

# USE OF DEPRECIATION AS A TAX POLICY DEVICE TO CONTROL INFLATION

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## ABSTRACT

*The United States Internal Revenue Code contains many provisions for credits, deductions, and other tax advantages intended to achieve various economic goals considered desirable by the U.S. Congress. The depreciation allowance is one such deduction, frequently used to compensate taxpayers for the effects of inflation and to promote economic growth. The government uses it extensively as a part of tax-incentive programs based on the theory that tax benefits stemming from depreciation reduce the cost of doing business, and thus stimulate capital formation by allowing tax-free recovery of capital by businesses. Capital formation increases productive capacity by providing resources to those companies that can use them to expand business operations. The expected increase in productivity would result in more goods and services in the economy, which in turn would act to keep prices down and help suppress inflation. Congress has realized the importance of capital formation to control inflation and thus, over time, has extended significant tax advantages to businesses through depreciation. This paper examines the effectiveness of depreciation as a means of stimulating capital formation and of controlling inflation.*

**JEL:** H2, H4, H8

**KEYWORDS:** Depreciation, Tax Policy Device, Inflation, U.S. Congress, Capital Formation, Internal Revenue Code

## INTRODUCTION

Depreciation is a deduction from the taxable income of a business for exhaustion, wear and tear, and obsolescence of property used in the course of that entity's income-producing activities. Due to these factors, physical plants, machinery, equipment and other types of physical assets lose their value with the passage of time. Consequently, the Internal Revenue Code allows a deduction for the depreciation of physical assets used in a business (I.R.C. § 167 and 168, 1986). The amount of depreciation allowed for tax purposes is a product of the acquisition cost of the assets, their estimated useful life, and (if required) their salvage value. The annual depreciation deduction is determined by allocating the acquisition cost of the assets over their service life by means of a systematic allocation method. One may assume that depreciation deduction is intended to provide funds to replace such property at the end of its useful life (United States v. Ludey, 1925). However, as a practical matter, depreciation is not an objectively determinable figure; it is an estimate based upon individual judgments or market data. The amount allowed for depreciation by the Code may not be equal to the actual decrease in an asset's market value (Portland General Elec. Co. v. U.S., 1969). In reality, depreciation is determined legislatively based on the policies adopted by the Congress, which has used depreciation frequently, in various forms, over a span of decades to stimulate investment and economic growth. It is not, therefore, possible to estimate the true rate of depreciation of every asset in the actual economy (Congressional Budget Office, 1985).

Depreciation is one of the most important factors considered in business and regulatory accounting in order to determine taxable business income, and to measure the growth of the economy. Accurate measures of income are necessary in order for government to accurately gauge the success of economic and financial programs, including the control of inflation. Several studies have indicated that Congress has not always been successful in its attempts to promote investment and to control inflation through

depreciation allowance (Barry P. Bosworth, 1985). Rather, frequent changes in depreciation methods have widened the gap between tax depreciation and economic depreciation, or the real loss in the value of physical assets. The original intention of Congress was to allow taxpayers a reasonable allowance for depreciation. Historically, an asset’s depreciable life was set equal to its estimated economic life.

However, the Internal Revenue Code, 1954 Section 167(b) provides that, for assets purchased after 1953, the term “reasonable allowance” shall include an allowance computed under certain specified methods. This language took away the taxpayers’ ability to estimate a reasonable allowance for depreciation. Furthermore, the Accelerated Cost Recovery System of 1981 created several different classes of assets, each with arbitrarily-prescribed recovery periods which differ from those assets’ expected economic lifespans. Substantial changes in the depreciation system arose out of the Tax Reform Act of 1986. The Act of 1986 introduced the Modified Accelerated Cost Recovery System (MACRS). The arguments in support of MACRS included the assertions that both the ACRS and pre-ACRS depreciation methods had been defective. ACRS had been founded on unrealistic assumptions of the lifespans of depreciable assets, whereas the pre-ACRS methods did not take inflation into account. Thus MACRS aimed to preserve investment incentives while explicitly accounting for inflation and different rates of economic depreciation (President Tax Proposals, 1985). Table 1 shows the major classes of assets, and Table 2 shows the recovery allowance percentage for some of the major classes of property under the Modified Accelerated Cost Recovery System of 1986.

