REFERENCES


I. INTRODUCTION

During the last decade, the "twin deficits" have been unusually high and have become a major concern for economists and policy makers alike. Since 1980, after a long history of surpluses, the U.S. has had a large trade deficit with every major trading partner. As for the budget deficit, it is true that since World War II, surpluses have been more the exception than the rule; but in the 1980's federal deficits were brought into the spotlight, because of their unusually large size. In the 80s alone, governmental borrowing to finance the deficit exceeded $1 trillion.

This paper addresses the issue of concomitant high U.S. budget and trade deficits. Is it just a coincidence or is there any systematic relationship? If there is a relationship, then what is the nature of such relationship? More specifically, is the relationship between those two variables uni-directional, bidirectional, or are they independent?

II. LITERATURE OVERVIEW

Although there seems to be a wide spread political and popular perception that the twin deficits must somehow be interrelated, there is quite a great deal of controversy in the literature as to how and what extent they are related. A rudimentary national accounting identity can be used to relate the trade deficits, the government deficit, and investment and saving:

\[ S + T + M = I + G + X \]

or

\[ T - G = X - M \ (I - S) \]

Where:

- \( S \) - Gross private saving
- \( T \) - Government revenues
- \( M \) - Imports
- \( I \) - Gross private domestic investment
- \( G \) - Government spending
- \( X \) - Exports

If savings is kept constant, an increase in the budget deficit will either reduce investment or increase trade deficit, or most likely a mix of both. This simple analysis suggests a positive relationship.

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between the two deficits. Can we say, then, that higher budget deficit results in higher trade deficit? At one end of the spectrum we find Niskanen (1988). Niskanen broadens the definitions of exports by adding capital grants received by the United States and imports by adding transfer payments and interest payment by the government to foreigners; and then assesses the relationship between the foreign balance (or current account deficit) and government sector balance. He has found that the relationship between the two balances has not been stable over time.

During the recovery from 1974-75 there was a strong negative relationship between the foreign balance and the government balance. However, from 1982 through 1987, following the 1981-82 recession, there was little apparent relationship between the foreign balance and the government balance. In addition, he has found that the longer-term U.S. experience (1974 through 1986) as well as a cross-country comparison, does not indicate any significant direct relationship of the foreign balance and the government balance.

Niskanen's results suggest that the reason why U.S. government balance does not appear to have had a significant effect on the trade balance is because changes in the government balance were offset by changes in private saving and domestic investment, with very little effect on the foreign balance. And, therefore, the "two deficits" of the 1980s were primarily a coincidence or unrelated conditions, rather than the result of a significant relationship between the trade and budget deficits.

This is quite a controversial conclusion, (although Niskanen is not alone) because the conventional view is that budget deficits do increase trade deficits. Quite a few econometricians, most notably Martin Feldstein (1984), have proposed the following chain of effects between the budget and trade deficits: higher budget deficits result in higher interest rates that tend to appreciate the exchange rate, which, in turn results in higher trade deficits. The validity of this chain has been tested, for the most part, on a link by link basis. Do large deficits produce high interest rates? Do high interest rates increase the exchange rate? Do high exchange rates cause the trade deficit? Many people believe that large budget deficits spell higher interest rates, but it has been very difficult to prove that association empirically. Some studies even reject that proposition all together. One of those studies, perhaps the most comprehensive, is by Evans (1985). His analysis covers over a century of U.S. history and offers no evidence of a positive association between deficits and interest rates. He analyzed the periods during which federal debt has exceeded 10 per cent of national income; the U.S. experience during the Civil War, the U.S. experience during World War I, and the U.S. experience during World War II. In none of these periods did deficit rate rise appreciably. Regression analysis applied to data from these three periods showed no evidence of a positive association between deficits and interest rates. The same conclusion was drawn for the post war period. In fact, the evidence more strongly supports a negative association than a positive one.

Evans' conclusion that large deficits have never been associated with high interest rates is not generally accepted. However, the contrary is worse. Cases in point are, Cebula (1987) who found a strong positive relationship between federal government deficits and short-term interest rates and Wachtel and Young (1967) who also found a positive relationship between announcements of unanticipated changes in projected deficits and interest rates on the day of the announcement.

When it comes to the impact on exchange rates, the controversy continues. Evans (1986) did not find any significant direct effect of budget deficits on exchange rates. Others have found high exchange rates to high interest rates—see for instance Hutchinson and Pigott (1984). The impact on the trade deficit turned out to be weaker than expected, as the U.S. trade deficit did not seem to respond, at first, following lower exchange rates after 1985. The lag turned out to be much longer than economic theory predicted. In short, even though this "conventional" chain is intuitively appealing, the empirical evidence for each step is somewhat weak. Therefore, the question remains: how are the "two deficits" actually related? Is the relationship unidirectional, bidirectional, or is there no relationship at all between the two? The investigation of this relationship is the main purpose of this study.

