Canada’s Underground Economy Revisited: Update and Critique

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This paper discusses changes in Canada over the past 15 years which may have contributed to growth in underground activity. Personal income taxes net of transfers, as a share of personal income, rose from 15.2 to 19.7 per cent from 1976 to 1990, and direct and indirect taxes, as a share of GDP, from 38 to 43 per cent. The self-employed grew from 11.1 per cent of all workers in 1976 to 14.5 per cent in 1991. There has been growing concern over the efficiency of government, global competition, and growing unemployment. Some immigrant communities have grown rapidly. The globalization of markets, reflected in the rapid growth of the current account discrepancy for the world, is an additional development. Finally, the base of the federal sales tax was much extended in Canada in 1991. These factors are explored as possible contributors to relatively rapid growth in the underground economy. The paper reviews problems with approaches used to measure the underground economy, and previous Canadian estimates based on the ‘monetary aggregates’ approach are updated. Estimates show an increase in underground activity from 1976 to 1990, with the underground economy accounting for 15 to 20 per cent of total economic activity in 1990. The paper then discusses what we know about the effectiveness of methods for reducing underground activity.

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I Introduction

... we face a dual economy: a formal sector characterized by sticky wages and prices, regulation by the government, a high level of social payments and taxation, working hours determined collectively, unintended stocks of goods and means of production, and long waiting times; and an informal sector characterized by flexible wages and prices, decentralized decision-making, a low level of public burden, working hours determined individually, and planned stocks (Heertje, 1987:308).

Public concern exists in many countries over the size and growth of underground economic activities. Questions are raised concerning whether the underground economy is expanding or not, whether it is possible to quantify and control it, and whether the social costs associated with it are, indeed, very large. The general consensus seems to be that ‘the growth of the hidden economy is a reality common to all countries’ (Barthelemy, 1988).

What do we mean by the underground economy? There are two possible perspectives, depending on whether one is concerned with the phenomenon of tax evasion or the accuracy of national income measurement.

Our concern is with tax evasion. Therefore, the starting point is the statutes which identify the types of income that constitute the tax base. Market and non-market, legal and illegal activities all give rise to taxable income in Canada. Income from the transfer of assets is also part of the tax base, although it is excluded from Gross Domestic Product (GDP).

We therefore define the underground economy as economic activity which would generally be taxable were it reported to the tax authorities. Thus, the underground economy includes employees who are working for employers off the books, rental incomes that are not reported, tips and child care earnings that are not reported, skimming by owners of businesses, barter activities, and the selling of home-grown produce and home-produced items. It also includes income from activities which are not reported in order to avoid regulations and licenses, such as illegal gambling, drug dealing, and some construction activities.

On the other hand, it excludes activities which are largely of a self-service nature, such as gardening, serving, home repairs, cooking and the like (Smith, 1986).

Tax evasion to some extent also bedevils GDP measurement. For example, as GDP can be measured by adding all the expenditures for newly produced goods and services that are not resold in any form, it can be too low because tax evasion leads to underreporting of retail sales. Alternatively, the income-based measure of GDP could also be too low because of underreporting. The amount of unreported GDP is, however, likely to be smaller than the amount of tax evasion because the latter applies to more types of income.

The literature on underground economies has grown rapidly outside of Canada. Within Canada, scholars and public officials pay relatively little attention to the phenomenon. The government has done little to measure the size of the underground economy. Academic interest in Canada has been confined to a few articles (Mirus and Smith, 1981; 1989; Mirus, 1984; and Paquet, 1989). The most recent of these concluded that ‘the underground economy broadly defined might represent, in the most conservative estimates, approximately one third of measured GDP and in the higher estimates as much as 100 per cent of measured GDP’ (Paquet, 1989:4).

This observation, at the least, suggests it is timely to revisit the issue of the underground economy in some detail. The present article reviews some results of underground economy studies of the past decade, presents new estimates for Canada, and again highlights macroeconomic and policy implications.

There is only limited evidence that growth of underground economic activity may have been substantial since the 1970s.
Nonetheless, forces over the past 15 years in Canada may have contributed to continued growth. These include a rise in personal income net of transfers from 15.2 per cent in 1976 to 19.7 per cent in 1990, a rise in direct and indirect taxes as a share of GDP from 38 to 43 per cent over the same period, and continued concern over the efficiency of government. Additionally, integration of the global economy created new opportunities for underground economic activity, as data collection struggles to keep up with international financial flows. The International Monetary Fund (IMF) (1987), for example, found that ‘...reported portfolio investment income is the fastest growing, and now the largest, of all individual current account discrepancies’. In other words, interest and dividends reported by companies as paid abroad are much larger than the amounts reported as income by the recipients. In 1991 this discrepancy amounted to US$90 billion on a global basis. To the extent that Canadians participated in the expansion of capital flows that occurred during the 1980s, there would have been an impetus for growth of the underground economy from this source. Immigration is also a likely contributing factor in Canada. Recent years have seen a rise in the number of immigrants, and business immigration has accounted for a growing share: while the annual number of immigrants doubled between 1981 and 1992, the number of business immigrants quadrupled. Studies in the US have found that the business relationships among newly-arrived immigrants involve substantial informal activity (Alessandrini and Dallago, 1987; Portes, Castells and Benton, 1989).

