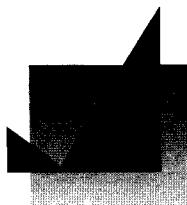


Consumer debt and home equity borrowing

Francesca Eugeni



Consumer debt ratios are important analytical tools because they allow economists and business people alike to evaluate households' financial conditions and forecast consumer spending, which is a crucial component of our economy. Because consumer spending represents two-thirds of the United States' gross domestic product, fluctuations in households' consumption affect the economy's output. Typically, rising levels of personal consumption expenditures stimulate the economy, while slower growth or declines in this component have a dampening effect on economic growth.

In general, individuals base their spending decisions on several factors, including the level of their existing indebtedness and their disposable income. Therefore, we need to measure household debt appropriately in order to forecast consumer spending behavior. To evaluate consumer indebtedness and consumer liquidity, analysts often use debt to income ratios, which measure the ability of consumers to cover outstanding obligations with income.

The analyst's most difficult task when calculating debt to income ratios is to choose the debt measure that can best reflect the full weight of consumer indebtedness. If the measure of debt is too narrow, the resulting debt to income ratio will underestimate the true magnitude of consumer debt, while a debt measure that is too broad will inflate the real level of indebtedness. In either case, the resulting forecast of consumer spending behavior will be inaccurate.

For example, the most commonly used measure of consumer indebtedness, the ratio of consumer installment credit to disposable personal income, has been declining consistently since the beginning of 1990, reaching a seven year low in the second quarter of 1992. It has been widely suggested that the recent decline in this commonly used ratio indicates that consumers finally have strengthened their balance sheets by lowering the level of their indebtedness, and will be able to sustain rising levels of spending in the future. However, a close look at the major components of household debt indicates that, over the last six years, consumers have been substituting home equity borrowing for other types of credit. Moreover, a recent increase in auto leases suggests that consumers also have been replacing traditional automobile loans with less costly auto leasing agreements. One of the results of these substitution trends is a decline in consumer installment credit outstanding which, in turn, causes the ratio of installment credit to disposable personal income to overstate the true change in consumer indebtedness. Because consumer borrowing behavior has changed over time, we need to adjust our gauging tools accordingly and find a debt measure that can best reflect such changes.

This article proposes more comprehensive debt to income ratios that take into account the

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substitution of home equity borrowing for consumer installment credit. The analysis indicates that, when total home equity lending is included in the measure of consumer indebtedness, the consumer debt ratio has not declined consistently during the last two years, and it is much higher than the ratio of consumer installment credit to disposable personal income. Moreover, the analysis indicates that the substitution of auto leasing for automobile loans causes an understatement in the real magnitude of automobile credit outstanding.

The evidence presented in this article suggests that the recent restructuring of consumers' balance sheets may not have been as significant as the traditional debt ratio indicates, and that the apparent improvement mostly reflects a reclassification of consumer liabilities among the different components of household debt. Furthermore, although the rate of growth of household debt has slowed in the early 1990s, the analysis indicates that the more appropriate measure of consumer credit has not declined dramatically since 1989, which also suggests that households might not be able to sustain higher levels of spending in the near future.

The components of household debt

The two major components of household debt are consumer credit and home mortgage debt. As of the third quarter of 1992, consumer credit represents approximately 19.3 percent of total household debt, and it consists of installment credit and noninstallment credit. Noninstallment credit represents only 7 percent of total consumer credit and consists mostly of short term credit, such as charges on credit cards that require payment in full within the billing cycle. Because noninstallment credit is such a small component of consumer debt, it is normally excluded when calculating debt to income ratios. Clearly more important, consumer installment credit represents 93 percent of total consumer credit, and it is comprised of automobile loans, revolving credit, and "other" installment credit.¹ Total household debt as measured by the Federal Reserve Board² also includes "all other" debt (tax exempt debt, other mortgages, bank loans n.e.c., and other loans) which currently represents 10.3 percent of total household debt. In the remainder of this article, household debt will include only its two major components, home mortgages and consumer credit.

Home mortgage debt currently represents 70.4 percent of total household debt, and it consists of all loans secured by one-to-four family residential properties, including home equity loans and home equity lines of credit, which are loans secured by the equity in the borrower's primary residence. Home equity loans are traditional closed end loans that require scheduled monthly repayments of principal and interest for a predetermined period of time. Home equity lines of credit are revolving accounts (open end lines) that allow borrowers to make withdrawals against an approved dollar amount.

