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FINANCING CAPITAL FORMATION IN THE 1980s:
ISSUES FOR PUBLIC POLICY

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ABSTRACT

Three specific aspects of the corporate financing decision — internal versus external funds, equity versus debt within the external component, and features of the debt including especially maturity — present opportunities (and pitfalls) for public policy for affecting U.S. capital formation.

First, by reducing the government's dissaving and hence its claims on the economy's financial resources, policy can make credit market funds available for corporations to finance their investment externally, thereby both stimulating the overall amount of capital formation and also taking advantage of the allocative efficiency of the competitive market mechanism to achieve a productive composition of that capital formation. At the same time, by using the tax system to augment the rate of return on corporate-sector assets, policy can also enable corporations better to compete for such funds once they are available.

Second, by eliminating or even reversing the current tax discrimination in favor of debt, policy can encourage corporations to rely at least in part on equities in their external financing, thereby reducing the economy's aggregate-level financial risk.

Third, by neutralizing or even reversing the current emphasis on long-term securities in managing the federal government's own debt, policy can encourage corporations to issue long- instead of short-term debt instruments, thereby further reducing aggregate-level financial risk. Along the same lines, policy can also play a role in pioneering markets for new financial instruments, like bonds providing protection of the investor's purchasing power, that private borrowers can then use to finance private capital formation.

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FINANCING CAPITAL FORMATION IN THE 1980s: ISSUES FOR PUBLIC POLICY

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Increased American capital formation has emerged as a nearly undisputed objective of economic policy for the 1980s. Dissatisfaction with the U.S. economy's poor productivity performance in the 1970s, as well as with the erosion of international competitiveness that began much earlier but also became more evident in the 1970s with the dramatic declines in the international exchange value of the dollar, has elevated what was once largely a business interest into a much more widely shared goal. In today's environment groups representing labor and consumers also recognize the need for capital investment to create jobs and to raise productivity and hence the population's overall standard of living. On the whole, public discussion has moved from whether more capital formation is desirable to what policies can best achieve it.

An important aspect of capital formation that this discussion has often overlooked, however, is its explicitly financial side. In an economy like that of the United States, each decision to create more physical capital necessarily has a financial counterpart. This financial counterpart may be a single transaction, but in an economy with highly developed financial markets it is more likely to be an entire chain of obligations and transfers leading from an ultimate saver to an ultimate investor. In the end the financial and nonfinancial systems interact so that the allocation of the economy's real resources — whether to make consumer goods or producer goods, for example, or how much and what kind of each — exactly corresponds to its allocation of financial resources.

The financial aspect of the capital formation process is especially

important in a public policy context for two reasons. First, the financial transactions associated with capital formation are not merely a reflection of real resource allocations that would necessarily come about in any case. The setting in which the financing of capital formation takes place can also be a key determinant of real resource allocations, including not only the total amount of capital formation but also its composition. The financial and the nonfinancial elements of the process jointly determine one another, and public policy may affect the ultimate outcome by influencing either. Indeed, financial aspects of private capital formation decisions, like a firm's after-tax borrowing costs, may be much more readily subject to public policy influence than physical aspects like the production rates of the latest machine models.

A second reason why the financial side of capital formation is so important for public policy is that, when financial markets are as fully integrated into the economy's life pulse as they are in the United States, fragility of the financial structure can pose major hazards for the entire economic system. Moreover, there are sound reasons for believing that the considerations determining the actions of individual financial market participants do not adequately reflect potential threats to the system as a whole from too brittle a financial structure at the aggregate level. Financial structure is therefore a kind of "public good" in the familiar sense that an individual's (or individual firm's) actions bear "externalities" potentially affecting everyone else. Because there is no reason for the presence of such externalities to affect directly the decisions of individual financial market participants, there is a role for public policy in providing incentives that will in the end lead to a more satisfactory aggregate financial structure.

The object of this paper is to consider, from the financial perspective,

both the setting of and the prospects for American capital formation in the 1980s, and to focus in particular on the opportunities (and pitfalls) for public policy. Section I reviews the evolution of investment and saving in the United States during the last quarter-century and emphasizes the connection between the allocation of physical and financial resources. Section II examines in detail the financing of investment through the economy's nonfinancial corporate business sector, which historically has accounted for nearly three-quarters of all U.S. investment in plant and equipment. Section III develops more fully the concept of externalities associated with private financial actions and the resulting role for public policy. Section IV focuses on three specific aspects of corporate financing decisions — internal versus external funds, equity versus debt within the external component, and the maturity of the debt — and identifies in each case the issues for public policy. Section V provides a brief summary of the paper's principal conclusions.

I. Physical Capital Formation and Financial Capital Formation

The principal development that has spurred interest in increased U.S. capital formation as a goal for the 1980s has been the economy's deteriorating productivity performance, in conjunction with its declining rate of net investment in productive plant and equipment. The productivity of labor in the U.S. nonfarm private business sector increased by 2.6% per annum during 1948-65, and 2.2% per annum during 1965-73, but only 0.6% per annum during 1973-79.¹ Although neither 1978 nor 1979 was a recession year, labor productivity declined absolutely in both, marking the first two-year continuous productivity fall in U.S. postwar history. With a recession in 1980, productivity has now declined for still a third successive year.

In principle, any or all of a number of potential explanations may help to account for the U.S. productivity slowdown.² There is evidence that the rate of technical progress has slowed, probably as a result of the trend away from research and development activities undertaken by industry. There is also evidence that both capital and labor resources have become less mobile, and hence less able to adapt to changing technologies and consumer tastes. Demographic factors were rendering the labor force progressively younger, and hence less experienced and less skilled, until the very end of the 1970s. Government regulation has added increased burdens to production, importantly so in many industries. Slower output growth per se also typically exerts downward pressure on productivity, and the 1970s were a recession-prone, slow-growth era, at least in comparison with the 1960s.³

The increased attention to the nation's capital formation rate, however, has brought into a single focus the role of capital — that is, plant and equipment — in the basic production of goods and services. Although economists investigating the production process have often found the role of

capital frustratingly difficult to quantify, both economic theory and empirical evidence make clear that fixed capital is essential to production in the modern economy.⁴ Table 1 shows the experience of investment in plant and equipment in the United States during the past quarter-century, by five-year spans (as well as for the single year 1980, to indicate the starting point for today's policy environment). The table shows not only gross investment in plant and equipment but also the corresponding net investment after subtraction of capital consumption allowances adjusted to reflect true economic depreciation. The table shows these totals both in absolute dollar amounts and as percentages of gross national product in each year.