Other factors which may contribute to a growing underground economy are a rise in unemployment and the ever-growing pressures from global competition. Unemployment rates averaged 5.2 per cent for the ten years before 1976 and 9.3 per cent for the ten years following. Greater global competition forces business to seek non-traditional and lower-cost ways to conduct normal business activities. Despite partial indexation of the tax system, inflation rates during this time increased the tax burden as nominal gains on asset sales were subject to tax. In the 15 years up to 1976, the annual inflation rate (CPI) averaged 4.7 per cent. In the following 14 years the average annual rate was 6.8 per cent. Further, younger taxpayers are more likely to report non-compliance with the tax laws (Kinsey, 1987). If this is a factor of age, the problem may decline as the population ages; if it is a generational phenomenon, non-compliance may be on the increase. Likewise, activities to evade taxes are more likely by those who know others who do not comply with the law. If such behaviour is increasingly common, a growing share of the population is in contact with such behaviour.

Finally, non-reporting of taxable income is most common among small and self-employed businesses. If such businesses account for a growing share of our economy, hidden activities may also account for a growing share. The self-employed in the unincorporated and incorporated sectors grew from 11.1 per cent of all workers in 1976 to 14.5 per cent in 1991. This group of workers increased by 71 per cent, while all other workers increased 25 per cent. It is likely that immigrants are amongst those most active in the small business sector, and evidence from other countries suggests that immigrant communities have adapted to competitive global forces through, inter alia, low wages and increased underground activity (Sassen-Koob, 1989).

There is the additional factor of the introduction of the Goods and Services Tax (GST) in Canada in January of 1991. Concerning similar taxes in Britain and Germany, one study (Smith and Wied-Nebbeling, 1986:89) concluded that ‘the rise of taxation may have provided some encouragement to the black economy – particularly when major changes were introduced, such as the imposition of value added tax on services in the UK in 1973, and the replacement of the turnover tax by valued added tax in Germany in 1968’. A
sharp rise in taxes, or imposition of a new tax, on an important sector of the economy may elicit a significant reaction. A recent Canadian study (Spiro, 1993) shows that cash balances increased dramatically after the GST was introduced in January 1991. Growth in the underground economy, in the absence of other explanations, seems a likely cause. With the GST and the other factors in mind, a review and updating of past work is warranted.

Section II of the paper reviews reasons why the size of the underground economy and its rate of change are of interest. Section III examines methods used and problems arising in measuring the underground economy. Section IV presents some Canadian estimates. Actions which may reduce underground economic activity are considered in the final section.

II Why Do We Care?

A precise estimate of the underground economy is not possible. Nevertheless, its existence and magnitude raise important issues. At the macroeconomic level, the underground economy biases the information flowing to policy-makers. Estimates of economic growth, of changes in productivity, of savings rates, of unemployment rates and of inflation may all be well off the mark if the underground economy is large and is changing rapidly. Distorted statistics may lead to an incorrect diagnosis of economic performance and incorrect prescriptions.

The underground economy may also lead to significant public revenue losses. Even the most conservative estimates of the underground economy in Canada, those of Statistics Canada (Berger, 1986), imply an unrecorded sector from 2.9 to 3.5 per cent of GDP. If that unobserved income were taxed at the marginal tax rate the additional revenue would exceed $6 billion. The loss of revenue results in higher taxes on recorded economic activities, larger deficits, or lower government spending. In addition, if officially recorded income is substantially different from total income, the social services system allocates resources erroneously. The flow of unemployment insurance payments to those earning substantial incomes in the underground economy is a particular concern. A less fair tax and welfare system and higher tax rates lead to disenchantment with the public sector. Moreover, awareness of a sizable underground economy itself could lead to a spreading of the phenomenon.

The underground economy also has important microeconomic effects. It alters the use of labour and other factors of production. For example, a reduced tax base leads to higher tax rates which increase the wedge between returns to factors in the taxed and untaxed sectors. This leads to cost advantages for clandestine businesses, thus hampering the profitability of taxable businesses. The result is a reallocation from more efficient and productive (but taxed) businesses, to less efficient (but untaxed) businesses, thus diminishing the overall efficiency of the economy. The welfare loss due to this differential tax treatment has been estimated for the US in 1980 at 28 per cent of tax revenues and 9 per cent of GDP (Alm, 1985:259).

In contrast to the negative concerns, the hidden economy may have positive welfare effects. For example, it may reduce income inequalities (Skolka, 1984). However, Persson and Wissen (1984) suggest that the distribution of total income (including underground activity) is more uneven than the distribution of officially-reported income in Sweden. In this case, egalitarian government policies aimed at reducing the income inequality, to the extent that they force activities underground, may make total income less evenly distributed.

Another, but positive, possibility is that the growth of the underground economy signals the changes required to remain globally competitive. The underground part of the economy may be faster to adapt to changing conditions in the global market, and in doing so it may help a country adjust to structural changes and remain competitive (Portes et al., 1989). It may 'put
downward pressure on wages in the "visible" economy, further fostering enterprise, promoting growth and curbing inflation' (Harding and Jenkins, 1989:173). It also ensures that services are available at lower cost to some, such as the poor and the aged, who have limited ability to pay.

To summarize, the underground economy has important implications for the efficient functioning of the economy and society. The presence of a larger or growing underground economy suggests that the market and social mechanisms are not working properly. Nonetheless, some recent studies have emphasized the flexibility contributed to the economy through underground activity and the adjustments this permits to global competition.

III How Big Is the Underground Economy: Methodological Concerns

Measuring the underground economy is beset with difficulties due to the clandestine nature of the phenomenon. Therefore, the numerous creative methods that have been developed provide only rough estimates.

The Household Survey Method

This method relies on direct information gathered from the general public by means of tax auditing or household sample surveys designed for estimation of the underground economy (US. Dept. of Treasury, 1979; 1983; Brown, Levin and Ulph, 1984; Isachsen, Klovland and Strom, 1982; Isachsen and Strom, 1985; Smith, 1985; Kenadjian, 1982; Pestièau 1985; Witte, 1987; McCrohan, Smith and Adams. 1991). The sample surveys provide detailed information on the underground economy but are biased because of high rates of non-response and false answers. Nevertheless, this method may provide valuable information as to the magnitude of consumer use of informal suppliers.

