Pages 179 to 201 from the book *Size, Causes and Consequences of the Underground Economy*. Edited by Christopher Bajada and Friedrich Schneider, Ashgate Publishing, Aldershot, England, www.ashgate.com

Chapter 10

Tax Policy and the Underground Economy

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The purpose of taxation is to raise revenue to pay for public goods, but along the way it has impacts on economic growth and income distribution. These impacts are often undesirable, and sometimes difficult to predict.

Tax policy is the most complex area of economic policy, because each tax change has so many ramifications. One can say very little about the impacts of taxation based simply on economic theory and deductive logic. Only empirical estimates of the elasticity of response to specific taxes can enable us to choose which is the least bad alternative. This empirical analysis is inherently difficult, and it is made even more difficult by the existence of an unmeasured underground economy.

One of the considerations that is all too often ignored in discussions of tax policy is the way it affects the underground economy. Theoretical tax models almost always assume that everybody follows the rules. In reality, the behavioral response to tax changes has a wider range of variation than the choice between labour and leisure. Many otherwise honest citizens are prepared to break the law in order to evade taxes.

Once the underground economy is taken into account – in effect, the proposition that individuals may decide to "opt out" of the tax system – there is a whole new layer of complexity to tax policy. Taxes that may seem to be optimal without the underground economy may no longer be optimal once it is taken into consideration.

There are a number of serious policy issues that may result from the growth of the underground economy:

1. Tax evasion caused by higher tax rates will siphon off revenue, forcing even higher tax rates in the areas where evasion is difficult. Tax evasion is affected both by tax rates and enforcement, and therefore the choice of tax policy must also depend on the type of enforcement that accompanies it.

2. The opportunity to participate in the underground economy represents a "subsidy" to certain types of economic activity where evasion is easier. These are often relatively low productivity areas of the economy.

3. The underground economy makes official statistics on economic growth less reliable, and this faulty information may lead to incorrect economic policy decisions.

The above three items are all negative consequences of the underground economy. However, it should be pointed out that the underground economy also has its supporters. Some economists argue the following positive points:

1. Governments sometimes undertake excessive and wasteful spending, and the electoral system is too blunt an instrument to rein them in. The underground economy is a form of tax protest that forces governments to realize that there is a limit to how much they can raise their spending.[1]

2. Governments sometimes establish unnecessary and inefficient regulation of economic activity, and the underground economy is the result of a situation where there is a willing seller and a willing buyer who cannot make a legal exchange. In such an instance, the underground economy is a useful outlet that increases economic welfare. However, it should be noted that this is a situation in which the activity has gone underground not in order to evade tax. Where an activity has gone underground mainly to evade tax, it is usually carried out in a less efficient manner than it would be in the legal economy, and there are welfare costs.

There is no simple universal answer to what is good tax policy that takes into account the underground economy. The answer will be different for different countries, depending on their pre-existing tax policies and institutions. This paper will attempt to survey the types of issues that need to be considered in setting tax policy in a world where "opting out" of the tax system is an ever-present reality.

How Should the Underground Economy Influence Tax Policy?

The underground economy is just one of many concerns that affect tax policy. Taxes are a necessary evil for raising tax revenue, to pay for what are considered by society to be public goods. Tax policy is concerned about the impacts of taxes on economic efficiency, aggregate demand and income distribution.

Whenever there are taxes, there will be tax evasion. Tax policy cannot be concerned solely or even primarily with minimizing evasion. However, the fact of evasion, and its consequences, alters the way in which taxes impact on economic efficiency and income distribution. Therefore, the underground economy needs to be taken into account in predicting the impacts of tax changes.

In particular, it can reasonably be argued, following Palda (1998), that the underground economy suffers from diseconomies of small scale and other inefficiencies. Anything which drives more activity into the underground economy reduces productivity. In a benefit-cost calculation, this is the main cost of any tax move that increases the incentive to engage in underground economic activity.