Table 1: Major Classes and Asset Lifespans under MACRS

Class	Type of Property
3-year	Certain special manufacturing tools
5-year	Automobiles, light-duty trucks, computers, and certain special manufacturing equipment
7-year	Most industrial equipment, office furniture, and fixtures
10-year	Certain longer-lived types of equipment

*Source: Partial table constructed from Financial Management, Brigham & Ehrhardt, 14th ed., page 482, 3014. The recovery periods under MACRS rules are not based on the actual useful life of assets. In many cases, the allowed depreciation periods are significantly shorter than the economic lifespan of the assets in question. Thus MACRS allows more rapid cost recovery than is possible under straight-line depreciation.*

Table 2: Annual Recovery Allowance Percentages for Property, by Investment Class

	3-Year	5-Year	7-Year	10-Year
Year 1	33.33	20.00	14.29	10.00
Year 2	44.45	32.00	24.49	18.00
Year 3	14.81	19.20	17.49	14.40
Year 4	07.41	11.52	12.49	11.52
Year 5		11.52	08.93	09.22
Year 6		05.76	08.92	07.37
Year 7			08.93	06.55
Year 8			04.46	06.55
Year 9				06.56
Year 10				06.55
Year 11				03.28
<b>Total (%)</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

*Sources: Partial table constructed from Financial Management, Brigham & Ehrhardt, 14th edition, Page 483, 3014. The fixed annual recovery allowance percentages under MACRS fail to take into account fluctuations in the rate of inflation. The recovery allowance percentage for various classes of assets is fixed; however, frequent fluctuations in inflation rates create variances in the effective tax rates for assets.*

The Modified Accelerated Cost Recovery System was designed to shorten the depreciable lives of assets, and thus to allow businesses to take advantage of large deductions at an earlier point in time. The higher depreciation allowance lowers the amount of taxable income, resulting in a smaller amount of taxes. At the same time, this can motivate taxpayers to allocate capital in non-productive assets, which widens the gap between tax depreciation and real capital loss. Thus, MACRS defeats the primary objective of depreciation, which is to provide a reasonable estimate of an asset’s decreased value. Furthermore, the system could be seen as a harmful tax policy because it encourages capital to be allocated simply to gain a

tax advantage. The purpose of this paper is to examine the relationship between the primary objective of depreciation and the effectiveness of U.S. tax policy in stimulating investment and compensating for the effects of inflation since 1913.

## LITERATURE REVIEW

Since the inception of the income tax system, Congress has allowed taxpayers the right to a depreciation deduction for the loss in value of property used in business (Revenue Act of 1909, and Revenue Act of 1913). As the allowance for depreciation of property is merely an estimate of the actual change in value, the Internal Revenue Service issued Bulletin “F” on August 31, 1920, delegating to taxpayers the right to determine reasonable rates of depreciation based upon their own judgments and experiences (U.S. Bureau of Internal Revenue, 1920). Thus, tax depreciation initially meant economic depreciation as estimated by the taxpayer, with the underlying objective of providing funds to replace depreciable assets used in the business (United States v. Ludey, 1925). Increased accuracy in the measurement of income and the collection of revenue were among the basic economic objectives underlying this depreciation deduction (United States v. Ludey, 1925).

The administrative approach to depreciation remained unchanged for almost 25 years, until the Great Depression of 1934 brought about a change in the government’s fiscal priorities. To help finance the public works launched during the Depression, the Treasury Department narrowed depreciation deductions and required taxpayers to prove that the lifespans given for their depreciable assets were appropriate (T.D. 4422, 1934, C.B. 58.). The primary purpose of this new approach was to assure the reasonableness of any claim by taxpayers for depreciation, and to increase the amount of revenue collected.

This approach changed again in 1946, when the use of accelerated depreciation and liberal cost recovery methods were sanctioned by the government; these methods were later codified in 1954 (I.R.C § 167 (b), 1954). Accelerated depreciation methods assume that the annual decline in an asset’s value will be higher in the early years of the asset’s life (President’s Tax Program, 1978); as a result, higher depreciation deductions were allowed in the years immediately following the acquisition of those assets, followed by smaller annual deductions for the remainder of an asset’s lifespan. The Internal Revenue Code of 1954 maintained the general provisions of the earlier tax law, which had viewed depreciation deductions as a “reasonable allowance” for exhaustion, wear, and tear. However, the Internal Revenue Code provided that, for the assets purchased after 1953, the term “reasonable allowance” would include an allowance computed under certain specified methods, which allowed faster cost recovery (I.R.C § 167, 1954).