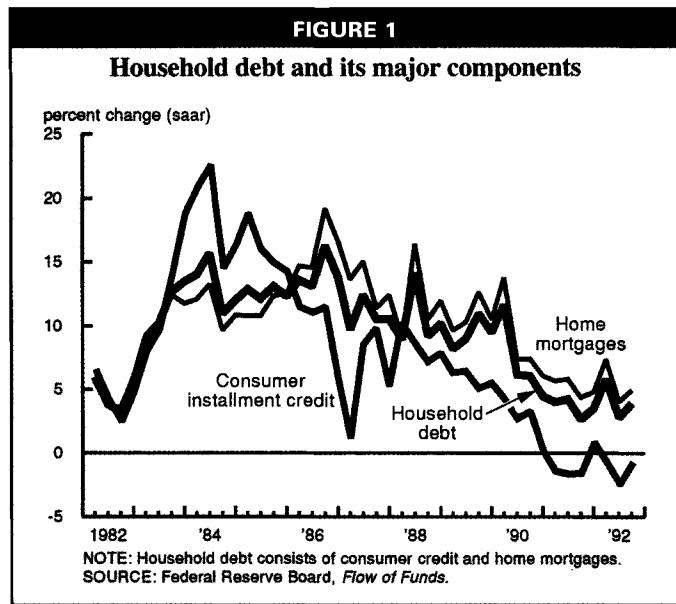
Separate data on total home equity lending are not available, as loans secured by residential property are all grouped together in the all inclusive category of home mortgages. However, data on home equity lines of credit outstanding at commercial banks and thrifts are available in the *Report of Condition*, which summarizes balance sheet data of insured depository institutions.³ Moreover, because of the increased popularity of home equity lines of credit during the last six years, different entities have been publishing survey data on home equity lending since 1987.⁴ Nevertheless, none of these sources offers complete historical data on both home equity loans and lines of credit for the lending industry as a whole. Therefore, the data on home equity lending used in this article to calculate adjusted debt to income ratios are estimated.

The shift to home equity borrowing

As shown in Figure 1, during the last ten years, household debt (consumer credit and home mortgages) grew rapidly until 1990, when the rate of growth, although still positive, started to slow down. However, from the second half of 1983 to the end of 1985 total debt growth was boosted mainly by sharp increases in consumer installment credit, while from 1986 to the present the growth in total debt has been fueled mostly by home mortgages.

In fact, home mortgages, including home equity lending, grew at an average seasonally adjusted annual rate of 15 percent from 1986 through 1987, compared to 11 percent in 1984. On the other hand, the growth in consumer installment credit slowed to an average 8 percent rate from 1986 through 1987, compared to 19 percent in 1984.

In the early 1990s, the accumulation of both home mortgage debt and consumer installment credit slowed down considerably compared to



the 1980s. Installment credit actually declined 0.9 percent in 1991, and 1.2 percent in 1992.⁵ On the other hand, home mortgage debt continued to rise during the last three years, although at an average annual rate of approximately 6.5 percent.

Typically, when the level of home mortgage debt increases, we expect home sales to rise accordingly, especially when nominal mortgage interest rates are declining. However, home sales were relatively weak from 1987 to 1991. Part of this anomaly can be explained by the fact that home mortgage debt does not consist exclusively of acquisition mortgages. Other components, such as home equity borrowing, are included in home mortgage debt and changes in these items are not correlated with changes in home sales.

Home equity lending, and especially lines of credit, became extremely popular between 1986 and 1988, soon after the enactment of the Tax Reform Act of 1986. "Surveys of Consumer Attitudes," conducted in 1987 and 1988 by the University of Michigan, show that 11 percent of homeowners had home equity loans in the second half of 1988, compared to 6.8 percent in 1983. Moreover, 76 percent of all the lines of credit in existence at the time of the surveys were opened in 1986 or 1987, compared to only 3 percent in 1983.⁶

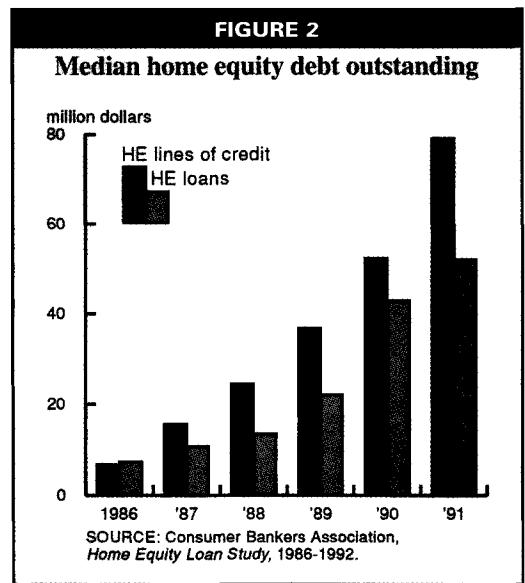
The Tax Reform Act of 1986 phased out personal interest expense on nonmortgage loans as a tax deduction over a five year period (reaching zero deductibility in 1991). This meant that the tax deductibility of personal interest on credit cards, auto loans, and personal loans disappeared

gradually while mortgage interest remained deductible. Because home equity loans (closed end loans) and lines of credit (open end lines) are secured by a lien on residential property, they are classified as mortgage loans, therefore allowing almost full deductibility of interest expense. The only restriction is that the amount of home equity debt on which the interest is deductible may not exceed the lesser of the home's true equity (home's fair market value less acquisition debt) or \$100,000.