Labour Market Studies

Labour market studies are a second survey method used to estimate the underground economy (Contini, 1981; Isachsen et al., 1982). This approach estimates, by means of sample surveys, the number of workers who participate in the workforce and/or the number of hours worked. For example, Contini (1981) argues that the difference between his estimated participation rate of 41.4 per cent in 1977 in Italy and the official rate of 33.7 per cent is due to the fact that many people work in the underground economy. With the rapid development of data-processing and the improvement of surveys, labour market studies may increase substantially their efficiency and provide information on the characteristics of the households involved in the underground economy.

The Tax Auditing Method

Tax auditing programs also provide information on unreported income. The main advantage of this method is that the information provided is more reliable because of the fear of sanctions in case of false replies. Although it is expensive to make extensive audits, properly designed and executed audits may provide the most reliable estimates of the unreported income. But even this seemingly safe conclusion will be disputed by some. Kinsey (1987), for example, found that in at least one Dutch study auditor judgments on tax cheating were not correlated with self-reports of non-compliance by the same taxpayers. Other surveys also yielded a poor relationship between tax audits showing evasion and taxpayers' views of non-compliance. Hence, the validity of results from tax audits may be open to question.

The Monetary Aggregates Method

Most of the methods used to estimate the underground economy rely on indirect routes – they infer the size and growth of the underground economy by the traces which it leaves. An approach pioneered by Cagan (1958) studies the ratio of currency to demand deposits, attributing increases in the ratio over some base year to the need
to hold additional cash for underground transactions. An estimated velocity for this currency could then yield the size of the underground economy. However, the assumptions upon which that approach is based (Gutmann, 1977) are not robust (Garcia, 1978; Feige, 1979; Bowsher, 1980; Barthelemy, 1988). A variety of factors have had a major impact on currency to demand deposit ratios over the past two decades. Financial innovations in corporate cash management and automatic transfers from saving to checking accounts have reduced the need for both cash and demand deposits. The rapid growth of bank credit cards and of automatic teller machines from the late 1970s also has reduced the need to hold currency. The number of automated teller machines in Canada grew from 250 in 1977 to 4,500 by 1987 and to 13,000 by January of 1992 (Canadian Payments Association, 1992; Bank for International Settlements, 1989). In such an environment, increases in the ratio of currency to demand deposits may be attributable to a decline in deposits rather than an increase in currency holdings, and identifying explanatory variables is problematic.

A second monetary approach was pioneered by Edgar Feige in a number of papers (Feige, 1979; 1980; 1989). Feige's approach examines the relationship between the total value of transactions (measured by adding currency transactions to cheque-based transactions, except purely financial ones) and the recorded GDP. He argues that the ratio of total economic transactions to final transactions is historically stable, or perhaps slightly declining, due to the increase in the service sector which requires fewer intermediate transactions. Use of the historical ratio of total to final economic transactions permits an estimate of what GDP should have been if all final transactions had been properly observed by the official GDP statistics. Then the underground economy can be estimated by subtracting the officially-measured GDP from the total GDP estimated by the transaction method. The transactions approach overcomes one of the restrictive assumptions of the currency/demand deposits ratio method, namely that only cash is used in the underground economy. However, a major problem in using the transaction method is the absence of time series data on the total value of transactions undertaken in an economy, as well as information on the turnover speed for currency. The assumption of a stable ratio of total transactions to GDP is also suspect. Additionally, the total value of cheques cleared needs to be adjusted so as to eliminate a possible bias in the results from the growth of purely financial transactions. Finally, as with the Gutmann method, an arbitrary assumption has to be made about the level of the underground economy in the chosen base year.

To summarize, Feige's method rests on some strong and restrictive assumptions which have been questioned (Tanzi 1982a; Frey and Pommerehne, 1984; Porter and Bayer, 1984; Barthelemy, 1988), and the data needed for the transaction method are not readily available.

In the early 1980s Tanzi (1980; 1982b; 1983) developed an econometric approach which has been used to estimate the tax-induced underground economy in a number of countries. The approach extended the earlier work by Cagan and argued that the currency/M2 ratio was a function of the tax rate, share of wages and salaries in personal income, real per capita income, and the interest rate on time deposits. Tanzi adopted the idea that if currency is used for the vast majority of underground activities, and if most underground activity is designed to avoid taxes, it should be possible to identify a statistically significant relationship between currency holdings and the personal tax burden. Regressing the currency/M2 ratio on the above-mentioned variables, Tanzi simulates what currency holdings would have been with historically low taxation levels. Then the extra currency holdings attributable to tax evasion are identified by subtracting the simulated holdings from the official data. The extra holdings are multiplied by M2-velocity to arrive
an estimate of the tax-induced underground economy.

Tanzi’s approach also has its limitations. For example it relies (similar to Gutmann’s approach) on the assumptions that underground economy transactions are paid for exclusively in cash and that the income velocity of circulation in the underground and aboveground economies is identical (Acharya, 1983). We must also assume that at some low tax level the amount of underground activity is negligible. In addition, Tanzi’s method when applied to other countries produced strange and inconclusive results (Klovland, 1984; Barthelemy, 1988). Finally, tests performed on Tanzi’s data by Porter and Bayer (1984) and Thomas (1986) suggest that the tax variable is only significant for years up to 1945.