III. METHODOLOGY

In this section an attempt will be made to test the causal relationship between trade deficits and budget deficits for the United States using quarterly data for the period 1971:1 to 1989:3. Specifically, we will look into four possible relationships. First, it is the budget deficit that is causing the trade deficit, second, it is the trade deficit causing budget deficit, third, the variables are causally dependent i.e., budget deficit causes trade deficit while trade deficit causes budget deficit. Finally the variables may be independent of each other.

To test these alternative hypotheses empirically, we will use the test of causality as suggested by Granger (1969). Granger defines causality in terms of predictability of time series. A variable X causes variable Y, if present Y can be better predicted by using the past values of X than by not doing so, where account has been taken of the past values of X and Y. We can write the condition for time series X causing time series Y in the following equation:

$$
\Delta y(t) = \beta X(t) + \epsilon(t)
$$

where $\Delta y(t)$ is the minimum mean squared error predictor (prediction error variance) of $Y$ given both the past values of $Y$, denoted by $\Delta Y$ and the past values of $X$ denoted by $\Delta X$. The term $\beta X(t)$ is the variance of the prediction error variance of $Y$ based on the information contained only in the past values of $X$.

Similarly, Y is said to cause X if:

$$
\Delta x(t) = \beta Y(t) + \epsilon(t)
$$

A bi-directional causality is present between the two time series X and Y when equations (1) and (2) occur simultaneously; that is, if X causes Y and Y causes X.

The two time series are not temporally related or they are independent of each other if:

$$
\Delta x(t) \neq \beta Y(t) + \epsilon(t)
$$

Based on the Granger's definition of causality, Sims (1972) has developed a statistical test for the presence of causality between two variables using the following two steps procedure. First, to isolate part of variable Y that can not be predicted using its own past, the variable is filtered to produce a Whitened time series, so that serial correlation is removed. Second, a regression of Y on future and past values of X is performed using the white noise time series. According to Sims' test, Y causes X if the leading values of X have regression coefficients, which as a group are significantly different from zero.

Another approach to empirically applying Granger's causality criterion is suggested by Haugh. In Haugh's test, pre-whitened data series are cross correlated and test statistics and S* computed. Under the null hypothesis of independence, the cross correlation function has zero values at all positive, zero, and negative lags and both s and S are distributed asymptotically chi-square with (2n + 1) degrees of freedom.

$$
S = N \sum_{j=1}^{n} \hat{S}(j)
$$

Since Haugh's test is strictly valid only as a test of independence or dependence between the two series, Granger or Sims causality tests are needed to determine the direction of causality.

The direct test of causality has been found to be most efficient in empirical work. See for instance, Geweke, Dent and Meece (1985). To empirically determine the relationship between trade deficit and
budget deficit, we will use the test proposed by Granger. Using Granger's procedure, we have to estimate the following two equations:

\[ TD = \sum a_{TD} + \sum b_{RD} + U, \]
\[ BD = \sum c_{RD} + \sum d_{TD} + V, \]

where, \( U \) and \( V \) are uncorrelated and \( E(U, U) = 0, E(V, V) = 0 \) and \( E(U, V) = 0 \) for all \( \neq 0 \).

Following the above equations, unidirectional causality from trade deficit to budget deficit can be established if the estimated coefficient on the lagged trade deficit variables as a group are significantly different from zero in equation (7) while the estimated coefficients on the lagged values of budget deficit variables as a group are not significantly different from zero in equation (6). This finding, however, would not support the conventional proposition that budget deficit causes trade deficit.

Similarly, unidirectional causality from budget deficit to trade deficit is implied if the estimated coefficient on the lagged budget deficit variable as a group are significantly different from zero in equation (6). A relationship of this nature is consistent with the conventional proposition. Bi-directional causality or feedback between the two variables is present if the estimated coefficient on the lagged values of both budget deficit and trade deficit as a group in both of the equations are significantly different from zero. However, if the estimated coefficients are not significantly different from zero, then no causality is present and we can say that trade deficit and budget deficit are independent of each other.

In this paper, the direction of causality is tested by using the conventional joint F-Test.

An important factor in causality test is the determination of the appropriate lag lengths for the variables under consideration. In this respect various measures have been suggested from time to time. However, all of these relate to large time series data. It is, however, important to note that the acceptance or rejection of the null hypothesis is sensitive to the lag length selected (Thornton and Bartus, 1985). In order to determine the optimum finite lag lengths for variables subject to causality test, Hausman has developed a technique based on Akaike's final prediction error criterion. The primary objective of his approach is to determine the combination of lags that minimize the final prediction error. In the present study, for lag length selection we relied upon final prediction error criterion as suggested by Hausman.

