

Industrial Impacts of the 1981 Business Tax Cuts

The Accelerated Cost Recovery System (ACRS) included in the 1981 Tax Act provides more rapid write-offs of depreciable assets for businesses. Manufacturing industries important to the Southeast, however, may benefit somewhat less from ACRS than U.S. manufacturing as a whole.

Introduction

In addition to substantially reducing the statutory tax rates on personal income, the Economic Recovery Tax Act of 1981 (ERTA) made major changes in the taxation of business income. The most significant change is the adoption of the Accelerated Cost Recovery System (ACRS) which speeds up the rate at which business capital can be depreciated for tax purposes. Indeed, it is estimated that ACRS accounts for some 96 percent of the total tax savings generated by business.

As a result of these tax savings due to ACRS, federal corporate tax receipts should grow at a rate well below the average annual growth rates of the last three decades. One consequence of this lower growth rate is that the share of corporate taxes in total federal taxes should decline substantially.¹

How does ACRS fit into the development of post-World War II corporate tax policy? What is the economic rationale for ACRS? Finally, how

will ACRS affect specific industries, particularly those industries important to the economic base of the Southeast?

Corporate Tax Policy Before ACRS

The Accelerated Cost Recovery System continues a post-war trend toward progressively more rapid write-offs of the costs incurred in using depreciable assets in production. Prior to 1954, firms received no tax credits for new investment and were essentially required for tax purposes to use a straight-line depreciation formula based on legally prescribed asset lives. For example, if the useful life of a particular depreciable asset was "n" years, 1/nth of the initial cost of the asset could be taken as a depreciation deduction in computing taxable income. In 1954, taxpayers were for the first time allowed to use accelerated depreciation formulas. Though the pre-1954 definitions of useful asset life were retained, the accelerated formulas permitted taxpayers to write off more than 1/nth of the asset cost in the "early" years of its useful life and less than 1/nth of asset cost in later years. This effectively allowed taxes on the income generated

¹For a more detailed overview of the Reagan tax spending program, see James R. Barth, "The Reagan Program for Economic Recovery: An Historical Perspective," this *Review*, October 1981.

by depreciable assets to be deferred, thereby lowering the effective tax rate on business income.

Between 1954 and 1962, the useful lifetimes for determining depreciation allowances were gradually reduced. In 1962 the lifetimes were thoroughly revised, and generally shortened, resulting in a further acceleration of capital recovery. In addition, Congress adopted an investment tax credit for purchases of equipment in 1962. This credit was subsequently made somewhat more generous in 1964, and then suspended and restored twice between 1966 and 1971. In 1971, the investment credit was reinstated and the Asset Depreciation Range (ADR) system was adopted.

The enactment of ADR further liberalized tax depreciation rules. Under ADR, taxpayers could shorten or lengthen the period over which they took depreciation by as much as 20 percent relative to the 1962 guidelines. In 1975 the rate of the investment tax credit was increased. Finally, the investment tax credit was made permanent in 1978.

Thus, the system for recovering business capital costs prior to ACRS was the product of successive tax policies which provided enhanced incentives for capital spending. Many observers considered such policies necessary to offset the impact of increasingly higher inflation on the real value of depreciation deductions.

Under traditional accounting techniques, depreciation allowances are calculated on the basis of the historical rather than the replacement cost of assets. During periods of inflation this practice can result in an overstatement of "true" profits. The reason is that, while business receipts are likely to rise with inflation, one important cost of generating those receipts—namely depreciation or the wearing out of existing capital—is measured as a constant, when in fact the cost of replacing depreciating capital is actually rising. Failure to measure depreciation on a replacement cost basis therefore results in an overstatement of taxable profits during periods of inflation. This in turn increases the effective, if not statutory, tax rate on business income.