While results of approaches relying on monetary aggregates are open to challenge, rejecting these approaches leaves few means of obtaining overall estimates. As Cowell notes (1990:18) ‘it is usually necessary – and will continue to be necessary – to resort to ingenious indirect methods to arrive at some figure that will yield a plausible approximation’. The monetary approaches, at best, yield very rough approximations of the size of the underground economy; continuing attempts to refine these approaches may be worthwhile.6

The Income-expenditure Discrepancy Method

Non-monetary approaches to measuring the underground economy have also been developed. One is the so-called ‘discrepancy method’ which relies on the presumption that at the national level income must equal expenditures. Therefore, if reported income falls short of reported expenditures, the difference can be regarded as an estimate of hidden activities (Macafee, 1980; Blades, 1982; Matthews, 1984). Of course, to the extent that retail sales are deliberately underreported this would result in a downward bias of the estimated underground economy. Other factors such as timing and sampling errors may also influence the observed discrepancy. In addition, questions have been raised concerning the objectivity of such estimates. Barthelemy (1988:191) concluded that ‘a common feature of all accounting methods seems to be the desire of the authors to protect ... the legitimacy of the GDP figure that they, directly or indirectly, contribute to quantifying’. The estimate developed by Statistics Canada (Berger, 1986) relied on time-availability in underground-prone occupations and found ‘unrecorded’ economic activity to be between 2.9 and 3.5 per cent of GDP, far below what other evidence suggests.

At the household level the discrepancy method may be more promising, since high expenditures relative to earned official income can logically be explained by additional underground income. Dilnot and Morris (1981), using the 1977 Family Expenditure Survey, arrived at an estimate for the underground economy in Britain of between 2.3 and 3 per cent of GNP. While suffering from the problem of non-response and biased information, this study provides evidence on the characteristics of those households thought to be participating in the underground economy.

Smith, Pissarides and Weber (1986) and Pissarides and Weber (1989) pioneered a different discrepancy approach using econometric techniques and data from the British 1982 Family Expenditure Survey. The working assumptions are that all income groups report expenditure on food correctly, salaried employees report their income correctly, and the self-employed underreport their income. On that basis they estimate Britain’s underground economy (defined as unreported taxable income) to be about 5 per cent of GDP.

The contrast in the results from the monetary aggregates approach and the income-expenditure discrepancy approach is striking whatever the country. It is not unusual for the underground economy to be estimated at in excess of 30 per cent of official GDP using the former approach. Esti-
mates using the second approach usually fall within the 3 to 5 per cent range.

It appears that no matter what method is used to estimate the underground economy one cannot be confident about the results. The main reason lies in the fact that, by their very nature, the data used for the various methods are subject to measurement errors and misrepresentation. Unfortunately, in the words of Frank Cowell (1990), 'any conceivably improved data set is also likely to be inadequate, because of a "catch-22": If official or unofficial institutions existed that could provide really accurate and reliable data in this area, then presumably there would be enough information available to the authorities to ensure that evasion would not exist in the first place'. In other words for the time being there is no highly reliable method for measuring the size of the underground economy. We have to rely on a variety of methods, seeking to improve them as we proceed.

IV Canadian Estimates

This section updates earlier estimates (Mirus and Smith, 1981) based on monetary aggregates. In spite of the weakness of this approach, the limited research in Canada over the past decade results in continuing reference to the 1976 estimates. Evidence suggests that the earlier results must be viewed with scepticism, as must any new results. The currency/demand deposits ratio in Canada has steadily increased for the past 25 years. Thus, following the approach (Gutmann, 1977) which used the change in currency/demand deposit ratio to infer the size of the underground economy, the illegal economy is estimated at $42 billion in 1980, $123.7 billion in 1985 and $185 billion in 1990 (13.5, 25.9 and 29.7% respectively, of the recorded Gross National Product). These estimates compare with the previous estimate of 16.3 per cent for 1976. It seems unlikely that the underground economy grew so rapidly or became so large after 1980. The increase in the currency/demand deposits ratio was due to the fact that demand deposits as a share of GDP fell more rapidly than did currency. Currency fell from 3.4 per cent of GNP in 1980 to 2.9 per cent in 1990, while demand deposits fell from 6.0 per cent to 3.2 per cent. This fall of demand deposits results from increased ease of converting demand deposits into chequable saving deposits, investment of demand deposits overnight, and a rise of 'near' banks providing financial services.

In view of this it may be that the currency/all chequable deposits ratio can be used to modify the Gutmann method. However, the data, which are only available from 1967 on, provide no consistent picture.

In order to apply Feige's transactions approach in the Canadian context, a series is constructed for currency turnover based on the assumption of 125 lifetime transactions of a bank note and the average life of bills published by the Bank of Canada Review (January, 1982). These estimates have not been carried beyond 1984 since Statistics Canada thereafter discontinued the time series on demand deposit transactions (cheques cashed in clearing centres), and a similar series has not been maintained by the Canadian Payments Association. Updating the previous estimate for 1976 using Feige's approach yields an underground economy equal to 23.9 per cent (or $106 billion) of recorded GDP in 1984. This compares with an estimate of 28.0 per cent for 1976. In contrast to the Gutmann approach which found substantial growth, there appears to be some decrease between 1976 and 1984. In arriving at the 1984 estimate, an ad hoc adjustment for strictly financial transactions was again made. We estimate the growth rate of total cheque-based transactions for all clearing centres other than Toronto, Montreal, Vancouver, and Calgary. That estimate (a proxy of the growth rate of demand deposits transactions in the non-financial centres) is then applied to the 1946 volume of transactions in the financial centres in order to arrive at the first estimate of total adjusted demand deposits transactions. In addition, again
following Feige, total federal personal and corporate income taxes as well as employer and employee contributions to social insurance were subtracted from these adjusted transactions. Since data on cheques cashed in clearing centres do not include federal government transactions, we subtracted the federal government expenditures for goods and services from the recorded GNP data when computing the total transactions/GNP ratio.

