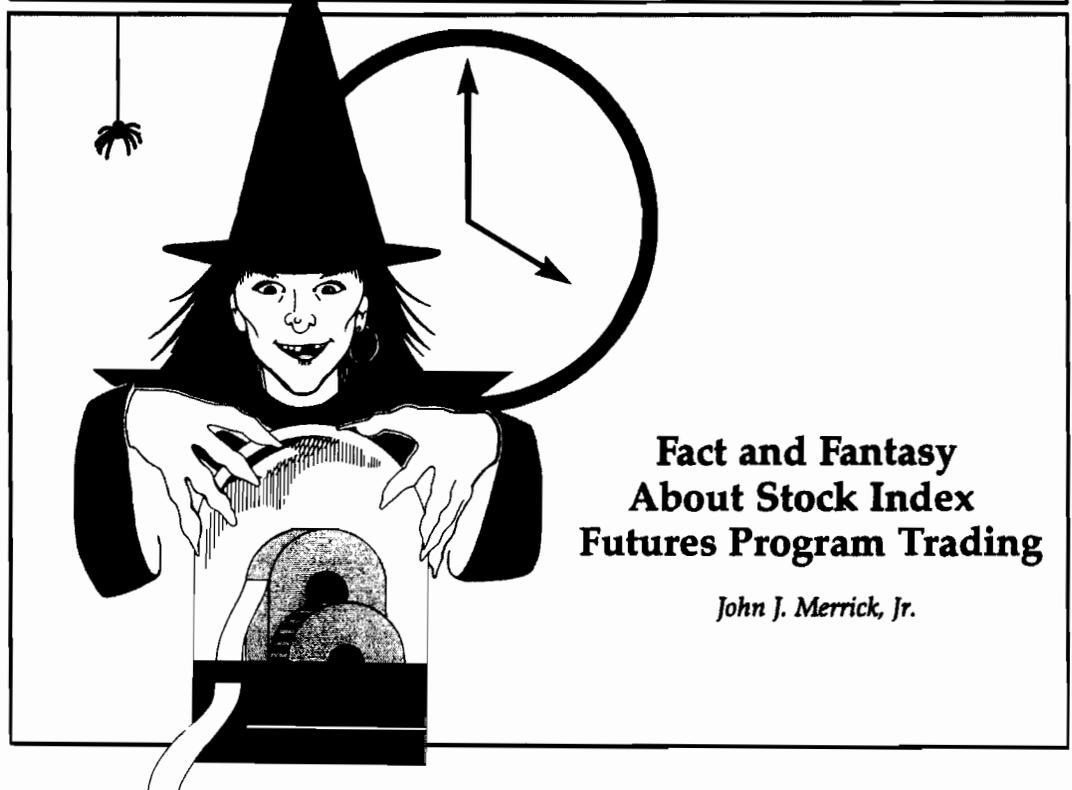
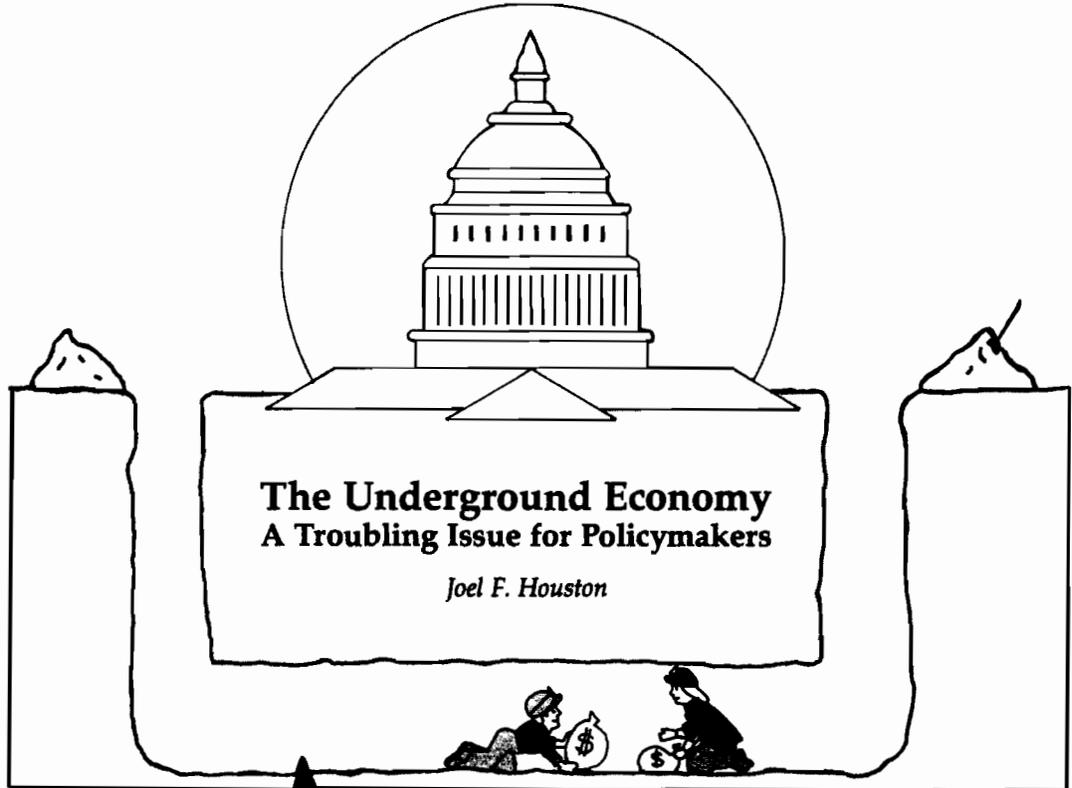