One means of reducing the adverse impact of inflation is to permit taxpayers to use depreciation allowances more rapidly, as was done in the 1950s, '60s, and the early '70s. However, beginning in the mid '70s, the existing capital cost recovery system, which was a modified version of the ADR system adopted in 1971,

increasingly was criticized as inadequate in an environment of persistently high inflation rates.² In particular, critics argued that unless depreciation rules were further liberalized, inflation would generate significant, though unlegislated, increases in the effective tax rate on capital income; and that this in turn would discourage capital spending by U. S. industry. In response to these concerns, the Reagan administration proposed and Congress adopted in August of 1981 the Accelerated Cost Recovery System as a replacement for the ADR system.

Provisions of ACRS

The ADR system attempted to match the stream of nominal depreciation deductions for the cost of an asset with the stream of income earned by the asset. In practice, this meant that the Treasury, on the basis of actual industry experience, specified a midpoint life for industrial equipment. Taxpayers could then elect lives 20 percent longer or shorter than the midpoint life. ADR midpoint lives ranged from 2.5 years for certain special manufacturing tools to 50 years for certain public utility equipment. For assets not eligible for ADR and for taxpayers who did not elect ADR, useful lives were determined according to the facts and circumstances pertaining to each asset or by agreement between the taxpayer and the IRS.

By comparison, ACRS places all depreciable assets in one of four classes based on their previous ADR midpoint life. These classes determine the length of time over which capital costs may be written off for tax purposes. In general, the recovery periods for different types of assets—3 years, 5 years, 10 years, and 15 years—are shorter than the corresponding recovery periods under the ADR system. The rate of investment tax credit allowed for certain short-lived assets is also somewhat more generous under ACRS than under ADR. Table 1 shows comparisons of both the recovery periods and the investment tax credits allowed for different types of assets under ACRS and the ADR system. Clearly, ACRS reduces the recovery period substantially for some assets and modestly for others. Note also

²See, for example, Joseph J. Cordes, "Tax Policies for Encouraging Innovation: A Survey" and Dale W. Jorgenson, "Taxation and Technical Change," in Ralph Landau and N. Bruce Hannay, eds., *Taxation, Technology and the U.S. Economy*, New York: Pergamon Press, 1981.

Table 1. Capital Cost Recovery Periods and Investment Tax Credits Under ACRS and ADR

Asset	Investment Tax Credit		Cost Recovery Periods (Useful Lifetimes)	
	Old Law	ACRS	Old Law	ACRS
1 Furniture and Fixtures	0.100	0.100	8.00	5.00
2 Fabricated Metal Products	0.100	0.100	10.00	5.00
3 Engines and Turbines	0.100	0.100	12.48	5.00
4 Tractors	0.067	0.100	5.00	5.00
5 Agricultural Machinery	0.100	0.100	8.00	5.00
6 Construction Machinery	0.100	0.100	7.92	5.00
7 Mining and Oil Machinery	0.100	0.100	7.68	5.00
8 Metalworking Machinery	0.100	0.100	10.16	5.00
9 Special Industry Machinery	0.100	0.100	10.16	5.00
10 General Industrial Equipment	0.100	0.100	9.84	5.00
11 Office and Computing Machinery	0.100	0.100	8.00	5.00
12 Service Industry Machinery	0.100	0.100	8.24	5.00
13 Electrical Machinery	0.100	0.100	9.92	5.00
14 Trucks, Buses, and Trailers	0.067	0.100	5.00	5.00
15 Autos	0.033	0.067	3.00	3.00
16 Aircraft	0.100	0.100	7.00	5.00
17 Ships and Boats	0.100	0.100	14.40	5.00
18 Railroad Equipment	0.100	0.100	12.00	5.00
19 Instruments	0.100	0.100	8.48	5.00
20 Other Equipment	0.100	0.100	8.16	5.00
21 Industrial Buildings	0.0	0.0	28.80	15.00
22 Commercial Buildings	0.0	0.0	47.60	15.00
23 Religious Buildings	0.0	0.0	48.00	15.00
24 Educational Buildings	0.0	0.0	48.00	15.00
25 Hospital Buildings	0.0	0.0	48.00	15.00
26 Other Nonfarm Buildings	0.0	0.0	30.90	15.00
27 Railroads	0.100	0.100	24.00	15.00
28 Telephone and Telegraph	0.100	0.100	21.60	15.00
29 Electric Light and Power	0.100	0.100	21.60	15.00
30 Gas	0.100	0.100	19.20	10.00
31 Other Public Utilities	0.100	0.100	17.60	10.00
32 Farm	0.0	0.0	25.00	15.00
33 Mining, Shafts and Wells	0.0	0.0	6.80	5.00
34 Other Nonbuilding Facilities	0.0	0.0	28.20	15.00
35 Residential	0.0	0.0	40.00	15.00
36 Inventories	0.0	0.0	0.0	0.0
37 Land	0.0	0.0	0.0	0.0

