

Corporate Refinancing in the 1990s

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U.S. corporations have floated stocks and bonds in unprecedented amounts in the past year. Private firms going public, public firms growing fast, and mature firms running losses have all sold shares on Wall Street. And as long-term interest rates have dropped, corporate treasurers have flooded underwriters with notes and bonds even though short-term borrowing has remained much cheaper.

Last year's full-scale return of U.S. firms to their traditional role as sellers of equity decisively reversed seven extraordinary years of firms' buying their own and one another's equity. After 1984 only the most conservative corporations refrained from increasing leverage. Indeed, management often found it in its own interest to pile on debt in order to discourage corporate raiders from boot-strapping their way into the executive suite with borrowed money.

The about-face of corporate treasurers from retiring to floating equity in 1991-92 has caught the attention of policymakers trying to understand the anemia in the U.S. economy since the Gulf War. Observers have pointed to the preoccupation of U.S. firms with reducing debt as the chief source of the firms' extraordinary caution in planning fixed investment, in managing inventories, and especially in taking on new employees. Obsessed with the risks of debt, many firms use higher business cash flows produced by any spending impulse in the economy to pay down debt faster rather than to invest or to hire. For example, the 5 percent rise in consumer spending in the first quarter of 1992 did not lead to a surge in production and employment.

This article looks beyond aggregate equity issuance to identify firms selling equity and the factors motivating

them. It then assesses the progress of corporate refinancing by quantifying the interest savings achieved through equity issuance, bond calls, and bond sales. Particular attention is given to the relative effectiveness of corporate refinancing and lower short-term interest rates in easing the interest burden on U.S. corporations' cash flows.

We find that surprisingly few of the corporations now tapping equity investors are seeking funds for the purpose of expanding business operations. Many firms have returned to the equity market because the debt they took on in the late 1980s has proved difficult to manage. When bankruptcies surged and bond investors and banks tightened credit to highly leveraged firms, organizers of leveraged buyouts welcomed new equity investors. In addition, unprofitable firms, especially industrial firms that built up finance company subsidiaries in the 1980s, have sold equity to offset weak cash flows and to retain their access to commercial paper funding. Thus, much of the record financing has served to strengthen corporate balance sheets, to unburden cash flows of the weight of debt service, and to forestall costly credit rating downgrades.

Our analysis further suggests that in the aggregate, corporate refinancing has only modestly eased the interest burden on corporate cash flows. Equity sales and bond calls alone would have reduced the claim of interest by 1 percent of cash flows. But because corporate treasurers have replaced bank debt with tens of billions of bond debt at a time when long-term rates stand at twice short-term rates, they have given up much of the interest savings from equity sales and bond calls.

The reduction of interest rates, rather than corporate

restructuring, has done the heavy lifting in unburdening corporate cash flows of interest payments. Indeed, lower rates have done ten times the job of corporate refinancing. Put differently, corporate refinancing at its 1992 rate is lowering the interest burden of corporate America only as much as a (permanent) 45 basis point cut in short-term rates.

Behind the record-breaking flotation of stocks, therefore, we find corporate treasurers trying to cope with the debt buildup of the 1980s. Their activities in the stock and bond markets, however, have partially offset each other. As a result, lower short-term interest rates over the last two years have freed up corporate cash flows much more than the labors of corporate treasurers and their investment bankers.

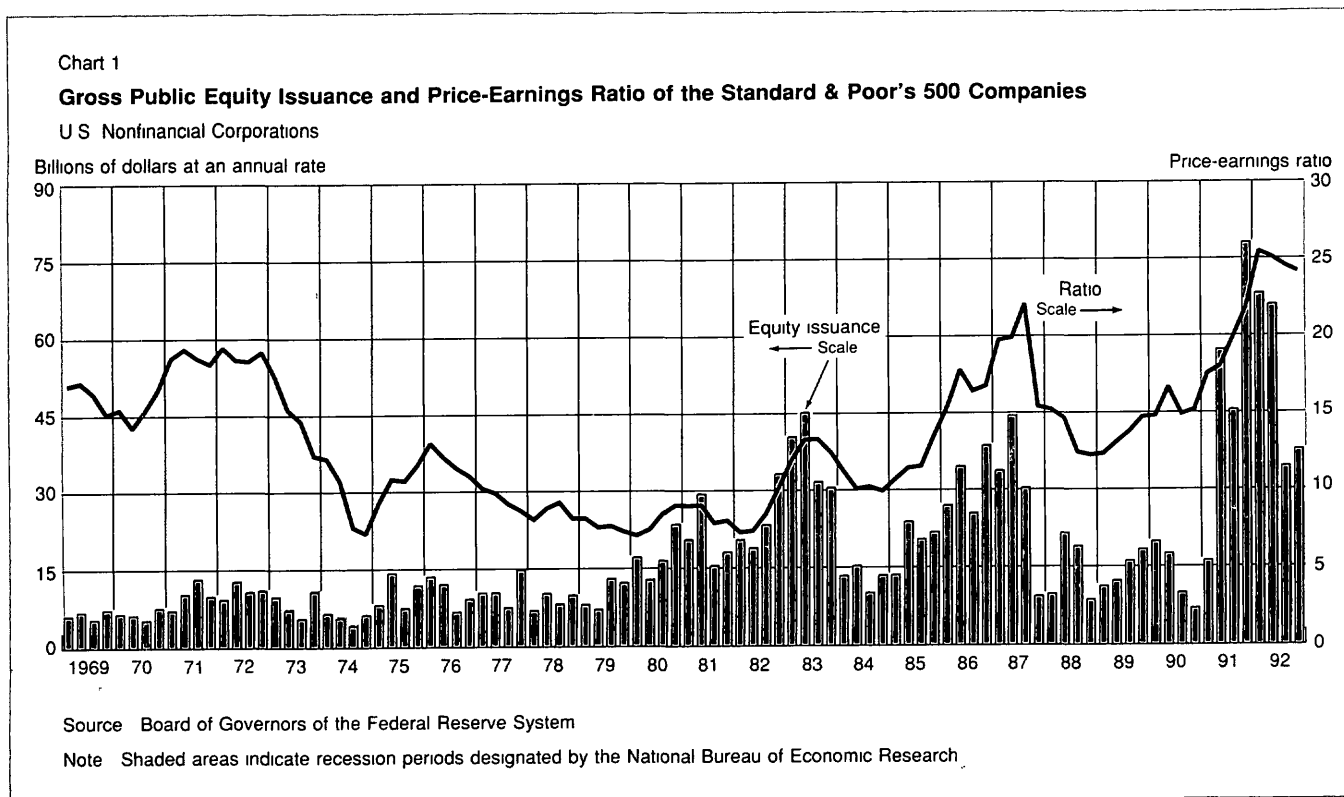
Motives for restructuring

Estimating how long financial restructuring will continue requires an understanding of the short-term and long-term motives behind the process. U.S. corporations have seized the opportunity to infuse equity into their capital structure in 1991-92 both for cyclical reasons and for reasons relating to the extraordinary developments in U.S. corporate finance in the 1980s.

The 1991-92 period resembles 1982-83, the corresponding phase of the prior business cycle, in two respects. Stock prices rallied to mark the end of a recession, and corporations, including heretofore private firms, issued equity aggressively. But 1991-92 also differs from the earlier period in important features. In the 1980s many U.S. corporations leveraged up, and some firms rapidly expanded into financial services through their finance companies. These developments carried unusual risks, which manifested themselves in 1989-90 and motivated treasurers to delever their firms' finances aggressively.

Cyclic influences: the 1982-83 record

Both demand- and supply-side forces contribute to the rise in equity issuance when a recession ends. On the demand side, stock market investors, anticipating an upturn in the economy and an associated surge in earnings, bid up prices relative to current earnings. Declining interest rates reinforce the effect of higher anticipated earnings on price-earnings ratios as investors capitalize anticipated earnings at a higher rate. On the supply side, corporate treasurers readily issue shares into a more buoyant market to augment cyclically low cash flows.



After the 1981-82 recession, these forces combined to produce an unusually timed burst of equity issuance (Chart 1) that reduced the burden of interest payments on U.S. corporations' cash flows. With little equity being withdrawn through debt-financed mergers or share repurchases, U.S. nonfinancial firms' net equity issuance ran at an annual rate of \$15 billion in the eighteen months between July 1982 and December 1983. This issuance of equity, given the high interest rates then prevailing, saved the issuers some \$3 billion in interest payments by the fourth quarter of 1983, and sliced ½ of 1 percentage point off the ratio of interest to cash flow.

U.S. corporations' resort to equity finance in 1991-92 bears some resemblance to equity issuance in 1982-83. The rates of gross and net equity issuance are about double those of the earlier period, but taking account of economic growth and inflation in the intervening years narrows the difference. Owing to the higher interest rates prevailing in 1982-83, the interest saved in relation to corporate cash flows during the earlier cycle was comparable to that saved in the recent period. The current surge of equity issuance is distinguishing itself, however, by its composition and longevity, and by the high price-earnings ratios underpinning it.

The hangover of the leveraging of the 1980s

The outside accumulation of corporate debt in the 1980s, the greater than anticipated difficulty of servicing it, and the resulting unprecedented pileup of business bankruptcies have also spurred treasurers to issue equity in the 1990s.¹ After the leveraging wave of the 1980s, many managers of large U.S. firms sought protection under Chapter 11 of the bankruptcy code. In 1990, the number of large company bankruptcies—that is, those involving more than \$100 million in liabilities each—reached twenty-four and accounted for an aggregate of over \$27 billion in liabilities (Chart 2). The number of large filings rose in 1991 to thirty-one bankruptcies, although total liabilities fell off to \$21 billion. In 1992, the third year of extraordinary attrition of large companies, the number of large bankruptcies declined sharply but the debts involved only edged down.

Our attempt to piece together a comprehensive measure of default across the whole corporate sector shows an arresting departure from the difficulties faced by corporations in the previous business cycle. In 1982 and 1983, corporate defaults on bonds, bank loans, finance company loans, and other liabilities reached the range of ½ to 1 percent of liabilities and stayed there

through 1987 as recession rolled through the farm belt and oil fields (Chart 3). But in 1991, the default rate almost doubled its earlier peak.²

Evidence suggests that in 1990-92, U.S. corporations found managing their debt in a period of weak cash flows more difficult than anticipated. Perhaps managers took seriously the argument that highly leveraged firms with weak cash flows could generally reorganize their debt without resorting to bankruptcy.³ This argument held that creditors would grab the controls and pull highly leveraged firms out of a nosedive while considerable value still remained in the firm. That is, because creditors of a very leveraged firm would, by definition, be exposed to loss early on as the value of a firm dropped, they would have more incentive than the creditors of an unlevered firm to intervene early in a troubled firm. The argument concluded that creditors would avoid the deadweight losses of bankruptcy by collectively reducing their claims without resorting to the courts. The argument ignored the difficulty of forging an agreement among different classes of creditors, a problem that was worsened by the proliferation of creditor classes during the leveraging boom of the 1980s.

Recent research has confirmed that the strategic interaction of multiple classes of creditors has made it harder for firms to manage their debt. A study of distressed firms that had issued junk bonds in the 1970s and 1980s found that the weakness of cash flow had no power to predict Chapter 11 filings. The complexity of the capital structure, as measured by the number of public debt issues outstanding or the number of priority tiers among claimants, had considerable predictive

²The numerator, nonfinancial corporate defaults, combines data from two sources: Dun & Bradstreet's *Monthly Business Failures* and First Boston's annual *High Yield Handbook*. Dun and Bradstreet's publication provides data on business failure liabilities (which do not include any long-term, publicly held obligations) by industry. The first component of nonfinancial corporate defaults consists of Dun & Bradstreet's annual total for U.S. failure liabilities less the annual totals for finance, insurance, real estate, and agriculture. The second component is the difference between the total value of bonds going into default and the defaults of bonds issued by financial firms. First Boston's *Handbook* contains the data for bond defaults. For the years 1977-88, First Boston provides one default total, covering the entire period, for each business sector. The 1977-88 total for financial sector defaults constituted 5.1 percent of all defaults for the period, therefore, the value of bonds issued by financial firms was estimated as 5.1 percent of the value of bonds going into default each year over this period. After 1988, First Boston gives sector totals on a year-by-year basis. Chart 3 shows the sum of the adjusted Dun & Bradstreet and First Boston data as a percent of the sum of total credit market instruments and total trade debt for nonfinancial corporate business as reported in the flow of funds data issued by the Board of Governors of the Federal Reserve System.