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THE UNDERGROUND ECONOMY: A TROUBLING ISSUE FOR POLICY- MAKERS

Joel F. Houston

The existence of the underground economy leads to tax rates and budget deficits that are higher than necessary, unfairness in the tax system, and potentially misguided fiscal and monetary policies. But getting a handle on the underground economy is no easy task. Depending on the definition, economists' estimates of its size range as wide as 5 to 25 percent of GNP, or \$200 billion to \$1 trillion! Moreover, how policies will affect the underground economy also depends on how it is defined.

FACT AND FANTASY ABOUT STOCK INDEX FUTURES PROGRAM TRADING

John J. Merrick, Jr.

Futures markets in stock indexes, such as the S&P 500, are an astounding success story. And some are concerned that arbitrageurs' "program trading," which tries to profit from abnormal price differences between these futures markets and the cash market for stocks, has grown too much. Pointing to the price swings in the stock market on "Triple Witching Days," they claim that program trading makes stock prices volatile overall. But a careful analysis of the impact of program trading suggests that limiting arbitrage activity could do more harm than good.

The Underground Economy: A Troubling Issue for Policymakers

*Joel F. Houston**

In making economic decisions, households, businesses, and government officials all rely on information concerning the current and expected performance of the economy. The most widely recognized barometer of economic performance is the measure of gross national product (GNP). In principle, GNP represents the value of all final goods and services produced for a given time period.

In practice, however, not all economic activity is accounted for in GNP. Empirical evidence suggests that a significant portion of economic activity takes place in a sector that has been alternatively referred to as the “shadow,” “hidden,” “irregular,” or “underground” economy, where goods and services—some legal, some not—are produced but not reported. For policymakers who want to account for this activity, the problems of doing so are daunting. The underground economy does not just sit “out there,” unchanging; rather, many diverse elements make up the underground economy, and both the size of its components and its overall size vary over time. Parts of the underground econ-

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omy, for example, may move in response to changes in government policy. To the extent that policymakers do not, or cannot, take the underground economy into account, they may not achieve their desired goals.

