payments measured in the SCF. Exhibit 1 lists the categories of debt from the SCF and the corresponding Universal Classification Codes (UCCs) in the CE used to construct total debt payments.

The first issue that arises in constructing comparable debt payments is the timing of each survey relative to the date the payment actually was made. In this article, debt payments in each survey are converted to an annual, calendar-year measure. Because the SCF debt payment questions refer to payments within the relevant SCF year, this conversion was

straightforward: the payments simply were converted from the frequency actually reported by the household to an annual payment. In the CE, however, converting debt payment to an annual, calendar-year frequency was challenging for a number of reasons. First, the CE is a rolling sample, so the 12 months to which the survey refers in interviews do not always match with a calendar year. Second, debt payments can have household-specific variations within a year. Third, the CE longitudinal sample is unbalanced, because not all consumer units participate in all five interviews. Fourth, the CE weights are assigned quarterly, so the same consumer unit gets a different weight in each interview in which it participates.

These challenges were dealt with in turn. First, the CE sample was restricted to consumer units that participated in all interviews and reported valid income data. Second, for mortgage and auto-related debt, the annual payment was calculated as the sum of payments reported in all four interviews. These payments were obtained with the use of the monthly UCC-level data in the detailed expenditure (MTAB) file. To approximate payments in a given calendar year, consumer units that had at least two quarters overlapping with the SCF calendar year were included in the sample. For example, to match with the SCF 2001 wave, consumer units that entered the CE survey from the second quarter of 2000 to the second quarter of 2001 were included in the sample.<sup>5</sup> Consequently, the CE data presented here cover eight quarters bracketing

#### Exhibit 1. Summary of debt payment variables in the Survey of Consumer Finances and the Consumer Expenditure Survey

SCF debt payment categories	Corresponding Consumer Expenditure Survey Universal Classification Code (UCC)
Mortgages on primary residences	220311, 830201
Other real-estate-backed loans	
Home equity loans secured by primary residence	220313, 830203
Lines of credit secured by primary residence	880110, 880120
Mortgages, home equity loans, and lines of credit on vacation homes and other properties	220314, 790940, 830204, 220312, 790920, 830202, 880210, 880220, 880310, 880320
Vehicle loans	850100, 870103, 870203, 870803
Credit cards	Not computed from UCC-level data
Other consumer loans	Not comparable

the SCF year.<sup>6</sup> Third, because the reported payments on credit card debt in the CE data include only interest payments, debt service on credit card debt was calculated by means of the concept employed by the Federal Reserve System in its aggregate debt service ratio measure.<sup>7</sup> The calculation used the second-interview credit card debt balance.<sup>8</sup> Fourth, the arithmetic average of weights in the four quarters was used to approximate the consumer unit's annual weight.

Total payments on household debt, defined as the sum of payments on mortgages for primary residences, mortgages on other property, auto loans, and credit cards, nearly doubled between the 1992 and 2007 waves of the CE, rising from about \$4,900 in 1992 to about \$9,500 in 2007. (See table 1.) This increase reflects, in part, an increase in the share of households with total debt payments greater than zero. The share reflects the fraction of consumers that made any debt payment in a year. In 1992, about 68 percent of CE respondents had total debt payments greater than zero. By 2007, the share had reached 73 percent. Among the major types of household debt, mortgage debt on a primary residence represents the largest share, accounting for 58 percent of total debt payments in 2007. Mortgages on other real estate accounted for 14 percent of the total debt payments in 2007, auto loan payments made up 21 percent, and required minimum payments on credit cards accounted for the remaining 8 percent.

Broadly speaking, the level of total household payments for these four types of debt calculated from the CE sample lines up reasonably well with that calculated from the SCF sample. (See table 1 and chart 1.) From 1992 through 2007, the mean of total household debt payments calculated from the CE sample was always a bit lower than that calculated from the SCF data, but the difference varies from year to year. The gap was smaller than 3 percent in 2001, but widened somewhat in 2004 and 2007. In addition, apart from 1995 and 2007, the mean of total debt payments in the CE data was not statistically different from that in the SCF data. However, debt payments in the CE vary less than those in the SCF, most likely because of the topcoding of such payments in the CE.<sup>9</sup>

Much of the difference in total payments between the two surveys reflects mortgage payments on primary residences, which account for more than one-half of total debt payments. This difference ranges between 8 and 15 percent, with the CE seemingly consistently underestimating mortgage payments relative to the SCF, and is typically statistically significant.<sup>10</sup>

The gap between loans for other real estate calculated from the CE and those calculated from the SCF is the second-largest source of the difference between the two estimates in terms of dollar amount. Although this gap suggests that the

CE estimates of payments on loans for other real estate are, on average, 25 percent lower than the SCF estimates, the variances of the estimates are quite high, so, except for 2007, the hypothesis that the gap is zero cannot be rejected. These underestimates of mortgage payments in the CE are somewhat offset by overestimates of payments on auto loans. The gap in payments on automobile loans between the two surveys is typically around 10 percent and is statistically insignificant in several years. In 2007, the auto loans payment in the SCF and the CE were essentially identical.

The required minimum payments on credit cards aligned very well in earlier waves. However, of late it appears that the CE underestimated credit card debt relative to the SCF, reversing the pattern observed in the 1995 and 1998 SCF. Overall, estimates of debt payments in the CE appear to be reasonably comparable to those in the SCF, with the difference varying somewhat over time and across categories.