The third approach in estimating Canada's underground economy is a modification of the method developed by Tanzi (1980). As discussed in Section III, this approach also assumes that greater use of currency reflects growth in the underground economy. Dependent variables in our equations have included the currency/demand deposit ratio (CDD), the currency/M2 ratio (CM2), and the currency/all chequable deposits ratio (CM1B). The explanatory variables of currency to deposit ratios include personal income taxes as a share of personal income net of transfers (T), direct and indirect taxes as a share of GNP (TT), real per capita income (Y), 91-day T-bill rates (R), GNP implicit price index (IPI), contributions to social insurance systems (SI), share of wages and salaries in personal income (W), real disposable income (RY), and a time trend (t). In some of the equations variables were lagged. The signs expected for the variables are as follows. Cash holdings are expected to increase with growth in the underground economy. Thus the expected signs for T, TT, SI, and IPI are positive. Those for R and W are expected to be negative since the opportunity cost of holding cash rises with R and the opportunity to avoid taxes decreases as wages and salaries account for a larger share of personal income. The signs for Y and RY are also likely to be negative as higher incomes may lessen the need to become involved in the underground economy.

For equations where the currency/demand deposits ratio is the dependent variable, the results are poor. In some cases the coefficients have wrong signs. For most equations income variables and W were not significant. However, the results indicate a statistically significant relationship between currency holdings and tax burdens (proxied either by T or TT). In all of the equations the T (or TT) variable has the expected positive sign and was generally significant at the 1 per cent level.

The equations with the currency/M2 ratio as the dependent variable yielded better statistical results. However, estimates of the underground economy based on simulations using these results appear unreasonably large. This is true when immediate post-war taxation levels are used. As an alternative, if 1965 is used as the starting period to simulate what the currency/M2 ratio would have been in 1990 had the tax burden in Canada remained at the 1965 level, we find $5.0 billion in currency that can be attributed to a rise in taxation since 1965. Multiplying that extra currency by the GNE-velocity of M2 we estimate the tax-induced irregular activities to be about $98 billion in 1990, or about 14.6 per cent of GDP. This estimate is significantly higher than previous estimates for 1976, and is, as previously, below estimates from the Gutmann and Feige approaches. The results for 1976 using the Gutmann, Feige and Tanzi approaches, compared with the more recent results appear in Table 1.

We can compare these estimates to findings of researchers at the IMF. In a research program on the measurement of international capital flows the IMF (Wilson, 1992) studied real per capita currency holdings for eight countries. Hypothesizing that new technology would lead to a decline in these holdings over time – a reflection of debit and credit card use, as well as elec-

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<th>Method</th>
<th>Previous estimates</th>
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<td>Gutmann</td>
<td>14.0 (1976)</td>
<td>21.6 (1990)</td>
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<td>Tanzi</td>
<td>4.5–7.2 (1976)</td>
<td>14.6 (1990)</td>
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ronic transfer of funds – the study assumed that cash balances should have declined by 10 per cent over the 1970–1990 period. The ‘unexplained’ positive difference between the actual and hypothesized real per capita currency holdings then forms the basis of the cumulative currency stock attributable to the underground economy, to unreported capital outflows (currency exports), or both.

Since foreign use of the C$ as a store of value or medium of exchange can be expected to play a minor role, the unexplained difference of C$4.7 billion in 1990 is extra currency since 1970 that may have fuelled the underground economy. On that basis, coupled with a turnover speed of approximately 15 for M1, the implication of the IMF research is that in 1990 there existed an extra GDP of C$70 billion – in addition to whatever the underground economy may have been in 1970. An increase in cash-based underground economic activity since 1970 of nearly 11 per cent of GDP when added to already existing activity of that time, falls well within the range of plausible outcomes.

An international perspective can be gained from a recent summary by The Economist (1994) which reports a sample of underground economy estimates ranging from highs of 30 per cent of GDP for Spain and 20 per cent for Italy to a low of 4 per cent for Japan. On the basis of a detailed tax compliance study by the Inland Revenue Service, Feige (1993) estimates that in 1992 US$585 billion of legal and US$88 billion of illegal income went unreported in the US, implying an underground economy of 11.1 per cent of GDP.

To summarize, we are far from developing reliable estimates of the underground economy in Canada. This is partly due to existing data limitations, and partly to a lack of effort in Canada to develop such estimates. For example, in the case of Feige’s approach, information on cheque-clearing activities at cheque-clearing centres has become unavailable since Statistics Canada stopped collecting and reporting such data in 1985. And data on tax compliance analogous to the U.S. Tax Compliance Measurement Program have not been made public for Canada.

Underground activity is likely to be particularly important in areas where barter activities, including the exchange of services, are common due to high levels of unemployment in seasonal industries. Most informed experts agree that Canada’s underground economy, like that in other countries, plays an important role in overall economic activity. In light of this, it is remarkable that such a limited amount of academic and government effort has been made to effectively monitor, if not control, this part of the economy.

V Policy Design and Implementation Issues

Even the most conservative estimates of the underground economy of 3 to 5 per cent of GDP involve $20 to $40 billion in output. Estimates of 15 per cent suggest $120 billion in output, and 2.0 million jobs if each job generates $60,000 in GDP. Even the smallest of the estimates deserves attention. The official number of unemployed in Canada in 1992 was about 1.6 million.

Economic policies are likely to be more appropriate and effective if the hidden economy is smaller. Economists agree that factors contributing to the underground economy include:

– high marginal and average tax rates,
– high levels of national insurance contributions and unemployment compensation,
– the burden of regulation (especially for small businesses); this includes rigid hiring and firing laws, inflexible work rules and strong labour unions,
– disenchantment with the government; a perception of inefficient and overmanured bureaucracy and of distributional injustice resulting from tax and expenditure systems,
– high rates of inflation, and
– cultural and personal behaviour charac-
The most examined issue is that concerning the effects of the tax system on the underground economy. Some of the optimum income taxation models have considered the existence of an endogenous underground economy and its implications (Sandmo, 1981; Clotfelter, 1983; Cowell, 1990). These models suggest that reforming the tax system requires that several topics be considered: tax base and rate, tax progressivity, forms of reporting and methods of collection, probability of detection, stiffness of penalties, and general perceptions concerning the fairness of the system.