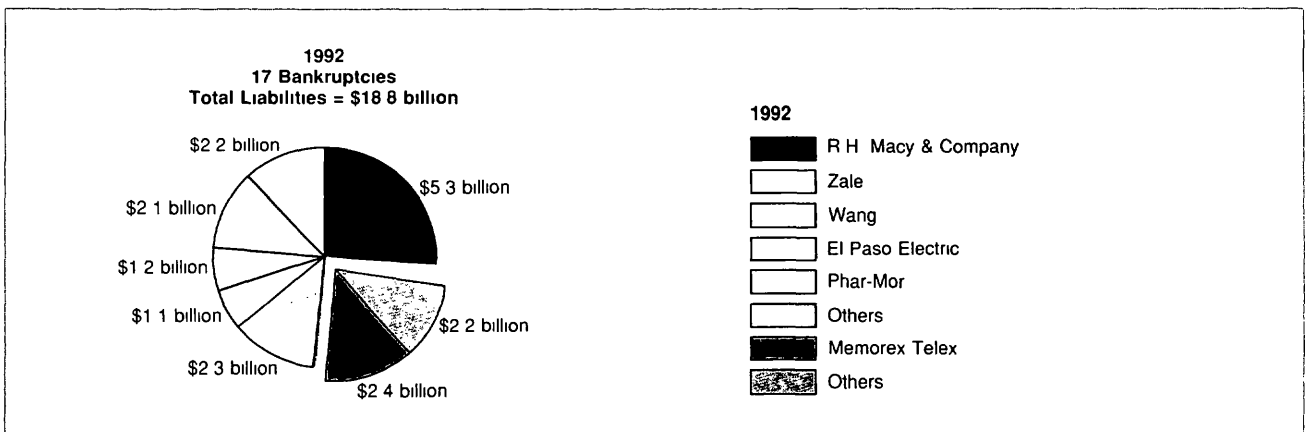
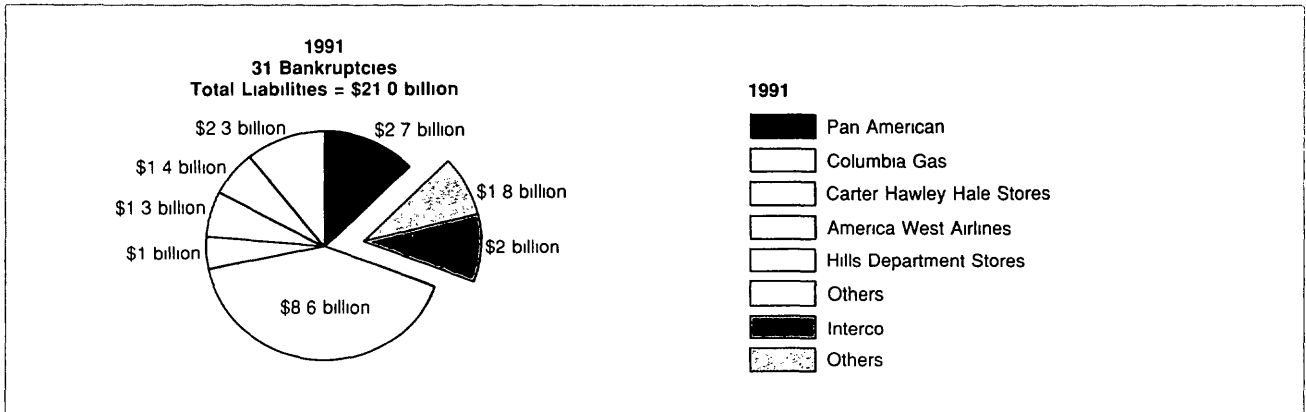
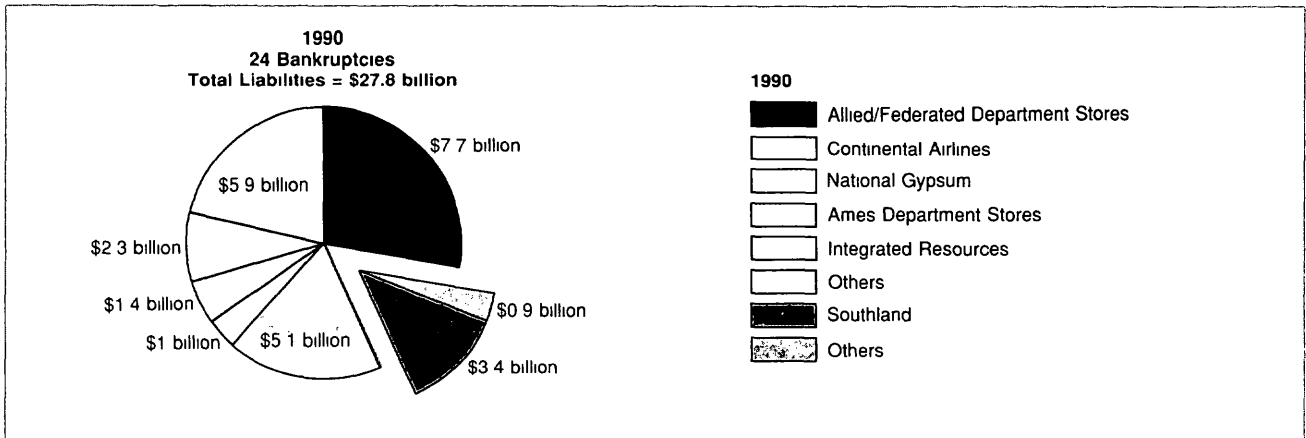
¹See Edward J. Frydl, "Overhangs and Hangover: Coping with the Imbalances of the 1980s," Federal Reserve Bank of New York *Annual Report 1992*, and Edward J. Frydl, ed., *Studies on Corporate Leveraging*, Federal Reserve Bank of New York, September 1991.

³Michael C. Jensen argued that bankruptcy had been privatized in testimony before the House Ways and Means Committee, *Tax Policy Aspects of Mergers and Acquisitions Hearings*, 100th Cong., 1st sess. (January 31, February 1, 2, March 14, 15, 1989), pp. 412-14.

Chart 2

Major U.S. Corporate Bankruptcies, 1990 to 1992

Liabilities over \$100 Million



Note Separated portion of each pie represents prepackaged bankruptcies

power, however.⁴ Junk bond issuers and their investment bankers appear to have misjudged how multiple creditor classes would jinx workouts in the event of distress.

The rise of the prepackaged bankruptcy (Chart 2) attests to the difficulty of achieving the near-unanimity among creditors necessary for less costly debt restructurings outside of bankruptcy. When a leveraged firm with a complex debt structure encounters difficulty in servicing its debt, bondholders are asked to exchange their claims for new ones that can more readily be serviced. When too many creditors in one or more classes hold out, blocking the restructuring, the firm enters bankruptcy with a prepackaged plan of reorganization that can be enforced under the bankruptcy court's majority rule provisions. Although the prepackaged bankruptcy may force a minority of holdouts to accept a deal, it nevertheless burdens firms with

⁴Paul Asquith, Robert Gertner, and David Scharfstein, "Anatomy of Financial Distress: An Examination of Junk Bond Issuers," unpublished paper, July 1992.

legal costs and disrupts business relations.

In response, perhaps, to accumulating experience, corporate treasurers gave signs as early as mid-1989 that they were backing away from borrowing and share repurchasing as strategies for boosting their share prices. A survey conducted then of 118 firms with revenues in excess of \$1 billion listed strategies for creating shareholder value in three categories and asked which ones the firms had pursued in the past and which they were currently contemplating.⁵ In the capital structure category, 66 had chosen to "expand utilization of debt in capital structure" but, going forward, only 45 contemplated so doing. Similar reactions to "inaugurate/expand a share repurchase program" were recorded: 63 had pursued this course but only 46 foresaw so doing. The author of the survey concluded, "surprisingly, interest in reducing the cost of capital through expanding the use of leverage is waning. And less reliance is being placed on stock repurchase programs as a future avenue to enhance value." The record of defaults makes the change of attitude on the part of corporate treasurers unsurprising.

Firms with major finance companies and access to commercial paper

Another important reason for the extraordinary current burst of equity issuance is the need felt by a minority of industrial and commercial firms to buttress the balance sheet condition of their finance company affiliates. Finance company balance sheets generally grew faster than the economy in the 1980s, and finance companies owned by industrial firms tended to grow faster than their parent firms.⁶ At the same time, finance companies' reliance on credit markets for funds increased in the 1980s. These developments combined to heighten the importance of retaining a high credit rating to keep access to the most credit-sensitive bond portfolios and, critically, to the commercial paper market.

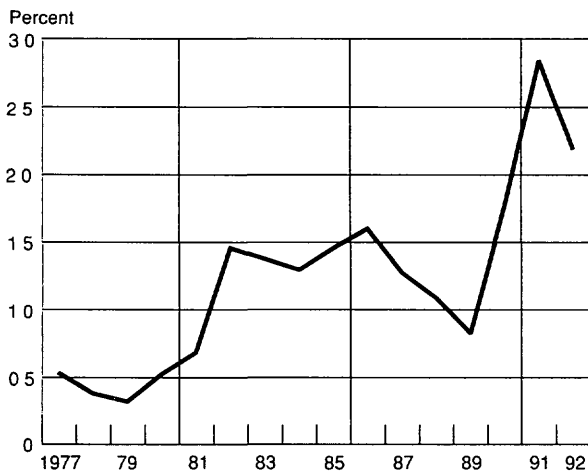
Chrysler's experience illustrates the costs of a credit downgrade. When Chrysler Financial's commercial paper was downgraded to the second tier of prime, the firm had to turn to its banks for financing, at an immediate cost of something like 1/2 of 1 percentage point on the funds formerly raised from the commercial paper market. And when it came time for Chrysler to renegotiate its bank credit, the cost rose even further. The lesson was not lost on other financially strained firms with finance company affiliates.

⁵Allen J. Schneider, "How Top Companies Create Shareholder Value," *Financial Executive*, May-June 1990, p. 38. Precise data from the survey were provided by Schneider.

⁶See Eli M. Remolona and Kurt Wulfekuhler, "Finance Companies, Bank Competition, and Niche Markets," this *Quarterly Review*, vol. 17 (Summer 1992), pp. 25-38.

Chart 3

Nonfinancial Corporate Defaults as a Share of Total Liabilities



Sources: Dun & Bradstreet, *Monthly Business Failures*, First Boston, *High Yield Handbook*, Board of Governors of the Federal Reserve System, Flow of Funds data, Federal Reserve Bank of New York staff estimates.

Notes: Estimate for 1992 annualizes total high-yield defaults as of June 1992 as well as current failure liabilities and total liabilities as of 1992-III. Defaults combine Dun & Bradstreet "failure liabilities" and First Boston bond defaults by nonfinancial firms. For the years 1977-88, financial sector defaults are assumed constant at 5.1 percent of total bond defaults.

Tighter supply of credit for heavily leveraged firms

The junk bond market's seizure in late 1989 not only eliminated a source of leveraged finance but also increased the incentive for equity issuance owing to the structure of outstanding junk bonds. The largest leveraged buyout, that of RJR Nabisco, provides a telling example. Part of its debt consisted of so-called reset notes. This instrument promised to trade close to par owing to the periodic resetting of its interest rate. In late 1989, however, with junk bonds selling at a deep discount, the interest rate required at reset threatened to climb so high that it would push the firm into default. The need to refinance these notes spurred the issuance of equity by RJR Nabisco in February and April of 1991. In short, engineered into the stock of junk bonds were features that presumed the junk bond market's health,⁷ that market's malady forced leveraged companies to resort to unexpected equity issuance.

The crisis in the junk bond market was reinforced by the tightening of bank credit in 1990. Banks with substantial claims on troubled real estate projects, as well as undercapitalized or downgraded banks, started to restrict commercial and industrial loans.⁸ For compa-

nies seeking loans, this tightening of bank credit meant wider spreads over banks' cost of funds, stiffer collateral requirements, and in some cases sheer difficulty in obtaining funds. Equity finance then became more attractive on grounds of price and availability.

U.S. corporations' return to net issuance of equity

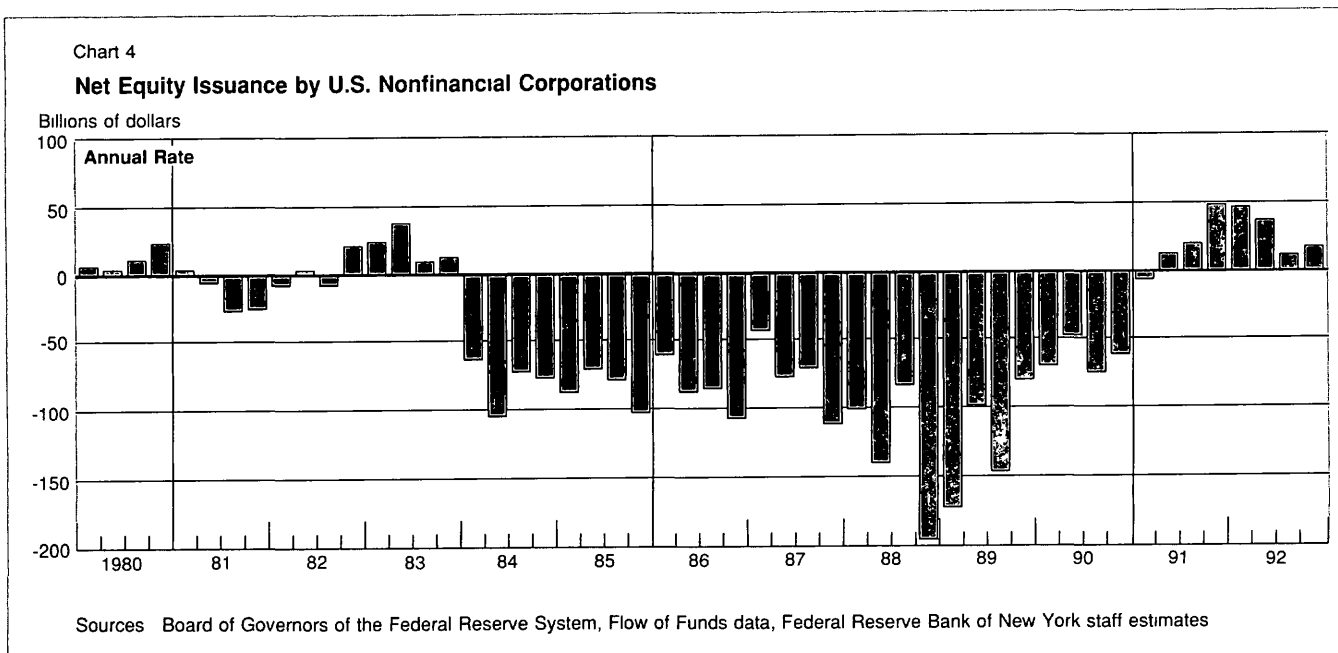
Through mergers and acquisitions, leveraged buyouts, and share repurchases, U.S. nonfinancial corporations removed more equity from the stock market than they issued into it from 1984 to 1990 (Charts 4 and 5). During that seven-year period, a net \$640 billion dollars of equity was retired. Net retirements peaked at an annual rate of almost \$200 billion, or about 7.5 percent of the total outstanding equity, in the fourth quarter of 1988.⁹

Positive net issuance returned in the second quarter of 1991 and totaled \$18.3 billion for the year. For the first three quarters of 1992, U.S. nonfinancial corporations issued equity at a \$31 billion dollar annual rate. This sum reflects not only a surge in gross new issuance but also a decline in debt-financed mergers and acquisitions, including a virtual disappearance of the leveraged buyout, and much-reduced share repurchasing. We first consider briefly the falloff in equity retirement through mergers and repurchases, and then take a

⁷See Andrew E. Kimball and Jerome S. Fons, "Coupon Events in 1991," Moody's Investor Service, February 1, 1991.

⁸Ronald Johnson, "The Bank Credit 'Crumble,'" this *Quarterly Review*, vol. 16 (Summer 1991), pp. 40-51.