Debt payments also display similar patterns across demographic groups in the two surveys. Many of these patterns mirror those of household income. Total debt payments in the CE rise with the age of the head of the household until around age 45 and then fall steadily, a pattern mimicked by other types of debt as well. (See table 2.) Households whose head is White had higher debt payments, on average, than those whose head is non-White. Debt payments also rise with education: households whose head had at least a college degree had more than 4 times the debt payments of those whose head had less than a high school diploma. Finally, married households had more than twice the debt payments of unmarried households. Each of these patterns in the CE sample is evident as well in debt payments in the SCF sample.

Average outstanding household debt in the CE increased by more than 160 percent between 1992 and 2007, mainly because of a rapid increase in mortgages on primary residences. (See table 3.) In general, the CE underestimates total household debt somewhat relative to the SCF. (See table 3 and chart 2.) On average, the CE estimate of total debt is within 10 percent of the SCF estimate; for two of the six waves examined, it is within 5 percent. The bulk of the underestimate stems from mortgages on primary residences, which account for more than 80 percent of total household debt. The CE estimate of other mortgage debt also differs significantly from the SCF estimate, but these mortgages account for only about 5 percent of total household debt.

In contrast to the CE estimates of mortgage debt, CE estimates of vehicle debt and credit card debt are exceedingly close to estimates from the SCF. Over the six waves, the gap between the two surveys' estimates of vehicle and credit card

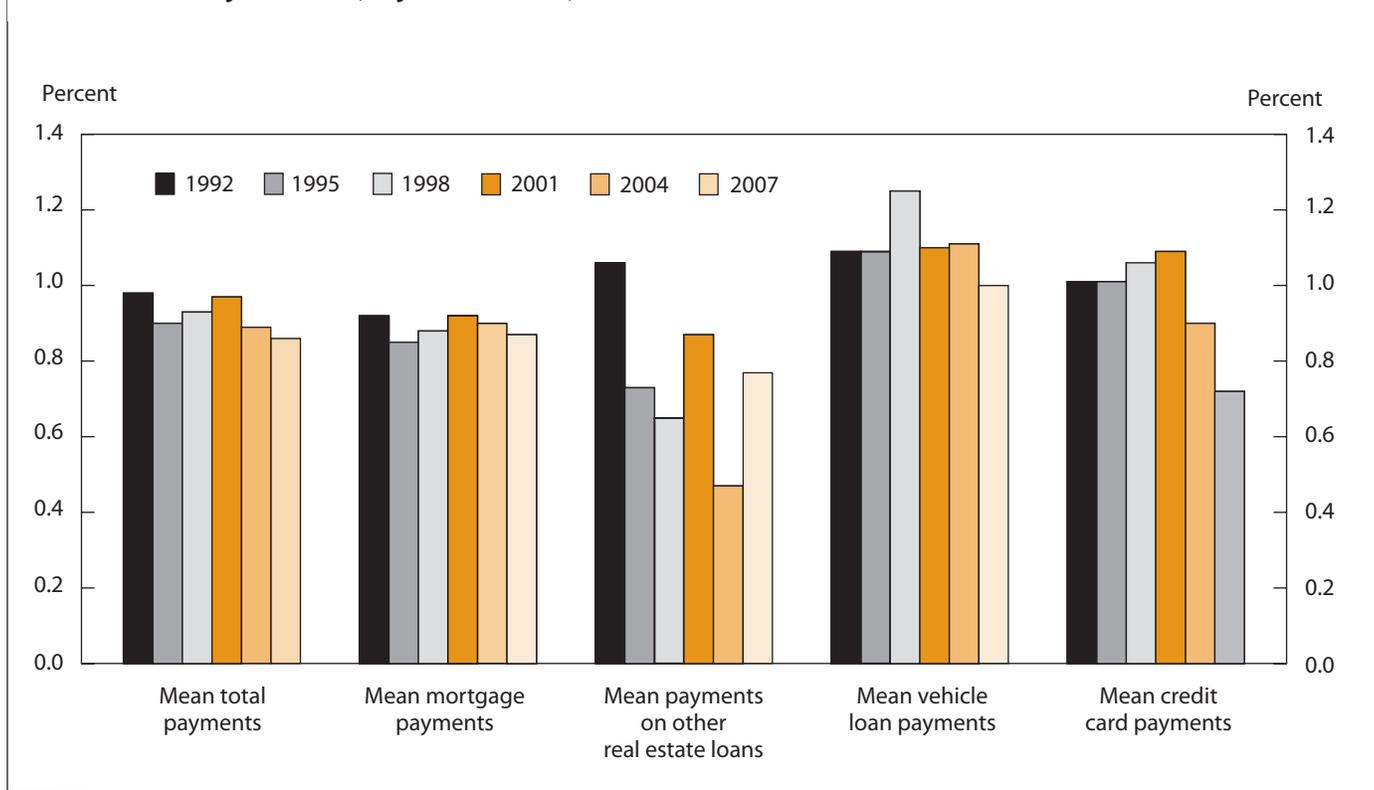
**Table 1. Household debt payments, by year and survey, 3-year intervals, 1992–2007**