Interest in understanding and estimating the size of the underground economy has increased recently, due in part to the current political environment in which budget deficits and tax reform have dominated the news. High budget deficits have led legislators to search for untapped sources of revenue. At the same time, tax reform was designed to lower marginal tax rates and to promote a more equitable distribution of the tax burden. And while tax reform was designed explicitly to be revenue neutral, it represents a net tax cut for individual taxpayers. By "getting at" income generated in the underground economy, the potentially contradictory goals of increasing revenue and lowering tax rates can both be met. But in order to do so, the two-way link between the underground economy and policy should be carefully explored.

AN INTRODUCTION TO THE UNDERGROUND ECONOMY

What Is the Underground Economy? The underground economy conjures up a variety of images. Often, people first think of illegal activities, such as selling drugs, gambling, or loan-sharking. They might also think of income earned in perfectly legal activities but not reported, for example, income earned moonlighting "off the books" to avoid taxes or to supplement social security or unemployment benefits without facing a reduction in benefits. More generally, the underground economy incorporates all unmeasured economic activity. Thus it includes other activities as well, such as bartering goods and services: the dentist wires braces for the electrician's child, and in return the electrician wires the dentist's house. It even includes activities like growing your own food or doing your own repairs.

Obviously, the underground economy defined this broadly is not homogeneous. It is made up

of lots of different people who are influenced by many different factors. For example, the factors influencing whether or not you decide to deal drugs may be entirely different from the factors affecting whether or not you neglect to report all of your income on your taxes.

These differences are especially important to keep in mind when it comes to interpreting studies claiming to measure the size and impact of the underground economy. Estimating the size of the underground economy cannot be separated from the fundamental question concerning what the underground economy comprises. Indeed, estimates of the underground economy vary, at least in part, because they often focus on different components of the underground economy.

While the underground economy can be defined quite broadly, most researchers have focussed on a more narrow definition that does not consider activities such as barter and growing your own food. These activities are often extremely hard to detect, and individuals' reasons for engaging in them are difficult to pinpoint. The dentist and electrician, in the previous example, may be merely exchanging acts of friendship, as opposed to trying to circumvent the tax laws. Policymakers, it would appear, have little or no impact on whether or not acts of friendship occur, or on whether or not an individual chooses to grow his own food. Policymakers, however, can more directly influence certain other types of underground activity, such as taxes that are evaded on income that is earned legally, and income illegally earned, which presumably also is untaxed. These activities represent a more narrow definition of the underground economy, and will make up what we refer to here as the underground economy.¹

¹In adopting this more narrow definition we are limiting the discussion to that part of the underground economy that has been the primary focus of past research and policy discussions. This does not imply, however, that there is no link between public policy and activities such as barter and growing your own food. As discussed in Donald C. Cox and

How Big Is the Underground Economy? For some very obvious reasons, it is impossible to come up with a direct estimate of the size of the

underground economy. By definition, participants in the underground economy are actively trying to avoid detection, so there is no simple and direct place to look for information about its size. This makes the underground economy inherently difficult to measure.

Robert H. DeFina, "Warm Feelings and Cold Calculations," this *Business Review* (March/April 1986) pp. 15-22, even acts of friendship have important implications for the success or failure of certain policy initiatives. At the same time, changes in policy may make barter and growing your own food more or less attractive. Indeed, the main points concerning the links between policy and our more narrow definition of the underground economy also may directly apply to these other activities as well.

Studies that have tried to measure it have used a variety of *indirect* techniques. (See MEASURING THE SIZE OF THE UNDERGROUND ECONOMY.) The various estimates differ considerably, ranging from 5 to 25 percent

Measuring the Size of the Underground Economy

A number of techniques have been employed in an attempt to measure the underground economy, with each giving a somewhat different view of its size and variation.^a Two related issues help explain the differences among these various estimates. First, each uses a different methodology; for instance, the IRS estimates rely on audits of tax returns, while others rely on unexplained currency holdings.^b Second, there is no guarantee that the alternative procedures have captured the same portion of the underground economy. This is true despite the fact that all available estimates focus only on market transactions and ignore barter transactions. For example, the IRS estimates may be picking up mainly legally earned, but not reported, income, while currency-based estimates may be capturing mainly illegally earned income. It is important to keep this lack of perfect comparability in mind when examining the estimates. See SELECTED BIBLIOGRAPHY, p. 12, for full references.