The Code provided for the following alternative depreciation methods: (1) the straight-line method, (2) the declining-balance methods, (3) the sum-of-the years digits method, or (4) any other consistent method that does not result in greater total depreciation being claimed during the first two-thirds of the asset’s useful life than would have been allowable under the double declining balance method. Permissible methods include both machine hours and units of production methods, (I.R.C. § 167 (b) (4), 1954). The stated justifications for permitting faster cost recovery were administrative convenience, proximity to economic depreciation, and an incentive for capital investment – the last of which was expected to increase production (H.R. Rep. No. 1937, 1954). It was assumed that accelerated depreciation would result in taxpayers recouping most of the cost of their investments more quickly, which in turn would provide a greater tax savings. Tables 3, 4, and 5 compare the present value of tax savings under the straight line, double declining balance, and sum of the year’s digits methods for an asset with an initial cost of \$100,000 and an estimated useful life of 10 years, and no salvage value; the assumed corporate tax rate is 34 percent, with an assumed interest rate of 8 percent:

Table 3: Straight-Line Method

Year	Depreciation	Tax Savings	Present Value Interest Factor	Present Value of Tax Savings
1	\$10,000.00	\$3,400.00	0.92593	\$3,148.16
2	10,000.00	3,400.00	0.85734	2,914.96
3	10,000.00	3,400.00	0.79383	2,699.02
4	10,000.00	3,400.00	0.73503	2,499.10
5	10,000.00	3,400.00	0.68053	2,313.80
6	10,000.00	3,400.00	0.63017	2,142.58
7	10,000.00	3,400.00	0.58349	1,983.87
8	10,000.00	3,400.00	0.54027	1,836.92
9	10,000.00	3,400.00	0.50025	1,700.85
10	10,000.00	3,400.00	0.46319	1,574.85
Total				\$22,814.10

Table 4: 200 Percent Declining Balance Method

Year	Start-of-Year Book Value	Rate on Declining Balance (%)	Depreciation Expense	Book Value at Year-End	Tax Savings	Present Value Interest Factor	Present Value of Tax Savings
1	\$100,000.00	0.2	\$20,000.00	\$80,000.00	\$6,800.00	0.9259	\$6,296.32
2	80,000.00	0.2	16,000.00	64,000.00	5,440.00	0.8573	4,663.92
3	64,000.00	0.2	12,800.00	51,200.00	4,352.00	0.7938	3,454.75
4	51,200.00	0.2	10,240.00	40,960.00	3,481.60	0.7350	2,559.08
5	40,960.00	0.2	8,192.00	32,768.00	2,785.28	0.6805	1,895.47
6	32,768.00	0.2	6,553.60	26,214.40	2,228.22	0.6302	1,404.16
7	26,214.40	0.2	5,242.88	20,971.52	1,782.58	0.5835	1,040.12
8	20,971.52	0.2	4,194.30	16,777.22	1,426.06	0.5403	770.46
9	16,777.22	0.2	3,355.44	13,421.77	1,140.85	0.5003	570.71
10	13,421.77	0.2	2,684.35	10,737.42	912.68	0.4632	422.74
Total			\$89,262.60				\$23,077.73

Table 5: Sum-of-the-Years' Digits Method

Year	Base	Rate (%)	Depreciation	Tax Saving	Present Value Interest Factor	Present Value of Tax Savings
1	\$100,000	18.18	\$18,181.82	\$6,181.82	0.9259	\$5,723.93
2	\$100,000	16.36	16,363.64	5,563.64	0.8573	4,769.93
3	\$100,000	14.55	14,545.45	4,945.45	0.7938	3,925.85
4	\$100,000	12.73	12,727.27	4,327.27	0.7350	3,180.68
5	\$100,000	10.91	10,909.00	3,709.09	0.6805	2,524.15
6	\$100,000	09.09	9,090.91	3,090.91	0.6302	1,947.80
7	\$100,000	07.27	7,272.73	2,472.73	0.5835	1,442.81
8	\$100,000	05.45	5,454.55	1,854.55	0.5403	1,001.96
9	\$100,000	03.64	3,636.36	1,236.36	0.5003	618.49
10	\$100,000	01.82	1,818.18	618.18	0.4632	286.34
Total						\$25,421.94