Measure	1992			1995			1998		
	Survey of Consumer Finances	Consumer Expenditure Survey	Ratio of Consumer Expenditure Survey to Survey of Consumer Finances	Survey of Consumer Finances	Consumer Expenditure Survey	Ratio of Consumer Expenditure Survey to Survey of Consumer Finances	Survey of Consumer Finances	Consumer Expenditure Survey	Ratio of Consumer Expenditure Survey to Survey of Consumer Finances
Total:									
Mean .....	\$4,974	\$4,888	0.98	\$5,456	\$4,913	0.90	\$6,791	\$6,345	0.93
Standard deviation .....	10,067	14,968	1.49	10,138	7,428	.73	21,788	8,486	.39
Share of positive payments .....	.66	.68	1.02	.68	.69	1.01	.69	.73	1.06
Difference-in-means test .....	...	...	.22	...	...	2.11	...	...	1.14
Primary mortgage:									
Mean .....	2,888	2,657	.92	3,107	2,641	.85	3,830	3,358	.88
Standard deviation .....	5,957	4,713	.79	6,335	4,876	.77	6,665	5,404	.81
Share of positive payments .....	.38	.39	1.03	.39	.41	1.05	.41	.43	1.05
Difference-in-means test .....	...	...	1.59	...	...	2.81	...	...	2.82
Other mortgage:									
Mean .....	747	794	1.06	712	518	.73	1,015	660	.65
Standard deviation .....	6,420	13,783	2.15	6,271	3,471	.55	19,733	3,658	.19
Share of positive payments .....	.13	.11	.82	.11	.09	.79	.14	.13	.89
Difference-in-means test .....	...	...	.14	...	...	1.43	...	...	1.13
Vehicle :									
Mean .....	1,036	1,131	1.09	1,214	1,325	1.09	1,401	1,747	1.25
Standard deviation .....	1,981	2,147	1.08	2,191	2,466	1.13	3,375	3,187	.94
Share of positive payments .....	.29	.35	1.18	.32	.37	1.17	.31	.40	1.29
Difference-in-means test .....	...	...	1.60	...	...	1.46	...	...	3.69
Credit card:									
Mean .....	303	306	1.01	424	429	1.01	545	579	1.06
Standard deviation .....	799	736	.92	1,099	1,077	.98	1,475	1,368	.93
Share of positive payments .....	.44	.45	1.04	.47	.48	1.02	.44	.50	1.13
Difference-in-means test .....	...	...	.14	...	...	.15	...	...	.84
N.....	3,906	1,828	...	4,299	1,311	...	4,305	1,657	...
	<b>2001</b>			<b>2004</b>			<b>2007</b>		
Total:									
Mean .....	\$7,701	\$7,438	.97	\$8,975	\$7,952	.89	\$10,983	\$9,470	.86
Standard deviation .....	13,006	9,817	.75	44,575	9,752	.22	17,368	12,546	.72
Share of positive payments .....	.71	.75	1.05	.72	.73	1.01	.72	.73	1.01
Difference-in-means test .....	...	...	.93	...	...	1.48	...	...	3.89
Primary mortgage:									
Mean .....	4,483	4,117	.92	5,085	4,593	.90	6,332	5,487	.87
Standard deviation .....	8,244	6,470	.78	7,963	6,914	.87	10,901	8,178	.75
Share of positive payments .....	.42	.45	1.06	.45	.49	1.09	.45	.49	1.09
Difference-in-means test .....	...	...	1.99	...	...	2.65	...	...	3.39

**Table 1. Continued—Household debt payments, by year and survey, 3-year intervals, 1992–2007**

Measure	2001			2004			2007		
	Survey of Consumer Finances	Consumer Expenditure Survey	Ratio of Consumer Expenditure Survey to Survey of Consumer Finances	Survey of Consumer Finances	Consumer Expenditure Survey	Ratio of Consumer Expenditure Survey to Survey of Consumer Finances	Survey of Consumer Finances	Consumer Expenditure Survey	Ratio of Consumer Expenditure Survey to Survey of Consumer Finances
<b>Other mortgage:</b>									
Mean .....	\$967	\$844	0.87	\$1,284	\$606	0.47	\$1,691	\$1,308	0.77
Standard deviation .....	7,332	4,161	.57	43,131	2,990	.07	8,635	6,069	.70
Share of positive payments .....	.12	.13	1.03	.15	.11	.74	.16	.16	1.00
Difference-in-means test .....	...	...	.87	...	...	1.05	...	...	2.01
<b>Vehicle</b>									
Mean .....	1,700	1,875	1.10	1,895	2,109	1.11	1,947	1,943	1.00
Standard deviation .....	3,278	3,455	1.05	3,704	3,682	.99	4,596	3,604	.78
Share of positive payments .....	.35	.38	1.11	.36	.42	1.18	.35	.38	1.09
Difference-in-means test .....	...	...	1.99	...	...	2.28	...	...	...
<b>Credit card:</b>									
Mean .....	551	602	1.09	712	643	.90	1,013	731	.72
Standard deviation .....	1,718	1,539	.90	1,831	1,689	.92	2,773	1,754	.63
Share of positive payments .....	.44	.46	1.04	.46	.43	.93	.46	.42	.91
Difference-in-means test .....	...	...	1.23	...	...	1.56	...	...	4.87
N .....	4,442	2,255	...	4,519	2,347	...	4,418	1,904	...