<u>Study</u>	<u>Estimate (billions \$)</u>	<u>Percent of GNP</u>	<u>Year of Estimate</u>
IRS	145	8	1976
Bureau of Economic Analysis Adjusted Gross Income Gap ^c	184	5.4	1983
Monetary Based Approaches:			
Gutmann	420	14-15	1981
Feige	600+	27	1979
Tanzi	118-159	4.5-6	1980
O'Leary ^d	432	15.2	1985
Houston	400	14.7	1980

^aFor a more comprehensive review of these estimates see, Carol S. Carson, "The Underground Economy: An Introduction," *Survey of Current Business* 64 (May 1984 and July 1984). Some of the estimates in the chart follow directly from a similar chart presented in these articles.

^bFor a critical summary of these approaches, see R. Porter and A. Bayer, "A Monetary Perspective on Underground Economic Activity in the United States," *Federal Reserve Bulletin* (March 1984) pp. 177-189.

^cThe Bureau of Economic Analysis stresses that caution should be taken in interpreting this measure. See Robert Parker, "Improved Adjustments for Misreporting of Tax Return Information Used to Estimate the National Income and Product Accounts, 1977," *Survey of Current Business* (June 1984) pp. 17-25, and Carol S. Carson, "The Underground Economy: An Introduction," *Survey of Current Business* 64 (May 1984 and July 1984).

^dFor a description, see Leonard Silk, "Underground's Hidden Income," *New York Times* (September 10, 1986) p. D2.

of reported GNP in recent years. Most of the estimates, however, suggest its size is quite large and lies in the more narrow range of 5 to 15 percent of reported GNP. At the beginning of 1987, that amounted to between \$200 and \$650 billion.

The large disparity among the various estimates is perhaps not surprising, since the different methodologies used probably pick up different aspects of even our narrow definition of the underground economy. Estimates from the Internal Revenue Service (IRS), for example, rely on information gained from audited tax returns, and so may be a more accurate measure of tax evasion of income legally earned. Other estimates focus on what are believed to be abnormal holdings of currency. In contrast to the IRS strategy, these approaches may do a better job of detecting changes in illegally earned income.

The wide range of estimates serves as a reminder of how slippery the underground economy is, and thus of the difficulties policymakers face when trying to get a handle on it. But despite those potential difficulties, policymakers cannot afford to ignore the underground economy. For as it happens, the success or failure of a variety of economic policies may well hinge on the existence and behavior of the underground economy.

THE EXISTENCE OF THE UNDERGROUND ECONOMY HINDERS EFFECTIVE POLICYMAKING

For a number of reasons, the viability of the underground sector makes policy initiatives less effective than they would otherwise be. It can, for example, force tax rates or budget deficits to be higher than is desirable. It can also lead to an unfair distribution of the tax burden; and, by obscuring policymakers' view of the overall health of the economy, it can lead to misguided fiscal or monetary policies.

The Underground Economy Can Lead to Higher Taxes or Larger Deficits. A key feature of underground activity is that it remains untaxed,

and thus represents a potentially large source of lost revenue. This loss of revenue implies that the government must either increase taxes, run a larger deficit, or cut government spending. While an increase in taxes may offset the lost revenue due to the underground economy, tax increases raise the costs of public services for current taxpayers and reduce the incentives to work and invest, which in turn may weaken the economy. Alternatively, increasing deficits may lead to higher interest rates, which also may discourage investment and economic growth. Slashing government spending is not likely to reduce investment, but it does imply that taxpayers are receiving fewer government services than they would if all underground activity were somehow taxed. Consequently, the loss of tax revenue due to the underground sector poses serious problems for fiscal policy, regardless of whether the lost revenue is offset by higher taxes, higher deficits, or lower spending.

