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Abstract

This paper examines the history, scope, and types of investment tax credits (ITC's) implemented in the United States. Changing views about the role of this fiscal policy tool are related to changing views about the structure of the economy and the possibilities for constructive public policies. The impact of the ITC on economic activity is reviewed briefly.

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INVESTMENT TAX CREDITS

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Investment tax credits are reductions in tax liabilities determined as a percentage of the price of a purchased asset. Starting with the Revenue Act of 1962, the investment tax credit (ITC) has been set at various rates, suspended, reinstated, repealed, resurrected, increased, and then eliminated completely in the Tax Reform Act of 1986. Reinstituting the ITC was part of the Clinton Administration's initial economic proposal to Congress, but it was not part of the 1993 budget bill enacted into law.

Tax credits were initially granted primarily for the purchase of business capital equipment, and have been extended to other assets and activities (e.g., expenditures on research and development, restoration of historic buildings, and hiring of certain classes of workers). ITCs have been a quantitatively important tax expenditure ($21.3 billion in 1985), and equal the amount for two well-known tax expenditures: the exclusion of employer contributions for medical care and insurance premiums and the deductibility of nonbusiness state and local taxes (other than on owner-occupied homes).

This entry is divided into three parts. Part one discusses the history, scope, and types of ITCs. The chief reason for granting these subsidies has been to stimulate economic activity, though which aspect of economic activity was the appropriate target for this stimulus has varied because of changing views about the structure of the economy and the possibilities for constructive public policies. These changes are considered in the second part. Finally, the impact of the ITC on economic activity is reviewed briefly in the third part of this entry.

History, Scope, and Types of ITCs

ITCs have been used frequently as an instrument of fiscal policy in the United States. Beginning

on January 1, 1962, the statutory rate for the ITC was set at 7 percent for spending on business capital equipment with tax lives (i.e., recovery periods or service lives) greater than three years and for special purpose structures (defined as structures replaced contemporaneously with the equipment that they house, support, or serve). The statutory rate was increased to 10 percent in 1975. The Tax Reform Act of 1986 abolished the ITC. Between 1962 and 1986, the ITC was not in force for two periods: suspended from October 1966 to March 1967 and repealed from April 1969 to August 1971. Public utility property (equipment plus structures) has also received a credit, ranging from 3 percent in 1962, to 4 percent in 1971, to 10 percent in 1975. Assets generally become eligible for the tax credit when they are placed in service. The statutory rates and effective dates are summarized in Table 1.

Table 1

Statutory Rates For The Investment Tax Credit

In The United States

(percent)

Effective Date Beginning	Business Capital + Equipment	Special Purpose Structures	Public Utility Property
January 1, 1962		7	3
October 10, 1966 (suspended temporarily)		0	0
March 10, 1967		7	3
April 19, 1969		0	0
August 16, 1971		7	4
January 22, 1975 (increased temporarily)		10	10
January 1, 1979		10	10
January 1, 1986		0	0

Source: Pechman (1987a) and U.S. Treasury (various issues through 1980). Effective dates refer to permanent changes unless otherwise noted.

There are several complicating factors that drive a wedge between the statutory rates in Table 1 and the ITC's ultimate impact on businesses. Four are discussed here. First, the ITC is not refundable, and hence is valuable to a taxpayer only if there is a current tax liability. (Legislation has generally exacerbated this problem by restricting the percentage of the current tax liability that can be reduced by the ITC.) This shortcoming is mitigated by carryback and carryforward provisions, but the delay in realizing the tax credit lowers the value of the ITC, especially for firms relying heavily on internal funds for investment financing. Problems caused by an absence of a current tax liability were overcome with the safe-harbor leasing provisions in the Economic Recovery Tax Act of 1981 that, in effect, permitted the sale of unused tax credits to firms with current tax liabilities. While such an expansion of markets is generally welcomed by economists, the realization that many large profitable corporations were paying little or no taxes led to a public outcry, and safe-harbor leasing was eliminated at the end of 1983.

Second, the statutory impact of the ITC increases with the tax life of the asset. For example, under the 1962 legislation, eligible property with a tax life of 4 to 6 years received one-third of the ITC, and eligible property with a tax life of 6 to 8 years received two-thirds of the ITC. The full credit was given for eligible property with a tax life of 8 or more years. The tax lives determining the percentage of the available credit, as well as the percentages themselves, have been changed periodically. A larger ITC for longer-lived assets can be an important feature in attempting to preserve neutrality of the ITC across assets (Bradford, 1980; Harberger, 1980).