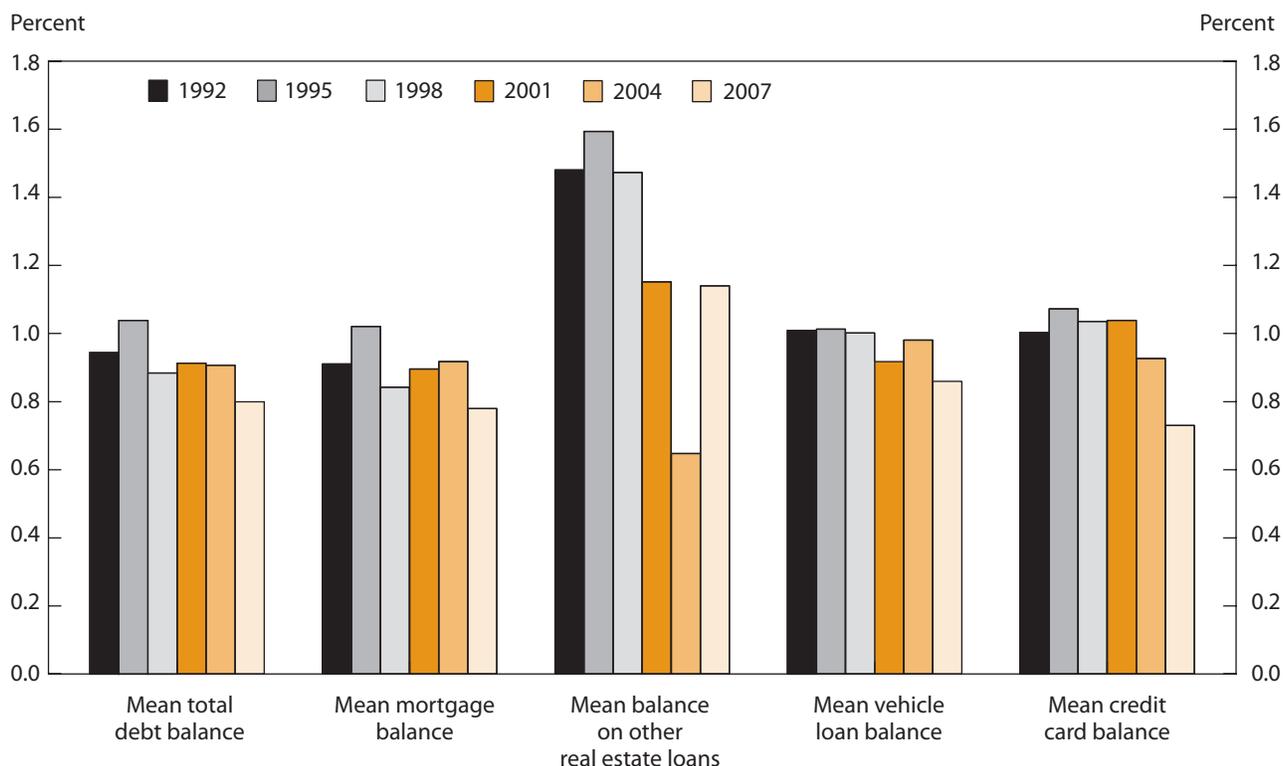
**Chart 1. Debt payments, ratio of Survey of Consumer Finance amounts to Consumer Expenditure Survey amounts, 3-year intervals, 1992–2007**



**Table 2. Household debt payments by demographic characteristics and survey, 2004**

Characteristic	Total debt payments		Mortgage		Other real estate		Vehicle		Credit card	
	Survey of Consumer Finances	Consumer Expenditure Survey	Survey of Consumer Finances	Consumer Expenditure Survey	Survey of Consumer Finances	Consumer Expenditure Survey	Survey of Consumer Finances	Consumer Expenditure Survey	Survey of Consumer Finances	Consumer Expenditure Survey
<b>Age, years</b>										
Under 35.....	\$6,808	\$7,333	\$3,918	\$3,953	\$414	\$269	\$1,949	\$2,407	\$527	\$705
35-45.....	11,849	10,830	7,262	6,950	1,291	703	2,376	2,429	920	748
45-55.....	12,799	10,871	7,641	6,290	1,925	698	2,224	2,963	1,010	920
55-65.....	10,291	8,819	5,263	4,841	2,126	1,089	2,185	2,208	717	681
65-75.....	4,809	3,615	2,154	1,801	944	382	1,198	1,120	512	311
75 and older.....	2,725	1,421	967	701	965	307	489	304	304	109
<b>Race</b>										
White.....	9,803	8,074	5,526	4,621	1,512	697	1,994	2,088	771	668
Non-White.....	6,823	7,309	3,937	4,449	691	126	1,638	2,221	556	513
<b>Education</b>										
Less than high school.....	3,239	3,209	1,576	1,703	316	81	1,026	1,166	321	259
High school.....	6,387	5,940	3,338	2,939	529	487	1,876	2,107	645	407
Some college.....	8,839	8,238	4,828	4,475	1,176	650	1,976	2,320	859	793
College and above.....	13,468	11,913	8,057	7,688	2,350	937	2,214	2,378	847	910
<b>Marital status</b>										
Married.....	12,132	10,298	6,914	5,972	1,782	819	2,579	2,748	857	759
Unmarried.....	4,622	4,763	2,563	2,720	597	316	952	1,241	510	486