The experience reviewed in the bottom panel of Table 1 in particular suggests clearly why capital formation has received increased attention as the economy's productivity performance has slipped during the 1970s. Although gross investment in plant and equipment has moved to a progressively larger share of the nation's total gross national product, the corresponding net investment has shown a sharp reversal since the late 1960s. Indeed, by the late 1970s the share of total output devoted to net investment in plant and equipment was almost back to the level of the late 1950s, and the growth rate of the capital stock had fallen back accordingly. In light of the economy's declining net capital formation rate, it is hardly surprising that the amount of capital available to each employed U.S. worker has actually declined since 1974 after rising steadily at 3% per annum during the previous twenty-five years.

Moreover, even the dramatic decline in the net investment rate shown in these statistics may understate the true extent of the effective reduction in the economy's productive capital investment. One reason is that at least part of net capital outlays in recent years have gone into special investments that protect the environment, or enhance workers' health and safety, but do

TABLE 1

U.S. GROSS AND NET INVESTMENT IN PLANT AND EQUIPMENT

	1956-60	1961-65	1966-70	1971-75	1976-80	1980
	Billions of Dollars					
<u>Gross Plant & Equipment Investment</u>	\$45.0	\$56.6	\$92.2	\$137.3	\$239.3	\$295.9
Capital Consumption Allowances with Capital Consumption Adjustment	-33.6	-40.0	-58.0	-97.4	-178.7	-225.6
<u>Net Plant & Equipment Investment</u>	11.4	16.6	34.2	39.9	60.6	69.8
	Percent of Gross National Product					
<u>Gross Plant & Equipment Investment</u>	9.8%	9.4%	10.6%	10.4%	11.0%	11.3%
Capital Consumption Allowances with Capital Consumption Adjustment	-7.2	-6.5	-6.6	-7.3	-8.2	-8.5
<u>Net Plant & Equipment Investment</u>	2.6	2.9	4.0	3.1	2.8	2.7

Notes: Data are averages (except for 1980) of annual flows, in billions of dollars and as percentages of annual gross national product.

Detail may not add to totals because of rounding.

Source: U.S. Department of Commerce.

not otherwise increase capacity to produce the items included in conventional measures of output and productivity. In addition, the sharply higher price of energy relative to the prices of other inputs to the production process (especially labor) has changed the appropriate mix of those inputs to be used, so that substantial amounts of labor-saving but energy-consuming capital are no longer economical.⁵

Increasing the economy's investment rate is, at one level, a matter of the allocation of real resources. Although additional capital increases the economy's productive capacity once it is available for use, in the short run resources are fixed, and devoting more to any one use means devoting less to something else. Devoting a larger share of output to business fixed investment than the 1980 level of 11.3% would require devoting a smaller share to consumer spending (63.7% in 1980), or to purchases of goods and services by federal or state and local governments (7.6% and 12.8%, respectively), or to residential investment (4.0%).⁶

Increasing the economy's investment rate is also a matter of the allocation of financial resources, however. An important key to understanding the functioning of any economy is the truism that, on an ex post basis, the economy's saving must equal its investment. Since it is unlikely in a decentralized market economy that ex ante plans for saving and investment will precisely balance one another, the market mechanism must influence the decisions of businesses and consumers so as to change these inconsistent ex ante plans into consistent ex post actions. Financial markets play a large role in this mechanism, generating adjustments in the real yield which the market pays to savers as suppliers of funds and in the cost and availability factors which confront those who demand funds to invest in productive plant and equipment, office buildings, inventories, and residential construction. If plans to

supply funds exceed plans to demand funds, the market excess leads to increased availability and a decline in yields. If plans to supply funds fall short of plans to demand funds, the market shortage leads to reduced availability and higher yields. The result is that, ex post, saving equals investment.

The function of the financial markets goes even further, however. The individuals or institutions that seek to do investment, in the sense of forming new physical capital, are often not the same as those that wish to do saving, in the sense of spending less on current consumption than the limit their income would permit. It is also the job of the financial markets to transfer available savings from those who have an excess out of income to those who have a deficiency because they are currently undertaking investment for the future. No doubt the financial markets perform many other important functions as well — for example, providing liquidity and a host of transactions-oriented services — but from the standpoint of their role in guiding the mainstream of economic activity the equilibration of total saving and total investment, and the transfer of available resources from savers to investors, constitute their main activity.

Moreover, these two functions are hardly independent, in that the amount of saving and investing that individuals and institutions do often depends on the facility of the financial markets in executing the relevant transfer. If the financial markets accomplish this transfer in an efficient way that delivers to savers much of the total return available from investment, then, other things equal, the amount of income saved (and, once transferred, devoted to investment) will typically be larger. Alternatively, if the financial markets do not function efficiently, so that much of the return available from investment does not find its way to savers, then, other things equal, the share of output devoted to investment will probably be smaller.

Table 2 shows the balance of saving and investment in the United States during the past twenty-five years, scaled in relation to the gross national product as in the lower panel of Table 1. It is clear from the table that during this period there has been no trend at all in the economy's total gross saving or total gross investment (which equals total gross saving, except for statistical discrepancy) in comparison to total income and spending. The 15-16% range has held remarkably steady throughout.⁷

Several important changes have occurred, however. Behind the steadiness of the total gross saving rate, the gross private saving rate has shown some tendency to increase while government as a whole has moved from a neutral position to that of persistent dissaving. Within the private sector, capital consumption allowances have risen, even after adjustment to reflect the true economic depreciation, so as to account for essentially all of the increase in the gross private saving rate. Personal saving as a share of gross national product has varied irregularly, as movements in the rate of personal saving out of disposable personal income have sometimes offset and sometimes compounded movements in the share of gross national product represented by disposable income itself. Undistributed corporate profits have increased in relation to gross national product during the 1970s, but here essentially all of the increase has consisted of artificial profits due to price inflation for firms treating inventories on a first-in-first-out basis. Within the government sector, continually growing surpluses among state and local governments (consolidated to include retirement funds) have offset about half of the growing deficits at the federal level.⁸

Because of the key role played by the federal government's dissaving in affecting the economy's overall balance of saving and investment, it is useful to focus on this one development in somewhat greater detail. Total

TABLE 2

U.S. GROSS SAVING AND INVESTMENT

	<u>1956-60</u>	<u>1961-65</u>	<u>1966-70</u>	<u>1971-75</u>	<u>1976-80</u>	<u>1980</u>
	Percent of Gross National Product					
<u>Total Gross Saving</u>	15.7%	15.4%	15.8%	15.7%	15.9%	15.3%
Gross Private Saving	15.9	15.7	16.3	16.9	16.7	16.5
Personal Saving	4.3	3.8	4.9	5.6	3.9	3.9
Undistributed Corporate Profits	3.0	2.9	2.9	3.2	4.3	4.1
Inventory Valuation Adjustment	-0.2	-0.1	-0.4	-1.2	-1.2	-1.7
Capital Consumption Adjustment	-0.7	0.2	0.4	-0.0	-0.7	-0.7
Capital Consumption Allowances	9.5	8.8	8.4	9.3	10.4	10.9
U.S. Government Surplus	0.0	-0.4	-0.6	-1.8	-2.0	-2.3
State & Local Government Surplus	-0.2	0.0	0.1	0.6	1.2	1.1
<u>Total Gross Investment</u>	15.7	15.8	15.7	16.0	16.1	15.3
Gross Private Domestic Investment	15.5	15.2	15.5	15.7	16.3	15.1
Plant & Equipment	9.8	9.4	10.6	10.4	11.0	11.3
Residential	5.1	4.8	3.8	4.6	4.7	4.0
Inventory Accumulation	0.6	1.0	1.1	0.7	0.7	-0.2
Net Foreign Investment	0.2	0.6	0.2	0.3	-0.2	0.2