Source: Don Fullerton and Yolanda K. Henderson, "Long Run Effects of the Accelerated Cost Recovery System," Discussion Pages No. 120, Woodrow Wilson School, Princeton University, Princeton, N. J., December 1981, adapted from Table 1.

that the substitution of ACRS for ADR does not affect the tax treatment of inventories and land.

The intent of ACRS is to provide businesses with more generous allowances for the costs of capital recovery. However, these more liberal allowances are of actual value to firms only if they are able to use them. The ability of any given firm to fully utilize its depreciation allowances in any given year is largely determined by

its taxable income. A firm with sufficient taxable income will be able to use all of its depreciation allowances as deductions against its gross income and all of its investment tax credits as offsets against the remaining tax liability.

For firms with insufficient taxable income, however, the value of depreciation deductions along with other business expenses may exceed gross income, resulting in net operating losses

(NOLs). In such situations, firms would also be unable to utilize any investment tax credits. Still other firms might be able to utilize fully all depreciation deductions, but yet might have sufficiently low taxable income once such deductions were taken to preclude the full use of tax credits. Net operating losses and/or unused credits would either have to be carried backward for a period of up to 3 years—that is, applied to prior years' tax liabilities—or carried forward against future tax liabilities for a period of up to 7 years under ADR and 15 years under ACRS.

Firms with sufficient taxable income in earlier years would, in effect, still be able to fully utilize available credits and deductions through the use of carrybacks. However, firms with insufficient ability to carryback would have to defer using at least some credits and deductions earned in the current year. The firms likely to be in this position are firms which have been unprofitable for several years, and new firms which are often unprofitable in their start-up years and with no ability to carryback.

Firms that are constrained in their ability to utilize depreciation deductions and the investment tax credit are placed at a disadvantage relative to other firms because they are less able to take advantage of investment incentives in the tax code. There is considerable evidence that many firms were encountering difficulties in fully utilizing available depreciation deductions and tax credits under the ADR system, which provided less generous capital recovery allowances than does ACRS.³

Thus, without some mechanism to facilitate the use of the additional deductions created by ACRS, a larger number of corporations than before are likely to encounter problems in fully using capital cost recovery allowances. This situation would have several consequences. First, if a significant number of firms were compelled to carry unused deductions and credits forward, the objective of ACRS, which was to permit firms to take deductions more rapidly, would not be completely achieved. Second, as noted above, firms which could not fully utilize deductions and credits would receive

SIGNIFICANT CHANGES IN POST-WAR CORPORATE TAX POLICY

Change in Corporate Tax Policy

1954	<i>Accelerated depreciation formulas in place of straight-line formulas permitted.</i>
1962	<i>Asset lifetimes revised and shortened; tax credit for new investment enacted.</i>
1964	<i>Investment tax credit liberalized, corporate tax rate reduced from 52 to 48 percent.</i>
1966-71	<i>Investment tax credit suspended and restored twice during this period.</i>
1971	<i>Asset Depreciation Range System enacted.</i>
1975	<i>Rate of investment tax credit increased.</i>
1978	<i>Investment tax credit made permanent and allowed to offset a higher maximum fraction of corporate tax liability, corporate tax rate reduced from 48 to 46 percent.</i>
1981	<i>ACRS enacted.</i>

a less than proportionate share of the tax savings resulting from ACRS. Moreover, such firms would become prime targets for take-over attempts by other firms interested in part in acquiring unused tax credits and deductions.