It is clear, therefore, that most of the initial surge in home equity lending, from 1986 through 1988, occurred as consumers were trying

to take advantage of the interest deductibility on mortgage loans, and were using home equity borrowing as a substitute for other types of credit and as a source of funds to repay more expensive outstanding debt. This view is also supported by the fact that the initial slowdown in consumer installment credit coincided with the first surge in home equity lending in 1986. In 1987, total consumer installment credit outstanding grew at one-third the average pace of 1984 and 1985. The growth in automobile loans started to slow down in 1987, and "other" credit was negative at the end of 1986 and remained considerably weak thereafter. At the same time, survey data show that the median debt outstanding under home equity lines of credit at the typical lender rose from \$6.8 million in 1986 to \$15.6 million in 1987, a jump of 130 percent. Debt outstanding under closed end loans rose from a median of \$7.4 million in 1986 to \$10.7 million in 1987, a gain of 44 percent (see Figure 2).⁷

Although mortgage interest expense remained deductible on both closed end loans and open end lines of credit, the Tax Reform Act of 1986 initially had a stronger impact on home equity lines of credit, as shown in Figure 2. This phenomenon can be attributed to the way homeowners originally used these two forms of home equity borrowing. Because home equity lines of credit are structured as simple revolving accounts, initially they were considered the closest substitute for more expensive types of consumer credit, while traditional closed end loans contin-



ued to be used mostly for home improvements. As Table 1 shows, in 1987, of the amounts borrowed under open end lines, 53 percent were used for debt consolidation, 19 percent for expenditures on consumer goods and services, and 25 percent for home improvements. In the same year, of the amounts borrowed under closed end loans, only 35 percent were allocated to debt consolidation, 16 percent were used for expenditures on goods and services, and 45 percent for home improvements. While the difference between the uses of closed end loans and open end lines was very pronounced in 1987, this difference narrowed somewhat in 1991, which seems

to indicate that consumers recently have been using home equity loans also as a substitute for traditional consumer loans. As Table 1 shows, in 1991, 43 percent of closed end loans were used for debt consolidation, and 26 percent were allocated to expenditures on goods and services. In the same year, 36 percent of open end lines were used for debt consolidation, and 32 percent were allocated to expenditures on consumer goods and services.

Overall, home equity lines of credit have become extremely popular over the last six years for the many tax and nontax advantages they offer to consumers compared to other forms of credit. For example, the interest rate charged on open end lines (approximately 2 percentage points over the prime rate) is usually much lower than interest rates on credit cards, car loans, and personal loans. Also, borrowers can use lines of credit on a need-only basis by means of checks, credit cards, and automatic teller machines. Usually, the amounts approved under open end lines are larger than closed end loans and are based on loan to value ratios ranging from 70 percent to 90 percent. For example, in 1991, the most common loan amount approved at the typical lender was \$28,000 under a revolving account, and \$19,000 under a closed end loan commitment.⁸ Finally, repayment methods under lines of credit are more flexible than the monthly repayment schedules of principal and interest under closed end loans. Although minimum monthly payments usually are required under lines of credit, lenders offer different

methods of repayment. Some lenders require minimum monthly payments calculated as a fixed percentage of the outstanding balance. Other lenders require only interest payments for the duration of the loan, which typically is between 5 and 10 years, and one "balloon" payment when the loan matures.

After the initial surge from 1986 through 1988, home equity lending, and especially lines of credit, continued to increase steadily. As shown in Figure 2, in 1991, the typical lender had a median of \$79 million open end lines outstanding, and \$52 million closed end loans, compared to approximately \$7 million in 1986 for each type of

TABLE 1

Uses of home equity debt
(percent of totals)

	1987		1991	
	Open end	Closed end	Open end	Closed end
Debt consolidation	53	35	36	43
Home improvements	25	45	28	29
Autos	4	5	11	10
Education	3	1	9	7
Investments	3	4	4	2
Other	12	10	12	9

NOTE: "Other" includes medical expenses, vacations, tax payments, major purchases, and business expenses.

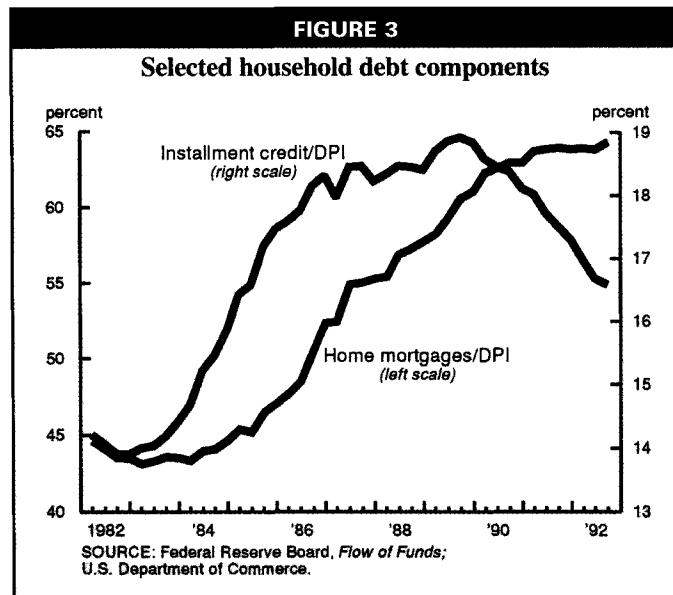
SOURCE: Consumer Bankers Association, *Home Equity Loan Study, 1989 and 1992; Canner, et. al., Federal Reserve Bulletin, 1988 and 1989.*

home equity lending.⁹ At the same time, as shown in Figure 1, growth in consumer installment credit slowed considerably from 1987 to 1990 and declined in 1991 and 1992.