*A comparison of the present value of tax savings under the straight-line method of depreciation with, liberal cost recovery method the 200 percent declining balance method, and the sum of the year digits method. This analysis reveals that the present value of tax savings under liberal cost recovery (i.e. accelerated cost recovery) methods is higher than the present value under the straight-line method.*

This comparison shows that the present value of tax savings under the straight-line method is \$22,814.10; the value under the 200 percent declining balance method is \$23,077.73; and the value under the sum of the year digits method is \$25,421.94. Theoretically, accelerated depreciation is the result of both financial considerations and economic environment.

### Financial Considerations

A theoretical focus on financial considerations suggests that physical assets should be depreciated as rapidly as possible. The rationale underlying this theory is that the depreciating items have been purchased in past years to provide additional funds to the enterprise in the future. Depreciation is a noncash charge; therefore, the depreciation allowance provides cash flow that can be invested in the business to encourage future production (Department of the Treasury, Bulletin F 26-27, 1920). The choice of depreciation methods substantially affects accounting income and, consequently, influences the managers' capital investment decisions. Accelerated depreciation is more favored by managers than the straight line depreciation, which has economic impact on the economy as a whole (Bronwyn H. Hall, 2007).

### Economic Environment

Due to post-World War II inflation, the replacement costs of fully depreciated assets were often found to be higher than the total depreciation charged on such assets. Congress became concerned that the real value of the depreciation allowance had declined due to inflation, thereby reducing the profitability of business investments. Accelerated depreciation was intended to compensate taxpayers for the effects of inflation on depreciation and, as a result, on taxes. Accelerated depreciation was justified on the grounds that it implicitly compensated taxpayers for inflation (John P. Steines, 1985). After the Second World War, the industrial nations of Western Europe and Japan attempted to stimulate business investments by providing depreciation incentives (Hiromitsu Ishi, 1989). This tax policy was based upon tax incentives to achieve specific goals, as well as successive tax cuts to maintain a lower income tax rate. The United States followed the example of other industrial nations and attempted to stimulate investments through depreciation incentives. In 1958, Congress passed the Technical Amendment Act, which enacted I.R.C. Section 179 to assist small businesses. I.R.C. Section 179 allowed an immediate deduction, not to exceed \$20,000 annually, for the cost of tangible personal property purchased with a useful life of at least six years (The Technical Amendment Act, 1958). The Internal Revenue Code added a provision which allowed business to report their depreciation expenses, which was the equivalent of depreciating up to \$125,000 of equipment over one year (Internal Revenue Service Publication 946).

Following these legislative changes in the depreciation system, another significant development on the administrative level came in 1962 when the IRS issued Revenue Procedure 62-21, which withdrew Bulletin F and provided a list of guidelines for broad classes of assets by industry use, as opposed to Bulletin F's asset-by-asset approach (Rev. Proc. 62-21, 1962 C.B. 418.). The new guidelines placed greater emphasis on the economic lives of the assets rather than their physical lives, resulting in a 30 to 40 percent reduction in write-off periods (Depreciation Guide - MACRS, 11, 1991). Another change occurred in U.S. tax policy when Congress passed the Tax Reform Act of 1969. As opposed to the earlier practice of allowing liberal cost recovery, the Tax Reform Act of 1969 imposed several restrictions on accelerated depreciation (The Tax Reform Act, 1969). In 1970's, the United States faced high inflation and retarded economic growth. Hence, to provide tax incentive to businesses, Congress passed the Revenue Act of 1971 which introduced the Asset Depreciation Range System to liberalize the cost recovery system (The Revenue Act of 1971).

Tables 6 and 7 detail the increase in the rate of inflation, high deficits, and a decline in productivity in the 1970's – all of which revealed the weakness of the depreciation allowance as a means to stimulate business investment. The increased rate of inflation during the decade of the 1970's challenged the historical justification of cost-based depreciation (Karen Mathias, 1987). The effective tax rate on capital increased because depreciation was not based on actual replacement costs.