⁹For a detailed analysis of equity retirements in the 1980s, see Margaret Pickering, "A Review of Recent Corporate Restructuring Activity, 1980-90," Board of Governors of the Federal Reserve System, Staff Study no. 161, May 1991.



close look at the extent and nature of equity issuance

U.S. corporations' slackened retirement of equity

As U.S. corporations chip away at the overhang of debt built up in the late 1980s, the pace of decapitalization through mergers and acquisitions has slowed to rates observed before the break in behavior in 1984. By contrast, share repurchases, while also much reduced, give evidence of becoming a more enduring means of managing leverage and putting cash into shareholders' hands

Debt-financed mergers and acquisitions

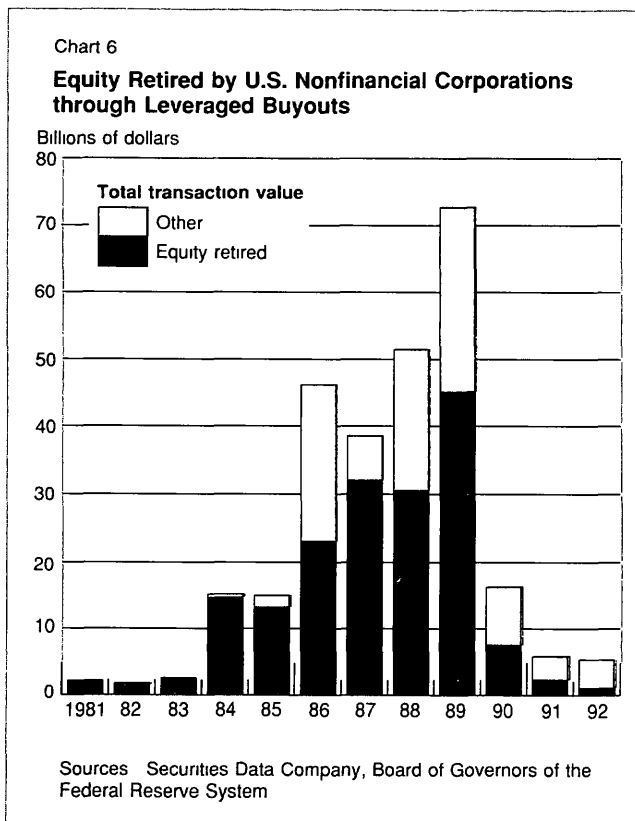
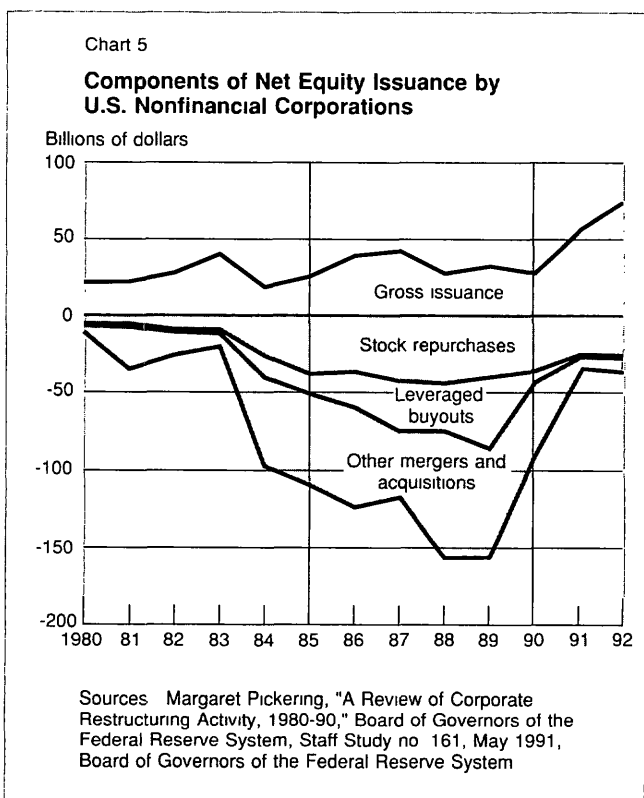
High share prices and tight credit for leveraged deals have curbed mergers and acquisitions involving the replacement of equity by debt. Well-capitalized firms account for much of the remaining merger activity, and with share prices high, treasurers are more inclined to use share exchanges in mergers. For example, ATT has paid for its acquisition of NCR with shares

Leveraged buyouts In a leveraged buyout (LBO), a small investor group, typically consisting of an LBO firm and a management team, takes on a large amount of debt to purchase the public equity of a company. In the

largest and most publicized transactions of this type, a public corporation is taken private. Between 1984 and 1990, over 18,000 U.S. nonfinancial corporations underwent leveraged buyouts, and the total dollar value of these deals exceeded \$250 billion (Chart 6). Of this sum, approximately \$165 billion in equity, or about two-thirds of the total, was replaced with debt or otherwise retired¹⁰

Since the peak in 1989, LBO activity has fallen off sharply—the result of a collapse in the junk bond market, the tightening of bank credit, and the surge in the ratio of stock prices to earnings or, more important, stock prices to cash flow. Transaction volume in 1990 was comparable to that in 1984 and 1985, but much less equity was retired in 1990 than in those earlier years. In the first half of 1992, the dollar value of LBO transactions was about \$2.3 billion, at this pace, LBOs in 1992 amounted to only 7 percent of the 1989 level. Moreover, the deals appear to be somewhat less leveraged than they used to be, probably for the same reasons that explain the fall in activity. LBO activity is estimated to have retired about \$1 billion in equity in 1992.

¹⁰Pickering, "A Review," p. 2



Other acquisitions. The total dollar volume of non-LBO mergers and acquisitions of U.S. nonfinancial corporations exceeded \$1.2 trillion between 1984 and 1990 (Chart 7). Of this total, about \$420 billion of equity, or roughly one-third, was retired.¹¹ Mergers and acquisitions other than LBOs have fallen off since 1989, though not as sharply as LBOs. Like LBOs, other mergers and acquisitions are now relying less on debt for their financing. Equity retirements from non-LBO mergers and acquisitions are estimated at \$11 billion to \$12 billion in 1992.

Stock repurchases

Share repurchases took off in 1984 as a defense against takeovers but give evidence of having found a broader, more lasting role in corporate finance. Repurchases, mostly quiet market operations but sometimes tender offers and occasionally greenmail at above-market prices, jumped from less than \$10 billion per year in 1983 to \$35 billion to \$45 billion in 1984-90

¹¹Pickering, "A Review," p. 2

(Chart 8). By 1991, however, defensive repurchases had become rare. Still, such disparate firms as Philip Morris and General Dynamics, apparently enjoying stronger cash flows than investment prospects, continue to repurchase shares in quantity to put cash in the hands of shareholders and to manage their leverage.

U.S. corporations' record flotation of new equity

U.S. corporations are taking advantage of the relatively high valuation of current earnings in the stock market. U.S. nonfinancial corporations issued \$45 billion of new equity in the public markets in 1991 and \$48 billion in 1992. The rate of equity issuance appears to have responded promptly to the market's valuation of a given stream of earnings (Chart 1). In particular, surges in gross equity issuance coincided with rising price-earnings ratios in 1982-83, 1985-87, and 1991-92. Both seasoned public corporations and firms issuing public stock for the first time (commonly termed initial public offerings or IPOs) tend to time their offerings to receive the most favorable prices for their shares.

While rising valuations have supported heavy stock issuance both in this cycle and in many previous ones, forestalling financial distress has emerged as a new motive in the recent surge of stock issuance. The spate of reverse LBOs (IPOs that partially unwind the high leverage of earlier LBO deals) and the heavy volume of both common and preferred share issues by firms running losses set the 1991-92 cycle apart from earlier cycles

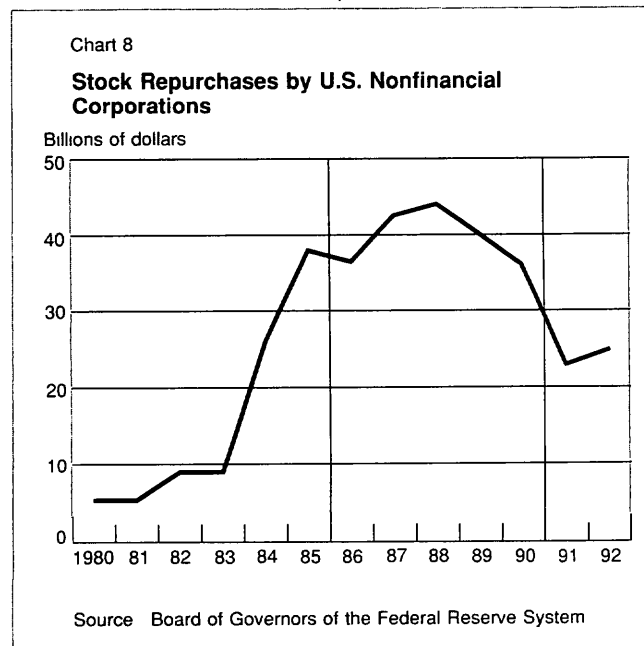
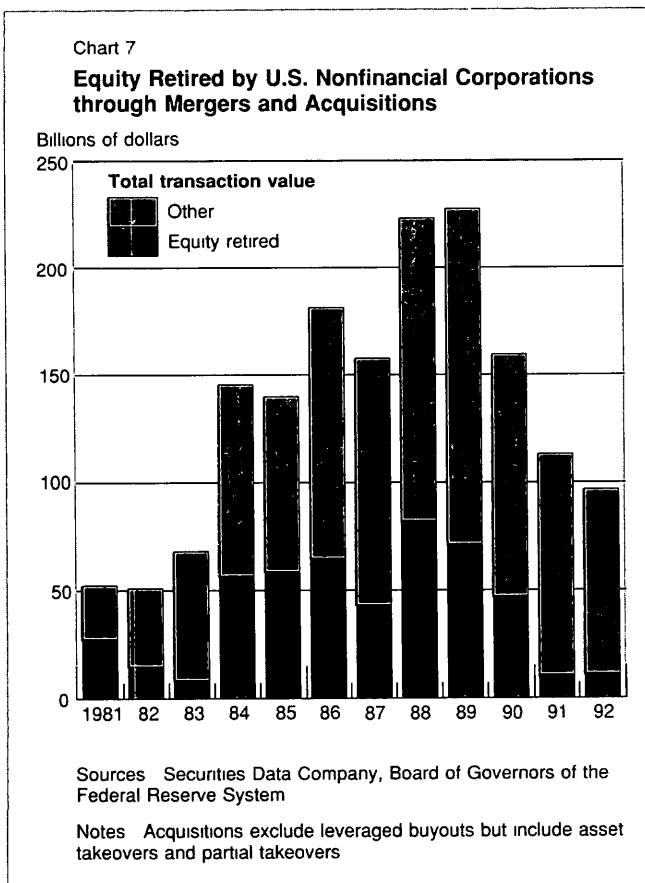
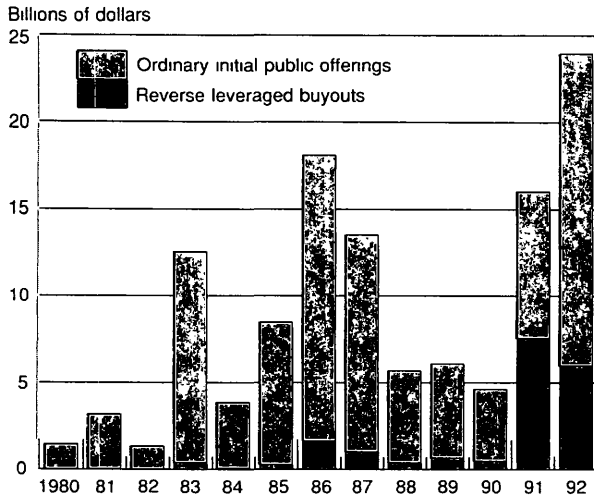


Chart 9

Gross Proceeds of Initial Public Offerings and Reverse Leveraged Buyouts

Excluding Closed-End-Fund Initial Public Offerings



Source Securities Data Company

Ordinary IPOs

Gross proceeds of initial public offerings reached \$16.5 billion in 1991 and a record \$24 billion in 1992; ordinary IPOs (as opposed to reverse LBOs) accounted for \$9 billion in 1991 and \$18 billion in 1992 (Chart 9).

Even within a record year, the timing of IPOs closely tracked the market. Thus, IPO issuance stalled midyear owing to the weak performance of recent IPOs and growth stocks in general, as measured by the NASDAQ index (Chart 10). Consequently, many firms postponed, canceled, or repriced their offerings. IPOs surged after the election in November, when small and medium-sized firms' share prices jumped.

IPOs are generally thought to provide growing corporations with new funds for expansion and to offer private investors, such as venture capitalists and top management, a means of liquidating their holdings. An analysis of IPOs, excluding reverse LBOs, by U.S. nonfinancial corporations in 1991 and the first half of 1992 confirms this conventional view (Chart 11).¹² About 31 percent of

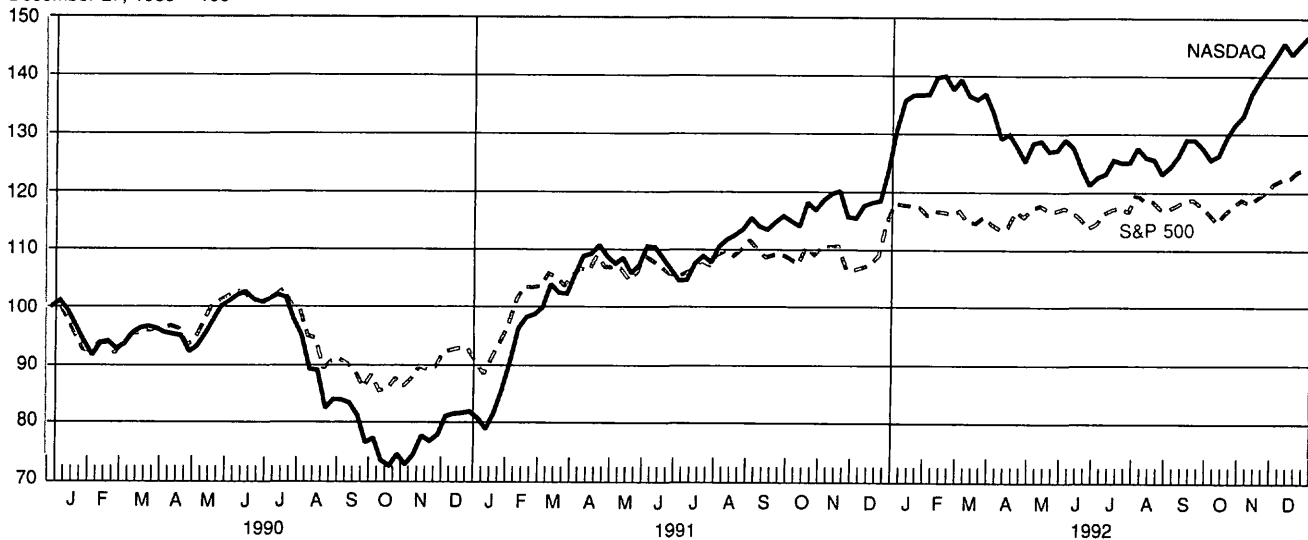
¹²We computed the allocation of proceeds by obtaining from Securities Data Company the following items for each offering—gross proceeds, offering price, underwriting spread, legal and administrative expenses, the number of primary shares, and a listing of the use of proceeds. We first determined expenses of the