Although replacing other kinds of consumer loans with home equity borrowing might have no effect on the total stock of household debt, it causes consumer installment credit outstanding to decline. For example, expenditures on automobiles, consumer goods, and services that are made with funds borrowed under home equity programs increase the home mortgage component of household debt instead of consumer installment credit. Similarly, the use of home equity loans for debt consolidation might cause consumer credit outstanding to decline as existing liabilities are reclassified on the balance sheets of consumers. In fact, when consumers repay their outstanding debts with home equity loans and lines of credit, they do not reduce the total level of their liabilities. Instead, the amount of the original debt is shifted from consumer installment credit outstanding to home mortgages, where home equity borrowings are included. Although the total amount of household debt has not changed on the balance sheets of consumers (assuming that the new home equity loan equals the original debt), we underestimate the true magnitude of consumer indebtedness if we continue to use only consumer installment credit to calculate debt ratios.

Consumer debt ratios

Consumer installment credit as a percent of disposable personal income is the debt ratio most often used to assess consumer liquidity, as it matches disposable personal income with short and medium term obligations. As Figure 3 shows, this debt to income ratio increased considerably throughout the 1980s, reaching an unprecedented level of 18.9 percent in the second quarter of 1989. However, from the peak in 1989, the ratio has declined consistently, falling to a seven year low of 16.7 percent in the second quarter of 1992, and to 16.6 percent in the third quarter of 1992. After over two years of declines in the most popular measure of household



debt, some might conclude that consumers finally have restructured their balance sheets by appreciably reducing their liabilities.

However, other broader measures of household debt clearly show that, although the overall accumulation of debt has slowed down since 1990, the true weight of consumer debt has not declined considerably during the same period. In fact, the debt to income ratio calculated using home mortgages continues to increase in the early 1990s (see Figure 3). In the third quarter of 1992, the ratio stood at 64.3 percent, which is almost 20 percentage points above its level in 1980. Therefore, while the debt measure using installment credit fell 2.3 percentage points from the third quarter of 1989 to the third quarter of 1992, the ratio of home mortgages to disposable personal income increased approximately 4 points over the same period. The end result is an increase of 1.1 percentage points in the ratio of household debt (consumer credit plus home mortgages) to disposable personal income over the same time period.

However, we have to be careful in the choice of a more comprehensive measure of consumer indebtedness. Including home mortgages in our measure of debt would actually cause the debt to income ratio to overstate the real magnitude of consumer liabilities. This is because home mortgage debt includes acquisition mortgages, which are long term commitments where only a small portion of the total debt has to be repaid each month. For example,

if we were to divide the entire amount outstanding of a 30 year mortgage loan by annual amounts of disposable personal income, clearly we would be inflating our debt measure.

On the other hand, although home equity borrowing is classified as mortgage debt, it differs from acquisition mortgages for two main reasons: 1) its uses, which are mostly debt consolidation and expenditures on consumer goods and services, and 2) its maturity, which is typically much shorter than the average life of first mortgages. Because these differences increase comparability between home equity borrowing and disposable personal income when calculating debt to income ratios, debt outstanding under home equity loans and lines of credit should be included in measures of consumer debt.

Home equity lending estimated

Before introducing adjusted consumer debt measures that take into account the substitution of home equity borrowing for consumer installment credit, it is useful to discuss the methodology used in this article to estimate the data on home equity loans and lines of credit. Estimation of the data was necessary for several reasons. First, although data on home equity lines of credit are available starting with the 1988 *Report of Condition* of most depository institutions (commercial banks, savings and loans, savings banks, and credit unions), data on home equity loans are often grouped together with first mortgages. Second, separate data on home equity lending at investment banks and finance companies are not available in the *Report of Condition*, and third, data on home equity lending at depository institutions are somewhat understated due to the recent increase in securitization of home equity loans and lines of credit.

In general, securitization is a transaction whereby assets of an institution, such as residential mortgages, credit card receivables, automobile loans, and, recently, home equity loans and lines of credit, are pooled together and repackaged into securities which are then sold to investors. When the seller of the securities transfers all risks and benefits associated with the assets to the purchaser, the sale is said to be without recourse, and the assets are removed from the balance sheet of the loan originator. Because securitization is almost always without recourse, home equity loans and lines of credit outstanding reported by depository institutions are understated by those amounts that are securitized and

eliminated from the balance sheets of the financial institutions.