Notes: Data are averages (except for 1980) of annual flows, as percentages of annual gross national product. Total gross saving and total gross investment differ by statistical discrepancy. Detail may not add to totals because of rounding. Source: U.S. Department of Commerce.

federal government expenditures have risen steadily as a share of gross national product over the last quarter-century, from 18.4% during 1956-60 to 22.0% during 1976-80. This relative growth of federal expenditures has itself reflected the net result of two sharp but opposing trends, as federal purchases of goods and services have represented a steadily declining share of gross national product (from 11.2% to 7.3%) and federal transfer payments a steadily rising share (6.0% to 12.9%). Both the goods and services purchases, which represent the government's own use of economic resources, and the transfers, which represent the government's redirection of claims on these resources within the private economy, must be financed.

The federal government's receipts from taxes and Social Security contributions have also increased in relation to the overall economy over these years, but only from 18.4% of gross national product during 1956-60 to 20.0% during 1976-80. The shortfall from the corresponding growth of federal expenditures, shown in Table 2 as a steadily growing negative surplus, has therefore represented a direct absorption of the private saving available to finance investment. To the extent that the government itself has undertaken investment activities, however — including either infrastructure investments like highways and bridges, or directly productive investments like hospitals and power facilities — the familiar private investment data shown in Table 2 understate the economy's overall investment total.

On the gross investment side in Table 2, the one clear trend during this period has been the increasing share of output devoted to gross investment in plant and equipment, as already indicated in Table 1. Apart from the typically cyclical characteristics of the single year 1980, which depressed homebuilding and induced an inventory run-off, there has been little trend in the other two components of private domestic investment. Finally, net foreign invest-

ment — that is, the excess of U.S. investment abroad over foreign investment in the United States — became negative in the late 1970s, so that in recent years (except for 1980) U.S. savers have had to finance less than all of U.S. domestic investment, instead of having to finance more than all of it as in earlier years.

The balance of saving and investment (again, except for statistical discrepancy) shown in Table 2 makes clear the sense in which increasing the economy's overall investment rate involves the allocation of financial as well as real resources. An increased investment rate also means an increased saving rate. In the absence of an infusion of foreign saving (in other words, a more negative net foreign investment position), increased investment would require either more private-sector saving or less government-sector dissaving, or both. Moreover, the largest component of correctly measured private saving, adjusted capital consumption allowances, are in effect given by the economic depreciation of the existing capital stock.⁹ Hence any increase in private saving would have to come from personal saving or undistributed corporate profits (adjusted for inventory profits), both of which have fluctuated only within a fairly narrow range during the last quarter-century.

II. Focus on the Corporate Sector

In the U.S. economy many kinds of institutions as well as individuals undertake investment in plant and equipment, but the dominant source of this investment has traditionally been incorporated firms doing business in nonfinancial industries including manufacturing, natural resource extraction, transportation, communication, and public utilities and other nonfinancial services. As Table 3 shows, nonfinancial business corporations have consistently accounted for nearly three-fourths of all U.S. plant and equipment investment. No other single readily identifiable group has even accounted for as much as 10% of the total — although the miscellaneous category, presumably a catch-all for individuals and unincorporated firms apart from farms, has consistently represented some 10-15%. While the remaining one-fourth of investment is hardly unimportant, any major increase in U.S. fixed investment activity is likely in large part to involve the nonfinancial corporate business sector.

Just as the corporate sector bulks large in the nation's total plant and equipment investment, investing in plant and equipment represents a large share of the corporate sector's activity. As Table 4 shows, nonfinancial business corporations typically use far more funds for physical investment than for financial investment, and plant and equipment is by far the dominant focus among corporate-sector physical investments.¹⁰ The table also shows that the increase in total U.S. plant and equipment investment as a share of gross national product indicated in Table 1 has been entirely due to the corporate sector. The increase from 9.8% of the nation's output devoted to gross investment in plant and equipment in the late 1950s to 11.0% in the late 1970s has simply reflected the corresponding increase from 6.9% to 8.1% in corporate-sector plant and equipment investment in relation to gross national product.

TABLE 3

DISTRIBUTION OF U.S. INVESTMENT IN PLANT AND EQUIPMENT

	<u>1956-60</u>	<u>1961-65</u>	<u>1966-70</u>	<u>1971-75</u>	<u>1976-80</u>	<u>1980</u>
	Billions of Dollars					
<u>Total Investment in Plant & Equipment</u>	\$45.0	\$56.6	\$92.2	\$137.3	\$239.4	\$295.9
Nonfinancial Corporate Business	31.8	40.2	68.4	100.4	177.2	217.9
Farms	3.5	4.2	5.8	9.2	16.4	17.8
Nonprofit Institutions	2.3	3.4	4.4	5.3	6.5	7.4
Financial Corporations	0.9	1.2	2.3	5.7	7.5	10.0
Other	6.6	7.6	11.3	16.7	31.8	42.9
	Percent of Total Plant & Equipment Investment					
<u>Total Investment in Plant & Equipment</u>	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Nonfinancial Corporate Business	70.6	71.0	74.2	73.2	74.1	73.6
Farms	7.7	7.5	6.3	6.7	6.8	6.0
Nonprofit Institutions	5.2	5.9	4.7	3.8	2.7	2.5
Financial Corporations	1.9	2.1	2.5	4.1	3.1	3.4
Other	14.6	13.5	12.3	12.2	13.3	14.5

Notes: Data are averages (except for 1980) of annual flows, in billions of dollars and as percentages of total investment in plant and equipment.

Detail may not add to totals because of rounding.

Source: Board of Governors of the Federal Reserve System.