IV. EMPIRICAL RESULTS

The empirical test conducted in this section is based on the quarterly data for the United States for the period of 1973.1 through 1983.3. All data for this period were taken from various issues of the Economic Reports of the President. With a view to test the four possible relationships, more specifically to focus on the direction of the causal relationship between trade deficit and budget deficit, we estimated the following two equations:

\[ TD = \sum a_{TD} + \sum b_{RD} + U, \]
\[ BD = \sum c_{RD} + \sum d_{TD} + V. \]

Since Granger's methodology can be applied only to co-variance stationary series, in the present study, all the variables were in their first difference form. Moreover, a constant and a time trend variable were added in the estimated regression, to induce co-variance stationarity in the two time series. It can be mentioned that, in all cases, the coefficient on time trend came out to be insignificant, implying stationarity in the time series under study.

Using the final prediction error criterion, under the null hypothesis that trade deficit do not cause budget deficit, optimum lag turned out to be one on budget deficit and one on trade deficit. On the other hand, under the null hypothesis that budget deficit does not cause trade deficit, the number of lags on the budget deficit and trade deficit were four and one respectively.

A direct comparison of the minimum FPE for the equation with budget deficit as the dependent variable and the hypothesis that trade deficits do not cause budget deficits, we found that for the optimal univariate and bi-variate model the FPE (univariate) > FPE (bivariate). The low F statistics (1.80) also fail to reject the hypothesis that there is no causality running from trade deficit to budget deficit. For the United States, considering budget deficit as the difference between nominal federal government expenditure and revenue and trade deficit as the difference between total exports and imports, these results indicate that high trade deficits are not causing high budget deficits. This is a relevant finding that needs further examination.

Under the null hypothesis that budget deficit does not cause trade deficit, a comparison of the FPEs with optimal univariate and bi-variate model shows that FPE (univariate) > FPE (bivariate) implying presence of one way relationship. The F statistics in this case (3.51) also leads to a clear rejection of the hypothesis that budget deficits do not cause trade deficits. This observation supports the conventional proposition where the direction of causation is from budget deficit to trade deficit.

V. CONCLUSION

This paper employs a bi-variate Granger causality approach and quarterly data in an effort to determine whether a causal relationship exists between trade deficit and budget deficit. Using Granger's methodology we tried to test the validity of four alternative relationships. Our paper employed Akaike's final prediction error criterion to determine the appropriate lag specification for each variable. The empirical results indicate that the budget deficit and trade deficit are related and the evidence, however, supports the conventional proposition that high budget deficits have caused high trade deficits. The finding that no causality is running from trade deficit to budget deficit needs more research in terms of variables and methodology used.

NOTE

1. All F. D. Harr (1988) used a multi-variate analysis to determine the relationship between budget and trade deficits and found a bi-variate relation between the two variables. He also examined the role of other macroeconomic variables in the analysis of budget and trade deficits relationship.

REFERENCES


Tracing the Privatization Movement in the U.K. and the U.S.: An Attempt to Address The Question of Industry Productivity

Mark P. Karscil

1. INTRODUCTION

Throughout the Reagan Administration, the dictum was: "regarding government, the less the better." A corollary to this may interpreted as the private sector routinely offers higher-quality goods and services at lower costs and with greater efficiency. The Administration had structured this thinking into formal policy on several occasions. Privatization has come to the United States.

Privatization—the transfer of federal properties and activities to the private sector and also the reduction in the role of government as the creator of markets and controller of private industry production—is not a new economic phenomenon. The United States is experiencing a renewed interest in the systematic examination of the boundaries between public and private deliveries of goods and services. This interest has been stimulated in part by the concern that the federal government has become too large, too expansive, and too intrusive into our lives. The interest might also reflect the belief that new arrangements between the government and private sector might improve productivity and efficiency while offering greater opportunities and satisfaction for the people being served.

The United States, however, is not unique in its renewed interest in privatization. Privatization policies are currently in progress world-wide—in Europe, the Americas, Japan, and numerous developing and newly industrialized countries. Every country organized on socialist principles, including the Soviet Union and the People's Republic of China, have taken measures that seem to move in the direction of loosening the ties that bind their enterprises to the apparatus of government. (Vickers and Yarrow, 1988) Privatization would seem to be high on the political agenda of various countries throughout the world.

Although the worldwide trend toward privatization has accelerated dramatically in the past few years, the unquestioned "champion" for sweeping privatization is Great Britain. Prime Minister Margaret Thatcher's government has made the sale of government commercial entities one of the principal themes of her administration. This paper will provide a brief overview of some of these developments both in Britain and in the United States in order to provide a basis for the proposed empirical research.

This interest in privatization is not new to the world, nor to the study of economics for that matter. In the Wealth of Nations Adam Smith addressed the economic consequences of privatization when he argued that:

"In every great monarchy in Europe, the sale of crown lands would produce a very large sum of money, which, if applied to the payment of public debts, would deliver from mortgage a greater revenue than any which those lands have ever afforded the crown. . . . When the crown lands had become private property, they would, in the course of a few years, become well improved and well cultivated."

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