Table 6: Annual Percentage Changes in Consumer Prices in the United States, 1978-87

Year	Percent Change
1978	07.6
1979	11.3
1980	13.5
1981	10.3
1982	06.2
1983	03.2
1984	04.3
1985	03.6
1986	01.9
1987	03.7

Source: U.S. department of Commerce, Bureau of the Census. Statistical Abstract of the United States, 113<sup>th</sup> Edition, 1993, p. 482. Table 6 shows the annual percentage change in the consumer price index from 1978-1987. Rising oil prices, increased costs of social welfare and regulatory activities, wage increases, and international pressure are some of the factors that contributed to inflation during this period.

Table 7: Summary of Receipts and Outlays, U.S. Budgets (in Billions of Dollars)

Fiscal Year	Receipts	Outlays	Deficits
1978	399.6	458.7	059.2
1979	463.3	503.5	040.2
1980	517.1	590.9	073.8
1981	599.3	678.2	078.9
1982	617.8	745.7	127.9
1983	600.6	808.3	207.8
1984	666.5	851.8	185.3
1985	734.1	946.3	212.3
1986	769.1	990.3	221.2
1987	854.1	1,004.6	150.4

Sources: Executive Office of The President, Office of Management and Budget, The United States Budget in Brief, Fiscal Year 1988, page 97; and The United States Budget in Brief, Fiscal Year 1989, page 101. As shown in Table 7, the government of the United States had a long trend of budget deficits. Social welfare activities, wage increases, and changes in the international economic environment, along with a declining rate of productivity, caused the amount of the budget deficit to rise.

The resulting decrease in the after-tax rate of return was thought to have discouraged savings and investment. Inadequate cost recovery allowances were presumed to have contributed directly to insufficient capital investment. Therefore, it was argued that cost recovery allowances had to be liberalized in order to encourage capital formation. The result of this debate was the enactment of the Economic Recovery Tax Act (The Economic Recovery Tax Act, 1981 and Senate Report, 1981). The Economic Recovery Tax Act (ERTA) was intended to stimulate savings by increasing the rate of return through tax-rate reduction and indexing for inflation. In particular, ACRS was meant to compensate taxpayers for inflation by allowing for the depreciation of assets over shorter timeframes, and thus increasing investments in plants and equipment (Douglas Greenwald, 1982, and Alvin C. Warren Jr. et al.

1982). The ERTA widened the gap between tax depreciation and economic depreciation by disassociating the time period over which an asset's cost was to be recovered from the actual lifespan of the asset. The cost recover periods prescribed by the Act were substantially shorter than the actual useful lives of depreciable assets. ERTA's separation of tax depreciation from economic depreciation was initiated by the changes in depreciation schedules based on economic useful lives through tax reforms made in 1982, 1984, 1986, and 1993 (Tax-Equity and Fiscal Responsibility Act, 1982, Deficit Reduction Act, 1984, Tax Reform Act, 1986, and Omnibus Budget Reconciliation Act, 1993).

The Tax Reform Act of 1986 made further substantial changes in the depreciation system by introducing MACRS. This legislation increased the number of recovery classes and extended the recovery periods for many assets. The objective of MACRS was to preserve investment incentives while accounting for

inflation through different rates of depreciation. Changes in the depreciation method made by the Tax Reform Act of 1986 were based on the philosophy that the depreciation allowance should reflect the fact that, on average, the value of assets declines over time due to variety of factors; therefore, if a depreciation allowance understates real depreciation, income from the investment is overtaxed. This results in a disincentive to invest in those assets, which in turn impairs capital formation and reduces the economy's productive capacity (Allan J. Auerbach et al, 1980). Similarly, if tax depreciation exceeds economic depreciation, an incentive is created for investments in depreciable property for tax reasons alone (President's Tax Proposals, 1985).

## METHODOLOGY

The methodology used in this research is the logical application of tax policy to depreciation for the purpose of controlling inflation, starting from the inception of such legislation in 1913. The relationship between tax policy changes and inflation is being examined on the basis of tax laws, administrative rules and regulations, court decisions, and the opinions of economists and tax experts. Wherever possible, previous empirical studies showing the effects of tax policy changes on investment and inflation have been used to support the arguments put forth below.