Chart 10

Stock Price Performance

NASDAQ and S&P 500 Indexes

December 27, 1989 = 100



Sources Wall Street Journal, New York Times, Standard & Poor's Corporation

Footnote 12 (continued)

offering by adding legal and administrative expenses to the product of the gross proceeds and the underwriting spread, expressed as a percentage of the offering price. These expenses were assumed to be allocated pro rata among the primary and secondary components of the offering. Next we determined the net primary proceeds by multiplying the number of primary shares by the

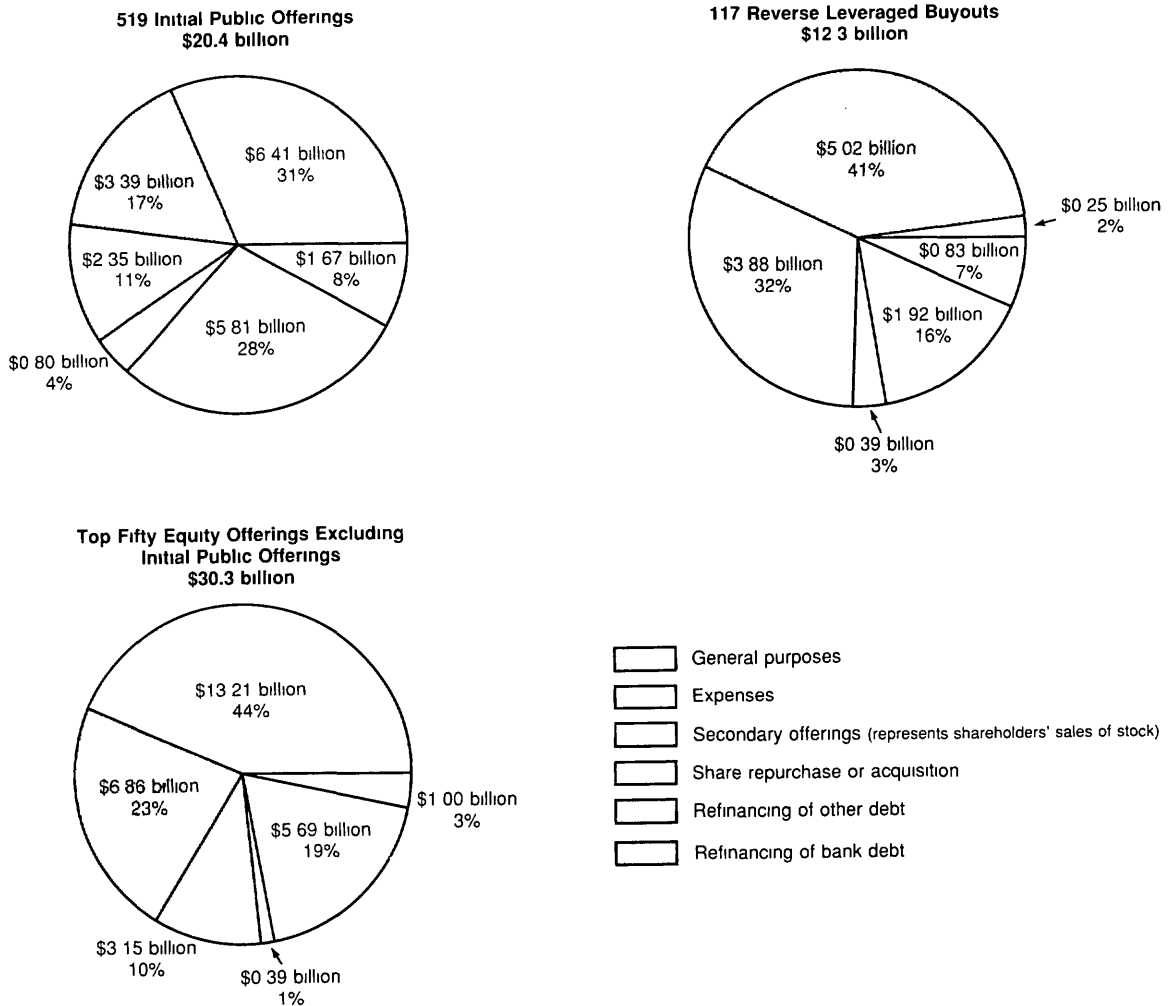
Footnote 12 (continued)

offering price and subtracting the portion of expenses that was allocated to the primary component. Net secondary proceeds were determined by subtracting expenses and net primary proceeds from gross proceeds. Lastly, we allocated net primary proceeds evenly among the primary uses listed. Therefore, if an offering with net primary proceeds of \$100 million had listed "general corporate

Chart 11

Uses of Proceeds from Public Stock Offerings by U.S. Nonfinancial Corporations

1991 - June 1992



Source: Securities Data Company

Note: Grey-shaded areas represent portion of proceeds devoted to refinancing

gross proceeds were reportedly devoted to "general purposes," which includes new hiring and investment in new plant and equipment. About 28 percent of the offering value was "secondary," meaning that this fraction of the proceeds took out existing shareholders and thus was not available to the offering firms. In addition, about 28 percent of the proceeds went towards the retirement of debt (deleveraging).

Reverse LBOs

Reverse LBOs are distinguished from ordinary IPOs by more than the financial history of the issuer. The proceeds of the \$7.5 billion raised in 1991 and the \$6 billion raised in 1992 from reverse LBOs served very different purposes than the funds raised by ordinary IPOs. Only 2 percent went to general purposes, while almost three-quarters went to pay down debt. These observations confirm that the primary motivation for IPOs by LBO companies is the retirement of debt taken on in going private.

It was probably not the original intent of those taking companies private via LBOs to reverse them under the circumstances in which many such companies found themselves during the early nineties. Earlier reverse LBOs—such as that of Gibson Greeting Cards in 1983—cashed out the existing LBO partners. In recent reverse LBOs, by contrast, little of the proceeds was used to cash out existing shareholders. In particular, only 16 percent of the proceeds went to existing shareholders on average—much less than for regular IPOs or for the more successful LBOs in the past. Difficulties in meeting debt payments, in refinancing junk bonds, and in selling assets at planned prices, combined with a window of opportunity in the stock market, seem to have led to premature public equity issuance by the recent LBOs.

Loss-incurring and deleveraging firms as issuers of seasoned public offerings

The composition of seasoned equity issuance in the past two years also has its unusual aspects. New offerings of stock by U.S. nonfinancial firms that were already public totaled almost \$30 billion in 1991; in 1992, such issues amounted to \$24 billion.¹³ Approxi-

Footnote 12 (continued)

purposes" and "refinancing bank debt" as uses, \$50 million was assumed to be allocated to each, although in actuality any allocation of the \$100 million would have been possible. The size of the errors, in percentage terms, produced by this approximation is lessened by the large number of observations and by the fact that almost two-thirds of the offerings listed only one use of proceeds. Offerings that listed no primary use of proceeds were assumed to allocate those proceeds as did other offerings of the same type (IPO, reverse LBO, or other offering).

mately two-thirds of the transaction value for the period January 1991 through June 1992 was concentrated among the top fifty deals (Table 1). An analysis of those deals shows that approximately 44 percent of the gross proceeds went toward general corporate purposes, much more than the 31 percent of IPO proceeds directed toward the same end (Chart 11). Nevertheless, this finding does not imply that seasoned companies are investing more in plant and equipment than are IPO companies.

The largest group of the seasoned firms offering equity consists of firms losing money at the time of issuance, epitomized by the auto makers. In these cases, funds devoted to "general corporate purposes" are probably being used to make up for sub par cash flows, not to finance expansion.

We argued above that unprofitable firms owning major finance company subsidiaries faced particularly sharp incentives to sell equity to protect their prime commercial paper ratings and thereby to maintain their access to commercial paper funding. We observe that no fewer than five firms with a sizable finance company subsidiary appear on the list of unprofitable stock issuers (Table 1). To test the relationship between profitability and equity issuance among firms with major finance companies, we arrange industrial and commercial companies that owned any of the fifty largest finance companies by profitability and stock issuance (Table 2).¹⁴ No less than five-sixths of the value of equity sales of this group were by firms suffering losses. By number, firms running losses were as likely as not to issue equity, while only one profitable firm among twelve did so.

Deleveraging has been another force driving equity issuance. Among the top fifty seasoned issuers of stock, high-leverage companies—those with a ratio of debt to book equity above 70 percent—represented the second largest group. These firms were undoing all the various modes of leveraging observed in the 1980s. Some of these firms had swelled their debt by acquisitions (Time Warner), others were following up on well-received reverse LBOs (Safeway and Duracell), and still others were paying down debt incurred in massive and defensive repurchases (Goodyear).

Ordinary motives are represented by secondary issues and by issues for expansion. When stock prices are high in relation to earnings, founding families cash out, as at Reader's Digest. Or a rapidly growing firm

¹⁴Drawing on the list of the fifty largest finance companies that was published in the December 11, 1991, issue of the *American Banker*, we examined the profitability of twenty-two industrial and commercial parents of twenty-three finance companies (Ford owns two finance companies). We eliminated Macy's both because it sold its credit card affiliate to General Electric and because it entered bankruptcy.

¹³Securities Data Company

Table 1

Composition of Top Fifty Equity Issues by Seasoned Firms, January 1991 through June 1992

Firm or Transaction Type	Ranking by Size	Firm	Date	Type ¹	Amount
Losses	2	General Motors	May 20, 1992		2,150
	3	Ford Motor	November 13, 1991	p	2,128
	5	General Motors	February 11, 1992	p	1,350
	7	Delta Air Lines	June 24, 1992	p	1,050
	9	General Motors	December 5, 1991	p	1,000
	11	General Motors	June 26, 1991	p	641
	12	Westinghouse Electric [†]	June 3, 1992	p	559
	13	Tenneco [†]	December 17, 1991	p	516
	20	USX-Marathon Group [§]	January 14, 1992		461
	21	Westinghouse Electric	May 9, 1991		451
	24	Federated Department Stores	May 20, 1992		437
	27	Delta Air Lines	April 8, 1991		416
	30	AMR	January 30, 1992		371
	33	Chrysler	October 2, 1991		349
	38	Texas Instruments	September 11, 1991		306
	43	Burlington Northern [†]	November 19, 1991		257
	48	Viacom [†]	June 4, 1991		239
	49	Texas Utilities	January 31, 1991		218
	50	AMR	January 24, 1991		210
					<i>Subtotal</i>
Deleveraging	1	Time Warner	July 5, 1991		2,760
	4	RJR Nabisco	November 1, 1991	p	2,025
	6	Sears Roebuck	February 20, 1992	p	1,075
	10	Dillard Department Stores [‡]	April 3, 1991		789
	17	York International Corporation	March 26, 1992		478
	18	International Paper	January 16, 1992		466
	19	Goodyear Tire & Rubber	November 13, 1991		465
	22	Freeport-McMoRan Resource	February 4, 1992		449
	29	Black & Decker	April 24, 1992		398
	32	IBP [‡]	September 5, 1991		360
	34	Sears Roebuck	November 1, 1991		325
	35	Santa Fe Pacific [‡]	June 4, 1992		319
	39	Colgate-Palmolive	November 19, 1991	p	300
	40	Safeway	April 9, 1991		287
	41	Duracell International	October 21, 1991		276
	45	The Vons Companies	May 30, 1991		251
					<i>Subtotal</i>
Secondary offerings/repurchases	14	ConAgra	September 26, 1991		507
	15	National Health Laboratories	April 30, 1991		501
	16	Reader's Digest Association	June 10, 1991		499
	23	Tandy	February 14, 1992	p	443
	25	ConAgra	May 28, 1992	p	425
	28	Marlon Merrell Dow	May 12, 1992		410
	31	Long Island Lighting	May 21, 1992	p	363
	37	Reebok International	December 10, 1991		310
	42	National Health Laboratories	February 13, 1992		259
47	Santa Fe Pacific	October 8, 1991		242	
				<i>Subtotal</i>	3,959
Expansion	8	K Mart	August 16, 1991	p	1,012
	26	Amerada Hess Corp	June 9, 1992		425
	36	Home Depot	April 12, 1991		315
	44	MGM Grand	July 16, 1991		256
	46	Browning-Ferris Industries	June 10, 1992		244
				<i>Subtotal</i>	2,252
				Total	30,056

Sources Securities Data Company, Compustat, Reuter's Textline

¹p indicates preferred[†]Debt retirement is listed as use of funds[§]Losses are at consolidated level[‡]Parent company used funds to retire debt

such as K Mart comes to market for the wherewithal to open new stores and to hire more people. But stock issues by such firms account for less than a third of the top fifty issues.

This look at the top issuers of equity indicates that loss-incurring and quite leveraged firms bulk large on the list. In the next section, we take a look at the largest 600 firms, some of which issued equity while others did not, and find that 1991 did introduce a change in the character of equity-issuing firms.

Equity issuance, leverage, and profitability

To test the hypothesis that the recent boom in equity issuance has been part of a general deleveraging trend, we drew selected operating and balance sheet statistics for the largest U.S. nonfinancial corporations from the Compustat data base. For each year from 1988 through 1991, the 600 firms with the largest assets were singled out. They were then broken up into three groups—the 50 with the largest positive net equity issuance, the 50 with the largest negative net equity issuance, and the other 500.

For each company and each year, six ratios were constructed. To measure the leverage of each company, we took the ratio of interest to cash flow and the ratios of interest-bearing debt to the book and market values of equity. To measure the profitability of each company, we took the ratios of net income to book and market

values of equity. However, to the extent that the rank of a company's income to market equity differs from the rank of its income to book equity, the former may more accurately serve as a proxy for the cost of capital. Finally, to measure the magnitude of investment in plant and equipment, we took the ratio of capital expenditures to assets.¹⁵

Table 3 presents the median of each statistic for each group in each year. For the two extreme groups of 50 each, we also present the *p*-value corresponding to the nonparametric Wilcoxon rank sum test of the null hypothesis that the ratio for the group of 50 is the same as the ratio for the middle group of 500 (Table 3). The *p*-value is the probability that, given the observations, the medians are the same. Consequently, *p*-values close to zero indicate significant differences, with almost no probability that the medians are the same.