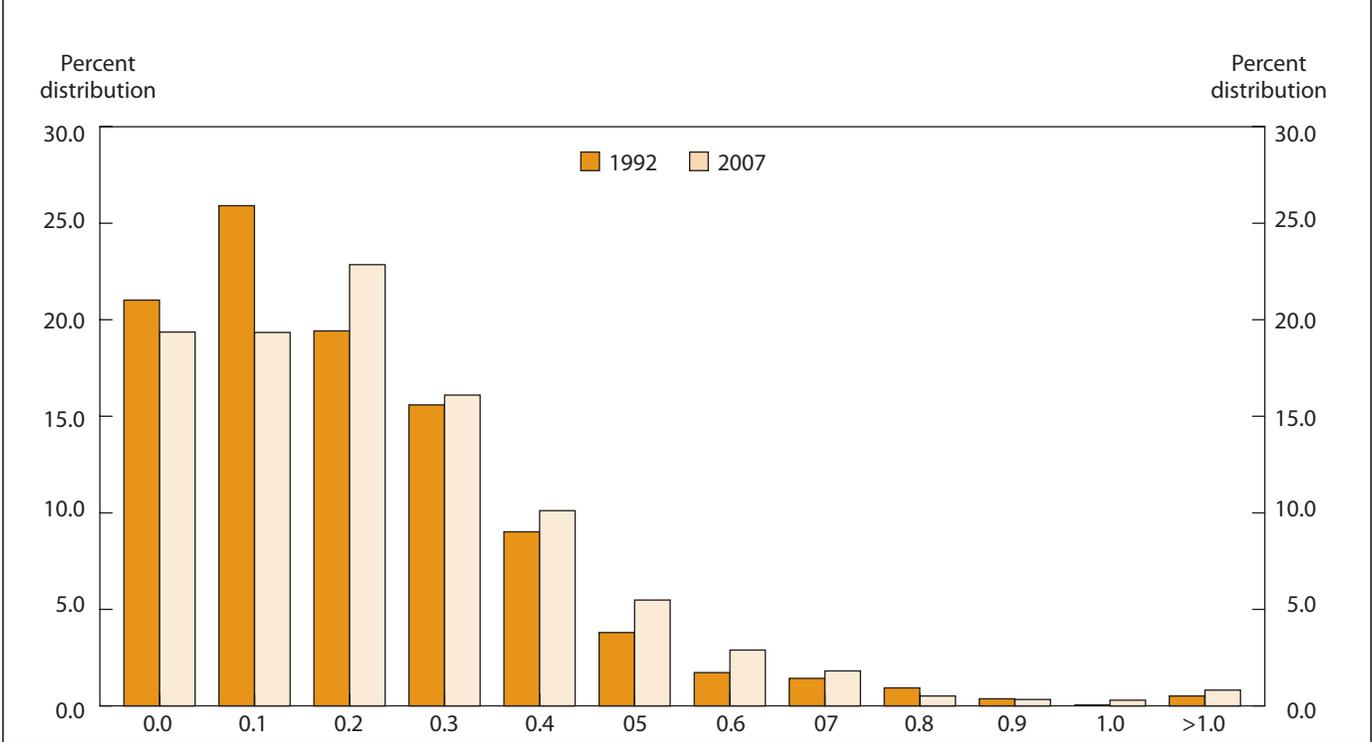
**Chart 2. Debt, ratio of Survey of Consumer Finances amounts to Consumer Expenditure Survey amounts, 3-year intervals, 1992-2007**