Two mechanisms to facilitate the use of the investment incentives created by ACRS were included in the administration tax package: (1) an extension of the carryforward period for net operating losses from 7 to 15 years, and (2) liberalization of rules governing leasing arrangements between firms. These provisions are intended to help firms with insufficient taxable incomes to use at least some benefits from otherwise unused deductions and credits.

Increasing the carryforward period from 7 to 15 years would be of some immediate benefit to corporations about to exceed the prior 7 year limit. However, the long run impact of extending carryforwards is likely to be modest since the present value of credits or deductions carried forward that far would be worth a fraction of their initial value.

Liberalization of equipment leasing rules to allow a wide variety of transactions to be characterized as leases for tax purposes should, however, have a discernible impact. The new rules permit sufficient flexibility in arranging lease terms so that firms that otherwise would be unable to fully utilize increased depreciation deductions and tax credits conceivably could

³For a detailed discussion of this issue, see Joseph J. Cordes, and Steven M. Sheffrin: "Taxation and the Sectoral Allocation of Capital in the U.S., *National Tax Journal*, December 1981; and "The Tax Advantage of Debt Finance," *1981 Proceedings of the National Tax Association*, forthcoming.

capture all the tax benefits from ACRS through appropriately structured leasing arrangements.

As the leasing market develops, firms with insufficient taxable income will lease an increasing fraction of their new investment to profitable lessors. This means that potential loss of credits and deductions on new investment will be of less concern. That's because the new leasing rules effectively permit deductions and credits to be transferred from firms with insufficient taxable income to firms less likely to experience utilization problems.

The Industrial Impacts of ACRS

To assess the relative impact of ACRS among different industries, we first must consider how the economic impact of investment tax incentives is to be measured. One procedure frequently used is to translate the amount of allowable investment credit and depreciation deductions into an "equivalent first-year deduction." Another is to estimate the impact of different depreciation rules and tax credit schemes on the effective tax rate levied on the capital income flowing from different investments.

While the equivalent first-year deduction measure is easily calculated and interpreted, it has important limitations. Most notably, this measure is not a price variable since it does not directly measure the impact of different tax regimes on either the price of capital services or the return to capital investment. This latter information is essential if one wishes to assess the impact of tax policy on the allocation of capital to different investment activities and ultimately to different industries.

One approach which has been widely used to obtain this information is based on user cost of capital formulas of the sort initially developed by Hall and Jorgenson.⁴ These formulas are used to estimate the *real pre-tax return*, R , that a hypothetical project of \$1 invested in a particular asset in a particular industry would have to earn in order to provide investors with some pre-determined after-tax real rate of return, r , given some assumed values of the inflation rate and relevant tax parameters. The size of the effective tax wedge between the

Table 2. Real Pre-Tax Rate of Return Required to Provide a 4 Percent Real After-Tax Return

ACRS Class and Asset Detail	After-tax real return=4% Inflation rate=8%			After tax real return=4% Inflation rate=6%	
	(1)	(2)	(3)	(1)	(2)
	ADR	1982	1986	ADR	1986
	ACRS	ACRS	ACRS	ACRS	ACRS
3-Year	4.9	3.5	2.8	4.3	2.3
Automobiles	4.8	3.5	2.8	4.4	2.4
Light Trucks	4.9	3.5	2.8	4.1	2.4
Small Tools	5.0	3.5	2.6	4.4	2.1
5-Year	5.2	3.8	3.1	4.6	2.7
Machinery & Equipment	5.1	3.8	3.2	4.6	3.0
Heavy Trucks	4.7	3.6	2.5	4.1	N.A.
Computers	4.5	3.6	2.4	3.7	N.A.
Vessels	6.1	3.9	3.4	5.7	3.2
Aircraft	5.5	3.7	2.9	4.8	2.4
Bus-Vehicle	4.5	3.6	2.5	3.7	N.A.
Steam	5.5	3.9	3.6	5.2	3.5
Furn & Fixtures	4.6	3.8	3.2	4.2	3.0
Small Tools	4.7	3.5	N.A.	3.6	N.A.
10-Year	7.1	5.7	4.9	6.5	4.4
Machinery & Equipment	7.0	5.7	4.9	6.5	4.4
Pollution	6.5	5.2	4.6	6.1	4.3
15-Year Equip.	9.4	7.8	6.7	8.9	6.2
Machinery & Equip	9.4	7.8	6.7	8.9	6.2
15-Year Bld.	8.1	6.6	6.6	7.8	6.3
Buildings	8.1	6.6	6.6	7.8	6.3
TOTAL	7.5	5.7	5.1	6.9	4.6

