The Equity-Efficiency Debate

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Two themes dominate the history of economic thinking, the efficient use of available resources and the equitable distribution of the claims to the output generated by those resources. In short, the prevailing issues have been economic efficiency and/or economic equity. In a paper as brief as this, a comprehensive discussion of the history of the relationship between equity and efficiency is beyond our capability.   However, two particular, although diametrically opposed, expositions are enlightening.

We begin with the brilliant, but sometimes erratic, John Stuart Mill. He raised the equity-efficiency issue by arguing that the most important dimension of economic analysis should be the distribution of income. His perception of the linkage between the two is clearly stated in the following remarks: "The laws and conditions of production of wealth partake of the character of physical truths. There is nothing optional or arbitrary in them ... It is not so with the distribution of wealth. This is a matter of human institutions solely. The things once there, mankind, individually or collectively, can do with them as they like" (Mill). Contrast this with the following remarks by Ludwig von Mises: "... in the market economy this alleged dualism of two independent processes, that of production and that of distribution, does not exist" (Mises, 1998).

With these views as background, we may turn to the present era. In the last twenty years, the political and intellectual rhetoric concerning the degree of inequality in the distribution of income and wealth in the United States has escalated dramatically. The specifics of these arguments have been documented frequently, (Gallaway & Vedder, 1993; Matthews, 1998) but a few summary comments are in order. In general, there is an element of disarray within the economics profession concerning the nature of the relationship

between the magnitude of government activity (especially at the federal level) and the twin concerns of equity and efficiency. Broadly speaking, there are two schools of thought, one that maintains that positive government actions are the *sine qua non* of both greater equity and efficiency and another which sees greater government intervention as a threat to both of these goals. We can describe these conflicting views with the terms "statist" and "anti-statist," respectively.

With respect to this controversy, a wealth of empirical evidence has surfaced in the last two decades supporting the anti-statist view. This evidence has focused primarily on the deadweight economic losses associated with the disincentive effects generated by the presence of government intervention (Armey, 1995; Scully, 1988 & 1992; Ballard, Shoven & Whalley, 1985; Gallaway & Vedder, 1986; 1995; Murray, 1984, 1995, 1996; Feldstein, 1995, 1996). These disincentives have been shown to impact on both the level and distribution of the national output of the United States, as well as within other countries (Scully, 1996; Barro, 1997; Vedder and Gallaway, 1998). The remainder of this paper will be devoted to exploring these impacts.

The impact of government on output[1]

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[1]The material in this section substantially parallels our "The Laffer Curve, Government, and Economic Growth," ***Innovative Applications of the Laffer Curve***, Special Issue, ***The Journal of Private Enterprise***, 14, 1998, pp. 63-71, although in an updated fashion. We also call your attention to our ***Government Size and Economic Growth, op. cit.***

We begin by summarizing our interpretation of the influence of government on economic activity. It is a fact that no society throughout history has ever obtained a high level of economic affluence without a government. Where government did not exist, anarchy reigned and little wealth was accumulated as the result of productive economic activity. After government took hold, the rule of law and the establishment of private property rights often contributed importantly to the economic development of Western civilization, and it has similarly impacted on other societies. Government is a necessary, though by no means sufficient, condition for prosperity.

It is also a fact, however, that where governments have monopolized the allocation of resources and interfered in economic decisions, societies have not been successful in attaining high levels of economic affluence. Economic progress is limited when government is zero percent of the economy, but also when it is at or near 100 percent. The experience of the old Soviet Union is revealing, as was the comparison of East and West Germany during the Cold War era, or North and South Korea today. Too much government stifles the spirit of enterprise and lowers the rate of economic growth.

If no government is too little, but all-encompassing government is too much, what is about right from the standpoint of maximizing economic welfare? Has the growth of government in the United States and other advanced industrial nations proceeded too little, too much, or about right from the standpoint of increasing the output of goods and services? Should the United States expand governmental activity faster or slower than the growth in the economy as a whole in order to expand the output of goods and services?

The Armey Curve

Borrowing a graphical technique popularized by Arthur Laffer, Representative Richard Armey, an economist by training, developed what he termed the Armey Curve (Armey, 1995). In a

state of anarchy, output per capita is low. Similarly, where all input and output decisions are made by government, output per capita is likewise low. Where there is a mix of private and government decisions on the allocation of resources, however, output often is larger. The output-enhancing features of government dominate when government is very small and expansions in governmental size are associated with expansions in output. At some point, however, further expansion of government no longer leads to increases in output, as the growth-reducing aspects of government become more important, and the growth-enhancing features of government

diminish. Beyond this point, further expansion of government contributes to economic stagnation and decline, producing a Laffer-Curve type relationship.

Why is this so? In a world without government, there is no rule of law and no protection of property rights. Bullies and strong people can steal the assets of weaker persons with impunity. There is little incentive to save and invest because the threat of expropriation is real and constant. Moreover, without some collective action, there is no protection from external threats, namely, foreign nations, or pirates on the high seas. Collective action also facilitates the creation of roads that improve transportation and lower trading costs. Government can also create a reliable medium of exchange, further developing the gains from trade. Thus, the establishment and early growth of government is associated with rising levels of income and positive rates of economic growth.