The largest net issuers do not appear to have differed consistently from other large firms in their profitability or debt burden from 1988 through 1990. In 1991, however, notable differences emerge between the largest net issuers and the rest of the pack. The large issuers are shown to be significantly less profitable and more highly leveraged by all

¹⁵The ratios of capital expenditures to fixed assets could have been used, but it would have "normalized" for the capital intensity of operations. The intent was to capture those companies that invested heavily, whether or not they were in capital-intensive industries.

Table 2

Industrial Firms with Finance Companies: Profitability and Equity Issuance in 1991-92

	Firms reporting a profit [†]	Firms reporting a loss [†]
Firms not issuing stock	General Electric ITT AT&T Xerox Philip Morris McDonnell Douglas Pitney Bowes J.C. Penney Textron (Avco Financial Services) Whirlpool GATX	IBM Deere & Co Caterpillar Greyhound Navistar
Firms issuing stock (Amount issued in parentheses)	Sears Roebuck & Co (\$1.4 billion)	General Motors (\$6.9 billion) Ford (\$2.1 billion) Chrysler (\$0.3 billion) Westinghouse (\$0.5 billion) Tenneco (\$0.5 billion)
		(Total) (\$10.3 billion)

Notes: Computed chi-square statistic is 4.77 with 1 degree of freedom. A statistic in excess of 3.84 allows the rejection of the null hypothesis that the equity issuance of a firm and its profitability are independent factors with a probability of error less than .05. Equity issuance by General Motors includes \$0.5 billion in Hughes Aircraft shares.

Sources: *Wall Street Journal*, *New York Times*, Securities Data Corporation.

[†]1991 net income.

measures. These observations lend strong support to the claim that equity issuance has been concentrated among those companies that need it most.

In 1991 a behavioral symmetry arises—large equity issuers and repurchasers are mirror opposites in profitability and debt burden. For each year from 1988 through 1991, those companies that were the largest net repurchasers of equity show significantly more profitability as measured by the ratio of income to book equity and a significantly lighter debt burden as measured by the ratio of interest to cash flow. However, these companies appear to be no more profitable than average if the ratio of income to market equity is used, except perhaps in 1989. This seeming anomaly arises because income to market equity better proxies the cost of capital than profitability. The explanation would then be that while the largest repurchasers were more profitable, they did not have to meet a higher required rate of return on equity than other companies. In 1990 and 1991, the large net repurchasers also show a significantly lighter debt burden as measured by the ratios of debt to equity. Given these

observations, it would appear that, of those companies that remained public, the ones that engaged most in stock repurchases were in fact the ones that could best afford it. It is also interesting to note that net equity retirements by more profitable and less leveraged companies continued through 1991, even as a general deleveraging trend took hold in the rest of the corporate sector.

Finally, large issuers and large repurchasers do not consistently differ from the average in the intensity of their capital expenditures. This finding lends support to the claim that equity financing since the late 1980s has been directed primarily toward financial restructuring as opposed to investment.

Interest savings from equity issuance at its current rate

As noted above, net equity issuance for U.S. nonfinancial corporations reached \$18.3 billion in 1991, its first positive showing since 1983. Since equity replaces debt, the interest savings at an annual rate by the end

Table 3

Leverage, Profitability, and Investment by Magnitude of Net Equity Issuance

Sample: Six-hundred Largest U.S. Nonfinancial Corporations

		1988	1989	1990	1991
Debt burden measures (ratios)					
Interest/cash flow	50 largest net issuers	18.06% (0.100)	20.96% (0.802)	18.32% (0.147)	49.89% (0.000)
	Middle 500	23.44%	24.05%	25.72%	25.82%
	50 largest net repurchasers	14.00% (0.004)	14.52% (0.002)	16.07% (0.000)	10.26% (0.000)
Interest-bearing debt/book value of equity	50 largest net issuers	69.39% (0.130)	89.80% (0.448)	96.32% (0.725)	154.68% (0.000)
	Middle 500	83.11%	90.93%	93.19%	90.55%
	50 largest net repurchasers	77.87% (0.663)	74.54% (0.090)	59.04% (0.007)	49.31% (0.000)
Interest-bearing debt/market value of equity	50 largest net issuers	38.07% (0.107)	46.08% (0.871)	48.19% (0.081)	86.02% (0.012)
	Middle 500	59.96%	53.58%	73.96%	58.07%
	50 largest net repurchasers	44.96% (0.122)	35.37% (0.030)	35.61% (0.000)	19.02% (0.000)
Profit measures (ratios)					
Net income/book value of equity	50 largest net issuers	14.22% (0.486)	11.28% (0.075)	12.98% (0.278)	6.04% (0.001)
	Middle 500	13.48%	13.10%	11.78%	10.33%
	50 largest net repurchasers	18.00% (0.000)	16.87% (0.000)	15.04% (0.000)	17.71% (0.000)
Net income/market value of equity	50 largest net issuers	7.30% (0.183)	6.14% (0.069)	5.94% (0.029)	3.16% (0.000)
	Middle 500	8.88%	7.11%	7.67%	5.14%
	50 largest net repurchasers	9.04% (0.432)	8.62% (0.025)	7.47% (0.880)	4.55% (0.958)
Investment intensity (ratios)					
Capital expenditures/assets	50 largest net issuers	6.90% (0.977)	7.54% (0.875)	8.72% (0.023)	5.78% (0.162)
	Middle 500	6.29%	7.24%	6.96%	6.50%
	50 largest net repurchasers	6.92% (0.975)	7.00% (0.699)	7.47% (0.251)	7.02% (0.451)

Source: Compustat

Notes: The table shows median values. The *p*-values of Wilcoxon rank sum tests for difference of medians are in parentheses. The *p*-value is the probability of observing a value as different from the middle 500's median under the null hypothesis that the medians of the two groups are the same. Consequently, *p*-values close to zero indicate significant differences in median values.

of the year can be calculated as the product of \$18.3 billion and the marginal interest rate of 8 percent, or \$1.5 billion (Table 4). For 1992, the net issuance of equity is estimated to have been \$32 billion, yielding annualized interest savings of \$2.4 billion when an average marginal interest rate of 7.5 percent on new debt is assumed (Table 4).

These measures of the savings from equity issuance do not attempt to capture the full savings on debt that result from equity issuance. For instance, when an industrial firm that owns a finance company sells equity and succeeds in maintaining its access to the commercial paper market, it saves more interest payments than those associated with the debt directly replaced by equity. This "saving" does not actually show up in observed interest payments, however: interest payments would have gone up without the equity issue. By contrast, our measure of the savings from junk bond calls, described below, does capture some effects of equity issuance. For instance, RJR Nabisco could call its 17 percent bonds and refinance them at 10.5 percent in the spring of 1991 not so much because of generally lower rates but because of the firm's sale of equity.

Debt restructuring

In several respects, corporate treasurers operated in the credit markets in 1991-92 in a manner fairly typical of an early recovery. Net issuance of debt weakened; bank loans and commercial paper contracted while outstanding bonds continued to grow. Between 1984 and 1990, U.S. nonfinancial corporations issued a net \$1.2 trillion worth of debt, divided almost equally between bonds and all other forms of debt, including loans and commercial paper (Chart 12). In 1991, net borrowing fell to \$29 billion, or about 17 percent of its average rate in 1984-90. This drop was entirely due to \$50 billion in net retirements of bank loans, commercial paper, and other debt; net bond issuance maintained its average 1984-90 rate of about \$80 billion. In the first three quarters of 1992, net issuance of bonds kept that pace, but net retirement of other debt decreased to about \$35 billion.

The relatively steady growth of corporate bonds outstanding appears hard to square with the flood of new bonds that corporate treasurers are selling to Wall Street underwriters. Indeed, estimated public issuance of bonds reached \$153 billion in 1992 and broke the record 1986 issuance of \$116 billion. Just as corporate

Table 4

Contribution of Refinancing and Lower Short-Term Interest Rates to U.S. Corporate Interest Savings in 1991-92

Billions of Dollars at an Annual Rate

	1991	1992	1991-92
Refinancing	0.4	2.4	2.8
Net equity issuance ¹	1.5	2.4	3.9
Fixed income	-1.1	0.0	-1.1
Bond calls	0.8	1.6	2.4
Investment grade ²	0.3	0.9	1.2
Junk ³	0.5	0.7	1.2
Maturity extension ⁴	-1.9	-1.6	-3.5
Direct effect of lower short-term rates⁵	14.1	13.2	27.3

Sources: For net equity issuance—Board of Governors of the Federal Reserve System, Flow of Funds data for nonfarm nonfinancial corporate business; FRBNY estimates. For investment grade bond calls—Salomon Brothers Corporate Bond Research, "Notice of Corporate Bonds Called," Industrials/Utilities; Bloomberg data base. For junk bond calls—First Boston High Yield Research. For maturity extension—Board of Governors of the Federal Reserve System, Flow of Funds data. For effect of short-term rates—Board of Governors of the Federal Reserve System, Flow of Funds data and *Federal Reserve Bulletin*.

¹Estimates assume that \$18.3 billion in equity replaced 8 percent debt in 1991 and that \$32 billion in equity replaced 7.5 percent debt in 1992.

²Estimates are based on \$28 billion called in 1991 and \$78 billion in 1992.

³Estimates are based on \$10 billion called in 1991 and \$24 billion in 1992.

⁴We estimate that \$47 billion in net fixed rate debt replaced floating rate debt in 1991 and that \$40 billion net fixed rate debt replaced floating rate debt in 1992.

⁵Estimates assume that one-fourth of net short-term debt is repriced each quarter.

treasurers sell equity into surging stock markets (Chart 1), so too they sell bonds into surging bond markets (Chart 13) What reconciles the steady growth of outstandings and the explosion of bond issuance is maturing bonds and especially calls of bonds.

Savings from bond calls

Bond calls over the last two years have been encouraged by the convergence of two trends—lower interest rates and less erosion of corporations' credit standing.¹⁶ The latter trend is a consequence of lower interest rates and net equity issuance

We estimate that a face value of \$106 billion in investment grade bonds and \$34 billion in junk bonds has been called in 1991-92.¹⁷ We base our interest savings calculation on samples of called investment grade bonds and junk bonds. The current pace at which U.S. nonfinancial corporations are calling and refinancing

¹⁶Andrea Bryan, "Corporate Credit Quality Erosion Eases," *Standard & Poor's Creditweek*, January 4, 1993, p. 39

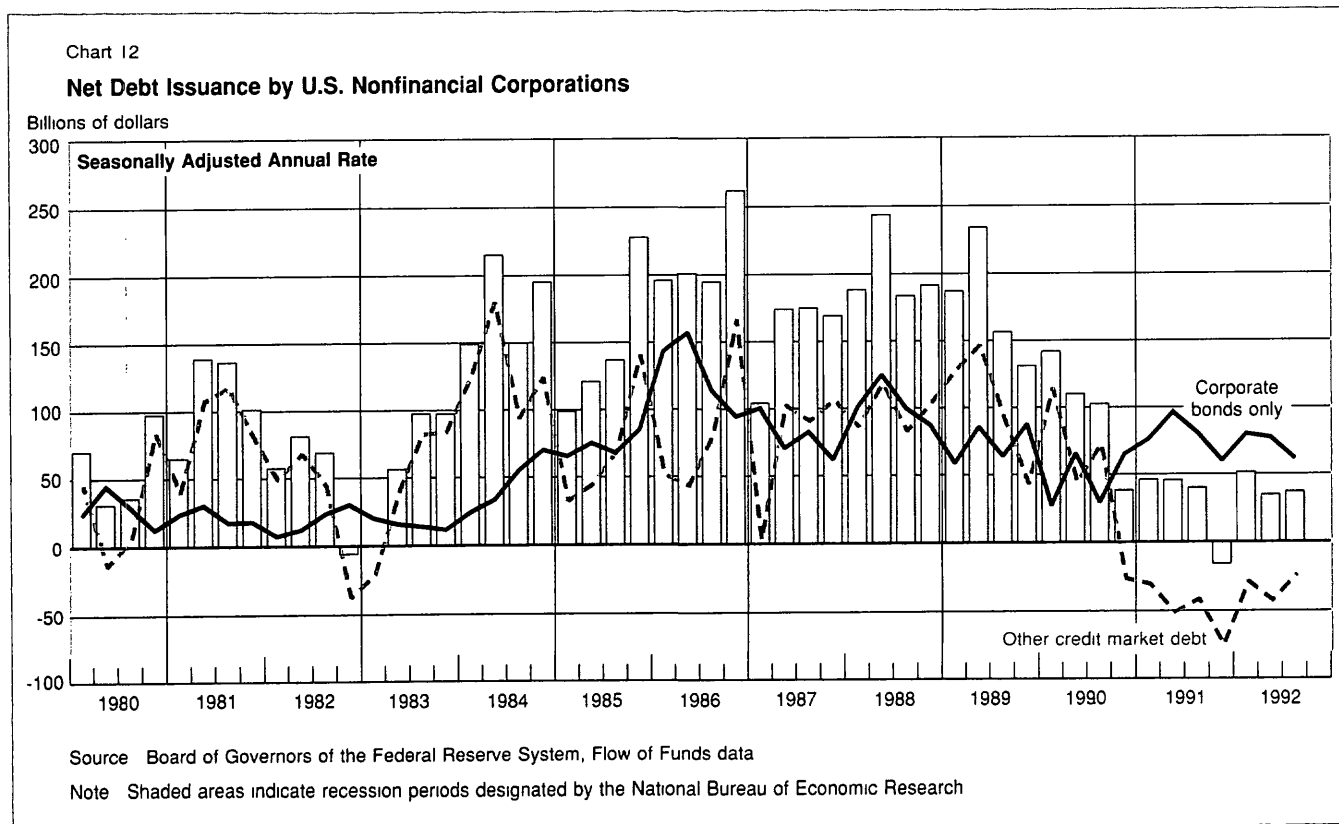
¹⁷Amount of junk bonds called is based on First Boston High Yield Research data. Amount of investment grade bonds called is based on Salomon Brothers' *Monthly Statement of Bonds Called* for 1991 and through November 1992, annualized

their bonds is saving \$1.6 billion a year in interest payments.