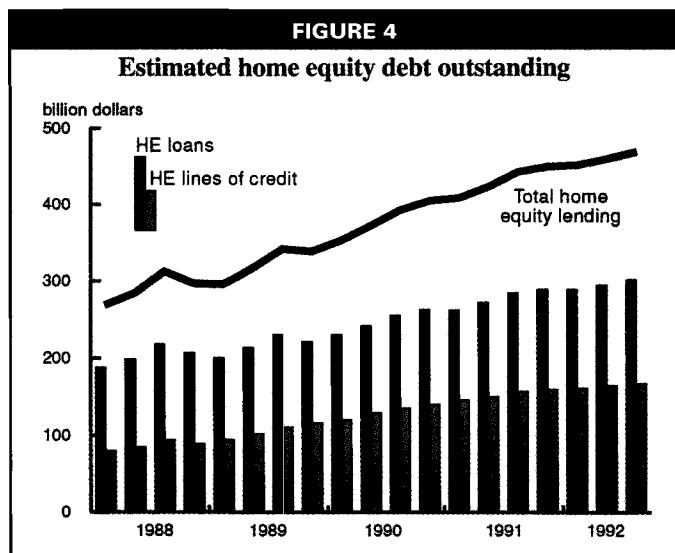
Although securitization of home equity loans and lines of credit is a fairly recent phenomenon, it has been growing at a very rapid pace since 1989. In 1991, new issues of securities backed by home equity loans and lines of credit reached an unprecedented \$10 billion, with 37 percent of home equity lines of credit securitized. This compares to \$2.7 billion in 1989, and \$5.6 billion in 1990.¹⁰ In 1992, analysts estimate another \$10 billion in total new issues, with 42 percent of home equity lines of credit securitized.¹¹

Available depository institution data on home equity lines of credit were first collected¹² and then total debt outstanding under home equity loans and lines of credit was estimated for the entire lending industry. The estimating process starts with the following findings from the 1987 and 1988 "Surveys of Consumer Attitudes":¹³ 1) insured domestic commercial banks had 40 percent of the home equity lending market at the end of 1987, and 2) home equity lines of credit represented approximately 30 percent of the total home equity loan portfolio of the typical lender in 1988.

The 40 percent market share was applied to home equity lines of credit outstanding at commercial banks to calculate a total for the industry in the first quarter of 1988 (\$32 billion/.40=\$80 billion). Then, data on lines of credit outstanding at commercial banks and thrifts were used to calculate a new market share (\$52 billion/\$80 billion=.65) which was used to estimate total lines of credit outstanding from 1988 to 1992. Then, since survey data show that lines of credit represented approximately 30 percent of total home equity lending in 1988, this proportion was used to calculate home equity lending for the industry as a whole from 1988 to 1992.

The estimated total home equity lending was then adjusted for the amounts of home equity loans and lines of credit securitized from 1989 to 1992. Finally, it is important to note that the understatement in depository institution data cannot be completely eliminated as information on whole loan sales and private placements of home equity loans and lines of credit are not available at this time.

As shown in Figure 4, the estimated total home equity lending increased 75 percent from 1988 to 1992, with increases of 110 percent for



open end lines and 60 percent for closed end loans during this same period. In the third quarter of 1992, total home equity lending reached an estimated \$469 billion, with 36 percent in home equity lines of credit. This compares to an estimated total of \$268 billion at the beginning of 1988, with 30 percent in open end lines of credit.

Adjusted consumer debt ratios

The foregoing analysis and survey data on home equity loans and lines of credit clearly show that home equity lending increased dramatically during the mid-1980s and continues to increase in the early 1990s. Because the substitution of home equity borrowing for other types of credit causes the traditional consumer debt ratio (installment credit to disposable personal income) to underestimate the true magnitude of consumer indebtedness, this article proposes three debt ratios that take into account this substitution trend. To develop an accurate formula for measuring debt, it is helpful to aggregate different components of debt and look at different ratios. For this reason, each of the three adjusted ratios presented in this article uses a different level of the estimated debt outstanding under home equity loans and lines of credit, ranging from a very conservative measure to a more inclusive one.

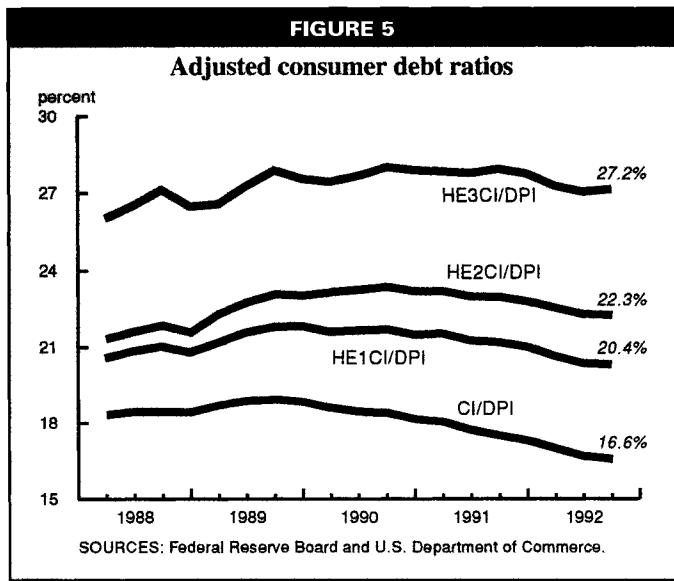
The three adjusted debt to income ratios shown in Table 2 all have disposable personal income (DPI) as the denominator, while each ratio has a different measure of consumer debt as the numerator. HE1CI/DPI uses the sum of total estimated home equity lines of credit and consumer installment credit. HE2CI/DPI uses the sum of consumer installment credit, total estimated home equity lines of credit, and the portion of estimated home equity loans that is used for expenditures on goods and services that typically are purchased with consumer credit. Finally, HE3CI/DPI uses the sum of total estimated home equity borrowing (total debt outstanding under loans and lines of credit) and consumer installment credit. Table 2 also shows CI/DPI, which is the traditional unadjusted ratio of consumer installment credit to disposable personal income.