Third, the impact of the ITC on investment incentives also depends on whether it reduces the basis used in calculating tax depreciation. The 1962 legislation that introduced the ITC subtracted the value of the ITC from the basis. This part of the legislation was known as the Long Amendment (after the Chair of the Senate Finance Committee), and was repealed in 1964. Thus, the 7 percent ITC in effect in 1962, ceteris paribus, was not as effective as the 7 percent ITC in effect in 1964. In the Tax

Equity and Fiscal Responsibility Act of 1982, the tax depreciation basis was lowered by one-half of the tax credit, thus reducing the value of the ITC.

Fourth, the limited coverage of the ITC creates an incentive to reclassify assets as equipment or special purpose structures. While the original legislation explicitly excluded any "building and its structural components," this restriction has been circumvented by creative accounting. This response to incentives, along with a slow expansion of the tax code to broaden the coverage of the ITC, has led to over 50% of the cost of the acquisitions of structures (as defined in the National Income and Product Accounts) to be eligible for the ITC in 1975.

The above considerations suggest the difficulty in specifying the impact of the ITC. Fullerton, Gillette, and Mackie (1987) have undertaken a careful study deriving estimates sensitive to these considerations. The particulars of the tax legislation can be found in documents published by the U.S. Treasury (through 1980) and by the U.S. Office of Management and Budget (1981 onwards).

For a given effective rate, several different types of ITCs are available to policymakers. The ITC can be targeted to particular classes of capital or uniform across all capital. In the United States, ITCs have favored business capital equipment. For those industries using a greater than average amount of tax-favored capital, the ITC becomes an implicit industrial policy. The benefits afforded by the targeted ITC have been interpreted by some as a partial second-best correction to tax code distortions that favor other capital assets.

The ITC can be permanent or temporary. An ITC with a credible expiration date, ceteris paribus, will induce firms to accelerate their investment spending to capture the transient tax benefits. It is unclear whether a temporary credit leads to an overall increase in investment spending or just intertemporal substitution with no increase relative to the level of investment that would have prevailed without the tax credit.

The ITC can be unilateral or incremental. A unilateral ITC applies to all investment in a category, and has been the type adopted in all previous U.S. legislation for fixed capital. An incremental ITC -- proposed by the Kennedy and Clinton Administrations -- applies to all equipment investment above a threshold, which might be specified as some average of the firm's past investment expenditures or sales or some industry-wide variables. While both types of ITCs provide an incentive to increase investment, the government would expect to lose less revenue for a given amount of investment -- that is, would expect a greater "bang-for-the-buck" -- with an incremental ITC.

The threshold creates several thorny problems for the incremental ITC. The benefits of an incremental ITC would not be distributed fairly, as firms that have recently undertaken major investment programs would receive relatively less benefit because of their higher threshold. Further difficulties would be faced in the long-run, as incentives would exist to "reinvent" the company (in an accounting sense) every few years to lower the threshold. Lastly, if the incremental ITC is in force for several years, firms would face an intertemporal tradeoff that would lower the impact of this fiscal policy. A firm that invests today may raise its threshold (depending on the definition) for calculating tomorrow's tax benefit, thus lowering the overall stimulus afforded by the ITC. This effect is amplified the longer the incremental ITC is in place. These latter two concerns suggest that an incremental ITC would be most useful as a temporary policy providing short-term stimulus to the economy.

ITCs have been implemented in several other major industrialized countries. See Jorgenson and Landau (1993) and Pechman (1987b) for further discussions.

Reasons For Adopting an ITC

The ITC is one of several fiscal policies that affect firms directly and are available to policymakers to stimulate economic activity. Other fiscal instruments include the income tax rate,

depreciation allowances, and the percentage of asset purchase price eligible for a tax or subsidy. While an ITC, the income tax rate, and depreciation allowances can be adjusted so that they all have the same present value to an investing firm (see the entry for the cost of capital), the ITC carries some additional advantages. Decreases in the income tax rate affect the returns on both existing and new capital, and hence are more costly to the government for a given amount of investment incentive. Depreciation allowances are subject to the uncertainty associated with discount rates (perhaps caused by inflation) or repeal. The immediate value imparted by the ITC makes it a more potent fiscal policy instrument than depreciation allowances.

Between 1962 and 1986, the ITC has been changed several times (see Table I). To understand the reasons for tax legislation changes, it is useful to remember that investment plays two pivotal roles in the macroeconomy. The considerable volatility of business investment spending is a prime contributor to short-run fluctuations in the aggregate economy. Additionally, the long-run potential of the economy is directly linked to the amount of capital available to businesses and the efficient allocation of that capital among firms. Due to changing views about the structure of the economy and the possibilities for constructive public policies, the reasons for adopting an ITC have varied between some combination of short-run stabilization and long-run allocation goals.