The savings from calls of investment grade bonds stem from strong refinancing activity and relatively modest average savings. A sample of 153 issues called between January and May 1992 with an aggregate face value of \$10.3 billion¹⁸ provides a weighted average original coupon of 9.3 percent, call price of \$102, and a refinancing cost of 8.04 percent. These averages indicate interest savings of \$1.10 per \$100 of face amount called. The difference between the original coupon (9.3) and new coupon scaled by the call price premium (8.04 times 102 divided by 100). This finding suggests that the annual interest savings on \$28 billion of called investment grade bonds in 1991 and \$78 billion in 1992 were \$0.3 billion and \$0.9 billion, respectively. Our calculation is biased on the side of greater savings because it neglects the higher principal repayment of refinancing implied by the call price premium

The savings from junk bond calls stem from more modest refinancing activity and very considerable average savings. Companies like RJR Nabisco, which sold

¹⁸Bloomberg data base, 153 issues called, January-May 1992



new equity to improve its credit standing so as to refinance its debt at lower interest charges, derived significant benefits from refinancing. Thus, savings on junk bond calls arise from credit upgrades as well as lower interest rates for a borrower of a given credit.¹⁹ A sample of \$3.7 billion junk bonds called in 1991²⁰ gives a weighted average original coupon of 15.1 percent, a call price of \$101.8 per \$100 of face amount, and a refinancing coupon of 10.1 percent (Table 5). Taking the difference between the original coupon (15.1) and the new coupon scaled by the call price premium (10.1 times 101.8 divided by 100) yields an interest savings of \$4.78 per \$100 of face amount called. This finding translates into annual interest savings of \$0.5 billion on \$10 billion in called junk bonds in 1991. Junk bond calls accelerated in 1992 but proved on average less lucrative. First Boston

High Yield Research reports that in the first half of 1992, the average coupon on new issues replacing those that were called or tendered was about 300 basis points lower.²¹ We estimate therefore that the \$24 billion called in 1992 saved \$0.7 billion in annual interest charges.

The costly extension of debt maturities

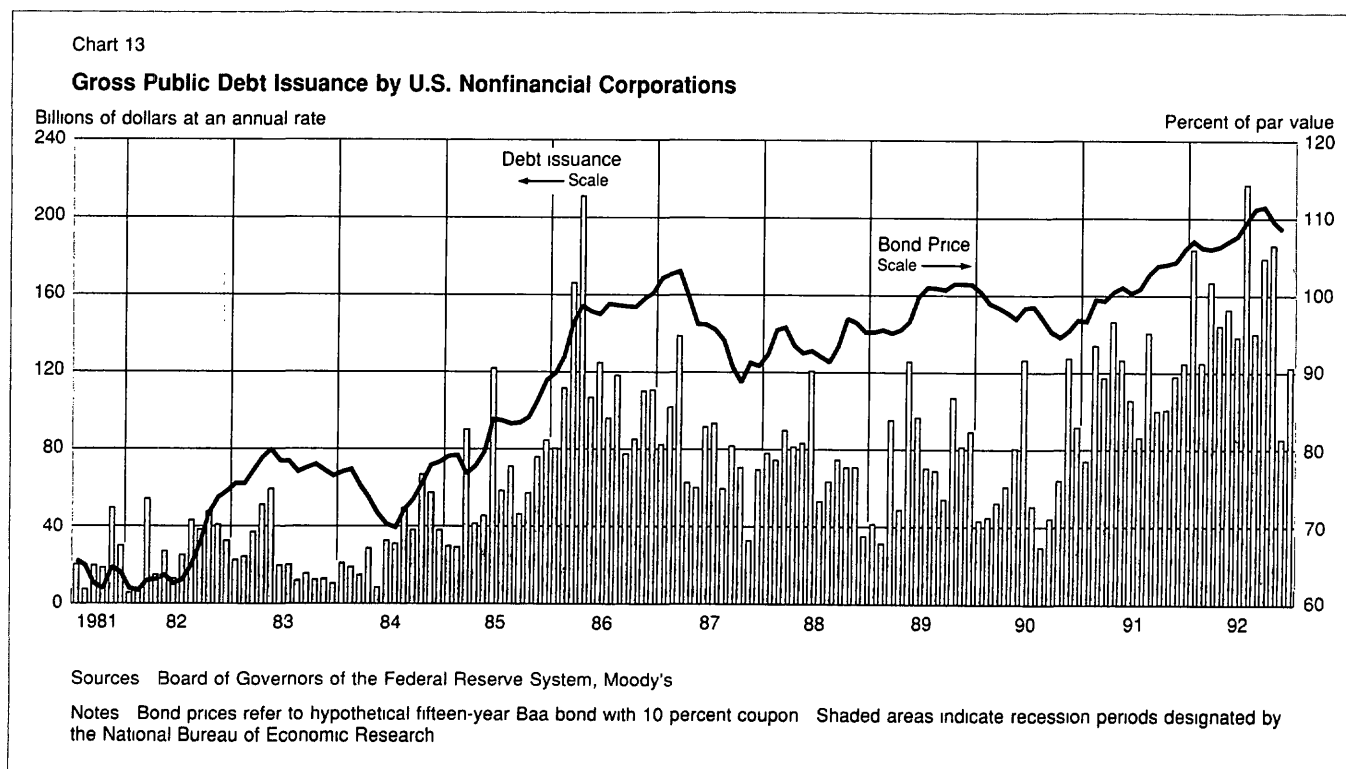
A large offset to these interest savings arises from the normal cyclical funding of commercial paper and bank debt with bond debt in the face of an extremely steep yield curve. Of course, if long-term interest rates simply represent the average of short-term rates over the relevant period, the extra interest paid now simply saves higher interest payments down the road. However, the power of long-term rates to predict future short-term rates has proven weak in the past. Corporate treasurers often view securing long-term, fixed rate financing as insurance against swings in short-term interest rates, but such financing also introduces the risk that a drop in inflation will leave the firm saddled with a very high real interest rate.

In keeping with our focus on net interest payments, we consider corporate liabilities net of financial assets. At the end of 1990, U.S. nonfinancial corporations had

¹⁹Restructurings and refinancings allowed issuers with outstanding debt to achieve higher credit quality. Among high-yield issuers in 1992, there were 98 upgrades totaling \$51 billion and 96 downgrades totaling \$37 billion. By contrast, in 1991, downgrades almost doubled upgrades. There were 75 upgrades totaling \$62 billion and 133 downgrades totaling \$81 billion." (Diana Vazza, "High-Yield Market Sets Record For Issuance in 1992," *Standard & Poor's Creditweek*, January 25, 1993, p. 33)

²⁰Sample from First Boston *High Yield Handbook*, January 1992, Appendix III.

²¹First Boston High Yield Research, *1992 Mid-year Review*, July 28, 1992, p. 3.



\$1,240 billion in fixed rate debt (net of fixed rate assets) and \$677 billion in net floating rate debt outstanding²² At year-end 1991, these outstandings were about \$1,287 billion and \$594 billion, respectively In 1991, the corporations reduced the ratio of net floating rate debt to total debt from 35.3 percent to 31.6 percent, partly by shifting about \$47 billion worth of that debt from a floating rate to a fixed rate and partly by paying off loans with internal cash flows. This recent behavior is consistent with the historical relationship between maturity shifts and changes in interest rates During periods of declining interest rates, corporations tend to shift from floating to fixed rate debt to lock in favorable interest rates. Such moves occurred in 1970-71, 1975-76, and 1985-87 Conversely, when interest rates rise, as they did in 1973-75, 1979-81, and 1983-84, corporations tend to shift into floating rate debt to avoid locking in unfavorable interest rates (Chart 14)

As U.S. nonfinancial corporations shifted out of float-

²²Net floating rate or short-term debt is defined in flow of funds classifications as the sum of bank loans, commercial paper, and other loans minus all liquid assets excepting currency and checkable deposits, U.S. government securities, and tax-exempt securities Net fixed rate debt is defined as corporate bonds minus U.S. government securities and tax-exempt securities

ing rate debt and into fixed rate debt in 1991 and 1992,²³ they undertook higher interest obligations Although

²³The growing use of interest rate swaps by U.S. nonfinancial corporations makes balance sheet data less reliable when the analyst tries to gauge the relative importance of fixed and floating rate funds The most common interest rate swap involves the exchange of floating payments, usually based on LIBOR, for predetermined fixed payments on a notional amount of debt Hence a nonfinancial firm borrowing short-term or floating rate funds may enter a swap that effectively creates a fixed rate liability However, since swaps are off-balance-sheet items, the balance sheet (and the flow of funds data) would still show an exposure to short-term interest rates

To estimate the effect of interest rate swaps on the composition of debt, the analyst must know the gross positions in both fixed-to-floating and floating-to-fixed rate swaps of U.S. nonfinancial corporations If U.S. nonfinancial corporations are net fixed rate payers, then the effective ratio of floating rate to total debt would be somewhat lower than flow of funds data indicate, and vice versa

According to the International Swap Dealers Association, the value of interest rate swaps outstanding stood at more than \$3 trillion at the end of 1991, up from about \$680 billion just four years earlier Of this total, U.S. nonfinancial corporations were end users of about \$260 billion, up from \$76 billion in 1987, according to the Bank for International Settlements Although the data are insufficient to estimate the aggregate effect of swaps on nonfinancial corporations' exposure to short-term interest rates, there is some evidence that these firms tend to be net fixed rate payers in swaps See Eli M. Remolona, "The Recent Growth of Financial Derivative Markets," in this issue of the *Quarterly Review* Our estimates of the cost of maturity extension from balance sheet data will understate the true effect if firms are increasingly swapping into fixed rates

Table 5

Interest Savings on Junk Bonds Called in 1991

Company	Month	Coupon (Percent)	Amount (Millions of Dollars)	Premium over Par	New Coupon (Percent)	Dollar Savings (Millions of Dollars)	Percent Savings (Percent)
Century Communications	Oct	12.750	200	101.00	11.875	1.5	0.76
Ferrellgas Inc.	Dec	13.375	61	106.69	11.375	0.8	1.24
Ferrellgas Inc.	Dec	12.750	149	104.78	11.375	1.2	0.83
FMC	Jun	12.500	150	106.25	7.500	6.8	4.53
Illinois Central	Aug	15.500	150	100.00	10.210	7.9	5.29
Kelsey Hayes	Nov	13.250	124	100.00	11.375	2.3	1.88
Maxxam Group	Nov.	13.625	140	100.00	12.750	1.2	0.88
Owens-Corning Fiberglass [†]	Dec.	15.000	208	100.00	7.400	15.8	7.60
Playtex Apparel	Dec	14.000	182	110.89	11.625	2.0	1.11
RJR Holdings Group	Jun	17.000	1,500	100.00	10.500	97.5	6.50
Safeway Stores [†]	Nov	14.500	420	102.90	7.930	26.6	6.34
Safeway Stores	Dec	11.750	250	104.61	9.650	4.1	1.66
Viacom Inc.	Aug -Oct	15.500	200	100.00	10.250	10.5	5.25
Total/weighted average		15.081	3,734	101.77	10.127	178.4	4.78

Sources: Reuter's *Textline*, Moody's, *First Boston High Yield Handbook*, Euromoney Loanware, *International Financing Review*

Notes: Amount indicates the amount of the call that could be attributed to a recent debt issue or bank loan Percent savings are calculated as the difference between the old coupon rate and the new coupon rate adjusted upwards by the ratio of the call price to 100 Dollar savings are the percent savings multiplied by the amount

[†]Bond was refinanced with a bank loan New coupon assumes a spread of 75 basis points over LIBOR on the loan converted into an equivalent fixed rate using the mid-December 1991 five-year interest rate swap spread Seventy-five basis points was the average spread over LIBOR on syndicated loans for a sample of Baa3-rated borrowers in 1991

[†]Bond was refinanced with a bank loan, as in the case of Owens-Corning New coupon assumes a spread of 83 basis points converted into an equivalent fixed rate using a seven-year swap spread to match the maturity of the Safeway syndicated loan Eighty-three basis points was the average spread over LIBOR for a sample of Ba2- and Ba3-rated borrowers in 1991

this shift may have had the beneficial effect of locking in lower long-term rates, the immediate effect has been to increase interest expense. The slope of the corporate yield curve, defined as the difference between the commercial paper rate and the yield on Baa-rated bonds, has been about 4 percentage points. Therefore, the estimated increase in annualized interest expense resulting from the maturity shift that occurred in 1991 is \$1.9 billion. The first three quarters of 1992 saw further shift in debt composition from floating to fixed rate debt of about \$40 billion at an annual rate. Thus, the increased interest expense for 1992 is estimated to be \$1.6 billion.

In summary, corporate treasurers' operations in the debt markets have served not only to pare interest payments through bond calls but also to lock in higher payments through maturity extension. Our calculation of the net cash flow benefits of these operations only attempts to capture immediate, not ultimate, effects. Interest rates may rise to leave discounted interest payments unaffected by the maturity extension. Or interest rates may rise somewhat less but leave corporate treasurers content that the benefit of stable and predictable interest payments matches the ultimately higher cost of fixed rate finance. By contrast, if inflation

continues to remain subdued and interest rates decline, the maturity extension could prove more expensive ultimately than immediately.

Short-term interest rates and the interest burden

Financial restructuring has contributed to reducing the interest burden of U.S. nonfinancial corporations. But the decline in short-term interest rates since 1989 has unburdened corporate cash flows quite apart from any refinancing. This influence takes effect as interest charges on floating rate debt are reset to prevailing market rates on a monthly, quarterly, semiannual, or annual basis. To compare the effects of refinancing activity and lower short-term interest rates, we need to quantify the relation of lower rates to corporate net interest payments.

Lower interest payments on short-term and floating rate debt

If almost all floating rate assets and liabilities are reset at least once a year, then the savings from lower rates should be roughly equal to the product of the change in interest rates and the dollar amount of net floating rate debt outstanding. We employ both simple arithmetic and regression analysis to estimate interest savings.



Box 1: Regression Analysis of the Pass-through of Short-Term Interest Rates to Corporate Interest Payments

The results of our regression analysis are reported in the table. The product of the quarterly change in the three-month commercial paper rate and the lagged quarter-end level of net floating rate debt effectively predicts the change in seasonally adjusted annualized net interest payments. As the table shows, the estimated relationship is significant both contemporaneously and lagged three quarters.[†] Moreover, the null hypothesis that the four coefficients on quarterly lags add up to one can be

accepted at any reasonable level. In other words, a change in short-term rates exerts its full impact within a year. Finally, the null hypothesis that the transmission of short-term market interest rates to corporate interest payment occurs smoothly (one-quarter per quarter) can be accepted.