A tax system that attempts to control inflation will be more effective than a system that seeks to alleviate the effects of inflation through across-the-board tax cuts. The inflation rate essentially depends on productivity trends, which can be improved by reducing the cost of capital and stimulating investment in productive economic activities. Economic activities which tend to stimulate productivity growth are classified as productive, and those which do not substantially contribute to productivity growth are categorized as non-productive activities. In general, the primary non-productive sources of income are passive investments, which may include investments in tax sheltered activities and investments in other activities where the primary source of income is due to inflationary gains. Congress realized the distinction between these activities and, as a result, added I.R.C. section 469 in 1986, classifying economic activities as "active" or "passive" based upon their anticipated impact on investment. According to a report of the Senate Finance Committee in that year:

*"The prior law of tax favored assets has harmed the economy generally, by providing a non-economic return on capital for certain investments. This has encouraged a flow of capital away from activities that may provide a higher pre-tax economic return, thus retarding the growth of the sectors of economic with the greatest potential for the economy" (Senate Report no. 313, 1986). It is evident from this statement that Congress had already recognized the potential impact of tax policy on inflation and productivity growth.*

### Evaluation of the Depreciation System

A historical overview of the depreciation system shows that Congress has tried to ensure that depreciation allowances would reflect economic reality, while simultaneously stimulating investment through the use of accelerated cost recovery methods. However, the implementation of ACRS did not provide an effective cure for inflation, and did not promote increased investment as expected. Various studies have attempted to assess the effect of accelerated depreciation as an investment incentive (Barry P. Bosworth, 1985, and Charles W. Swenson, 1987). Those studies did not conclusively establish the real impact of tax incentives on capital investment through depreciation. Most studies have concluded that tax incentives may have had a role in capital investment, albeit a far less significant one than was commonly believed.

Expressing his doubts on the effectiveness of the accelerated cost recovery system to promote economic growth, Charles W. Swenson commented:

*“Although not neutral on a macro basis, ACRS will significantly correct for under-depreciation in many industries. Unfortunately, it will overcompensate for under-depreciation in capital intensive industries. These disproportionate benefits during inflationary periods will result in large direct shifts in capital across industries, which indicate the horizontal inequity of ACRS. This effect may be exacerbated by indirect wealth transfer to more tax-favored industries. Both of these shifts in capital would result in economic inefficiency and a deadweight loss to the economy. It is ironic that ACRS was created to promote economic growth through capital formation, yet its deadweight loss to economy may have diminished or offset any welfare gain through economic growth.” (Charles W. Swenson, 1987).*

In fact, the relative lack of capital investment for nearly two years after the enactment of ACRS in 1981 provides evidence that capital formation did not significantly increase due to the policy of accelerated depreciation. Table 8 measures the amount of savings in the U.S. correlated with the Flow of Funds Data from 1953-1989 as a percentage of GNP.

Table 8: Savings in the U.S. Correlated with Flow of Funds Data (as a Percentage of GNP)

Period	Household Savings	Corporate Savings	Private Savings	Government Savings	Net National Savings
1953-1961	5.6	1.9	7.5	-9	6.7
1962-1973	5.6	2.2	7.8	-5	7.3
1974-1979	5.6	2.7	8.3	-1.5	6.8
1980-1984	5.5	1.6	7.0	-2.9	4.1
1985-1989	3.9	1.4	5.2	-2.9	2.3

*Source: Constructed from the Federal Reserve Board, New York Quarterly Review (Winter 1991), Volume 15, No 3-4. Table 8 indicates that household savings, corporate savings, government savings, and net national savings did not improve due to the implementation of the Accelerated Cost Recovery System and the Modified Accelerated Cost Recovery System. Instead of the anticipated improvement in savings, the actual rate of savings decreased after 1980.*

Empirical evidence suggests that businesses choose depreciation methods to increase reported earnings. Firms that use accelerated depreciation methods show higher levels of capital investment (A.R. Beeren, 2013), and many firms depreciate assets more aggressively for financial reporting purposes than they do for tax reporting. Accelerated depreciation methods lack comparability with other businesses and with financial statement users (Thomas R. Noland, 2010). Depreciation methods influence firms’ capital investment decisions; however, it is possible that the choices firms make for financial reporting purposes may reflect non-value maximizing decisions (Scott B. Jackson, 2008), which might not promote investment in productive economic activities. Furthermore, accelerated cost recovery methods widen the gap between tax depreciation and economic depreciation. In an attempt to provide realistic depreciation deductions, the Tax Reform Act of 1986 modified and restricted the more liberal methods of depreciation. While the MACRS introduced by the Tax Reform Act of 1986 is a step in the right direction, it is not a permanent cure. As shown in Table 9, the recovery periods of many classes of property under MACRS are the same, whereas the rates of economic depreciation are different.