Conventional wisdom and economic logic suggest that cuts in marginal tax rates would lead to reduced incentives for involvement in underground activities. The hypothesis that tax evasion increases with the tax rate is confirmed by empirical evidence (US. Dept. of Treasury, IRS, 1979; 1983; Crane and Nourzad, 1986; Clotfelter, 1983; Lynch, 1985). However, an unresolved question is by how much the tax rate should be cut in order to discourage underground activity given the goal of maximizing the utilitarian social welfare function.

There also may be a 'ratchet' effect. As noted by Houston (1987:11), 'people (may be) 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 increase in tax rates over the years may have led people into the underground economy,... it may not follow that symmetric reductions in tax rates will bring them back aboveground.' This is supported by evidence that those who know of others who cheat on their taxes are more likely to also do so. Hence, once tax rates contribute to a high incidence of cheating, reversal of the trend by lowering taxes may be difficult.

The probability of detection and severity of the punishment also affect the underground economy. In general, the higher the probability of detection and severity of sentence, the lower is the stimulus for involvement in the underground economy. However, costs of enforcement are substantial, and more rigorous enforcement and frequent comprehensive audits require cost-benefit analysis. Society may also find the increased involvement of government bodies in private life to be unwelcome, further encouraging resistance.

There is another aspect to consider. Alm, Bahl and Murray (1990) found that more severe penalties and more certain detection may contribute to increased tax avoidance activity. No longer would taxpayers risk working for taxable income which they underreport. Instead they would spend time on nontaxable do-it-yourself activities. The distortion here may be large. Yet another possibility is that increased audit rates which heighten the chance of being caught if one underreports may reduce the number of taxpayers who file returns since it is the filed returns that are audited (Dubin, Graetz and Wilde, 1990).

Kinsey (1987:35) finds that 'seriousness ratings for tax evasion are lower than those for most other crimes'. Skolka (1984) reports research evidence from Austria, Sweden, Norway and France that most people may even be sympathetic to the people engaged in minor tax offences. These sentiments contribute to relatively light official penalties for evasion. One significant factor inhibiting higher penalties is that tax authorities are not flawless – in the presence of imperfect information they may relatively frequently make false charges of noncompliance. In addition, severe penalties create large inequities between those who escape detection and those who do not. With the growing sense of distributional injustice that has accompanied increased inequality of incomes in North America during the 1980s, it seems likely that increased measures to detect, rather than to punish, evasion will find support.

Allowing the possibility for retroactive punishment and inquests (for example retrospective auditing once a person is found guilty of tax evasion) may also diminish the attractiveness of income from underground activities. For example, Rickard, Russell

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and Howroyd (1982) show in a multiperiod model that retroactive penalties are much more effective in preventing tax evasion than the normal current period surcharges. However, the previously-mentioned lenient attitudes of society towards various forms of tax evasion may inhibit the use of retroactive penalties of substance.

As noted in the introduction, people's perceptions of others' behaviour might convert taxpayers into tax-evaders. Taxpayers are more likely to evade taxes if they perceive that others are dishonest. The US Department of the Treasury, Internal Revenue Service (1979) found that tax compliance is affected by the social grouping in which taxpayers find themselves. Others may not get involved in the underground economy because of moral considerations (Baldry, 1986; 1987). Accordingly, 'appeals to morality and public spiritedness - and their counterpart, the heaping of shame upon transgressors - could be effective alternatives to the stiffening of legal sanctions' (Cowell, 1990:176). Public campaigns encouraging noninvolvement in underground activity may be one way to combat the underground economy. But any such campaigns are less likely to have a beneficial effect if governments and their activities are held in low esteem.

The imposition of a value-added-tax, such as the GST in Canada, encourages underground activities if activity previously free of tax becomes taxable. This was a major issue in the Canadian GST debate since previously untaxed services and distribution activities became subject to a federal sales tax. A substantial increase in sales tax was, in these cases, at best only partially offset by reductions in other taxes. However, if the imposition of indirect taxes is complemented by a decrease in income tax rates, the overall burden of taxation may remain the same and the size of the underground economy may be little changed since there may be offsetting effects.

It is to be noted that the evasion of indirect taxes requires that both the buyer and seller of particular goods or services agree to deal 'underground'. With recourse to the prisoner's dilemma theory, we suggest that in such a case it is less likely that the deal will be executed. One of the parties may be risk averse or oppose the underground deal on purely moral grounds. This has led to the argument that a partial solution is tax reform which relies more on consumption taxes and decreases in income taxes. The reasoning here is that including services in the tax base represented a major adjustment. Now that it has been made, the consequences of a marginal increase in the GST may have only a small incentive effect to 'go underground' compared to the incentive to reduce tax evasion from lower marginal income tax rates, especially as the GST requires agreement between the two parties if taxes are to be evaded. An added benefit is that consumption taxes encourage savings.

Excessive regulation is another cause for going 'underground'. Paperwork is of particular concern to small businesses with limited staff and records. This was a major issue in the application of the GST to many businesses in the service and retail sectors. Limiting the burden of unwanted paper work and legal costs is an element in controlling the underground economy.