TABLE 4

USES OF FUNDS BY U.S. NONFINANCIAL CORPORATE BUSINESS

	1956-60	1961-65	1966-70	1971-75	1976-80	1980
	Billions of Dollars					
<u>Total Uses of Funds</u>	\$42.3	\$62.1	\$102.1	\$163.0	\$274.0	\$297.3
Physical Investment	35.1	47.7	79.7	112.8	196.9	224.6
Plant & Equipment	31.8	40.2	68.4	100.4	177.2	217.9
Other	3.3	7.5	11.3	12.4	19.7	6.7
Financial Investment	7.2	14.4	22.4	50.1	77.1	72.7
Liquid Assets	-0.4	2.3	1.2	11.5	11.8	13.8
Trade Credit	4.8	8.0	13.9	23.5	40.8	31.9
Other	2.8	4.1	7.2	15.1	22.6	27.0
	Percent of Gross National Product					
<u>Total Uses of Funds</u>	9.2%	10.3%	11.7%	12.4%	12.6%	11.3%
Physical Investment	7.6	7.9	9.2	8.6	9.1	8.6
Plant & Equipment	6.9	6.6	7.8	7.6	8.1	8.3
Other	0.7	1.2	1.3	1.0	1.0	0.3
Financial Investment	1.5	2.4	2.6	3.8	3.5	2.8
Liquid Assets	-0.1	0.4	0.1	0.9	0.5	0.5
Trade Credit	1.0	1.3	1.6	1.8	1.8	1.2
Other	0.6	0.7	0.8	1.2	1.1	1.0

Notes: Data are averages (except for 1980) of annual flows, in billions of dollars and as percentages of annual gross national product.

Detail may not add to totals because of rounding.

Source: Board of Governors of the Federal Reserve System.

Like any other entity within the economy, nonfinancial business corporations can use funds for investment or other purposes only to the extent that they either have these funds available internally or find external sources. As Table 5 shows, until the late 1970s the corporate sector increasingly financed its investment in physical and financial assets by raising external funds. (The total sources of funds in Table 5 differs from the total uses of funds in Table 4 by a statistical discrepancy which over time grows about in pace with the size of the corporate sector, and which represents unreported uses of funds.) Internally generated funds accounted for more than two-thirds of all corporate-sector sources of funds in the late 1950s but little more than one-half in the early 1970s, as the percentage reliance on external sources steadily rose. In addition, close inspection of the underlying year-by-year data suggests that the reversal of this trend in the late 1970s has largely reflected the aftermath of the unusually severe 1973-75 recession as well as the brief recession in 1980.

Among corporations' internal sources of funds, both undistributed profits and capital consumption allowances rose substantially throughout the 1956-80 period in absolute terms, but until the late 1970s neither rose rapidly enough in comparison with the surge in external funds to maintain the initial two-thirds internal share. Moreover, throughout this period an ever larger share of reported profits consisted of artificial inventory profits. Further, even in the late 1970s capital consumption allowances continued to increase more slowly than total sources of funds, and hence fell for the first time below two-fifths of total sources.

The corporate sector's external sources of funds have consisted almost entirely of debt. Despite the existence in the United States of the world's largest and most liquid secondary market for corporate equity securities,

TABLE 5

SOURCES OF FUNDS TO U.S. NONFINANCIAL CORPORATE BUSINESS

	1956-60	1961-65	1966-70	1971-75	1976-80	1980
<u>Total Sources of Funds</u>						
Internal Funds	\$46.1	\$68.6	\$108.1	\$175.0	\$301.0	\$328.8
Undistributed Profits	31.7	45.5	63.1	91.1	169.9	196.7
Capital Consumption Allowances	9.9	13.1	18.4	31.3	70.3	80.2
Inventory Valuation Adjustment	21.6	31.3	46.7	70.8	118.5	149.7
Foreign Earnings	-0.9	-0.5	-4.0	-16.5	-28.7	-45.7
External Funds	1.1	1.6	2.0	5.5	9.8	12.5
Equity Issues	14.4	23.1	45.0	83.9	131.0	132.1
Bonds and Mortgages	2.0	0.7	2.5	8.8	5.7	9.5
Trade Debt	6.8	8.7	19.3	32.6	45.8	51.6
Other Debt	3.6	7.1	12.7	21.7	34.0	29.3
Other Sources	3.1	5.3	11.4	17.9	38.6	40.2
	-1.1	1.4	-1.0	2.9	6.8	1.5
<u>Total Sources of Funds</u>						
Internal Funds	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Undistributed Profits	68.8	66.4	58.4	52.1	56.4	59.8
Capital Consumption Allowances	21.6	19.1	17.0	17.9	23.4	24.4
Inventory Valuation Adjustment	46.8	45.6	43.1	40.5	39.4	45.5
Foreign Earnings	-2.0	-0.7	-3.7	-9.4	-9.5	-13.9
External Funds	2.4	2.3	1.8	3.1	3.3	3.8
Equity Issues	31.2	33.6	41.6	47.9	43.5	40.2
Bonds and Mortgages	4.4	1.0	2.3	5.1	1.9	2.9
Trade Debt	14.7	12.6	17.9	18.6	15.2	15.7
Other Debt	7.7	10.4	11.8	12.4	11.3	8.9
Other Sources	6.8	7.7	10.6	10.2	12.8	12.2
	-2.4	2.0	-0.9	1.8	2.3	0.5

Notes: Data are averages (except for 1980) of annual flows, in billions of dollars and as percentages of total sources.

Other external sources category includes change in corporate profit taxes payable, hence may be positive or negative.

Detail may not add to totals because of rounding.

Source: Board of Governors of the Federal Reserve System.

together with a well developed investment banking industry capable of underwriting and distributing primary issues of new securities, nonfinancial business corporations have consistently determined the equity/debt mix of their sources of funds almost entirely according to the internal/external mix.¹¹ In addition, during the period of enlarged equity issuing activity in the early 1970s and again in 1980, many of the new equities issued were typically preferred shares (which are essentially equivalent to debt except for the tax treatment), and even then one industry (public utilities) accounted for much of the total.

Hence the corporate sector's ever increasing reliance on external funds until the late 1970s really amounted to an increasing reliance on debt. Within the various categories of corporate debt, however, the late 1970s slowdown relative to the growth of total sources involved only the bonds and mortgages and the (mostly inter-company) trade debt. Since 1975 nonfinancial business corporations have actually increased their percentage reliance on (largely short-term) "other debt," including mostly bank loans and commercial paper, thereby renewing a trend that has now prevailed throughout the past twenty-five years except for a brief interruption during the early 1970s.¹²

In the same way that an increase in the economy's overall investment rate would require an increase in its saving rate, in the absence of a reduction in its financial investment an increase in the corporate sector's use of funds for investment in plant and equipment would require an increase in its internally generated funds or its external funds, or both. If past patterns of financing continue, then an increase in internal funds would imply additional reliance on equity, while an increase in external funds would imply additional reliance on debt. At least in principle, however, an increase in external funds could mean debt or equity, just as whatever additional debt corporations issued could consist of either long- or short-term instruments.

