The Underground Economy in the United States

Comment on Tanzi

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In his paper, Tanzi\(^1\) offers a time series of annual estimates of the "underground economy" in the United States for the period 1930–80. These estimates are based on a currency-demand-equation approach, which Tanzi developed in an earlier paper.\(^2\) The technique, which draws inspiration from a classic paper by Cagan,\(^3\) has gained wide currency among scholars engaged in estimating the scale of the underground economy (variously called the black economy, the parallel economy, the unaccounted economy, the unreported economy, and so forth) in the United States and abroad.

The purpose of this brief note is to raise some conceptual objections about this technique (henceforth referred to as "the Tanzi method") and, by implication, about the estimates derived from its application.

THE TANZI METHOD

Tanzi fits equations of the following form to U.S. data:

\[ V = f(Md, r, w, p, \ldots) \]


\[ \ln C/M_2 = a_0 + a_1 \ln T + a_2 \ln WS/NI \\
+ a_3 \ln R + a_4 \ln Y + \epsilon, \]  

where \((C/M_2)\) is the ratio of currency holdings to broad money (including time deposits), \(T\) is the tax variable, \((WS/NI)\) is the share of wages and salaries in national income, \(R\) is the rate of interest on time deposits, \(Y\) is real per capita gross national product (GNP), and \(\epsilon\) is an error term.\(^4\) The rationale for these variables is given in Tanzi's paper.\(^5\)

Tanzi fits his equation to annual time series data for the period 1930–80. Having obtained statistically satisfactory estimates of his equation, he proceeds to estimate the size of the underground economy for a given year, \(t\), as follows. Taking his “best” equation, Tanzi obtains the predicted value for currency demand, \(C'_t\), given the observed value for all the other variables in year \(t\). He obtains another prediction of currency demand, \(C''_t\), by setting the value of the tax variable equal to zero while retaining the observed values for all the other variables. The difference, \(C'_t - C''_t\), gives an estimate of “illegal currency,” or, more properly, the holding of currency that can be attributed to taxation. Tanzi then subtracts the estimated value of illegal currency from the value of “narrow money,” \(M_1\), in year \(t\) to obtain an estimate of “legal money” in year \(t\). Dividing nominal GNP in year \(t\) by the estimate of legal money yields an income velocity for legal money. By assuming that the income velocity of illegal currency is the same, he is able to generate an estimate of the size of the underground economy for year \(t\). By this method, Tanzi presents estimates of the size of the underground economy for each of the years 1930–80.

**SOME PROBLEMS WITH THE TANZI METHOD**

The first question that arises relates to the concept of the underground economy that underlies Tanzi's estimates. In the final paragraph of his 1983 paper, and almost as an afterthought, Tanzi writes:

Perhaps a word on what has been measured here is necessary. The estimates attempt to measure the incomes that were generated through the excessive use of currency and that presumably were not reported to the tax

\(^5\)Ibid., pp. 289–90.
authorities. Whether these incomes were or were not measured by the national accounts authorities cannot be determined. Presumably, part of these incomes not only evaded the tax net but also may have escaped the attention of the national accounts authorities—but, how large this part was cannot be assessed with the information at hand.  

This agnosticism conflicts with the procedure for estimating the income velocity of legal money, in which the estimated stock of legal money ($M_1$ minus illegal currency) is related to measured GNP. The implicit assumption is that none of the illegal currency ($C' - C''$) is used to finance transactions relating to recorded GNP and that, conversely, all of it is used to finance transactions relating to the underground economy. But then the unaccounted economy should be wholly additive to measured GNP; there can be no vagueness about whether some of the underground economy is already captured in recorded GNP. The choice is clear-cut: either the estimate of the underground economy is wholly additive to measured GNP, or the procedure for estimating the income velocity of "legal" and "illegal" money (and, hence, the underground economy) is logically flawed.

In Tanzi's framework it is difficult to sustain the first possibility. His estimated equation does not allow one to deduce that the illegal currency is used solely to finance transactions associated with incomes that are unrecorded in GNP estimates. All that the equation tells us is that when the tax burden (however defined) increases, the demand for currency increases, presumably because of the growth of income and transactions hidden from the tax authorities. Tanzi is correct in professing agnosticism about whether such incomes also escape national income authorities. But if agnosticism in this regard is warranted, there is no getting away from the logical flaw in estimating the income velocity of legal money. To estimate this parameter, what one needs is not the data on recorded GNP, but rather a series on legal income encompassing income that is properly reported to the tax authorities as well as income that need not, legally, have been reported. Such a series is not easy to construct—and it is not offered by Tanzi.

At best, Tanzi's estimate of the income velocity of legal money should be seen as an approximation; the closer is the value of legal income to recorded GNP, the better is the approximation. The problem lies in not having any ready means by which to assess the quality of this approximation.

Ibid., p. 303.
A second difficulty with Tanzi's approach is the absence of evidence in support of his assumption that the income velocity of illegal currency is equal to the income velocity of legal money. The support he offers for this crucial assumption is disarmingly weak: the assumption, he argues, "is the result of agnosticism. The author is unable to take a position between those who would argue that the velocity of money in the underground economy must be lower than in the legal economy, and those who would argue the contrary."

Third, there is some question about the stability of the income velocity of illegal currency. For example, if an increase in indirect taxes leads to additional demand for currency to conduct transactions in cash so that payment of indirect taxes may be evaded, it is quite possible that this increased demand for currency can occur without a substantial change in the income that evades tax. Thus, the relation between tax-evaded income and illegal currency need not be stable; in other words, the income velocity of illegal currency may be unstable.

Fourth, a number of economists have challenged the assumption that transactions associated with tax evasion are undertaken solely with cash. They argue that many of these transactions occur through the banking system.

Finally, Tanzi's approach is ill-suited to assessing the significance of nontax causes that might lead to the under-reporting of incomes and transactions to tax authorities. For example, incomes earned through illegal activities may generate a demand for cash (and such incomes would normally evade taxation), but one would not expect to observe any relation between the demand for cash and tax rates for this form of undeclared incomes. The same would hold true for undeclared incomes stemming from government regulatory measures; these could include a variety of scarcity premiums and bribes, both of which might be expected to be transacted in cash, regardless of the burden of taxation. More-

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over, there are forms of tax evasion that might not generate any incremental demand for cash: take, for instance, the well-known—and reportedly widespread—practice of charging personal consumption as business expense, a practice that reduces the tax base for both personal income taxation and business income taxation.

The conceptual problems presented above appear quite significant. It is left to the reader to judge whether these objections undermine the credibility of the estimates of the underground economy offered by Tanzi.