Source: Calculated by the authors from U.S. Treasury Department data.

pre- and the after-tax rate of return on each investment may then be calculated as $(R-r)$, while the effective tax rate on each investment can be estimated from the ratio $(R-r)/R$.

This approach has the attractive feature of being prospective: it measures the expected tax consequences if a particular investment is undertaken given certain assumptions that the investor makes about the future course of tax policy and of inflation. However, as Bradford and Fullerton have recently noted, estimates of the effective tax rate calculated from the general formula $R-r/R$ may be highly sensitive to empir-

⁴Robert E. Hall and Dale W. Jorgenson, "Application of the Theory of Optimal Capital Accumulation," in Gary Fromm, ed., *Tax Incentives and Capital Spending*, Washington, D.C., Brookings Institution, 1971.

ical assumptions used to estimate the required pre-tax return.⁵

Moreover, calculated values of the effective tax rate are undefined when R is zero and make little economic sense for values of R close to zero. Hence, rather than use estimated effective tax rates, we have chosen to compare the impact of ADR and ACRS in terms of the required pre-tax real return—R—that different assets would have to earn to provide an investor with a 4 percent real return after corporate taxes.

The first three columns of Table 2 compare the required pre-tax return needed for a 4 percent real after-tax return when the inflation rate is assumed to be 8 percent. Clearly, the required pre-tax return differs among various assets under both ADR and ACRS. Indeed, under both systems the required pre-tax return increases with the life of the asset.⁶ Thus, if the required pre-tax return is viewed as a "hurdle rate" which the return to a prospective investment must meet or exceed in order to be worthwhile, both ADR and ACRS favor investment in shorter-lived assets.

Moreover, though ACRS reduces the required pre-tax return for all assets, it reduces it relatively more for shorter-lived than for longer-lived assets. For example, assuming the inflation rate is 8 percent, the fully phased in 1986 version of ACRS may be expected to reduce the required pre-tax return of 3-year assets by 42 percent, of 5-year assets by 40 percent, of 10-year assets by 31 percent, of 15-year equipment by 29 percent, and of buildings by 18 percent. If the inflation rate is assumed to be 6 percent, the reduction in the required return due to adoption of ACRS would be 47 percent in the case of 3-year assets, 41 percent for 5-year assets, 32 percent for 10-year assets, 30 percent for 15-year equipment, and 19 percent for buildings.

⁵David F. Bradford and Don Fullerton, "Pitfalls in the Construction and Use of Effective Tax Rates," Working Paper No. 688, National Bureau of Economic Research, June 1981.

⁶For an analysis of the potential reductions in economic efficiency resulting from this differential treatment of assets, see Jane G. Gravelle, "The Social Cost of Non-neutral Taxation: Estimates for Non-residential Capital," in Charles R. Holten, ed., *Depreciation, Inflation, and the Taxation of Income from Capital*, Washington, D.C.: The Urban Institute, 1981.