The three adjusted ratios are graphed in Figure 5 together with the traditional consumer debt ratio (CI/DPI). HE1CI/DPI is the least inclusive of the adjusted measures of debt, accounting only for the substitution of home equity re-

TABLE 2
Adjusted consumer debt ratios
(percent of disposable personal income)

	(1) CI/DPI	(2) HE1CI/DPI	(3) HE2CI/DPI	(4) HE3CI/DPI
1989-Q1	18.7	21.3	22.3	26.6
1989-Q2	18.9	21.6	22.8	27.3
1989-Q3	18.9	21.9	23.1	27.9
1989-Q4	18.9	21.9	23.0	27.6
1990-Q1	18.6	21.7	23.2	27.5
1990-Q2	18.5	21.7	23.3	27.7
1990-Q3	18.4	21.7	23.4	28.0
1990-Q4	18.1	21.6	23.2	27.9
1991-Q1	18.0	21.6	23.2	27.9
1991-Q2	17.7	21.3	23.0	27.8
1991-Q3	17.5	21.2	23.0	28.0
1991-Q4	17.3	21.1	22.8	27.8
1992-Q1	17.0	20.7	22.6	27.3
1992-Q2	16.7	20.4	22.3	27.1
1992-Q3	16.6	20.4	22.3	27.2

SOURCE: Column (1), U.S. Department of Commerce and Federal Reserve Board. Columns (2), (3), and (4) are calculated by the author.



volving accounts for consumer credit, and it represents a very conservative adjustment of the traditional debt ratio. As shown in Figure 5, while CI/DPI fell 2.3 percentage points from the third quarter of 1989 to the third quarter of 1992, HE1CI/DPI fell only 1.5 points over the same period and has not declined since March 1992. Therefore, although HE1CI/DPI still is a very conservative measure of consumer indebtedness, it shows that the recent restructuring of the balance sheets of consumers has not been as dramatic as CI/DPI indicates, since HE1CI/DPI has not declined as much. Moreover, it is important to remember that HE1CI/DPI recently edged down because it accounts only for a portion of the total substitution of home equity borrowing for consumer credit. The most comprehensive adjusted measure of consumer leverage, HE3CI/DPI, will account for this phenomenon in its entirety.

HE2CI/DPI adds to home equity lines of credit that portion of home equity loans that is allocated to the purchase of consumer goods and to expenditures on services, such as education, vacation, and medical services, that typically are purchased with consumer credit. This portion represented 26 percent of total closed end loans in 1991, compared to 16 percent in 1987 (see Table 1). As Figure 5 shows, in the third quarter of 1992, HE2CI/DPI stood at 22.3 percent, which is much higher than the 16.6 percent level of CI/DPI, and only 0.8 percentage point below its level in the third quarter of 1989.

Therefore, both HE1CI/DPI and HE2CI/DPI, which account for only part of the substitution of home equity borrowing for other types of consumer credit, indicate that even with very conservative debt measures, consumer debt ratios have not declined significantly in the 1990s.

Finally, HE3CI/DPI, which is the most comprehensive adjusted measure of consumer debt, accounts for the substitution of all forms of home equity borrowing for consumer installment credit, and it shows a more complete picture of consumer indebtedness. Recall that evidence on the uses of home equity borrowing shows that consumer credit recently has been

replaced with both home equity loans and lines of credit. Therefore, the inclusion of both forms of home equity borrowing in our measure of debt is not likely to overstate the full weight of consumer indebtedness.

The debt to income ratio adjusted for total home equity lending (HE3CI/DPI) clearly shows that consumers have not been considerably reducing the true magnitude of their indebtedness, as the traditional debt ratio indicates. In fact, HE3CI/DPI has ranged between 27 percent and 28 percent for the past three years and stood at 27.2 percent in the third quarter of 1992, which is only 0.7 percentage points below its peak level in 1989 (see Figure 5). Moreover, in 1990 and 1991, HE3CI/DPI averaged 27.7 percent and 27.9 percent, respectively, compared to an average of 27.4 percent in 1989. For the three quarters of 1992, the ratio averaged 27.2 percent, which is virtually unchanged from 1989.

All of the adjusted debt measures discussed in this section show that the recent restructuring of consumers' balance sheets has not been as dramatic as the traditional measure suggests. HE3CI/DPI, the most inclusive ratio and consequently a more accurate representation of consumer debt, is the most dramatic, indicating that the true measure of consumer credit remains virtually unchanged in the 1990s.

Debt service payment ratios

Another important debt ratio used to evaluate consumer liquidity is the ratio of debt service

payments to disposable personal income, which measures the ability of consumers to meet scheduled repayments of principal and interest on their outstanding debts. One measure of this consumer debt service burden, estimated by staff of the Federal Reserve Board, indicates that the ratio of debt service payments on total outstanding debt to disposable personal income has been declining steadily since the beginning of 1991, reaching a six year low of 16.6 percent in the third quarter of 1992. As estimated by the Federal Reserve Board staff, debt service payments on both consumer installment credit and home mortgages relative to disposable income also declined over this period.