The regression also confirms the linkage of net debt levels and net interest payments. A proxy for the change in net interest payments resulting from increasing levels of debt is computed as the sum of two products: (1) the change in net floating rate debt outstanding multiplied by the short-term interest rate, plus (2) the change in net fixed rate debt outstanding multiplied by the long-term interest rate. Absent any changes in interest rates, net

[†]The product using the first and third lags is significant at the 5 percent level (the critical value [c.v.] for the two-sided t-test is 2.70), the product using the third lag is significant at the 2 percent level (c.v. = 2.42), and the contemporaneous product is significant at the 2.5 percent level (c.v. = 2.02).

Effects of Short-Term Interest Rates and Debt Accumulation on Interest Payments by U.S. Nonfinancial Corporations: Results of Regression Analysis

Quarterly Data

Dependent variable: change in seasonally adjusted annualized net interest payments (billions of dollars at an annual rate)

Independent variables: change in net floating rate debt times the three-month commercial paper rate plus the change in net fixed rate debt times the corporate bond yield (billions of dollars)

Intercept suppressed

	Change in Commercial Paper Rate times Floating Rate Debt			Change in Net Debt times Interest Rate	Memorandum Sum of Commercial Paper Coefficients
	No Lag	One-Quarter Lag	Two-Quarter Lag		
Coefficient	0.205	0.338	0.27	0.358	1.175
(t-statistic, H ₀ : x = 0)	(1.88)	(3.17)	(2.65)	(3.63)	—
(t-statistic, H ₀ : x = 1)	—	—	—	—	(0.84)
(t-statistic, H ₀ : x = 25)	(0.42)	(0.83)	(0.24)	(1.09)	—
R squared	0.604				
Adjusted R squared	0.564				
Observations	44				
Degrees of freedom	39				
Durbin-Watson	1.98				

Independent variable: change in quarterly average three-month commercial paper rate times net floating rate debt outstanding (billions of dollars)

	Change in Commercial Paper Rate times Floating Rate Debt			Change in Net Debt times Interest Rate	Memorandum Sum of Commercial Paper Coefficients
	No Lag	One-Quarter Lag	Two-Quarter Lag		
Coefficient	0.219	0.346	0.265	0.365	1.194
(t-statistic, H ₀ : x = 0)	(2.03)	(3.29)	(2.58)	(3.76)	—
(t-statistic, H ₀ : x = 1)	—	—	—	—	(0.94)
(t-statistic, H ₀ : x = 25)	(0.29)	(0.91)	(0.15)	(1.18)	—
R squared	0.587				
Adjusted R squared	0.556				
Observations	44				
Degrees of freedom	40				
Durbin-Watson	2.05				

Box 1: Regression Analysis of the Pass-through of Short-Term Interest Rates to Corporate Interest Payments *(Continued)*

interest payments should increase by an amount roughly equal to this sum. Consistent with this simple hypothesis, the expected coefficient value for this variable is one. As the table shows, the data appear to confirm this hypothesis.[‡]

To isolate the effect of changes in interest rates, we repeated the regression, this time holding the value of

[‡]The intercept in the regression was forced to be zero on the assumption that no factor other than the accumulation of debt and changes in interest rates would systematically

the coefficient on the leveraging variable at one (see table). Because the results were similar to those for the unconstrained regression, the coefficients from this second regression were used to estimate the effects of changes in short-term interest rates on aggregate interest expense.[§]

Footnote [‡] continued

influence the level of interest payments. This assumption is not challenged by the data. The intercept in the unconstrained regression (not reported) is not significantly different from zero.

If we assume that one-fourth of net short-term debt is repriced each quarter, the savings owing to lower short-term rates (measured by the change in the three-month commercial paper rate) amounts to \$27.3 billion in 1991-92 (Table 4). Regression analysis supports the assumption that changes in short-term rates transmit themselves to net interest payments fairly smoothly over four quarters (see Box 1).

As a result of falling interest rates in 1990 and 1991, annualized net interest paid by U.S. nonfinancial corporations in the fourth quarter of 1991 was an estimated \$14.1 billion lower than it would otherwise have been. Similarly, the fall in interest rates in 1991 and 1992 is expected to lower the interest burden by an additional \$13.2 billion by the fourth quarter of 1992. An additional \$2.8 billion in savings should flow through in 1993 given current short-term rates. If we measure interest savings from 1989, when short-term rates were about 9 percent, the decline in short-term rates by about 6 percentage points has lowered corporate interest payments by \$36.5 billion.

Comparing lower short-term interest rates and corporate refinancing

Summing the effects of corporate activity in the stock market and in the debt markets shows the net impact of corporate refinancing (Table 4). In 1991, treasurers extended the maturity on so much debt while facing such a steep yield curve that the effect of the \$18 billion in net equity issuance was almost nullified. In 1992, the extension of maturities appeared to slow, so that the \$32 billion in net equity issuance served to reduce net interest payments by about \$2.4 billion per year.

Our calculations suggest that in 1991-92, lower short-term interest rates played a dominant role in lowering corporate interest payments. The immediate relief that

lower rates afforded U.S. nonfinancial firms in lightening the interest burden in 1991-92 was ten times the relief that refinancing provided: \$27.3 billion as against \$2.8 billion.

Another way to juxtapose the two effects is to draw an equivalence between a (permanent) change in short-term interest rates and the effect of refinancing activity at its 1992 pace. Each year that corporate treasurers restructure their capital at the current rate provides only as much relief to their cash flows as a permanent cut of 45 basis points in short-term corporate rates.

The relative effectiveness of lower interest rates and corporate refinancing in unburdening corporate cash flow can also be demonstrated by decomposing the total change in the aggregate ratio of interest payments to cash flow in the seven quarters since the end of 1990 (Chart 15 and Box 2). This ratio ratcheted up to a record vulnerability before the start of the recent recession as firms replaced equity with debt. By the end of 1990, the ratio had reached 24.25 percent, a level indicating that in aggregate, cash flow covered interest payments only four times over. The apparently low level of this ratio (or the apparently comfortable interest cover) does not by itself fully reflect the fragile state of corporate finances, since it must be understood as an average that includes many firms unable or barely able to cover their interest payments. By the third quarter of 1992, this ratio had fallen 3.85 percentage points to 20.4 percent.

Three forces have worked together to bring down this ratio: macroeconomic factors, lower short-term interest rates, and corporate refinancing (Chart 15). Macroeconomic factors include the growth of cash flow and the need for outside finance. As cash flow increased 6.6 percent over the seven quarters from 1990-IV to 1992-III, the wherewithal to meet interest payments grew and the ratio declined. Partially offsetting the growth of cash

flow, however, was the need for outside finance—that is, the gap between retained earnings and depreciation charges, on the one hand, and investment spending, on the other. Filling this gap with new debt would tend to raise interest payments and offset the effect of higher cash flow in bringing down the ratio. These two macroeconomic factors jointly have reduced the burden of interest payments on cash flows by about 1 percent (Chart 15).

Lower short-term rates did the job of reducing the ratio by about 2½ percentage points through the third quarter of 1992. Moreover, at present levels of short-term interest rates, corporations can expect to benefit from even lower interest payments in 1993 as short-term debt rolls over and is repriced at current interest rates.

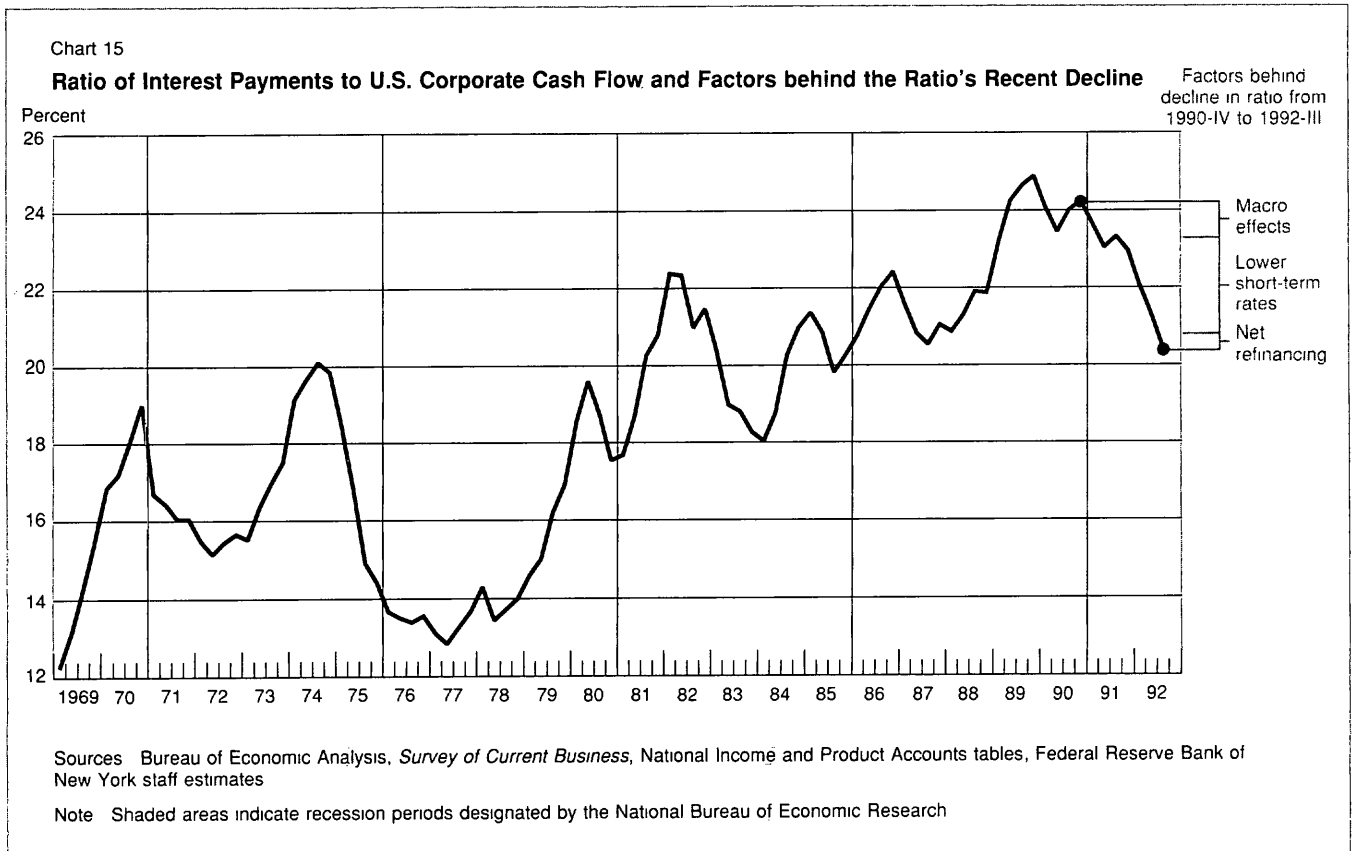
The net effects of refinancing activity account for a surprisingly small share of the decline in Chart 15. Equity issuance and bond calls alone would have driven the ratio down by another ¾ of 1 percentage point. But the extension of maturities from short-term debt to higher cost long-term debt has offset much of the savings from equity issuance and bond calls.

Conclusion

This article finds that in the aggregate, lower interest rates have far surpassed corporate refinancing in relieving the burden of interest charges on cash flows. This finding depends on an often-overlooked feature of corporate refinancing: the current expense of corporate treasurers' replacing bank debt with bonds wipes out much of the savings from new share issues and bond calls.

The timing in the business cycle of the 1991-92 surge in equity issuance has a precedent in 1982-83, but the classes of firms selling shares bear witness to the particular risks introduced by corporate leveraging in the 1980s. Firms running losses, especially parent firms of major finance companies, assumed unusual prominence among equity issuers. And quite mature businesses that had been put through leveraged buyouts showed up in the corporate nursery in the "initial" public offering market.

To be sure, restructuring has improved the financial health of those firms undertaking it. Equity issuance has kept some firms out of bankruptcy and has shored up the commercial paper credit ratings of others. Never-



Box 2: The Changing Burden of Interest on Cash Flow

This box defines the ratio of interest to cash flow and decomposes its decline from the end of 1990 through the third quarter of 1992. This ratio fell 3.85 percentage points, from 24.25 percent to 20.4 percent, in the seven quarters. The exercise is fairly straightforward in concept, although it requires some baseline from which to measure the contribution of equity finance. Our approach here is to take zero equity finance as the baseline. If, on average over long periods, U.S. corporations have had a modest resort to equity finance, our baseline may overstate the size of corporate refinancing somewhat.

Defining the ratio of interest to cash flow

This ratio is constructed to indicate the burden of net interest payments on cash flows. The measure has been shown to predict corporate distress and bankruptcy.

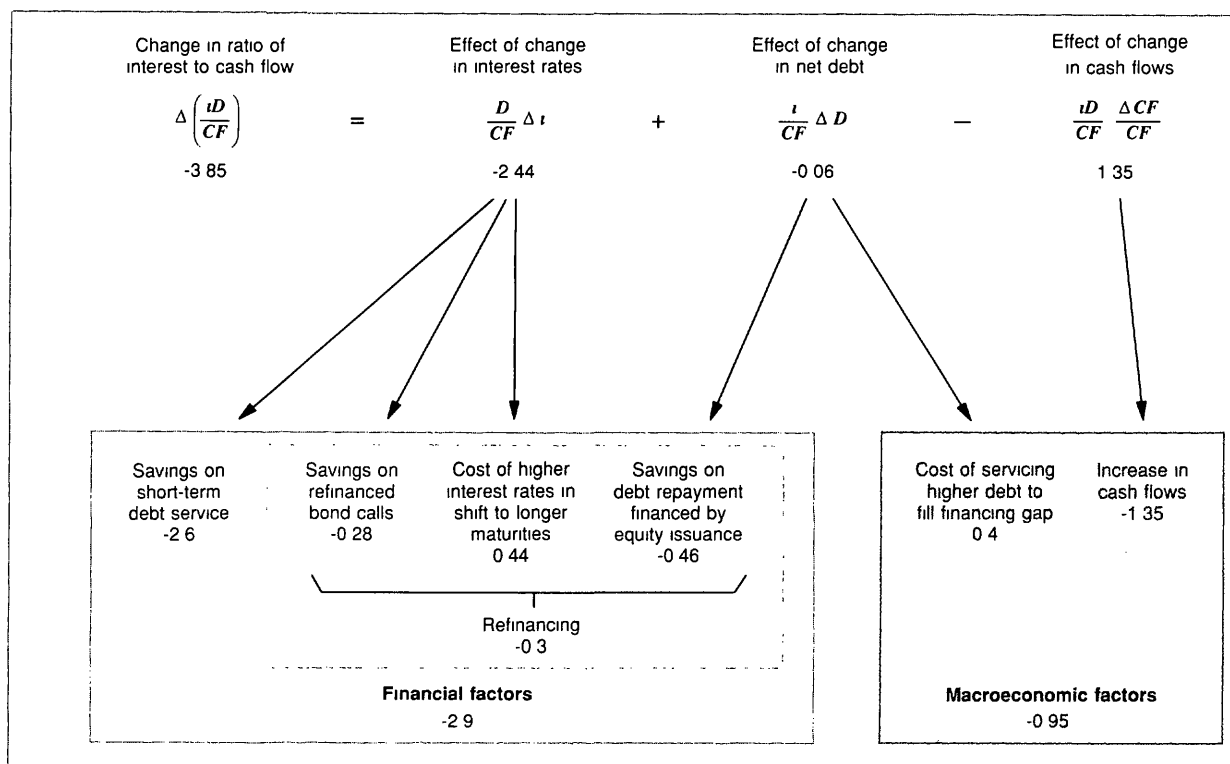
The numerator is net interest payments of nonfinancial corporate business as reported in the National Income and Product Accounts. We exclude imputed interest

receipts associated with non-interest-bearing deposits from total interest receipts on the ground that they are noncash, in-kind receipts that cannot be used to avert default.