**Table 3. Household debt, by year and survey, 1992–2007**

Measure	1992			1995			1998		
	Survey of Consumer Finances	Consumer Expenditure Survey	Ratio of Consumer Expenditure Survey to Survey of Consumer Finances	Survey of Consumer Finances	Consumer Expenditure Survey	Ratio of Consumer Expenditure Survey to Survey of Consumer Finances	Survey of Consumer Finances	Consumer Expenditure Survey	Ratio of Consumer Expenditure Survey to Survey of Consumer Finances
Total									
Mean.....	\$29,158	\$27,522	0.94	\$33,518	\$34,775	1.04	\$42,702	\$37,755	0.88
Standard Deviation.....	71,855	45,113	.63	75,630	52,857	.70	84,205	59,367	.71
Difference in means test.....	...	...	1.17	...	...	.76	...	...	2.89
Primary mortgage									
Mean.....	24,959	22,739	.91	28,637	29,244	1.02	36,153	30,491	.84
Standard Deviation.....	67,264	41,142	.61	72,879	49,576	.68	79,719	54,964	.69
Difference in means test.....	...	...	1.71	...	...	.39	...	...	3.53
Other mortgage									
Mean.....	1,170	1,733	1.48	863	1,376	1.59	1,360	2,003	1.47
Standard Deviation.....	12,836	10,013	.78	7,292	7,287	1.00	11,264	9,067	.80
Difference in means test.....	...	...	2.07	...	...	2.60	...	...	2.64
Vehicle									
Mean.....	2,018	2,036	1.01	2,605	2,640	1.01	3,371	3,379	1.00
Standard Deviation.....	5,036	4,572	.91	6,313	5,287	.84	12,121	7,068	.58
Difference in means test.....	...	...	.16	...	...	.23	...	...	.04
Credit card									
Mean.....	1,011	1,014	1.00	1,413	1,516	1.07	1,817	1,882	1.04
Standard Deviation.....	2,662	2,443	.92	3,662	3,677	1.00	4,917	4,461	.91
Difference in means test.....	...	...	.05	...	...	1.04	...	...	.57
N.....	3,906	3,172	...	4,299	1,996	...	4,305	2,768	...
<b>Year</b>	<b>2001</b>			<b>2004</b>			<b>2007</b>		
Total									
Mean.....	\$50,342	\$45,961	.91	\$74,045	\$67,156	.91	\$91,248	\$72,822	.80
Standard Deviation.....	94,062	72,436	.77	163,049	100,909	.62	175,462	110,421	.63
Difference in means test.....	...	...	2.42	...	...	2.31	...	...	5.08
Primary mortgage									
Mean.....	42,673	38,252	.90	62,600	57,479	.92	78,502	61,060	.78
Standard Deviation.....	87,227	68,138	.78	145,477	95,404	.66	162,416	100,724	.62
Difference in means test.....	...	...	2.61	...	...	1.89	...	...	5.23
Other mortgage									
Mean.....	1,904	2,194	1.15	4,270	2,768	.65	4,281	4,889	1.14
Standard Deviation.....	19,331	10,194	.53	46,757	13,675	.29	32,263	22,118	.69
Difference in means test.....	...	...	.88	...	...	2.05	...	...	.87
Vehicle									
Mean.....	3,928	3,606	.92	4,803	4,712	.98	5,088	4,395	.86
Standard Deviation.....	9,395	7,327	.78	22,300	9,412	.42	19,091	9,528	.50
Difference in means test.....	...	...	1.77	...	...	.25	...	...	1.93
Credit card									
Mean.....	1,837	1,908	1.04	2,372	2,198	.93	3,376	2,478	.73
Standard Deviation.....	5,725	5,230	.91	6,105	5,835	.96	9,242	6,101	0.66
Difference in means test.....	...	...	.60	...	...	1.29	...	...	4.59
N.....	4,442	4,050	...	4,519	3,381	...	4,418	1,964	...

**Chart 3. Distribution of the household debt service ratio in the Consumer Expenditure Survey, 1992 and 2007**



debt is within 5 percent, on average, and the differences are not statistically significantly different from one another for most waves.

### The time trend in CE debt payments

Consistent with the rise in the annual averages, the distribution of the debt service ratio across CE households shifted to the right between the early and late years of the CE sample examined. (See chart 3.) The share of households with no debt payments declined from 21.0 percent in 1992 to 19.4 percent in 2007. In addition, there is considerable heterogeneity across households.

The rightward shift is consistent with the rise in the aggregate household debt service ratio over the same period. As shown in chart 4, the aggregate ratio rose from about 11½ percent in 1993 to about 14½ percent in 2006, before falling back to about 14 percent in early 2009, a rate of increase of about 22 basis points per year. At the same time, the average debt service ratio in the CE trended upward a little more than 19 basis points per year. (See chart 5.)

The key issue is whether this rightward shift reflects a broad-based increase in debt service or whether it indicates a significant rise among those in a select group. For example,

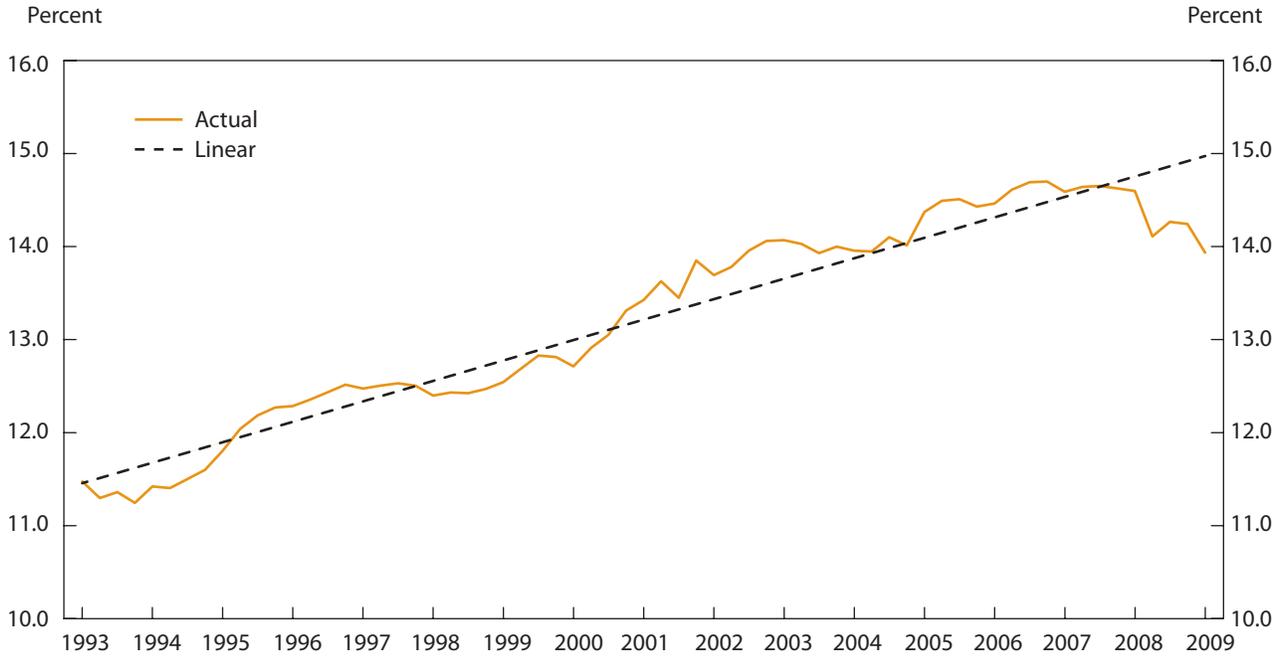
the shift in the debt service ratio may have been related, in part, to a rise in homeownership and the associated rise in the share of households with mortgage payments. The CE data show that the share of households with mortgage payments increased from about 40 percent in the earlier years of the sample to about 50 percent in recent years. To take a closer look at the influence of the rise in homeownership, along with changes in other household characteristics, on the debt service ratio, the household debt service ratio from the CE is regressed on a linear time trend, homeownership and other household characteristics as control variables, as given by the formula