Back-of-the-envelope calculations suggest that the potential revenue losses due to the underground economy may be staggering. The average range of estimates indicate that this sector currently represents between \$200 billion and \$650 billion. If all of this underground income were taxed at the average marginal tax rate of 22 percent, then the government would receive between \$44 billion and \$143 billion in additional revenue, everything else equal. This suggests that if this underground income could be discovered and taxed, current deficits could be reduced significantly, or tax rates could be cut. Alternatively, spending could rise anywhere between \$44 billion and \$143 billion with no corresponding rise in taxes or deficits.

The Underground Economy Diminishes the Fairness of Our Tax Structure. The loss of tax revenue due to the underground economy also raises some important issues concerning fairness and equity. For example, all of us receive some benefits from public goods, such as defense spending, park maintenance, law enforcement, and pollution control. To finance these services, we are expected to pay our "fair share" of taxes,

as determined by Congress and codified in the tax structure. But those who choose to participate in the underground economy enjoy the benefits of these services while paying less than their fair share of taxes. Some individuals in the underground economy may even pay no taxes at all. Tax evasion necessarily increases the burden on those who choose not to participate in the underground economy. Consequently, the presence of the underground economy leads to an unfair distribution of the tax burden.

The Underground Economy Can Lead to Misguided Policies. There are at least two distinct ways in which the underground economy may distort policymakers' perception of the economy, and hence lead to inappropriate fiscal or monetary policy actions. First, it prevents policymakers from accurately determining the average level of economic activity. Second, it distorts policymakers' views on how total economic activity fluctuates over the course of business cycles.

The key point is that individuals base their economic decisions on total income (that is, aboveground plus underground income), whereas policymakers observe movements in only the aboveground, or reported, economy. At least in part, individuals decide how much to save, how much to work, and even where to work based on all income opportunities that are available, as opposed to just the income that is reported to the IRS. For example, historical data on reported income and consumption might lead policymakers to conclude that household saving rates have been either low or declining. But if households have been earning money in the underground economy, this conclusion may be way off the mark. Instead, if the gap between consumption and actual income were quite large, policies designed to encourage savings would be misguided. In this instance, policymakers would be making incorrect decisions, because they do not have complete information about the average level of the economy's performance.

At the same time, policymakers' attempts to

stabilize the economy may be limited by their inability to observe movements in the underground economy over the course of business cycles. Since individuals base their economic decisions on their total income, it follows that interest rates and prices respond to changes in total as opposed to reported income. For example, we may observe inflationary pressures in the economy if total income is climbing, even if reported GNP is sluggish. For this reason, policymakers may care to stabilize the *total* economy. However, they are constrained by the fact that data exist only for the *reported* economy. If policymakers fail to understand the ways in which the aboveground and underground economies are linked, then they will misread the strength of the total economy, which may lead them to make inappropriate stabilization decisions.

As an example, consider the following scenario: We observe a recession in the reported economy, although at the same time the underground economy is expanding. So while reported GNP is declining, the total level of economic activity is not declining as much, or is possibly even increasing because of the increase in the underground economy. Observing the recession in the reported economy, policymakers become convinced that the economy is quite weak, and implement countercyclical policies to promote recovery. However, since the total economy is stronger than reported figures indicate, countercyclical policies that attempt to stimulate the economy may serve only to increase inflationary pressures in the total economy.²

Alternatively, the total economy may be subject to wider swings in performance than

²Policymakers might not care about inflationary pressures if they affected only *illegal* goods and services. Higher prices for narcotics and prostitution, for example, might be considered beneficial since they probably discourage their consumption. However, it is extremely unlikely that price increases would be isolated to illegal goods and services. As a practical matter, then, the main points stressed in this section represent relevant concerns to policymakers.

reported statistics suggest. In this situation, policymakers could be lulled into believing that the economy is growing at a steady rate, while in fact total economic activity may be subject to fairly dramatic swings over the course of business cycles. If policymakers aim to stabilize the total economy, then countercyclical policies may actually be appropriate, even if the reported economy appears to be stable.