Table 3: Real Pre-Tax Return Required to Provide a 4 Percent Real After-Tax Return

	After tax required return=4% Inflation rate=8%		
	(1) ADR	(2) 1986 ACRS	(3) % Reduction in Required Return Due to ACRS
Agriculture	6.5	4.8	26
Mining	6.2	3.7	40
Logging	6.5	4.3	34
Wood Products & Furn	7.6	5.3	30
Glass, Cement, & Clay	7.2	4.6	36
Primary Metals	6.5	4.2	35
Fabricated Metals	8.3	5.4	35
Machinery & Instruments	7.0	4.9	30
Electrical Machinery	6.4	4.6	28
Motor Vehicles	6.0	3.4	43
Transportation Equipment	7.0	4.8	31
Food	7.7	5.1	34
Tobacco	7.0	4.4	37
Textiles	6.3	4.3	32
Apparel	7.2	5.2	28
Pulp & Paper	6.1	3.9	36
Printing & Publishing	6.8	4.5	34
Chemicals	6.1	4.3	30
Petroleum Refining	6.7	3.9	42
Rubber	6.6	4.3	35
Leather	8.2	5.6	32
Transportation Service	6.4	3.7	42
Utilities	7.5	5.4	28
Communications	7.2	4.3	40
Services and Trade	9.1	6.6	27
TOTAL	7.5	5.1	32

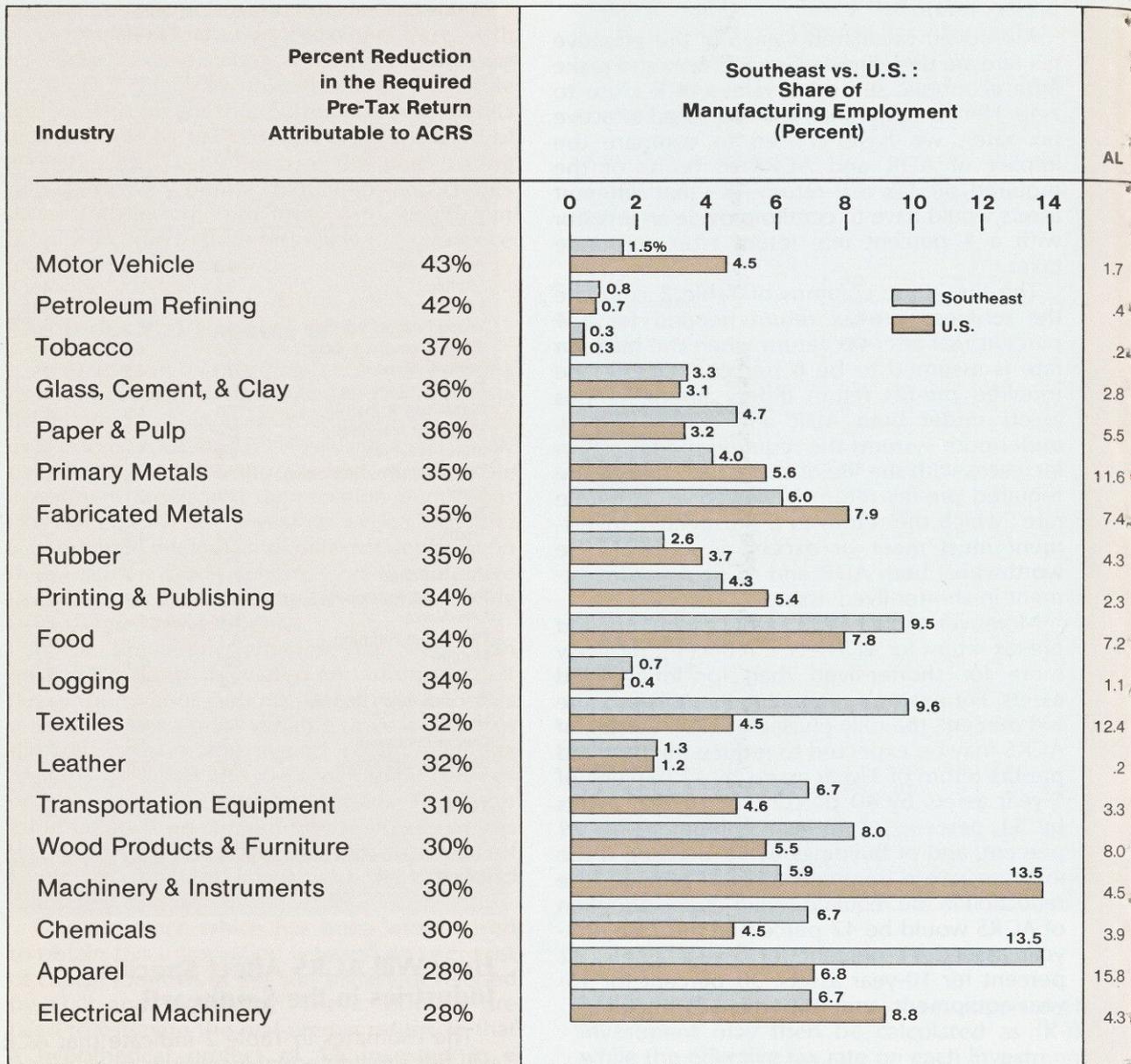
Source: Computations made by the authors based on U.S. Treasury Department data.