As governments grow, the law of diminishing returns begins operating. While the construction of roads initially assists output expansion, the construction of secondary roads and upgrading primary roads have less added positive impact per dollar spent. Moreover, the taxes and/or borrowing levied to finance government impose increasing burdens. Low tax rates become higher. New taxes, such as income levies, are added to initially low consumption taxes, with increasingly adverse effects on human economic behavior. Tariffs are raised, thwarting trade. New government spending no longer enhances economic growth.

When government is small, political actions involving income redistribution via tax policy or through payments to the poor are modest in magnitude. As transfer payments and progressive taxation grow with increasingly large government, the negative effects of governmental spending magnify. In small amounts, welfare payments help the poor and do not dramatically influence behavior. As the payments grow larger and more comprehensive, they lead to pronounced work disincentive effects. Thus, it is to be expected that as government absorbs an increasingly large share of national output, incremental spending actually will have an adverse effect on output.

The Armey Curve does not suggest that "all government is bad." To the contrary, some government serves the public good.

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But like most things, too much of it is harmful. Just as drinking one glass of wine daily may be good for the drinker's health but drinking 10 glasses is bad, so government in moderation is good for the economy, while in excess it is bad. Milton Friedman, comparing the United States and Hong Kong, put it well recently.

> Government has an essential role to play in a free and open society. Its average contribution is positive; but I believe that the marginal contribution of going from 15% of the national income to 50% has been negative ... (Friedman, 1997)

Professor Friedman is suggesting that the threshold where government's role in economic growth is positive probably involves its having command of somewhere between 15 and 50 percent of national income or output. We will examine that assertion shortly.

The Armey Curve in the United States

Does the historical evidence verify the existence of the Armey Curve? The short answer is yes, whether the frame of reference is the contemporary American economy, the American economy over long-time frames, or the economies of other nations. Statistical testing suggests that many modern Western economies are in the downward-sloping portion of the Armey Curve, where a reduction in the relative size of government would have positive effects on economic opportunities for the citizenry.

There are various ways of properly defining the Armey Curve. One approach is to relate government as a percentage of total output, G, to total output (real gross domestic product), O. The Armey Curve can be expressed in a simple quadratic fashion as follows:

(1) $O = a + bG - cG^2.$

The positive sign on the linear term, G, is designed to show the beneficial effects of government spending on output, while the negative sign for the squared term means that the variable measures any adverse effects associated with increased government size. Since the squared term increases in value more rapidly than the linear term, the presence of negative effects from government spending will eventually outweigh the positive effects, producing the downward-sloping portion of the relationship.

Output expands over time, of course, for reasons unrelated to government size. Human and capital resources grow, so one would expect that with the passage of time, T, output will grow. To control for this factor, we introduce a time variable, T, in our statistical analysis, assigning it a value of one for the first year examined, 1947. Subsequent years are assigned sequentially higher values, 1948 equal to two and so on, up to the value 51 for the last year examined, 1997. Also, output varies with the business cycle. We would expect output to be below the time-trend gross domestic product (GDP) in years in which the civilian unemployment rate, U, is high. Therefore, we expand equation (1) by the addition of time trend and unemployment variables. Thus, the final form of a statistical estimating equation designed to explain variations in the level of real GDP over the period 1947-1997 is as follows:

$$(2) \quad O = a + bG - cG^2 + dT - eU.$$

The results of estimating expression (2) using ordinary least squares regression analysis are reported in Table 1.[2] All of the independent variables are significant at the 5 percent level or better. The results permit a statistical estimation of the Armey Curve as well

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[2]The data on government spending as a percent of GDP are based on fiscal year information. The unemployment rate data are for calendar years. Two ARMA terms introduced to control for problems of serial correlation are not reported.

as the specific point where output is maximized. The curve peaks where government spending equals 17.45 percent of GDP. Since federal spending during the 1990s has been as high as 22.6 percent of GDP (in 1991), the results suggest that the federal government has been as much as 25 to 30 percent too large from the standpoint of growth optimization during this decade. To be sure, spending has fallen since 1991, now standing at 19.7 percent of GDP (1998). Nevertheless, the last year in which federal spending was below 17.5 percent of GDP was a third of a century ago, in 1965.