The underground economy would present less of a problem for stabilization policy if it remained constant in size, or if it remained a constant percentage of GNP. In either case, at least the *direction* in which the overall economy is moving could be gauged, and policymakers could successfully stabilize the total economy by looking only at reported data. Unfortunately, available estimates suggest that even this may not be true: indirect measures indicate that the underground economy may fluctuate significantly relative to reported GNP (see RATIO OF

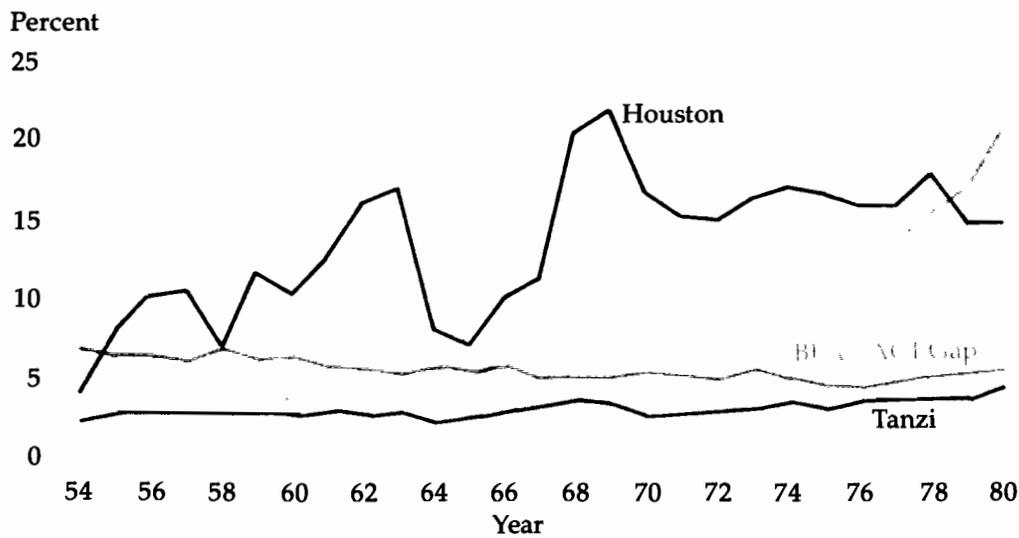
THE UNDERGROUND ECONOMY TO GNP). As a result, policymakers may well be "missing the boat" by focusing solely on the aboveground economy.

SOME SECTORS OF THE UNDERGROUND ECONOMY MIGHT RESPOND TO POLICY CHANGES

So far, we have looked at one part of the two-way link between the underground economy and policy, namely, the way the existence of the underground economy thwarts desired policy outcomes. Now we focus on the other part of the link, the way policy changes can affect the behavior of the underground economy. The first step to understanding this link requires a behavioral theory of the underground economy. With that in hand, we can then discuss the implications that policy initiatives have for the underground economy.

Why Do People Participate in the Underground

FIGURE 1
Ratio of the Underground Economy to GNP
1954 - 1980



NOTE: See SELECTED BIBLIOGRAPHY (p. 12) for references to data sources. The BEA-AGI Gap data are from Thae S. Park, "The Relationship Between Personal Income and Adjusted Gross Income, 1947-78" *Survey of Current Business* (November 1981) and the updates and revisions published in the *Survey* thereafter.

Economy? In all likelihood, a variety of considerations affect people's decisions to participate in the underground economy. Social factors, for example, probably play an important role. For instance, if an individual's parents, friends, and neighbors all cheat on their taxes, he might conclude that "everyone is doing it," and that he has an obligation to himself to do the same. It is also conceivable that while someone is at first reluctant to participate in the underground economy, once she has taken the plunge, she is unwilling to leave the underground economy. This may be in part because she has overcome any moral obstacles that would have precluded her from going underground; but it also may be because she knows that if she did decide to "come clean," she might bring attention to past underground activity.

Many of these social factors are hard to quantify, however, and hard for economists, in particular, to address through policy prescriptions. As a result, economists look for the *economic* factors affecting where and how an individual chooses to work.