The recent reduction in these debt service ratios appears to conflict with the above conclusion that consumers have not substantially reduced their indebtedness and strengthened their balance sheets considerably. However, debt service payments on consumer installment credit outstanding do not include repayments on home equity loans and lines of credit, causing this ratio to underestimate the true size of consumers' current liabilities. Moreover, although debt service payments on home mortgages include servicing of home equity borrowings, most of the recent decline in mortgage repayments reflects heavy refinancing and repricing of outstanding mortgages at lower nominal interest rates.

After the Federal Reserve Board lowered the discount rate to 3.5 percent on December 20, 1991, and to 3 percent on July 2, 1992, borrowers started replacing their outstanding mortgages with new loan commitments at lower nominal mortgage rates, thereby reducing their monthly payments. In January and July 1992, mortgage applications for refinancings represented approximately 70 percent of all originations in both months, compared to about 30 percent for all of 1991.¹⁴

In summary, the recent reduction in debt service payments on consumer installment credit outstanding relative to disposable income seems to overestimate the apparent restructuring of consumers' balance sheets, as this debt measure does not include monthly disbursements on home equity borrowings. Moreover, although the ratio of total household debt service payments to disposable income is calculated using the most comprehensive measure of debt (including home equity borrowings), part of the recent decline in this ratio was due to lower nominal interest rates. Therefore, although this reduction in debt servicing obligations lessened the repayment burden of

consumers, it cannot be attributed entirely to a retrenchment of household debt.

The shift to auto leasing

Another recent trend in consumer spending behavior is the substitution of auto leases for traditional automobile loans. In this case, the substitution phenomenon also causes an understatement in the real measure of consumer credit and should be taken into account when we evaluate the full weight of consumer indebtedness.

Auto leasing has become extremely popular during the last six years mostly because it allows consumers to lower their monthly payments of principal and interest on a new vehicle. This is possible because the individual who leases the vehicle (lessee) finances only a portion of the total value of the car. Then, at the end of the lease, the lessee can either purchase the car for a set residual price or simply return the vehicle to the lessor. Moreover, because of the favorable lease terms and rates, consumers often can lease a more expensive vehicle without considerably increasing their monthly disbursements.

Automotive leasing data collected by CNW Marketing/Research¹⁵ show that 24 percent of total passenger cars delivered were leased in 1992. This compares to 12 percent in 1986, and to a projected 28 percent in 1997. Moreover, as Table 3 shows, the total value of the consumer lease fleet of passenger cars went from \$13.1 billion in 1986 to \$27.7 billion in 1992, an increase of over 100 percent. During the same period, the amount paid by consumers for new auto leases rose from \$8.3 billion to \$12.7 billion, a gain of 53 percent. This increase is remarkable especially if we consider that, in 1992, consumers financed only 46 percent of the total value of the lease fleet, compared to 63 percent in 1986. This decline in the lessee's debt exposure is mostly due to shorter maturities on new car leases in 1992 compared to 1986.

The increase in auto leasing during the last six years coincided with a slowdown in the growth of automobile credit. From 1987 through 1989, automobile credit outstanding grew at an average annual rate of 6 percent, while it fell at an average of 4 percent during the last three years. This compares to average annual increases of approximately 20 percent from 1984 through 1986. The earlier analysis of recent changes in consumer borrowing habits indicated that the use of home equity borrowings

TABLE 3
Automobile leasing

	(1)	(2)	(3)	(4)	(5)
	Lessee's debt exposure	Value of lease fleet	Value of lease fleet cumulated	Ratio of consumer installment credit/DPI	Ratio adjusted for auto leases
	(..... billion \$.....))	(..... percent.....)	
1986	8.3	13.1	13.1	18.3	18.7
1987	10.7	17.3	27.1	18.2	19.0
1988	13.2	21.0	40.5	18.4	19.5
1989	11.5	20.2	47.9	18.9	20.1
1990	10.0	17.8	47.8	18.1	19.3
1991	10.7	20.5	49.2	17.3	18.5
1992	12.7	27.7	57.0	16.6	17.9

NOTES: Amounts in column (3) are first amortized over four years and then cumulated. The ratio in column (5) is the sum of consumer installment credit and the cumulated value of the lease fleet in column (3) as a percent of disposable personal income.

SOURCE: Columns (1) and (2), CNW Marketing/Research, *Lease Trak Reports/8*, August 1992.
 Columns (3) and (5) are calculated by the author. Column (4), U.S. Department of Commerce and Federal Reserve Board.

to purchase new autos and pay off more expensive automobile loans outstanding contributed in part to the recent slowdown in the growth of automobile credit. Here, the effects of the substitution of auto leases for traditional auto loans are evaluated and a measure of debt adjusted for such phenomenon is estimated.