Table 9: Economic Rates of Depreciation for Different Assets

Asset Class	Estimated Economic Depreciation Rate	Accelerated Cost Recovery System Rates	Modified Accelerated Cost Recovery System Rates
Furniture and Fixtures	0.110	0.20	0.143
Fabricated Metal Products	0.092	0.20	0.143
Engines and Turbines	0.079	0.20	0.143
Tractors	0.163	0.20	0.20
Agricultural Machinery	0.097	0.20	0.143
Construction Machinery	0.172	0.20	0.143
Mining and Oil Field Machinery	0.165	0.20	0.20
Metal Working Machinery	0.123	0.20	0.143
Special Industry Machinery	0.165	0.20	0.143
General Industrial Equipment	0.123	0.20	0.143
Office and Computing Machinery	0.273	0.20	0.143
Service Industry Machinery	0.165	0.20	0.143
Electrical Machinery	0.118	0.20	0.143
Trucks, Buses, and Trailers	0.254	0.20	0.20
Autos	0.333	0.333	0.20
Aircraft	0.183	0.20	0.20
Ships and Boats	0.075	0.20	0.10
Railroad Equipment	0.066	0.20	0.143
Instruments	0.150	0.20	0.143
Other Equipment	0.150	0.20	0.143
Industrial Buildings	0.036	0.53	0.27
Commercial Building	0.025	0.53	0.27
Religious Buildings	0.019	0.53	0.27
Educational Buildings	0.019	0.53	0.27
Hospital Buildings	0.023	0.53	0.27
Other Non-farm Buildings	0.045	0.53	0.27
Railroads	0.018	0.67	0.05
Telephone and Telegraph	0.033	0.67	0.05
Electrical Light and Power	0.030	0.67	0.05
Gas Facilities	0.030	0.10	0.67
Other Public Utilities	0.045	0.10	0.67
Farm Structures	0.024	0.53	0.05
Mining, Shafts and Wells	0.056	0.20	0.20
Other Non-building Facilities	0.029	0.53	0.27
Residential Structures	0.015	0.53	0.275

Source: Constructed from Don Fullerton/Yolanda K. Henderson/ James Mackie; adapted from Compendium of Tax Research, Department of the Treasury, p.179 (1987). This table indicates that the estimated rates of economic depreciation for various assets used in business are different than the tax depreciation rates prescribed by the Accelerated Cost Recovery System and the Modified Accelerated Cost Recovery System. In fact, tax depreciation rates widened the gap between economic depreciation and tax depreciation.

## RESULTS AND DISCUSSION

Congress has made extensive use of accelerated depreciation to stimulate investment in desired channels and to promote economic growth. Previous research studies do not conclusively prove the success of accelerated depreciation in stimulating investment in desired channels. The artificial service lives prescribed by the Accelerated Cost Recovery Systems, unrelated to assets' actual useful lives, undermine the accuracy of real depreciation while encouraging firms to allocate assets to non-productive economic activities solely for tax benefits. These activities have negative impacts on capital formation and do not serve to control inflation (Benshakar et. al. 2009). According to a 1984 Treasury Department report:

*Tax liabilities should be imposed on the basis of real economic income. In the case of investment in depreciable property, measurement of real economic income requires an allowance for the property's economic depreciation. If that allowance is understated income from the investment is overtaxed and a tax disincentive is created which impairs capital formation and retards the economy's productive capacity. By the same token, overstating depreciation and thus understating income creates an artificial incentive for one form of investment over another, discriminates among companies within the industry, and encourages nonproductive, tax-motivated investment activity. (Treasury Proposal, vol. 2, 1984)*

Improved accuracy in income measurement would result if all firms began to use the straight-line depreciation method. Straight-line depreciation provides a reasonable estimate of the decline in an asset’s value and allocates the cost of investment systematically over the assets’ useful life. Most U.S. firms use the straight-line depreciation method for financial reporting purposes; a 2009 study found that 79.53 percent of businesses used straight-line depreciation methods, while 20.4 percent of the businesses used accelerated depreciation (Jackson et. al., 2009). The current straight-line method of depreciation, however, is not free from defects. It does not take into account the impact of inflation on depreciation. The real value of depreciation deductions drastically declines during periods of high inflation, which requires an adjustment in the depreciation allowance to compensate taxpayers. Many economists suggest the income tax code should provide provisions for indexing depreciation to the rate of inflation (Joseph J. Minarik, 2014). If the straight-line method, indexed for inflation, were to be used uniformly, it would avoid the distortion that results from investment decisions based on tax considerations alone.