III. Financial Structure as a Public Good

Almost any kind of financial system is capable of transferring resources from ultimate savers to ultimate investors. The special feature of competitive financial markets is that, in so doing, they also perform an important allocative function. At the aggregate level the market mechanism determines the overall amount of the economy's income to be saved, and hence the overall amount of its output to be devoted to augmenting the physical capital stock. At the underlying level of the micro-unit, the same process enables a multitude of individuals and institutions to allocate the total amount saved and invested efficiently among countless potentially productive projects.¹³

This key role in efficiently allocating the economy's scarce resources constitutes the fundamental rationale underlying the very existence of competitive financial markets. In centrally planned economies, for example, the fiat approach is also generally capable of commandeering resources from various sources and transferring them to designated applications. Without competitive markets, however, the efficiency of the resulting resource allocation rests entirely on the centralized information gathering and decision making process.¹⁴ By contrast, a competitive market system utilizes each individual market participant's information (and preferences) in arriving at the prices of and yields on the full range of financial assets and liabilities. These prices and yields in turn provide the signals and incentives that induce individual savers to direct their savings toward the ultimate real investments that the market as a whole considers most valuable.

When individuals (or the intermediary agents acting in their behalf) decide which firm's equities to buy, or to which firm to lend via securities or other loan arrangements, they do so on the basis of the prospects for return and the apparent risks associated with that firm's equities or debt claims.

For firms in nonfinancial businesses, however, the prospective returns and risks associated with its securities mostly reflect the returns and risks associated with the firm's underlying real activity, based on its physical assets, its human resources, its organization, and other features of its business. If a firm's managers believe that it can expand in ways that will generate unusually high returns, even after allowance for risk, they will be prepared to pay a greater than average return in order to attract financial resources. If savers (or their agents) similarly assess the firm's prospects, they will advance financial resources to the firm on that basis. Because the economy's overall financial resources are scarce, mirroring the scarcity of real resources, each firm's ability to attract funds to finance its expansion necessarily limits the expansion of other firms. By allocating financial resources in this way, the competitive market system ultimately determines not just the overall rate but also the specific directions of the economy's real expansion.

The efficiency of the financial resource allocation process — and hence of the economy's chosen growth path — is not a matter of concern to the individual saver or to any one firm, however. The nature of a competitive system is that each participant pursues only his own objectives, yet in so doing contributes to the establishment of signals and incentives which steer all participants in the direction that best contributes to the efficiency of the overall outcome. For the system to operate effectively, therefore, any aspect of individual decision making that matters for the overall outcome should also influence the prices and yields to which the individual decisions respond. If financial decisions at the level of the micro-unit bear aggregate-level implications that these prices and yields do not reflect, then the resulting "externality" will prevent the system from directing individual financial

decisions so as to constitute, in total, the most efficient overall outcome.

The primary area in which modern financial markets may be subject to such externality problems is that of risk. To be sure, market participants acutely analyze the risks associated with any specific individual borrower or firm raising either debt or equity funds, and the yield or prospective return set by the market as a whole in principle does reflect such risks in each case. Moreover, the market tends to price these risks in ways that systematically vary between individuals and business firms, among both individuals and firms according to a rich variety of criteria, and from one stage of the economic cycle to another.¹⁵ What the financial markets may not price, however, is the collective risk to the economy as a whole associated not with any individual borrower's debt per se but, instead, with the economy-wide aggregate debt position.

In industrially advanced economies with highly developed financial markets, a complex financial structure typically supports most real activities — including especially the basic business sector. As is clear in Table 5, nonfinancial business corporations in the United States typically finance much of the expansion of their productive plant and equipment by raising external funds in the debt markets. Moreover, in most cases these funds came not from individuals but from intermediary institutions, which in turn raise their funds by issuing their own liabilities to individuals or to still further intermediaries.¹⁶ At every level of this process, each market participant's leverage position may be entirely satisfactory in the sense that liabilities are well in line with assets, yet most participants' assets are in reality just others' liabilities.

The fact that most of the assets are simply someone else's liabilities lends a pyramid, or chain, characteristic to the resulting financial super-

structure. At its base, of course, are physical assets with real values of varying degrees of stability, together with presumably default-free claims on the federal government. Beyond that base, however, nonfinancial events causing the default of any one link in the chain have the effect of invalidating the assets of the next link, and therefore threaten further defaults due now to financial circumstances. The more complex and interwoven is the superstructure in comparison to its underlying base, the greater is the risk that such a default situation initially due to nonfinancial events could cumulate, thereby threatening a major rupture to the system as a whole.¹⁷

The implications of aggregate-level financial risk for the growth of the economy are related to, but yet distinct from, the implications of the amount and composition of capital formation addressed above. Because the devotion to net capital formation of a part of the economy's fixed resources at any time increases the economy's future productive capacity, the investment (and savings) rate is an important determinant of how fast the economy grows. Similarly, because different investment projects make different contributions to that productive capacity, the efficiency of any given amount of capital formation also matters for the economy's growth. By contrast, the economy's overall level of financial risk matters primarily for the variability of economic growth, although it may affect the average growth rate also. The effect of a fragile financial structure on the variability of economic growth was most readily apparent in the United States in the decades before World War II, when business fluctuations that were far more severe than any in the post-war experience often followed financial disruptions. Moreover, if the increased pace of investment during business expansions does not completely make up for the shortfall during contractions, more variable growth will mean slower average growth as well.

As Table 6 shows, in the United States the total amount of outstanding debt issued by nonfinancial borrowers has grown approximately in pace with the economy's nonfinancial activity during the past twenty-five years. Except for a short period in the 1950s, the economy's aggregate nonfinancial debt-to-income ratio has exhibited essentially no trend.¹⁸ Within the stability of the total, however, the composition has steadily shifted toward greater private-sector indebtedness, and reduced government-sector indebtedness, relative to the economy's total output and spending. Between 1955 and 1980 the combination of some movement in the overall total and this large change in composition resulted in nonfinancial private borrowers' outstanding debt rising from only two-thirds of a year's total income to well over a full year's income. Although some of this increase merely reflects the growth of the nation's physical capital stock (including residential capital) relative to income, to a large extent it also indicates more heavily leveraged financing of that capital.¹⁹

Moreover, in addition to this increase in the private sector's relative indebtedness, the financial system has continued to become more extensively intermediated.²⁰ The share of total private-sector holdings of credit market debt claims accounted for by financial intermediaries has risen steadily during this period, from 69.8% at year-end 1955 to 81.5% at year-end 1980.²¹ From the perspective of aggregate-level risk, therefore, a growing superstructure of financial intermediation has compounded the effect of greater leverage.

Finally, not all kinds of debt liabilities are equally fragile as assets in the portfolios of lenders who hold them. Although it is possible to draw a number of distinctions among different debt instruments along these lines, the greater exposure associated with short- in contrast to long-term

maturities is the most readily apparent. Here the effect of nonfinancial business corporations' increased reliance on short-term debt, as indicated in Table 5, has led over time to a steady reduction in the average maturity of these corporations' outstanding debt. As Table 7 shows, the short-term share of U.S. nonfinancial business corporations' outstanding debt rose from only one-fifth of the total at year-end 1955 to well over one-fourth at year-end 1980, so that during these years the corporate sector's outstanding short-term debt more than doubled in relation to gross national product.