If this result is correct, since 1965 the nation has been in the negatively sloped portion of the Armey Curve - higher government spending (as a percentage of total output) would produce a *negative relationship* between government spending and output. As equation (3), below, demonstrates, this has been the case, with the coefficient measuring the negative impact being significant at the one percent level:

(3) O =   1356.42   -   30.48 G   -   51.38 U   (13.48)   (4.55)
(7.11)

$\qquad$ +   127.87 T,   D-W = 1.98, $\bar{R}^2$ = .999, ARMA = (0,4)
$\qquad\qquad$ (122.08)

Table 1
Regression Analysis of Impact of Federal Government Spending on Level of Real Gross Domestic Product and
Ratio of Mean Income of Top Five Percent to Mean Income Bottom Twenty Percent, United States, 1947-1997

Regression Term or Statistic	Dependent Variable			
	Real GDP		Ratio Mean Income Top Five Percent to Mean Income Bottom Twenty Percent	
	Regression Coefficient	t-Statistic	Regression Coefficient	t-Statistic
Federal Spending as Percent GDP	121.17	2.27	- 0.5334	3.28
Square of Federal Spending as Percent GDP	- 3.47	2.39	0.0153	3.63
Time	136.07	24.28	--	--
Unemployment	- 60.71	- 9.64	--	--
R^2 (Adjusted)	0.9994	--	0.5916	--
Durbin-Watson	2.14	--	1.42	--
ARMA Scheme	(2,0)	--	(0.2)	--

Source: Authors' calculations.

where the numbers in parentheses are t-values. These results suggest that for each 1 percentage point increase in the federal government share of GDP, the GDP itself falls by about $30 billion. Since the numbers are expressed in 1992 dollars, the figure in current dollars would be slightly higher, perhaps approaching $35 billion. Since a 1 percent change in GDP is currently about $85 billion (in current dollars), this suggests that $85 billion in additional federal spending has associated with it an output-reducing impact of about $35 billion, or somewhat more than 40 percent of the total. This is the "deadweight" loss of modern government.[3]

The impact of government on economic equity
We turn now to the impact of government activity on the distribution of income. During the discussion of the effect of government on total output, the role of government income transfers as a source of disincentive effects was introduced. The critical question is what is the impact of such programs on the actual distribution of income. The conventional wisdom, i. e., the statist view, has been that it reduces inequality. However, in recent years, this view has been significantly challenged. Charles Murray in 1984 and several of our own writings have suggested that, in some ranges, income transfers have the effect of increasing, not reducing, income inequality. At this point, we will explore this issue in a fashion that is comparable to our examination of the impact of federal government spending on the level of economic output.

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[3]A standard reference in this respect is Ballard, Shoven, and Whalley, *op. cit.* They observe efficiency losses of as much as 20 to 50 percent of tax revenues. More recently, see, e. g., Feldstein, NBER Working Papers 5055 and 5413, *op. cit.*

First, though, we must define what we mean by inequality and how we propose to measure it. Ordinarily the language of this issue focuses on straightforward notions. References to the "rich" and the "poor," the "privileged" and the "underprivileged," the "top" and the "bottom," and "haves" and "have-nots" abound. While these concepts usually are employed in an imprecise fashion, we can devise a measure in the spirit of such notions by simply dividing the income received by a group of people at the top of the income distribution, say those in the top five percent, by the income obtained by those at the bottom of the distribution, in this case, perhaps, the twenty percent of people with the lowest income.[4]

The behavior of this statistic in post-World-War II America is intriguing. It begins at about 3.5 in the late 1940s, falls to between 2.5 and 3.0 in the late 1960s and early 1970s, and then begins a fairly steady ascent until it is in excess of 4.5 in the mid-1990s. The question for us is whether the behavior of this statistic bears any relationship to federal government spending. To pursue this, we have estimated our standard government expenditure model, with the income distribution ratio as the dependent variable and the federal government share of GDP and its square as the independent variables. The regression results are shown in Table 1.

What they show is truly remarkable. There is a significant statistical relationship between the income distribution measure and federal spending. In itself that is not surprising. It is the nature of the linkage that is striking. At relatively low levels of federal spending, a rising federal share of GDP reduces the relative gap between the share of income received by the top five percent of the

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[4] This approach to measuring income inequality is a point in time approach that does not take into account the movement of people between income classes over time. For discussions of the concept of income mobility, see the Joint Economic Committee of Congress Minority Staff Studies, *Income Mobility and Economic Opportunity*, June 1992, and *Family Income Growth and Income Equality: Progress or Punishment?*, July 1992. Also worth examining are Michael Cox, "By Our Own Bootstraps," Federal Reserve Bank of Dallas Annual Report, 1995, and Michael Cox and Richard Alm, *Myths of Rich and Poor* (New York: Basic Books, 1999).

income distribution and the bottom twenty percent. However, beyond some critical level of federal spending, additional outlays **widen** the gap. The threshold level where this happens? Why, at a level of spending
amounting to 17.43 percent of GDP, almost exactly the same level associated with maximizing the overall level of output.

Conclusions

What are the basic conclusions of this analysis? First, it appears that there are no basic conflicts between the simultaneous pursuit of both economic efficiency and economic equity through the device of federal government programs in the United States. That is the good news. However, there also is bad news. For the last third of a century, the level of federal government spending in this country has been in a range that produces both lower economic output and greater income inequality. Therefore, to the extent that there is excessive inequality in the United States, as claimed for example by Paul Krugman, who has suggested that our present income distribution is somehow un-American (Krugman), or by the historian Arthur Schlesinger, Jr., who maintains it "disgraces American society" (Schlesinger, 1996). The problem has been too much government, not too little. How ironic.

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