Table 10: Example of Straight-Line Depreciation, Indexed for Inflation

Year	Straight-Line Depreciation	Rate of Inflation	Indexed Depreciation
1	\$2,000	4%	\$2,080
2	2,000	3%	2,060
3	2,000	2%	2,040
4	2,000	5%	2,100
5	2,000	6%	2,120
<b>Total</b>	<b>\$10,000</b>		<b>\$10,400</b>

*Table 10 shows a hypothetical example of straight-line depreciation indexed for the rate of inflation. The amount of indexed depreciation shown is more than the historical cost of the property. The taxpayer receives a substantial tax savings due to a decrease in taxable income. The difference of \$400 between the current method of straight-line depreciation and the indexed straight-line depreciation represents the effect of inflation on depreciation.*

## CONCLUSION

We conclude that the current accelerated cost recovery methods are not as effective in stimulating investment in productive activities, which is essential to promote economic growth and thus control inflation. Congress has already acknowledged a distinction between activities that tend to stimulate growth and those “passive” activities that do not do so, with a 1986 Senate Finance Committee Report stating that “the prior law of tax favored assets has hampered the economy generally, by providing a non-economic return on capital for certain investments. This has encouraged a flow of capital away from activities that may provide a higher pre-tax economic return, thus retarding the growth of the sector of economy with the greatest potential for expansion” (S. Rep. No. 313, 1986).

Given this distinction, the determining factor that classifies an activity as productive or non-productive should be the impact of that activity on productivity growth. The first seeds of this concept were first sown when Congress added § 469 of the Internal Revenue Code, providing rules for passive activities (IRC, Section 469, 1986). These rules attempt to discourage passive, non-productive activities by preventing taxpayers from using losses from those activities to offset income from active sources. Discouraging passive investments result in the more efficient deployment of capital, which in turn promotes productivity growth. Based upon this research, the following changes in the tax code ought to be proposed:

The rate of depreciation allowed for tax purposes needs be equal to the actual economic rate of depreciation. In practice, it is difficult to calculate the true economic depreciation of each capital asset; however, a reasonable allowance for depreciation may be calculated objectively (Congressional Budget Office, 1985). Congress has unfettered discretion to determine the parameters of reasonable allowance under various circumstances. The absence of fixed criteria to determine a reasonable rate of depreciation

tends to create uncertainty in the system. Further research is needed to find a satisfactory uniform method for calculating reasonable depreciation. The straight-line depreciation method, indexed for inflation, should be treated as real economic depreciation until a reliable method is devised to measure economic depreciation (Venus C. Ibarra, 2013). Straight-line depreciation, indexed for inflation, best reflects the original intention of Congress in creating the depreciation system, and would provide a reasonable estimate of actual depreciation expense as this method equally allocates the costs of assets over their useful lives (Ben-Shahar et. al. 2009).

All economic activities do not equally stimulate desired investment and promote capital formation. Therefore, research is recommended to better classify economic activities as productive or nonproductive. The classification of any given activity should be based upon the impact of the activity on investment, employment, and economic growth, as opposed to the criteria of material participation in the activity by taxpayers under IRC Section 469 (which is required to separate active activities from passive activities) (I.R.C. Section 469,(e) (i) 1986).

Congress introduced the Investment Tax Credit in 1962 to subsidize expenditures by firms for promoting investment in certain desired activities, and to stimulate economic growth. The credit was finally suspended by the Tax Reform Act of 1986 (IRC §§ 38, 46-48, 1986) on the grounds that the investment tax credit did not provide substantial financial assistance and therefore did not stimulate economic growth. It is recommended that a modified investment tax credit should be reinstated for economically-productive activities only, in order to stimulate investment (Survey et. al., 1976 and Martin Feldstein et. al. 1979). The combination of the straight-line depreciation method, indexed for inflation, and a modified investment tax credit would help provide a truly reasonable method for compensating depreciation, and would help control inflation by stimulating investment in productive economic activities.

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