$$DSR_i = \alpha_0 + \alpha_1 time + \alpha_2 x_i$$

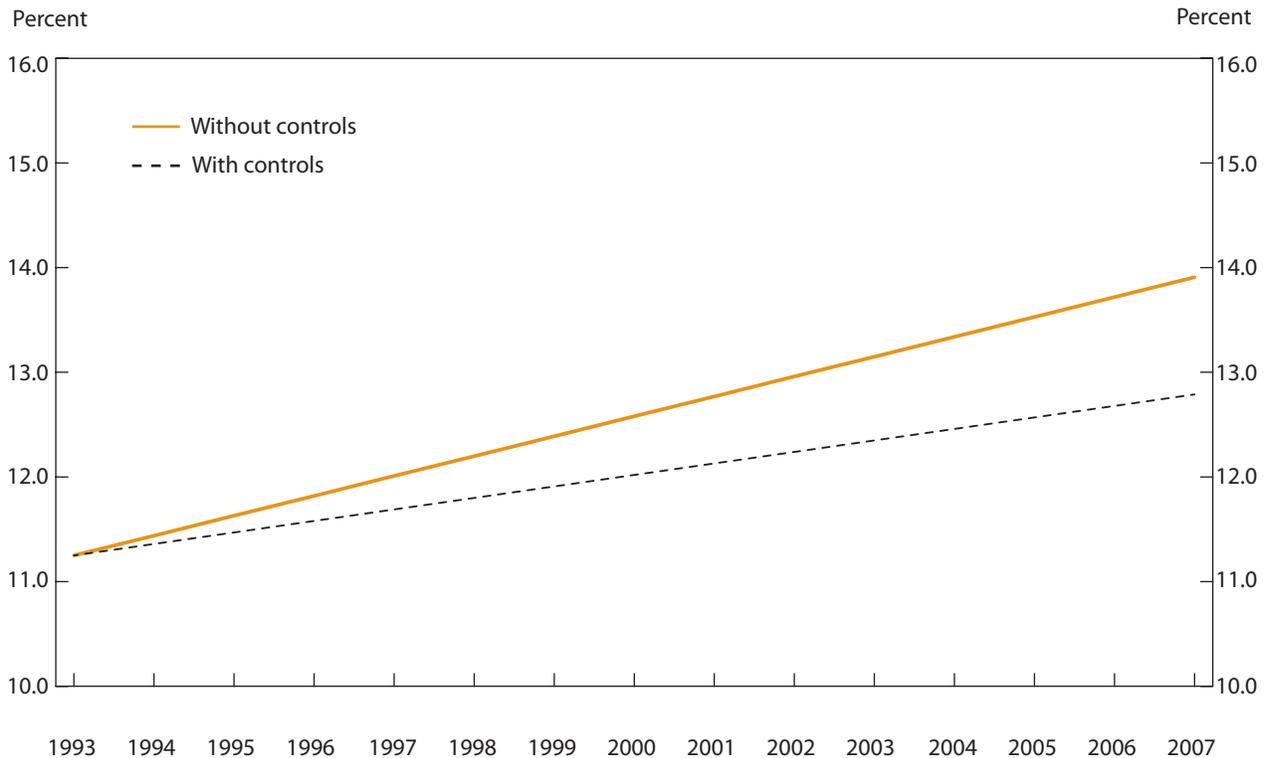
where  $x$  is a vector that includes homeownership, age, education, marital status, and race.

The solid line in chart 5 shows the time trend in the household debt service ratio without controlling for household characteristics.<sup>11</sup> The uptrend is broadly similar to that of the aggregate ratio over the same period. After controlling for household characteristics (dashed line), the slope is substantially reduced, but still trends significantly upward. All told, the remaining significant upward trend suggests that some part of the rise in the aggregate debt service ratio over time

**Chart 4. Aggregate household debt service ratio, 1993–2009**



**Chart 5. Time trend in household debt service ratio, Consumer Expenditure Survey, 1993–2007**



reflects a broad trend toward higher debt service across all types of households.