The foregoing have been concerns in recent tax reforms. New Zealand argued in 1988 that avoidance and evasion of the income tax was one among several important considerations in moving to its new General Sales Tax. The Canadian government also argued that its GST would encourage many businesses to register in order to obtain the credits for taxes paid to others. Much publicity was given to the larger than expected number of registrations for the GST. There was an administrative burden and an added tax liability for the many small businesses not previously subject to the Manufacturers' Sales Tax (MST). Particularly in the service sector where value added is a large share of the final price, a sizable new incentive for not reporting taxable income was created. Although it is only an early estimate, a recent
study by Spiro (1993) estimates (from the sharp increase in cash holdings) that underground economic activity has increased by an amount equal to 0.8 per cent of GDP since the GST was introduced in January 1991.

Accountability has become increasingly important as the public’s disenchantment with government has grown. There is some evidence that the willingness to pay taxes on taxable income increases where benefits are also tied to taxable income. Programs which link benefits with the taxes that finance them may generate compliance (see Alm et al., 1990; Alm, Jackson and McKee, 1992). Equity is an issue here too. Becker, Buchner and Sleeking (1987:251) found that ‘if the taxpayer supposes that he/she receives less than others, the probability that he/she evades taxes rises’.

That evasion behaviour varies considerably by occupation group, income type, family status, age and other personal characteristics has been confirmed by several studies. The obvious implication for the tax authorities is the grouping of the population into audit classes.

Where, in the absence of full indexation, inflation creates a sense of distributional injustice, and pushes taxpayers into higher tax rate brackets, it, too, may encourage increased tax evasion and avoidance. Thus, measures to control inflation are also likely to have the effect of reducing underground economic activity, and shifts away from full indexation will increase it. It also may be that increased tax auditing has a greater pay-off (a higher benefit/cost ratio) during times of relatively rapid inflation (Crane and Nourzad, 1986).

Some practical and easy-to-implement measures are in effect in various countries. In some countries tax withholding is a norm for all occupations. In the case of purchases from the self-employed the buyer may be required to withhold the VAT and reimburse it to the tax authorities. In Germany both the seller and the buyer in underground transactions are held legally responsible (Smith and Wied-Nebbeling, 1986). Promising results from the introduction of stringent tax auditing practices in New York City are reported by Shear (1990). Several years ago City authorities introduced tax enforcement aimed at tapping one of the underground economy sectors – businesses that are ‘off-the-books’ or ‘cooking the books’. The program is based on computer matching and the creation of specialized audit teams.

VI Conclusions

Empirical evidence, however imperfect, suggests the existence of a sizable underground economy in Canada. Evidence suggests that involvement in the underground economy in Canada and elsewhere is encouraged by high tax rates, unfair tax structures, inefficient government, and excessive and improper regulation. It is natural that individuals should wish to escape, and have a route of escape, from these ‘oppressions’. Nonetheless, we may discourage underground activity by measures which increase the chance of detection, by greater punishment, and by limiting the costs of operating above ground by reducing taxes and/or tying specific benefits to the payment of these taxes.

The underground economy affects both macro- and micro-economic variables, indicators, and decisions. It influences the growth of recorded GDP, the level and composition of total output and the labour supply, and the level of tax revenues. By distorting basic aggregate statistical indicators, it leads to erroneous assessments of the national economy and incorrect macro- and micro-economic medications.

While no single action is likely to markedly reduce the size of the underground economy, a series of actions might be helpful:

(a) There is a strong case for broader tax bases and lower tax rates. The tax reforms of the 1980s in Canada and elsewhere moved toward broader bases, lower rates, and diversified tax systems to reduce the incentives to underreport incomes. Nonethe-
less, the situation remains as we continue to have significant deductions as RRSP and RPP contributions in calculating taxable income and the exemption of food and other items in the application of federal and provincial sales taxes. There are reasons for these provisions, but they also result in higher tax rates, perceptions of unfairness and complexity, and a greater incentive to evade or avoid taxes.

(b) We also must attempt to link taxes closely with benefits enjoyed by taxpayers. Taxpayers are more likely to comply when they can readily identify the direct benefit to them of the tax (Alm et al., 1990; 1992). Here too we see efforts by central governments to down-load responsibilities in order to strengthen the tie between taxes and benefits. However, to the extent that our taxes support programs in areas of health, education, welfare and national defence, taxes paid, by their very nature, cannot be tied to direct benefits received.

(c) There is much evidence that compliance, particularly for the small business sector, needs to be kept as simple as possible. This is a major issue for the GST and is related in part to a narrower base for the tax – a base which excludes some items and includes others. This issue is even more important in provinces which have maintained an RST base that differs from that of the GST (see Sanford et al., 1989).

(d) There is an argument for tougher enforcement, but careful thought continues to be needed in this area. If tougher enforcement encourages either

more non-taxable activity such as do-it-yourself, or
non-filing as a means of avoiding audit, it may be counterproductive.

We need more information on those taxpayers least likely to pay their taxes by type of small business, sex, age, marital status, and so forth. Tax authorities must make good use of such information.

(e) There is a growing need for greater international co-operation in tax enforcement. Canadians derive increasing amounts of investment income from foreign holdings, yet Revenue Canada cannot keep track of the investments held by Canadians in the US or other countries. We cannot expect small business in the service and other sectors to respect the tax system if they perceive that large amounts of investment income escape taxation.

The conclusion is that a problem that was already large by 1976, the time of our first estimates, may since have grown considerably in absolute size and relative to total economic activity. There is good reason to devote some resources to the task of obtaining a better understanding of the role of the underground economy in Canada, and of factors contributing to its growth, in order to find ways to reduce its size.

Notes

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1 For a comprehensive bibliography on the subject see Danesh (1991).

2 Early work on Canada's underground economy carried out at the Bank of Canada includes Haas (1978) and Wong and Rose (1980) and at the Department of Finance (Ethier, 1982). In addition Berger (1986) from Statistics Canada estimates that the GNP in the early 1980s has been understated by between 2.9 and 3.5%.