First of all, it is necessary to express the value of the lease fleet in terms comparable to outstanding amounts of consumer installment credit. Table 3 shows the annual value of the lease fleet and the lessee's debt exposure from 1986 to 1992. For example, if the same cars were financed with traditional auto loans instead of leases, then consumers' debt exposure would equal the value of the lease fleet (assuming 100 percent financing of the vehicle total cost for a purchase). Moreover, the value of the leased vehicles should be cumulated, since auto loans typically are repaid in approximately four years. Also, only a portion of the total value of the lease fleet should be cumulated each year to allow for amortization of the auto loans over the four years. Therefore, the value rolled over each year is gradually reduced by one-fourth of its original amount to reach full amortization by the fifth year. Because at this time data on the value of leased vehicles are not available before 1986, the cumulated value of the lease fleet from 1986 to 1989 is not exactly comparable to the numbers cumulated for later years. However, the

purpose of these calculations is to give a general indication of the significance of the increase in auto leasing. At this point, the cumulated value of the lease fleet is added to consumer installment credit outstanding to obtain an estimated measure of debt adjusted for the shift to auto leases. As shown in Table 3, the new estimated measure is then used to calculate an adjusted debt to income ratio.

As Table 3 shows, although the ratio adjusted for auto leases has declined since 1989, it is much higher than the traditional ratio of installment credit to disposable personal income at any point. Moreover, the adjusted debt ratio does not take into account the substitution of home equity borrowing for other types of consumer credit, which causes installment credit to decline. Finally, if automobile loans outstanding are adjusted for the increase in auto leases, automobile credit fell only 7 percent from the third quarter of 1989 to the third quarter of 1992, compared to a 12 percent drop in the unadjusted measure of automobile credit during the same period.

The above analysis, once again, highlights the importance of choosing a measure of debt that takes into account the changes in consumer financing behavior and further suggests that even the most comprehensive adjusted debt ratio discussed earlier in this article (HE3CI/DPI) may still underestimate the full weight of consumer indebtedness.

Conclusion

The evidence presented in this article shows that consumer borrowing patterns have changed during the last six years, as households have been taking advantage of less costly sources of credit. The substitution of home equity borrowing for other types of credit and the replacement of traditional auto loans with auto leases are clearly two important changes in consumer borrowing behavior.

One of the results of these substitution trends is a decline in consumer installment credit outstanding, which, in turn, causes the most commonly used debt ratio (consumer installment credit to disposable personal income) to underestimate the full weight of consumer indebtedness.

Therefore, to appropriately gauge consumer liabilities, we need to use a debt measure that is more inclusive, but not too broad, and more responsive to changes in consumer borrowing patterns. This article has proposed three consumer debt ratios that take into account the substitution of home equity borrowing for other types of credit. These adjusted debt to income ratios indicate that, although the rate of accumu-

lation of total household debt has slowed down since 1990, the real magnitude of consumer indebtedness has not been consistently declining during the last two years, as the traditional measure of consumer debt suggests.

Moreover, the recent substitution of automobile leases for traditional auto loans also causes an understatement in the true level of automobile credit, and its effects should be taken into account in assessing consumer indebtedness.

Finally, a fundamental result of this analysis is to suggest that the choice of an appropriate measure of debt can turn an overstated decline in consumer indebtedness into a virtually unchanged reality. In fact, in light of all the findings presented in this article it is reasonable to conclude that, although the burden of debt servicing has declined due to lower nominal interest rates, consumers have not significantly reduced their debt levels. This, in turn, seems to indicate that, after all, households might not be able to appreciably increase their level of spending in the near future.

FOOTNOTES

¹"Other" installment credit includes mobile home loans, and secured and unsecured loans for education, boats, trailers, and vacations.

²Federal Reserve Board, *Flow of Funds Accounts*.

³The *Report of Condition* contains balance sheet and income statement information of insured commercial banks and thrifts. In general, insured depository institutions must file statements of condition and income with their respective federal government regulatory agencies on a quarterly or semiannual basis.

⁴The Consumer Bankers Association publishes annual *Home Equity Loan Studies*, and the American Bankers Association publishes annual *Home Equity Lines of Credit Reports*.

⁵Data for 1992 are through the third quarter, unless otherwise noted.

⁶Data from the 1987 and 1988 "Surveys of Consumer Attitudes" of the University of Michigan are from Canner, et. al. (1988) and (1989).

⁷The data are from the 1987 and 1989 Consumer Bankers Association's (CBA) *Home Equity Loan Studies*. Although the CBA's studies report both the mean and the median as measures of central tendency, in this article only the median will be used, as mean results can be at times skewed by

extreme observations. Moreover, Figure 2 seems to indicate that the typical lender maintains a higher portfolio of open end lines than closed end loans. Note, however, that Figure 2 plots only the middle results of the studies and that all of the respondents in the CBA's surveys offer both home equity lines and loans. Data from the *Report of Condition* indicate, however, that only 60 percent of commercial banks offer home equity lines of credit and that, overall, closed end loans represent a much larger share of the real estate loan market than open end lines.

⁸Consumer Bankers Association (1992).

⁹Ibid.

¹⁰Dean Witter Reynolds Inc. (1992); Duff & Phelps Credit Rating Co. (1992); and American Banker Bond Buyer (1992).

¹¹Estimated total issues for 1992 are from David Olson Research Co., Columbia, MD.

¹²Federal Reserve Board database.

¹³Canner, et. al. (1988) and (1989).

¹⁴Mortgage Bankers Association (1992).

¹⁵CNW Marketing/Research, *Lease Trak Reports/8*, (1992).

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