As the combination of greater leverage, more intermediation and shorter maturities continue to increase the U.S. economy's aggregate-level financial risk, the externality associated with individual financial decisions that do not take this aggregate-level risk into account becomes progressively more of a problem. The role for public policy with respect to the nation's financial markets is accordingly greater. In addition to using the financial system to achieve the amount of overall capital formation judged appropriate on macroeconomic grounds, and protecting the system's competitive aspects so as to promote the efficient allocation of that capital, aggregate-level risk represents yet a third focus of public policy with respect to the financial markets. The containment or reduction of this aggregate-level financial risk is, in effect, a "public good." Moreover, the more capital formation the nation undertakes — and hence the more financing it does — the more important this public good becomes.

TABLE 7

OUTSTANDING DEBT OF U.S. NONFINANCIAL CORPORATE BUSINESS

	<u>1955</u>	<u>1960</u>	<u>1965</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
	Billions of Dollars					
<u>Total Credit Market Debt</u>	\$104.2	\$153.9	\$223.4	\$376.4	\$629.5	\$1,048.4
Long-Term	83.1	122.1	174.5	287.8	477.2	756.7
Short-Term	21.1	31.8	48.9	88.6	152.2	291.7
	Percent of Total Credit Market Debt					
<u>Total Credit Market Debt</u>	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Long-Term	79.8	79.3	78.1	76.5	75.8	72.2
Short-Term	20.2	20.7	21.9	23.5	24.2	27.8
	Percent of Gross National Product					
<u>Total Credit Market Debt</u>	26.1%	30.4%	32.4%	37.9%	40.6%	38.4%
Long-Term	20.8	24.1	25.4	29.0	30.8	27.7
Short-Term	5.3	6.3	7.1	8.9	9.8	10.7

Notes: Data are year-end outstanding amounts, in billions of dollars, as percentages of total outstanding credit market debt, and as percentages of fourth-quarter gross national product. Detail may not add to totals because of rounding.

Source: Board of Governors of the Federal Reserve System.

IV. Corporate Finance and Public Policy

Three distinct aspects of the corporate financing decision, as illustrated in Table 5, represent areas in which public policy may exert influence over the amount and composition of capital formation undertaken in the United States, and on the aggregate-level risk associated with financing that capital formation: internal versus external funds, equity versus debt within the external component, and features of the debt including especially maturity.

Internal Versus External Funds. To the extent that the competitive market mechanism represents the most efficient available system for allocating scarce capital resources, an emphasis on external sources of funds to finance an increased rate of capital formation would best ensure the direction of that capital toward those industries, and those companies within particular industries, that provide the best opportunity for putting the added capital to productive use. Conversely, the more firms simply redeploy the financial resources that they generate internally, without having to face the market test in attracting new capital, the less role the competitive market system plays in promoting efficient allocations. Similarly, if government distorts capital formation away from market-determined allocations by means of direct or indirect subsidies (or by differential taxation), it substitutes its own more limited information gathering and decision making system for that of the financial markets.

A corporation relying largely on internal funds is, of course, not entirely exempt from the judgment of the market. The market still prices the company's shares, and shareholders seeking improved returns may exert some influence on the firm's management. In addition, if the market places too low a value on a corporation's shares, it sometimes becomes attractive for new ownership, prepared to provide new management, to acquire a controlling

interest. Even so, the imperfections of the dominant modes of corporate governance suggest that external funding in competitive markets is likely to enhance the efficiency of business capital formation.

Public policy could contribute to promoting externally financed corporate capital formation in two complementary ways. First, if the corporate sector is to raise additional external funds, it is necessary that those funds be available. As the balance of saving and investment shown in Table 2 makes clear, an increase in investment not financed by increased undistributed corporate profits (or by reduced residential investment or a shift to negative net foreign investment) requires either an increase in personal saving or a reduction in government dissaving, or both.

Much recent discussion has focused on tax incentives to stimulate personal saving by raising after-tax returns, although the historical variation of personal saving as a share of total income (see again Table 2) does not suggest any clear connection between such returns and the personal saving share.²² By contrast, the federal government's progressively larger budget deficits in relation to gross national product have clearly absorbed ever larger amounts of private saving that would otherwise have been available to finance investment. As Table 8 shows, net funds raised by the federal government have steadily increased not just in relation to gross national product but as a share of the total funds raised by all nonfinancial sectors in the U.S. credit markets. In addition, the government's use of its sponsored financial intermediaries has increasingly absorbed still more funds, which these intermediaries then have usually passed on to noncorporate borrowers for purposes other than investment in plant and equipment.

One major way for public policy to promote externally financed capital formation, therefore, would be to reduce the government's claims on the

TABLE 8

TOTAL NET FUNDS RAISED IN U.S. CREDIT MARKETS, ACCORDING TO BORROWING SECTOR

	1956-60	1961-65	1966-70	1971-75	1976-80	1980
Total Net Funds Raised	9.3%	11.4%	12.0%	16.3%	19.3%	16.0%
By Nonfinancial Sectors	8.4	10.1	10.2	14.3	16.4	13.5
U.S. Government	0.2	0.9	0.9	2.1	2.8	3.0
State & Local Governments	1.1	1.0	1.0	1.2	0.9	0.9
Households	3.5	4.1	3.1	4.5	6.2	3.9
Corporate Nonfinancial Business	2.6	2.4	3.9	4.6	4.0	3.4
Other Nonfinancial Business	0.6	1.1	1.0	1.3	1.4	1.2
Foreign	0.4	0.5	0.3	0.6	1.1	1.0
By Financial Sectors	0.9	1.3	1.8	2.0	2.9	2.5
Federally Sponsored	0.2	0.2	0.6	1.0	1.7	1.8
Other	0.7	1.1	1.1	1.0	1.2	0.7
Total Net Funds Raised	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
By Nonfinancial Sectors	90.3	88.3	85.1	87.2	85.1	84.4
U.S. Government	2.6	7.9	7.4	12.9	14.5	18.9
State & Local Governments	12.0	9.0	8.7	7.1	4.6	5.6
Households	37.8	36.2	26.1	27.4	31.8	24.1
Corporate Nonfinancial Business	28.1	21.1	31.5	27.8	20.7	21.9
Other Nonfinancial Business	6.4	9.6	8.5	8.1	7.1	7.3
Foreign	3.4	4.3	2.8	3.9	5.6	6.6
By Financial Sectors	9.7	11.7	14.9	12.8	14.9	15.6
Federally Sponsored	2.3	2.0	5.2	6.4	8.6	11.3
Other	7.4	9.7	9.7	6.4	6.2	4.3

Note: Data are averages (except for 1980) of annual flows, as percentages of annual gross national product and as percentages of total net funds raised. Detail may not add to totals because of rounding.