Financial Incentives Are Probably Important . . . Economic theory suggests that individuals respond to financial incentives, and will choose to work where they believe they will receive the greatest net benefit. The total net benefit from employment in the aboveground sector equals the dollar wage received plus the value of any benefits earned, less the amount of taxes paid. For example, if a worker earns \$10 an hour at his aboveground job, earns no fringe benefits, and pays 20 percent of his income in taxes, his net hourly wage is \$8.00.

What happens when he decides to go underground and not report his income? In this case, his *expected* net benefit from working in the underground economy comprises the dollar wage received less the expected penalties he has to pay in the event of being caught. For example, suppose the worker believes that he has a 10 percent chance of being audited, and that if he is audited he will have to pay twice the amount of the taxes owed, or \$4.00 for every hour he works

underground, instead of \$2.00 in aboveground taxes. In other words, his *expected* penalty is 40 cents an hour (10 percent probability of being caught times the \$4.00), so his expected hourly wage earned from working in the underground economy is \$9.60.

This reasoning also applies to felonious activities, where individuals must assess the chances of being caught by the police, as well as the penalties that may be imposed once caught. These factors must be balanced against the income earned from the chosen activity in determining the net wage.

. . . As Is People's Aversion to Risk. This framework highlights one important distinction between the net wages earned in the two sectors. While aboveground wages are known and fixed, people in the underground economy incur some risk concerning the actual net wage they will receive, because they are never sure when or if they will be caught. In the previous example, the worker's *expected* net wage was \$9.60 an hour, though the *actual* net wage received will depend on whether or not the worker is caught or audited. In the event that the worker escapes detection, he would receive the full amount of his underground income, or \$10.00 per hour. However, if the person is caught and forced to pay the penalty, he must pay \$4.00 per hour in taxes and penalties, so he would receive only \$6.00 an hour for working underground.

It is generally believed that individuals would rather avoid risk, and all else equal would prefer certainty over uncertainty. For example, most people given the choice between receiving \$1,000 with certainty or having a 50 percent chance of receiving \$2,000 would prefer the \$1,000 with certainty, even though they can in principle expect to receive \$1,000 in either case. This implies that since working in the underground economy involves additional uncertainty, workers must receive a bonus, or "risk-premium," in the form of a higher net wage in order to induce them to participate in the underground economy.

While it is hard to pinpoint the factors that

affect an individual's willingness to take risks, one factor that seems to matter significantly is the individual's level of wealth, which is directly affected by changes in income.³ Unfortunately, economic theory is unable to say anything decisive about this relation. That is, theory has identified good reasons why aversion to risk may rise with income and other reasons why it may fall with income. Moreover, theory suggests that while an individual's willingness to risk a *fixed* amount probably increases with income, his willingness to risk a given *portion* of his income may decline with income. For instance, it seems likely that a millionaire would be more comfortable betting \$10 on a coin flip than would someone who is currently unemployed. However, it is not obvious that a millionaire would be more willing than an unemployed worker to wager 10 percent of his wealth on a coin flip. Since we are hampered by the fact that we cannot directly observe people's willingness to take risk, empirical evidence has not been able to uncover how risk aversion varies with income. It does, however, seem plausible that income levels and risk aversion are related, even if the exact dependency remains unknown.

Policies Can Alter the Risks and Rewards of Being in the Underground Economy. This economic perspective suggests that there are two important considerations that determine whether or not someone will choose to be in the underground economy: the net wages in both the aboveground and underground economy and the individual's willingness to take risks. Therefore, policy changes that influence either the net wages or an individual's willingness to take risks can affect participation in the underground economy. Unfortunately, the net impact of such policy changes is unclear; conceivably a change in policy may affect net wages and people's willingness to assume risk simultaneously.

³For a complete discussion on the impact of wealth on risk aversion, see Kenneth Arrow, *Essays in the Theory of Risk-Bearing* (Chicago: Markham Publishing Company, 1971).

Worse yet, since we cannot directly observe movements in the underground economy, empirical tests cannot completely resolve many of these issues.