How Will ACRS Affect Specific Industries in the Southeast?

The estimates in Table 2 indicate that ACRS will not provide equal incentives to all types of capital investment. Since different industries are likely to rely on different mixes of capital, this implies that the adoption of ACRS, though benefitting all industries, will benefit some industries more than others. In particular, ACRS will favor industries for which short-lived equipment represents a large share of total capital.

Table 3 presents estimates of the pre-tax return required under both ADR and fully-phased-in ACRS to earn a 4 percent real after-

Chart 1. Industrial Impacts of ACRS



tax return in various industries. Column 3 of Table 3 shows the percent reduction in the required pre-tax return attributable to ACRS.

These ACRS reductions will have varying impacts on manufacturing industries in the Southeast and in the U. S. The first column of

Chart 1 contains manufacturing industries ranked by the benefits received from ACRS. The second column shows each industry's share of manufacturing employment in the Southeast and the U.S.

Chart 1 suggests that, relative to U. S. manu-

**District States'
Share of
Manufacturing Employment
(Percent)**

FL	GA	LA	MS	TN
.7	.6	1.3	1.1	3.4
.2	.2	5.5	1.1	.2
.8	.2	-	-	.2
3.9	3.1	4.0	3.3	3.0
4.3	5.4	7.7	2.7	3.4
1.3	2.6	3.4	1.3	3.6
6.8	4.0	6.9	4.3	6.8
3.0	.6	1.3	1.1	4.4
8.3	3.5	4.0	2.1	4.9
12.6	9.7	13.2	8.3	7.6
.5	.8	1.1	1.0	.1
1.3	24.1	1.3	3.6	5.5
1.1	.6	.1	1.0	3.6
10.3	6.4	11.3	14.3	1.8
6.7	6.1	6.9	16.2	8.0
8.2	4.2	5.1	6.3	6.8
6.0	3.1	15.5	3.0	10.8
8.9	15.7	5.7	17.8	14.3
11.7	3.3	5.2	8.3	7.8

industries which rank first in terms of their share in Southeast manufacturing employment, chemicals and apparel, rank at the bottom of manufacturing industries in terms of the estimated investment stimulus provided by ACRS.

Differences in the impact of ACRS are likely to be still more striking at the state level. Chart 1 also presents some information on the industrial impacts of ACRS in the southeastern states.

Chart 1 suggests that the industrial impacts of ACRS are likely to vary among states in the Southeast. In particular, manufacturing industries important to the economies of Alabama and Louisiana will benefit relatively more than manufacturing industries important to other states in the region, while manufacturing industries important to the economies of Georgia and Mississippi should benefit relatively less.

Conclusion

As this article shows, the Accelerated Cost Recovery System included in the 1981 Tax Act provides more rapid write-offs of depreciable assets for businesses. Manufacturing industries important to the Southeast, however, may benefit somewhat less from ACRS than U.S. manufacturing as a whole.

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facturing as a whole, manufacturing industries important to the industrial base of the Southeast may benefit somewhat less from the investment incentives provided by ACRS. The comparisons are, of course, more striking in the case of some industries than others. For example, the two