The denominator, also drawn from National Income and Product Accounts data, is earnings before interest, taxes, and depreciation (EBITD), adjusted for the effect of inflation on inventories. These earnings are operating cash flows available to pay interest. It is important that net interest payments be included in the denominator if the effect of economic growth on cash flows is not to be confused with the effect of lower short-term rates on interest payments. Consider a company with EBITD of 5 and net interest payments of 2 falling to 1. We would measure the ratio of interest to cash flow as 2.5 falling to 1.5. If net interest payments are excluded from cash flow, however, the ratio would be measured as 2.3 falling to 1.4, with cash flows apparently rising by a third.

Decomposition of Change in Ratio of Interest to Cash Flow from 1990-IV to 1992-III

Percentage points



Box 2: The Changing Burden of Interest on Cash Flow (Continued)

Decomposing the change in the ratio of interest to cash flow

The ratio can be decomposed into three partial effects: the effect of lower interest rates, the effect of lower debt, and the effect of stronger cash flows (see chart). The effect of lower interest rates itself is a compound of lower short-term rates, lower long-term rates on called or maturing bonds, and the effect of a shift in the mix of floating rate and fixed rate debt. The effect of lower debt may be thought of as a compound of debt growth (under the assumption that external financing exclusively takes the form of debt) and the separate effect of any net equity issuance.

It is useful to regroup terms into the economic forces bearing on the ratio. The two macroeconomic factors are economic growth's influence on cash flow and the financing gap's influence on the need for external debt financing. The two financial factors are the direct impact of lower short-term interest rates on net floating rate debt and the effect of corporate financial restructuring on the stock of net debt, the rates on long-term debt, and the composition of debt.

The chart shows the contributions of each of these factors to the change in the ratio of interest to cash flow from the end of 1990 through the third quarter of 1991. We estimate that macroeconomic factors reduced the ratio by just under a percentage point. The growth in cash flows reduced the ratio 1.35 percent, but the decrease was partially offset by the effect of the corporate sector's financing gap, or its need for external funds. This need would have raised the ratio 0.4 percent had it been filled entirely by debt finance. Financial factors lowered the ratio 2.9 percentage points, largely owing to direct effects of short-term rates, which accounted for 2.6 percent of the decrease. Refinancing activity, the other main financial factor, reduced the ratio by 0.3 percentage point. Among the refinancing factors, the retirement of debt with equity shaved 0.46 percentage point off of the ratio, bond calls saved 0.28 percentage point, but maturity extension cost 0.44 percentage point.

These calculations clarify the relative importance of macroeconomic and financial factors. Essentially, financial factors did three-quarters of the job of relieving the interest rate burden over the seven quarters, while macroeconomic factors did a quarter of the job.

Box 3: The Ratio of Net Interest to Cash Flow—Projected Future Values

by Richard Peach

Although the ratio of net interest to cash flow for the nonfinancial corporate sector declined substantially through 1992-III, it now stands just slightly below its average level for the 1980s (20.7 percent), a period of relatively high debt growth and interest rates. Some observers contend that given today's relatively low inflation and more conservative attitudes toward debt, the ultimate goal of corporate treasurers is to reduce this ratio much further, perhaps to as low as the average level of the 1970s (15.8 percent). Assuming that this is the goal, how long would it take to achieve? With interest rates held constant, optimistic but not implausible projections for cash flow, total debt, the cost of debt, and other relevant parameters suggest that achieving that result would take until the year 2000 (see chart). Moreover, no plausible set of parameter values is likely to achieve this goal over the next few years.

The accompanying table sets forth the parameters required to project this ratio and a "baseline scenario" or most likely set of values. Each of the parameters is discussed below.

Growth of total debt

Over the past thirty-five years, the total net debt of the nonfinancial corporate sector has increased at an average annual rate of 8.9 percent, 1.0 percentage point faster than the average growth rate of nominal GDP over the same period. In contrast, over the past three years of balance sheet restructuring, total net debt has increased at an average annual rate of just 1.5 percent. In the future it is quite likely that the growth of debt will accelerate, but perhaps remain below that long-run average. Under the baseline scenario it is assumed that total net debt increases 1 percentage point slower than the long-run growth of GDP, or 4½ percent, a rate that presumes a continued rapid pace of equity issuance.

Ratio of short-term to total debt

Over the twenty-year period from 1956 through 1975, the ratio of short-term to total net debt averaged 30 percent and varied relatively little from that average. During the second half of the 1970s it declined to an average of 26 percent, reaching a low of 24.3 percent in 1976-III. Dur-

Box 3: The Ratio of Net Interest to Cash Flow—Projected Future Values (Continued)

ing the 1980s this ratio increased substantially, averaging 35 percent and reaching a high of 38.3 percent in 1985-I. From its most recent peak of 36.9 percent in 1990-I, this ratio has fallen to 31.1 percent in 1992-III. Under the baseline scenario, it is assumed to decline to 30 percent by 1993-IV and then remain constant at that value.

Cost of debt

The cost of debt is determined by the level of interest rates and the rate at which the stock of debt is repriced. The baseline scenario assumes that both short-term and long-term interest rates remain constant at their 1992-III levels. Nonetheless, the cost of debt will continue to fall as earlier interest rate declines are realized through repricing of the stock of debt. Given the estimated \$5 billion to \$6 billion decline in interest on short-term debt due to expected repricing over the period from 1992-IV to 1993-III, the cost of short-term debt is assumed to decline 70 basis points (17.5 basis points per quarter) by 1993-III and then remain constant at that level. It is also assumed that the stock of long-term debt will be gradually repriced over the next ten years, with the average cost of long-term debt declining a total of 150 basis points (3.75 basis points per quarter) by 2002-III and then remaining constant.

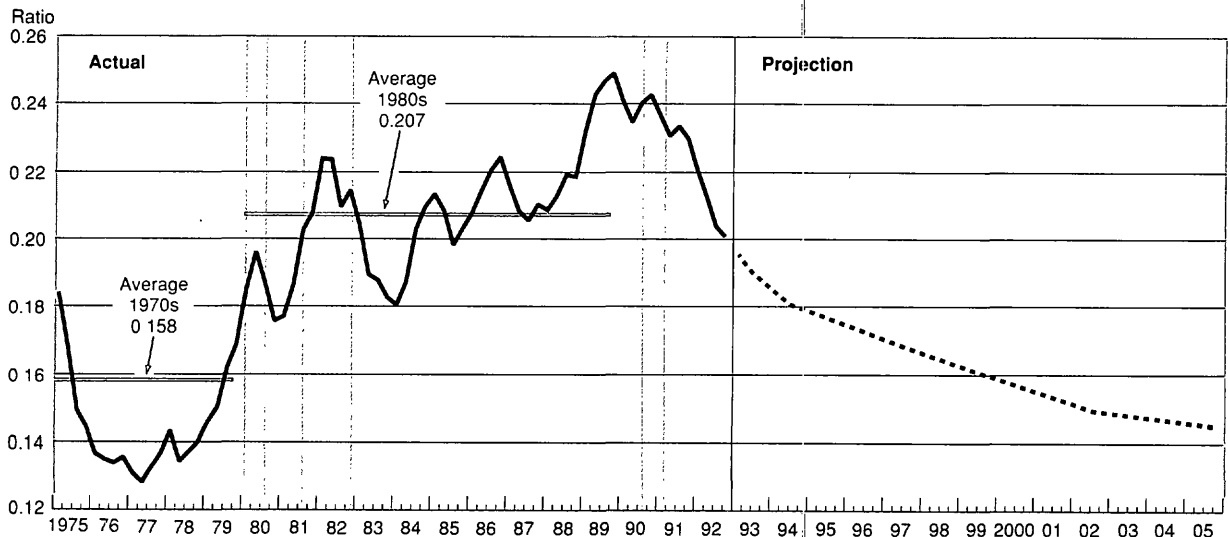
Growth of cash flow and GDP

Over the past thirty years the cash flow of the nonfinan-

cial corporate sector expressed as a percentage of nominal GDP has been on a gradual decline, averaging 14.1 percent in the 1960s, 13.7 percent in the 1970s, and 13.6 percent in the 1980s. This percentage also varies over the business cycle, rising during expansions and declining during contractions. During expansions, because cash flow represents a rising proportion of GDP, the growth rate of cash flow tends to be quite strong. In contrast, during a contraction, because cash flow represents a declining proportion of a slowing economy, the growth rate of cash flow is often negative. During the four preceding recoveries (excluding the brief recovery of 1980-81), cash flow as a percentage of GDP had risen an average of 1 percentage point. Most recently, cash flow bottomed out at 12.4 percent of GDP in 1992-I, while as of 1992-III it had risen to 12.6 percent. The baseline scenario assumes that cash flow will rise a cumulative 1 percentage point of GDP, reaching 13.4 percent by 1994-III, and then will remain constant. Accordingly, through 1994-III, cash flow will increase 60 percent faster than GDP. Beyond 1995, as cash flow reaches a stable share of GDP, cash flow and GDP will increase at the same rate (5.5 percent).

As both the table and the chart demonstrate, under the baseline scenario it would take eight years or until 2000 for the ratio of net interest to cash flow to decline to the average level of the 1970s. This result is quite sensitive to the assumed parameter values, particularly the growth

Ratio of Nonfinancial Corporate Net Interest to Cash Flow



Box 3: The Ratio of Net Interest to Cash Flow—Projected Future Values (Continued)

rates of total debt and GDP and the cost of debt. To highlight this sensitivity, the table shows alternative projections based on changes in individual parameter values. For example, if net debt were to increase 1 percentage point faster than the long-run growth rate of GDP, or 6.5 percent (Alternative A), the ratio would decline to 19.6 percent by 1995 and then begin a very gradual ascent. If the cost of short-term debt were to decline an additional 50 basis points (for a total decline of 120 basis points) by 1994-III while the cost of long-term debt declined an additional 50 basis points (5 basis points per quarter for a total decline of 200 basis points) by 2002-III (Alternative B), it would take six years to reach the goal. In contrast, if the long-run growth rate of GDP were 5 percent rather than 5½ percent, it would take ten years (Alternative C).

One implication of this exercise is that it may be

difficult to bring the ratio of net interest to cash flow down to the average level of the 1970s within a few years. For example, to achieve that result by the end of 1994 would require that GDP grow 6 percent per year, the cost of short-term debt decline 90 basis points (at the rate of 10 basis points per quarter), the cost of long-term debt decline 135 basis points (at the rate of 15 basis points per quarter), and the ratio of short-term to total debt remain constant at its 1992-III value of 31.1 percent. Such an outcome appears unlikely. For one thing, a higher rate of nominal GDP growth than assumed in the baseline would most likely induce higher interest rates because of upward pressures on inflation. Moreover, even if the assumed declines in interest rates were to occur, the implied rapid rate of turnover of the stock of long-term debt is implausible.

Parameters Affecting Projected Future Values of the Ratio of Net Interest to Cash Flow for the Nonfinancial Corporate Sector

	Baseline Scenario	Alternative Scenarios		
		A	B	C
Growth of total debt	4½%	6½%	4½%	4½%
Ratio of short-term to total debt	Declines to 30% by 1993-IV	Same as baseline	Same as baseline	Same as baseline
Cost of debt ¹				
Short-term	Declines 67 basis points by 1993-III	Same as baseline	Declines another 50 basis points by 1994-III	Same as baseline
Long-term	Declines 150 basis points by 2002-III	Same as baseline	Declines another 50 basis points by 2002-III	Same as baseline
Long-run growth of GDP	5½%	5½%	5½%	5%
Years until ratio reaches 15.8%	8	Never	6	10

¹The cost of debt is determined by the level of interest rates and the rate at which the stock of debt is repriced. The baseline assumes that interest rates remain at or near recent levels, that the stock of short-term debt will be completely repriced by 1993-III, and that the stock of long-term debt will be repriced by 2002-III (at the rate of 10 percent of the stock per year).

theless, reducing the aggregate corporate interest burden will take time. If the burden of interest on cash flows is to be lightened to the 19 percent characteristic of 1983, it will require another two to three years for corporate refinancing at its present rate to do the job alone. If the burden is to be reduced to the 15 percent characteristic of the late 1970s, then refinancing activity

will take over ten years. (For a consideration of how cash flow growth or interest rate declines could affect the outlook, see Box 3.)

Such conclusions are, of course, fraught with uncertainty. Corporate treasurers may be targeting a lower or higher burden, so that the restructuring would take more or less time. Equity market developments could

accelerate or slow down the process of restructuring. Corporate treasurers may cease to extend maturities, a move that would render refinancing more potent. A further bond market rally could make the refinancing of fixed rate debt more effective in easing interest burdens; a bond market sell-off would slow the process.

Monetary policy could further reinforce the restructuring process or begin to work at cross-purposes. On present trends, however, the process that started in earnest in 1991 will take until 1995 to reduce corporate interest burdens to their level in 1983.