From a conceptual viewpoint, an increase in tax rates both reduces the effective aboveground wage and lowers an individual's take-home pay, which may affect that individual's tolerance of risk. The reduction in the effective aboveground wage makes the underground economy more attractive to would-be tax evaders, and if such individuals are more willing to take risks as their after-tax income falls, then this also encourages their movement into the underground economy. However, if potential tax evaders are generally less willing to take risks as their income falls, then shifts in tax rates have an ambiguous effect on the underground economy. By the same token, raising the likelihood of detection or imposing stiffer penalties works to reduce the net underground wage, which makes the tax evasion component and the illegal activity part of the underground economy less attractive. But again, increased enforcement reduces the expected income of workers in the underground economy, which may alter both their willingness to take risks and their willingness to participate in the underground economy.

Policy decisions regarding the degree of progressivity in the tax structure and the level of unemployment compensation may also affect the size of the tax evasion element of the underground economy. In particular, changes in the tax structure and in unemployment compensation alter the cyclical behavior of the underground economy, and may ultimately determine whether or not the underground economy is procyclical or countercyclical. For instance, since the U.S. tax structure is progressive, an individual finds that his tax bill increases at a faster rate than does his income. Consequently, the financial incentives from working in the underground economy rise as his income rises. Assuming his willingness to take risks remains the same, a self-employed businessperson may decide to hide a greater portion of

income earned when times are good to avoid being pushed into a higher tax bracket. This works to make the underground economy procyclical.

Alternatively, it seems plausible that the underground economy is a place where many turn when times become tough in the reported economy. For instance, a person laid off in the middle of a recession may choose to paint houses "off the books," while collecting unemployment benefits and waiting to be rehired. If this case is dominant, the presence of unemployment benefits may make the underground economy more attractive in cyclical downturns. In this case, the underground economy is countercyclical and acts to smooth out shifts in the above-ground economy.

Exactly how policy changes will alter the underground economy will depend on which conflicting effect dominates. Empirical evidence is crucial in this regard. But while sorely needed, reliable evidence is sparse mainly due to the unobservability of the underground economy. The scant information that is available regarding the impact of policy changes chiefly concerns the effect of tax changes.⁴ The results of these

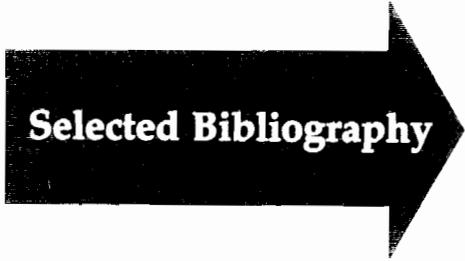
⁴See Charles Clotfelter, "Tax Evasion and Tax Rates: An Analysis of Individual Returns," *Review of Economics and Statistics* (August 1983) pp. 363-373, and S. Crane and F. Nourzad, "Inflation and Tax Evasion: An Empirical Analysis," *Review of Economics and Statistics* (May 1986) pp. 217-223.

studies suggest that high tax rates may encourage participation in the underground economy.

WILL TAX REFORM SHRINK THE UNDERGROUND ECONOMY?

To the extent that high tax rates have been a factor in increasing the underground economy, the Tax Reform Act of 1986, which lowers marginal tax rates, should provide the additional benefit of reducing the size of the underground economy. Indeed, if the above evidence is correct, tax reform may be expected to increase tax revenue by flushing out part of the underground economy. But here the sociological issues may also come into play. Conceivably, people are reluctant at first to participate in the underground economy. However, once they cross the line it may be harder to bring them back. Thus, while the steady increases in tax rates over the years may have led people into the underground economy, as empirical evidence suggests they have, it may not follow that symmetric reductions in tax rates will bring them back aboveground.

For policymakers, the key point to keep in mind is that tax reform will affect both the above-ground and underground economies. However, we will only observe directly how it affects the reported economy. Difficulties will undoubtedly persist in trying to assess the economy's overall performance. This emphasizes the importance of continuing to study the underground economy.



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