The Revenue Act of 1962 represented a major innovation in tax policy by introducing the ITC as a fiscal policy instrument. Many economists believe that the ITC was adopted initially to strengthen short-run economic activity in the tradition of Keynesian demand management. However, the first Economic Report of the Kennedy Administration reveals that the 1962 Act sought to meet both allocation and stabilization goals:

> The tax credit ... will stimulate investment in capacity expansion and modernization, contribute to the growth of our productivity and output, and increase the competitiveness of American exports in world markets. (ERP 1962, p. 26)

> With support from increased government expenditures and other government policies, the momentum of the recovery is expected to raise GNP ... Prompt enactment of the proposed tax credit for investment would give the economy further strength. (ERP 1962, p. 12)

Why equipment was the sole focus of the credit is not apparent from the published record. This qualification is compatible with allocation goals if positive externalities exist with respect to equipment investment or a fixed relation exists between equipment and other types of investment. Since, in response to an investment stimulus, firms can vary equipment investment relatively more quickly, an ITC only for equipment is also compatible with a stabilization goal.

Keynesian economics had come to dominate policymaking by the mid-1960s and early-1970s. Consequently, the ITC was viewed solely as a tool for stabilization when suspended in 1966 and reinstated in 1967 (U.S. Treasury, 1967, pp. 28-31).

In 1969, the ITC was repealed, and the budget saving was used to remove the income tax surcharge. Interestingly, despite the ascendancy of Keynesian thought at this time, the repeal was based on the "consideration of the longer-range issues" because "the national priorities of the 1970's did not require or justify this special incentive" (ERP 1970, p. 31).

Stabilization goals reemerged when the ITC was resurrected in 1971, as the primary motivation was to stimulate the economy in the short-run, with secondary consideration to the allocation of resources to capital for long-run objectives (ERP 1972, p. 69). Concern about a depressed level of aggregate economic activity led to an increase in the ITC in 1975. This increase was to last only two years, and was intended to give business "an incentive to undertake some investment now that they would otherwise have undertaken only later" (ERP 1975, p. 20). This temporary ITC was extended on a temporary basis in the Tax Reform Act of 1976.

During the latter part of the 1970s, questions arose about the usefulness of fiscal policy as a stabilization tool. Lags in recognizing the need for a fiscal stimulus, passing the appropriate legislation, and obtaining the desired spending by firms undermined the usefulness of discretionary fiscal policy. Furthermore, owing to both deficiencies in empirical predictions and theoretical foundations, the Keynesian model of the macroeconomy lost favor in the economics profession (see Mankiw (1990)). This disenchantment led to a change in emphasis concerning the reasons for adopting the ITC. When the ITC was made permanent in 1979, the stabilization goal was not emphasized. In the ERP 1978 (p. 10), President Carter stated that "... tax reductions will be the primary means by which Federal budget policy will promote growth" and that "Stable growth in markets, together with added tax incentives for business, will lead to rising business investment and growing productivity." The Treasury's Office of Tax Policy was more emphatic: "... changes in the investment credit rate should not be considered in terms of shortrun stabilization objectives, but for its longrun effect on capital formation and on promotion of the best use of available private savings" (U.S. Treasury, 1979, p. 365).

The demise of the stabilization goal was complete by the beginning of the 1980s with the passage of the Economic Recovery Tax Act of 1981 (ERTA). Among other aspects of this fundamental legislation, distortions affecting the intertemporal allocation of resources were emphasized. As stated by President Reagan, "These changes are moving us away from a tax system which has encouraged individuals to borrow and spend to one in which saving and investment will be more fully rewarded" (ERP 1982, p. 7). While ERTA had major effects on raising investment incentives, this legislation affected the ITC only slightly by increasing the percentage of the credit available to shorter-lived equipment, thus creating a credit uniform across all eligible assets.

The substantial incentives in ERTA, along with ongoing academic and government research, highlighted an additional dimension to efficient resource allocation. Not only must resources be

allocated efficiently between consumption and investment, but there is an additional issue of allocating a given amount of aggregate investment among capital assets. That taxes not affect the interasset allocation of capital is known as asset neutrality, which was enshrined in the concept of the "level playing field." The uniform ITC in place in the early 1980s posed major problems for creating a "level playing field" for business capital assets, and was eliminated in the Tax Reform Act of 1986. (See Fullerton (1994) for a thorough discussion of tax policy in the 1980s.)