Source: Board of Governors of the Federal Reserve System.

economy's real and financial resources. Between the late 1950s and the late 1970s, the share of real economic resources absorbed by the federal government rose by about four percent. Because the government did not finance that increase with increased taxes (and because of the growth of government intermediation), the share of total credit market resources absorbed by the federal government, either directly or indirectly, rose by more than eighteen percent. Reducing the federal deficit (even if just in relative terms) would release these resources, as would reducing the sponsored credit agencies' scale of activity.

The mere availability of savings, however, does not automatically mean that individuals (or their agents) will be willing to transfer them to nonfinancial business corporations for use in financing investment in plant and equipment. Hence a further major consideration for public policy along these lines is the corporate sector's ability to attract external funds. Corporations must show prospects of earning a sufficient rate of return on that investment, after due allowance for risk, to render such applications of financial resources competitive.

Hence corporate profits are hardly beside the point, even if the ultimate objective of public policy is to enhance capital formation largely financed from external sources. Through a combination of taxation and related means, policy could help to reverse the erosion in the after-tax profitability of fixed business investment, and thereby importantly affect the corporate sector's ability to attract the external funds necessary to finance additional capital formation.²³

Equity Versus Debt. As Table 5 shows, during the past twenty-five years U.S. nonfinancial business corporations have used debt instruments

to raise almost all of their external funds, so that the internal/external mix of their financing has also largely determined the equity/debt mix. The consequence of this financing pattern has been the rising corporate-sector leverage discussed in Section III.²⁴ A substantial increase in externally financed capital formation would only further erode corporate-sector balance sheets if this pattern continued, and the resulting aggregate-level financial risk to the economy would accordingly rise further.

Nevertheless, a corporation's choice of whether to issue debt or equity securities, as well as a saver's choice of bonds or stocks for his portfolio, is hardly independent of public policy influence. The likely avenues of policy influence in this area lie with the tax code's treatment of the respective costs and returns associated with debt and equity instruments. Probably the greatest such single influence in the United States in recent years has been the discrimination between debt and equity forms of pay-out at the corporate level under the corporate profit tax.²⁵ Because the tax code allows interest payments (but not dividends) as a deduction from corporate profit taxes, in most circumstances a corporation can reduce the total taxes due from its operations by financing its assets with debt instead of equity. Moreover, the interaction of the tax code and accelerating price inflation has made this discrimination all the more powerful in recent years, as nominal interest rates have risen to reflect the inflation premium necessary to compensate lenders for the reduction in the real value of their principal.

It is impossible to know the extent to which the tax code's discrimination in favor of debt and against equity has accounted for the observed pattern of corporate external financing. Even so, it is clear that eliminating this discrimination would at least remove corporations' current disincentive

to finance with equity. There probably exists no perfect way of completely neutralizing the tax system in this regard, but there has been no shortage of proposed steps that would advance this objective at least in part. These ideas have ranged from simply abolishing the distinction between the treatment of interest and dividend payments at the corporate level to fully integrating the corporate and individual income tax systems. Indexing the tax code to eliminate the effects of inflation, a suggestion often made for other purposes too, would be especially relevant in this context.

Moreover, in light of the deterioration in corporate-sector balance sheets that has already occurred, and which would otherwise continue and even increase with an enhanced capital formation rate financed externally, there is even a case for going beyond merely restoring neutrality. Under the circumstances a positive incentive in favor of equity financing (or, alternatively, a penalty to debt financing) would be a plausible objective to guide public policy. The rationale for this reverse discrimination lies in the externality associated with each individual corporation's financing decisions. Although the market presumably prices fully the incremental risk to the corporation's own securities associated with additional borrowing, there is no way for the market to price the added aggregate-level risk resulting from the further compounding of the economy's overall financial superstructure. To the extent that the containment or even reduction of aggregate-level financial risk represents a public good, positive discrimination in favor of equity financing would be a way of achieving it.

Features of the Debt. Even if public policy does lead U.S. nonfinancial business corporations to increase their historically minimal reliance on external equity financing, the major part of the external funds required to finance any new surge of corporate capital formation will almost inevitably

take the form of debt. To the extent that considerations of aggregate-level risk create greater externalities when corporations issue one kind of debt instrument rather than another, there is again a role for public policy in augmenting the markets' own system of incentives. In addition, there is room for public policy initiatives to broaden the U.S. debt markets in ways that would make debt funds easier overall for corporations to raise.

In deciding on the maturity of its debt instruments, a typical corporation takes into account the relative costs of short- versus long-term financing, including not only currently prevailing interest rates but also its expectations of interest rate movements in the future. At the simplest level, the relevant comparison is not between today's twenty-year bond rate and ninety-day paper rate, but rather between the bond rate and the (risk-adjusted) expected cost of renewing short-term paper for twenty years. In reality the comparison is far more complex, because a decision to issue short-term paper today still leaves open the possibility of issuing long-term bonds in the future. The available empirical evidence indicates that, in deciding the maturity of debt offerings, U.S. corporations respond to interest rate considerations along just these lines.²⁶

The federal government is also a borrower in these markets, however, and evidence suggests that the government has at least some significant ability to influence the relative interest rates on short- and long-term instruments by the management of its own debt.²⁷ Because lenders are not indifferent to the varying risk characteristics of securities of dissimilar maturity, the more the government issues short- instead of long-term debt, the higher will be short- relative to long-term interest rates, and vice versa. During most of the post World War II era, the federal government progressively shortened the average maturity of its outstanding debt. The mean maturity of privately held U.S. Treasury securities outstanding fell from 116 months

at year-end 1945 to 71 months at year-end 1955, and only 29 months at year-end 1975. The net effect of this policy was to reduce long- relative to short-term interest rates, thereby encouraging corporations (and others) to finance with larger maturities.

Since 1975, however, the government has changed its debt management policy so as instead to emphasize long-term issues. By year-end 1980 the mean maturity of privately held Treasury securities had risen from 29 months to 45 months, and it is continuing to rise. By raising long- relative to short-term interest rates, the new policy encourages corporations to finance with short maturities. This point is especially important in an era in which, because of the high level and volatile nature of the rate of price inflation, fewer lenders are willing to devote major shares of their portfolios to long-term fixed-income securities.

One way for public policy to pursue the objective of containing or reducing aggregate-level financial risk, therefore, would be to reverse the debt management policy pursued since 1976 — that is, to return to the policy which prevailed almost throughout the first thirty years of the postwar era. Even a neutral debt management policy, which simply preserved the current maturity structure of the outstanding Treasury debt instead of lengthening it, would prevent the government from exerting ever greater pressure on the corporate sector to finance an increased capital formation rate with short-term debt.