3 Far from everyone agrees with Paquet's view that the large size of the underground economy creates major distortions in economic indicators. Smith (1986:193) found 'no evidence of substitution between the formal and shadow economies on a scale sufficient to undermine the value of the national accounts as indicators of the state of the economy'. Smith's view is that even 5% is a high estimate for the black economy in Britain.


5 For a discussion of the beneficial effects of underground economic activities in New York City and Miami, particularly within the immigrant communities, see Sassen-Koo (1989) and Stepick (1989). Similar arguments may well pertain to economic activities in larger Canadian urban centres.

6 A more detailed examination of the monetary methods developed by Cagan, Gutmann, Feige and Tanzi is beyond the scope of this paper. The reader is referred to Pyle (1989) for an extensive
critical review of the results obtained in a number of
countries.

For example, demand and chequable savings
deposits in local credit unions, caisses populaires
and trust and mortgage companies in the four
years from 1983 to 1987 increased from $8.4 bil-
lion to more than $16.2 billion (Bank for Inter-

The currency/all chequable deposits ratio in-
creased steadily up to 1981, decreased sharply
from 1981 to 1985 and again began to increase af-
terwards. The reasons for these shifts deserve
further analysis.

We use time series for the 1939–1990 period when
simulating the currency/demand deposit ratio and
currency/M2 ratio. Regression on the currency/all
chequable deposits ratio were run with the avail-

There is an argument as to why higher taxes may,
in fact, reduce tax evasion. If taxpayers become
more risk averse as their after-tax incomes are
reduced, they may be less prone to take illegal ac-
tions required to evade taxes. This is an 'income
effect'. The substitution effect suggests there will
be more evasion as taxes increase, but the overall
net result is indeterminate.

Our 'best' equations using 1936–1990 data are:

\[
\log \text{CDD} = -0.95 \cdot 3.71 \log W + 0.53 \log T,
\]
\[
( -7.35 ) \quad ( -12.6 )
\]

\[ R^2 = 0.92, \quad DW = 1.16 \]

\[
\log \text{CDD} = -0.344 \cdot 2.62 \log W + 1.23 \log TT,
\]
\[
( -2.6 ) \quad ( -7.3 )
\]

\[ R^2 = 0.80, \quad DW = 0.8 \]

Note: t-statistics are reported below each coeffi-
cient estimate.

See Manasian (1987); 'GST Adding to Under-
ground Economy, Critics Say,' Toronto Star,
August 19, 1991, p.C1; 'Tax Could Boost Under-
ground Economy,' The Financial Post, 84:20, May
5/7, 1990, p.6; 'Probing the Depth of a Hidden
Economy,' The Financial Post, 82:6, Feb. 8, 1988,
p.15; 'Will Tax Revision Dredge Up the Under-
ground Economy,' Financial Times of Canada,
78:21, Nov. 6/12, 1989, pp.7–8.

Sandford, Godwin and Hardwick (1989:199) found
that VAT compliance costs as a percentage of tax-
able turnover for small firms were 1.48%, while for
larger firms they were 0.05%, a 30-fold difference.
For business taxes generally (including PAYE and
corporate taxes) the percentages were 3.66% for
the small firms and 0.17% for large firms.

See US. Dept. of Treasury (1979); Dilnot and Mor-
ris (1981); Isachsen et al. (1982); Isachsen, Samuel-
son and Strom (1985); Clotfelter (1983); McCrohan et al. (1991), and Pissarides and Weber
(1989).

References

Acharya, S. (1983) 'The Underground Economy in
the United States: Comment on Tanzi,' IMF Staff Papers, 31:742–6.

Alessandri, S. and B. Dallago (1987) The Un-
official Economy: Consequences and Perspec-
tives in Different Economic Systems (Alder-

Alm, J. (1985) 'The Welfare Costs of the Under-
ground Economy,' Economic Inquiry, 12:2:
243–63.

Alm J., R. Bahl and M. Murray (1990) 'Tax
Structure and Tax Compliance,' Review of

Alm, J., B. Jackson and M. McKe (1992) 'Esti-
mating the Determinants of Taxpayer Com-
pliance with Experimental Data,' National
Tax Journal, 45:1.

Baldry, J. (1986) 'Tax Evasion Is Not a Gamble:
A Report on Two Experiments,' Economic

Schedule: Some Experimental Results,' Public

Bank for International Settlements (1989) 'Pay-
ment Systems in Eleven Developed Coun-
tries,' April.


Estimates of the Hidden Economy: A Critical
Analysis,' The Review of Income and Wealth,
1:183–208.

'The Impact of Public Transfer Expenditures
on Tax Evasion,' Journal of Public Economics,
34:243–52.

Berger, S. (1986) 'The Unrecorded Economy:
Concepts, Approach and Preliminary Esti-
mates for Canada, 1981,' Canadian Statistical
Review, April:vi–xxvi.

National Accounts,' The OECD Observer,
114:15–17.

Bowsher, N.N. (1980) 'The Demand for Cur-
currency: Is the Underground Economy Under-
mining Monetary Economy?,' Federal Re-

'Tax Evasion and Avoidance on Earned In-
come: Some Survey Evidence,' Fiscal Stud-
ies, 5:3:1–22.


Shear, Jeffrey (1990) 'New York City Unearths the Underground Economy,' Government Fin-
ing on Recent US Research.' In Alesandrin
and Dallago (1987).
Wong, F. and D. Rose (1980) 'The Subterranean
Economy: A Survey of the Literature and Ap-
plications to the Canadian Economy.' Rm-80-
107, Bank of Canada, unpublished research memorandum.