Reviewing tax systems in several industrialized countries, Pechman (1987b, p. 3) echoed the sentiments of many economists at that time in noting a "... growing disenchantment almost everywhere with investment incentives. Opinion is widespread that they distort the allocation of resources and generate numerous inequities among industries and firms."

However, the case for asset non-neutrality and an equipment ITC reemerged quickly. As has been the case with the ITC over its history, views about investment incentives are affected by economic events and research findings. The impressive growth of several industrializing nations called attention to the strong correlation between growth and investment spending. Influential research by Delong and Summers (1992), combined with a large body of extant work on developing economies, highlighted the positive externalities that may be associated with equipment investment (though these research findings have created controversy). Equipment investment may play a particularly pivotal role in encouraging growth by creating learning externalities or channelling innovations into the production process. These and other considerations -- such as benefits generated but not captured fully by small businesses -- highlight a divergence between private and social returns, suggesting a constructive role for investment incentives targeted to business equipment.

The Clinton Administration proposed reinstituting a permanent ITC for equipment investment targeted to small businesses. Moreover, faced with a sluggish economy, there was a call for a

temporary incremental ITC as well. Using the ITC to address both allocation and stabilization goals is similar to the approach taken by the Kennedy Administration thirty years prior, though the temporary nature of the incremental ITC and the reasons for the permanent ITC differed. However, no ITCs were enacted into law in 1993.

The Impact of the ITC

The impact of the ITC can be viewed in several different ways. From an accounting perspective, profitability and cash flow are affected initially, though the ultimate effect depends on the general equilibrium response of output prices, input prices, and final sales. Economists tend to focus on the impact of the ITC at the margin; that is, on the final (or additional) dollar of investment spending. From a marginal perspective, the ITC also has several different impacts: the intertemporal allocation of resources between consumption and investment, the interasset allocation of resources among capital assets, the overall level of economic welfare, the marginal cost of funds, and the additional investment per dollar of tax loss. Calculations of the latter two effects will be reviewed here.

Assessments of the ITC at the margin can not be undertaken in isolation, but must consider all taxes impinging on the investment decision. The analytic tool used by economists is the cost of capital, first applied to tax policy analysis by Hall and Jorgenson (1967) and used recently by Jorgenson and Yun (1991) to study tax reforms in the United States. As detailed elsewhere in this encyclopedia, the cost of capital combines in a single measure several taxes affecting the decision to acquire capital. Conceptually, the cost of capital is the price of "renting" a unit of capital for one period. The ITC effectively lowers the purchase price of the asset, and hence the "rental" that is required from the firm.

In a simulation study representative of those with computational general equilibrium models, Fullerton and Henderson (1989) calculate the marginal cost of funds -- the decrement to total welfare (measured in dollars) from raising an additional dollar of tax revenue -- associated with taxes on 38 different types of capital assets. The marginal cost of funds is usually greater than the $1.00 in new revenue because of distortions introduced by taxes. Given the tax code that existed in 1984, their simulations reveal that reducing the ITC is the most efficient way of raising revenue (with available tax instruments). Due to a reduction of distortions among assets, the marginal cost of funds is only $.62;

hence, by appropriate reductions in the ITC, collecting $1.00 of revenue leads to a fall in consumer welfare of only $.62. While several important factors are not represented in this model (e.g., investment externalities and stabilization problems), these calculations suggest that investment decisions are sensitive to the ITC and its elimination in 1986 was welfare enhancing.

However, when assessed in terms of econometric investment equations, the ITC appears to have less impact (see Chirinko (1993) for a survey). Estimates of tax policy effects on investment vary widely, and these differences are related to some of the key assumptions and caveats used in specifying the econometric model. For example, Chirinko and Eisner (1982) analyze the investment equations in six quarterly macroeconometric models. In one partial equilibrium simulation, a doubling of the ITC for equipment and the institution of a 10 percent credit for structures leads to a "bang-for-the buck" -- the additional investment per dollar of tax loss -- of between $.13 and $1.43 (five years after the ITC increases). The mean value for all six models is $.84, corresponding to an elasticity (with respect to the cost of capital) of -.52.

A number of these aggregate equations contain overly restrictive assumptions. When the investment equations are reestimated with more general specifications, the mean impact of tax policy is lowered ($.47 with a corresponding elasticity of -.29) and the range of results across models is narrowed considerably ($.14 - $.82).