Finally, despite the great depth and diversity of the U.S. financial markets, these markets make available only a limited range of vehicles for transferring capital along the chain from ultimate savers to ultimate investors. For example, although price inflation and inflation risk have continued to be a major (perhaps the major) focus of attention among both borrowers and lenders in the United States for at least a decade, the market has yet to evolve any

vehicle by which savers can pay a price to transfer inflation risk to someone else.²⁸ Similarly, although the asymmetry of the conventional call feature greatly increases the inflation risk to the lender, almost all long-term corporate bonds issued in the United States continue to bear the standard call deferment of either five or ten years depending upon the business of the borrowing corporation.²⁹

Often the reason why the financial markets are slow in introducing new instruments, especially in well developed markets like that in the United States for corporate bonds, is that no one issuer is prepared to pay the cost of pioneering an innovation. Here, too, there is an externality in that the set of market incentives confronting the individual decision making unit do not encompass the full set of benefits (or costs) attendant on the decision to be made. A potential role for public policy in such circumstances would be to assume the pioneering role, introducing limited amounts of particular new kinds of securities so as to open new markets that private borrowers could then tap to raise funds to finance capital formation.

V. Summary of Conclusions

Capital formation implies the allocation of both physical and financial resources. The resulting constraints apply both to the economy as a whole and to its individual sectors. For the overall economy, increased investment is possible only if there is increased private-sector saving or reduced government-sector dissaving. For the nonfinancial corporate business sector, which accounts for nearly three-fourths of all U.S. investment in plant and equipment, increased investment is possible only if corporations generate more funds internally or raise more funds externally.

In a system of highly developed competitive financial markets, several considerations guide the effort of public policy to promote increased capital formation. Policy may affect the total amount of capital formation undertaken by influencing private saving or by controlling government dissaving. Policy may also enhance the efficient allocation of that capital formation by protecting the competitive nature of the financial markets. In addition, because there is an externality associated with the contribution of individual financing decisions to the economy's aggregate-level financial risk, the containment or reduction of that risk is itself a public good.

Three specific aspects of the corporate financing decision — internal versus external funds, equity versus debt within the external component, and features of the debt including especially maturity — present opportunities for public policy aimed at enhancing the nation's capital formation. First, by reducing the government's dissaving and hence its claims on the economy's financial resources, policy can make credit market funds available for corporations to finance their investment externally, thereby both stimulating the overall amount of capital formation and also taking advantage of the allocative efficiency of the competitive market mechanism to achieve a produc-

tive composition of that capital formation. At the same time, by using the tax system to augment the rate of return on corporate-sector assets, policy can also enable corporations better to compete for such funds once they are available. Second, by eliminating or even reversing the current tax discrimination in favor of debt, policy can encourage corporations to rely at least in part on equities in their external financing, thereby reducing the economy's aggregate-level financial risk. Third, by neutralizing or even reversing the current emphasis on long-term securities in managing the federal government's own debt, policy can encourage corporations to issue long- instead of short-term debt instruments, thereby further reducing aggregate-level financial risk. Along the same lines, policy can also play a role in pioneering markets for new financial instruments, like bonds providing protection of the investor's purchasing power, that private borrowers can then use to finance private capital formation.

Footnotes

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1. These data are from U.S. Council of Economic Advisers [28].
2. See Kendrick [20] for an analysis of these factors, including an effort to quantify their respective contributions.
3. See Gordon [15] for an analysis of the effect of output growth on productivity in a cyclical time frame.
4. See Lucas [22] for an early review of the literature of empirical production functions, with emphasis on the difficulty in empirically indentifying the contribution of capital. For a more recent example of this problem in an applied policy context, see Perry [26].
5. See Jorgenson [19] for an analysis of the influence of relative prices on production and productivity, in the context of the post-1973 rise in energy prices.
6. The remaining major spending categories of the gross national product, inventory accumulation and net exports, are probably not subject to policy decisions in this context.
7. The single-year high and low were, respectively, 16.6% (1965) and 13.4% (1958) for total gross saving and 17.3% (1956) and 13.8% (1958) for total gross investment.
8. The appearance from the table that the federal deficit for 1980 was the largest in relation to gross national product during the 1956-80 period is misleading, however. In fact the relative deficit was larger in 1975 and 1976 (4.5% and 3.1%, respectively) and in 1958 (3.0%).
9. The fact that adjusted capital consumption allowances are given does not mean that allowable depreciation does not affect saving when the allowance affects taxes payable.
10. Other physical investments undertaken by nonfinancial business corporations include inventories, residential dwellings (essentially all multi-family) and mineral rights.
11. During three years in the 1960s nonfinancial business corporations' total net equity issuance was actually negative, as repurchases exceeded gross new issues.
12. In fact the interruption was limited to the two years 1975-76, and was almost certainly a reflection of the 1973-75 recession.

13. See Baumol [1] for a classic description of this process in the context of the equity market. Much of Baumol's analysis applies to the debt markets as well.
14. See Bergson [2] for an analysis of the equivalent of "profits" in centrally planned systems.
15. See Jaffee [18] for an analysis of the variation in risk premiums on debt securities.
16. For example, a manufacturing firm may borrow from a bank, which issues a certificate of deposit to a money market fund, which issues shares to an individual. Such chains may involve many more transactions, of course.
17. Minsky's work has emphasized this aspect of the distinction between gross debt and net debt; see, for example, Minsky [24, 25]. See also Kindleberger [21] for a lively historical account in support of this idea.
18. See Friedman [12] for an analysis of the debt-to-income stability phenomenon, and Friedman [11] for a descriptive overview of the behavior of the debt-to-income ratio since 1918.
19. See again Friedman [12], especially Figure 3.
20. See Gurley and Shaw [16] and Goldsmith [13, 14] for analyses of the relationship between increasing levels of financial intermediation and the development of the economy.
21. These data are from the Board of Governors of the Federal Reserve System.
22. As Feldstein [7] has explained, in principle the effect of higher returns could either increase or reduce saving. See Boskin [5] and Howrey and Hymans [17] for differing views of the empirical evidence on this question.
23. The concept of "profits" that matters in this context is the rate of return gross of interest payments. See Feldstein and Summers [8] for estimates of the U.S. corporate sector's gross and net rates of return during recent years.
24. See Ciccolo [6] for a careful analysis of changes in the U.S. corporate sector's balance sheet since early in this century.
25. See McLure [23] for a comprehensive review of the U.S. corporate tax structure in this context.
26. See Friedman [9].
27. See Roley [27].
28. See Bodie [3] for a detailed analysis of the inflation risk associated with different kinds of securities in the United States, and Friedman [10] for a set of international comparisons.
29. See Bodie and Friedman [4] for an analysis of the call feature on U.S. corporate bonds.

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