A COMPARISON OF HOUSEHOLD LIABILITY information in the Consumer Expenditure Survey (CE) and the Survey of Consumer Finances (SCF) indicates that household debt balances and payments are measured reasonably well in the CE. In addition, the share of household income devoted to required payments on existing household debt (a measure of the household debt service ratio) between 1992 and 2007, constructed from the CE sample, exhibits an upward trend that is broadly similar to a publicly available aggregate measure of household debt service. This validation suggests that household debt payment data from the CE may be used to help examine the relationship between household debt and other household economic

decisions.

In one example of such research, CE data are used to show that ex ante measures of a household's debt service ratio can help to identify liquidity-constrained households. In particular, the consumption growth of households with a ratio in the top two quintiles and a low liquid-asset ratio is significantly more sensitive to income fluctuations than the consumption growth of other households.

Although this article has validated some of the self-reported CE liability data relative to another household survey, namely, the SCF, it does not fully address whether households report their debt accurately in *any* household survey. This type of measurement error may bias the estimated effects of debt measures on economic outcomes, suggesting that the study of how accurately households self-report debt is an important avenue for further research. □

## Notes

ACKNOWLEDGMENT: The authors would like to thank Karen Dynan of the Brookings Institution; Masao Ogaki of The Ohio State University; and seminar participants at the Federal Reserve Board, the 2007 Midwest Macro Meetings, the 2007 Federal Reserve System Applied Microeconomics Conference, the 2007 NBER Summer Institute, the FDIC Center for Financial Research, and the Consumer Expenditure Survey Data Users' Workshop for helpful comments on an earlier draft of this article.

<sup>1</sup> "Consumer Expenditures and Income," *BLS Handbook of Methods* (Bureau of Labor Statistics, 2006), chapter 16, p. 1, on the Internet at [www.bls.gov/ce/#publications](http://www.bls.gov/ce/#publications) (visited Dec. 16, 2009).

<sup>2</sup> See, for example, Raymond Gieseman, "The Consumer Expenditure Survey: quality control by comparative analysis," *Monthly Labor Review*, March 1987, pp. 8–14; and E. Raphael Branch, "The Consumer Expenditure Survey: a comparative analysis," *Monthly Labor Review*, December 1994, pp. 47–55.

<sup>3</sup> Rochelle Antoniewicz, "A Comparison of the Household Sector from the Flow of Funds Accounts and the Survey of Consumer Finances," working paper (Federal Reserve Board of Governors, October 2000), on the Internet at [www.federalreserve.gov/pubs/oss/oss2/papers/antoniewicz\\_paper.pdf](http://www.federalreserve.gov/pubs/oss/oss2/papers/antoniewicz_paper.pdf) (visited Dec. 16, 2009).

<sup>4</sup> Barry Johnson and Kevin Moore, "Consider the Source: Differences in Estimates of Income and Wealth From Survey and Tax Data," working paper (Board of Governors of the Federal Reserve System, 2005), on the Internet at [\[alreserve.gov/pubs/oss/oss2/papers/johnsmoore.pdf\]\(http://alreserve.gov/pubs/oss/oss2/papers/johnsmoore.pdf\) \(visited Dec. 16, 2009\).](http://www.feder-</a></p></div><div data-bbox=)

<sup>5</sup> Keep in mind that the first interview does not collect expenditure and debt payment data.

<sup>6</sup> The sole exception is 2007, for which only six quarters of the CE data are used, because data for the second quarter of 2008 are not yet available.

<sup>7</sup> Households are assumed to be subject to a minimum monthly credit card payment of 2½ percent (or 30 percent per annum) of the outstanding credit card balance.

<sup>8</sup> In the CE, credit card debt balance data are collected only in the second and fifth quarterly interviews. Accordingly, data recorded for the third and fourth interviews were carried forward from the second interview.

<sup>9</sup> Topcoding does not affect the mean of the CE, because topcoded observations take a value equal to the mean of the reported values exceeding the topcode.

<sup>10</sup> However, when other financial obligations related to mortgages are included, such as property taxes, the CE estimate of total mortgage obligations is larger, on average, than that of the SCF. Because the split between mortgage payments and property taxes is imputed for a substantial fraction of CE respondents, some of the difference may reflect the imputation method.

<sup>11</sup> The time trend was smoothed by regressing the year effects on time and plotting the resulting regression line.

## APPENDIX: Definitions of variables

### Debt payments

Debt payments are payments on mortgage, auto, and home equity loans from the MTAB file, plus payments on credit card loans. In the MTAB files, debt payments include principal and interest expenditures associated with the Universal Classification Codes (UCCs) for each type of secured debt. For example, debt payments on auto loans include the following UCCs:

850100	Reduction of principal on vehicle loan
870103	Finance charges on loans for new cars, trucks, or vans
870203	Finance charges on loans for used cars, trucks, or vans
870803	Interest, other vehicle, financed

Payments on credit card loans equal 2½ percent of the outstanding balance reported in the FN2 file, which is part of the CE microdata release.

### Debt service ratio

The debt service ratio is the ratio of debt payments to expected income. Expected income equals income fitted from a regression of the average income from each household's second and fifth interviews on the age of the reference person, age squared, age cubed, and dummy variables for non-White reference persons, high school graduates, and college graduates.