Thus, simulation studies indicate a more substantial impact of the ITC than obtained from econometric analyses. Reconciling these differences would begin by examining the many assumptions maintained in simulation models that may not accurately describe the economy. Alternatively, econometric estimates of the potency of the ITC may be attenuated by biases arising from aggregation, simultaneity, or measurement error in the cost of capital. In the latter regard, Ballentine (1986) reports that only 8.1 percent of the dollar volume of corporate tax increases in the 1986 Tax Act (over a five

year period) are reflected in the variables entering the cost of capital. With this and other caveats in mind, the empirical results from a wide range of econometric models suggest a limited impact for the ITC as historically implemented.

See also ASSET NEUTRALITY, COMPUTATIONAL GENERAL EQUILIBRIUM, COST OF CAPITAL, EFFECTIVE TAX RATES, EXTERNALITIES, SUPPLY-SIDE ECONOMICS, TAX EXPENDITURES.

REFERENCES

Ballentine, J. Gregory. "Three Failures in Economic Analysis of Tax Reform." National Tax Association - Tax Institute of America Proceedings (1986): 3-6.

Bradford, David F. "Tax Neutrality and the Investment Tax Credit." In The Economics of Taxation, edited by Henry J. Aaron and Michael J. Boskin. Washington: Brookings Institution, 1980, 281-298.

Chirinko, Robert S. "Business Fixed Investment Spending: Modeling Strategies, Empirical Results, and Policy Implications." Journal of Economic Literature 31 (December, 1993a): 1875-1911. An extended version of this survey has been published as "Econometric Models and Empirical Findings for Business Investment." A Monograph in the Salomon Brothers Center Series Financial Markets, Institutions & Instruments. New York: Basil Blackwell, 1993b.

Chirinko, Robert S., and Eisner, Robert. "The Effect of Tax Parameters in the Investment Equations in Macroeconomic Econometric Models," In Economic Activity and Finance, edited by Marshall E. Blume, Jean Crockett, and Paul Taubman. Cambridge: Ballinger, 1982, 25-84.

DeLong, J. Bradford and Lawrence H. Summers. "Macroeconomic Policy and Long-Run Growth," In Policies for Long-Run Growth. Kansas City, Missouri: Federal Reserve Bank of Kansas City, 1992, 93-128.

Economic Report of the President [ERP]. Washington: U.S. Government Printing Office, various annual issues.

Fullerton, Don. "Tax Policy." In American Economic Policy in the 1980s, edited by Martin S. Feldstein. Chicago: University of Chicago Press (for the NBER), 1994, 165-233.

Fullerton, Don, Robert Gillette, and James Mackie. "Investment Incentives Under the Tax Reform Act of 1986." In Compendium of Tax Research 1987. Washington: Office of Tax Analysis, U.S. Department of the Treasury, 1987, 131-172.

Fullerton, Don and Yolanda Kodrzycki Henderson. "The Marginal Excess Burden of Different Capital Tax Instruments." The Review of Economics and Statistics 71 (August, 1989): 435-442.

Hall, Robert E. and Dale W. Jorgenson. "Tax Policy and Investment Behavior." American Economic Review 57 (June, 1967): 391-414.

Harberger, Arnold C. "Tax Neutrality in Investment Incentives." In The Economics of Taxation, edited by Henry J. Aaron and Michael J. Boskin. Washington: Brookings Institution, 1980, 299-313.

Jorgenson, Dale W. and Kun-Young Yun. Tax Reform and the Cost of Capital. Oxford: Clarendon Press, 1991.

Jorgenson, Dale W. and Ralph Landau (editors). Tax Reform and the Cost of Capital: An International Comparison. Washington: Brookings Institution, 1993.

Mankiw, N. Gregory. "A Quick Refresher Course in Macroeconomics." Journal of Economic Literature 28 (December, 1990): 1645-1660.

Pechman, Joseph A. Federal Tax Policy, Fifth Edition. Washington: Brookings Institution, 1987a.

Pechman, Joseph A. (editor). Comparative Tax Systems: Europe, Canada, and Japan. Arlington, Virginia: Tax Analysts, 1987b.

U.S. Office of Management and Budget. Budget of the United States Government. Washington: U.S. Government Printing Office, various annual issues. Information on tax developments can be found in the main budget document (under "Budget Receipts: Enacted Legislation" or similar titles) or the supplements entitled "Special Analyses" and "Analytical Perspectives" from 1981 onwards.

U.S. Treasury. The Annual Report of the Secretary of the Treasury on the State of the Finances. Washington: U.S. Government Printing Office, various annual issues from 1962 through 1980 inclusive.