There has been an increasing tendency for fiscal analysts to think in terms of the marginal cost of public funds. This concept takes into account the disincentives to economic activity from taxation, and implies that each dollar raised through taxation has a larger cost in terms of lost economic output. This can occur due to effects such as disincentives to work from higher marginal tax rates even in the

absence of evasion. The implication is that the optimal level of public expenditure in a country occurs where the marginal cost of public funds equals the marginal utility of public services.

The marginal cost of public funds can only be measured with a considerable margin of error, and measuring the marginal utility of public services is even more problematic. It is questionable whether this concept can be put into practice with much precision, but it has nevertheless been influential. It has focussed attention on the need to limit the growth in government expenditure as a share of the economy. The study that comes closest to applying this concept empirically at a macroeconomic level is Tanzi and Schuknecht (1995).

Studies that attempt to estimate the marginal cost of public funds focus on empirical estimates of the elasticity of supply of labour with respect to the after tax wage rate. The existence of the underground economy leads to an interesting empirical anomaly. The existence of the underground economy implies that empirical estimates probably overstate the elasticity of supply and thus overstate the marginal cost of public funds.[2]

Suppose that a higher marginal tax rate discourages people from spending more hours working legally and paying tax. For example, somebody in a building trade may refuse to work overtime for his regular employer because taxes take too large a share of his marginal income. He will, instead, take on private jobs in his spare time on which he does not pay tax. Assuming that this underground work is not reported for statistical purposes, the decline in working hours due to the higher tax rate will be exaggerated.

It is ironic that the underground economy appears to reduce the true marginal cost of public funds in this example. There is a good chance that this worker will be less productive in this extra underground work, since he will not benefit from the economies of scale and the equipment that he has access to in his regular work. Therefore, there is an economic cost to this underground economy participation. However, the economic cost is not as great as if the work had not been done at all.

Public policy may be influenced toward reducing tax rates if concerns about the underground economy loom large. However, if this is the case, it is also reasonable to consider whether there is a greater benefit to improved enforcement as opposed to reduced taxation. In most advanced countries, especially the ones following the British legal system, the collection of taxes from the self-employed sector has been left on a voluntary basis to a remarkable degree. There has been a sense that greater government surveillance would intrude on personal liberty.

In any country, there are going to be a significant number of people working who are not registered with the authorities at all. The greater the degree of personal liberty, the more of these people there are likely to be. Often, they are illegal immigrants. However, at any point in time there are also going to be some legal residents who choose to work entirely underground, filing no tax return at all. This may well be the most effective form of tax evasion. Somebody who files a tax return, and under-reports income, is at some risk of being audited. By contrast, somebody who never files a return is likely to be safer, and under present arrangements may completely escape the notice of the authorities.

If there are concerns about the erosion of revenue due to the underground economy, it ought to be possible to improve enforcement. The remarkable growth in computer processing power and

databases would make possible much greater economic surveillance without significant intrusions on the liberty or privacy of honest taxpayers. All that would be required is that anybody who accesses a government service would be required to supply his taxpayer identification number – every time a real estate transaction is registered, a new car is registered, a driver's license is issued, a child is enrolled in school, or a government health card is issued. This would greatly reduce the scope for these "ghosts" to live comfortably by working entirely in the underground economy without filing any tax returns at all.

Taxation of Income versus Consumption

The existence of an underground economy can have a number of significant impacts on conventional views of what is optimal tax policy. One of the most important choices regards the "tax mix" between consumption versus income taxes. There has been a considerable groundswell of enthusiasm among economists, especially in the United States, for the idea that income taxes should be abolished or at least minimized, and replaced with a tax on consumption instead.[3]

This view is often supported by politicians who misunderstand how narrow the economic justification for it is. A common logical error is to suppose that a "tax on work" discourages work more than a "tax on spending." This is a fallacy, since the purpose of work is to earn money to spend. The supply of labour is affected by the real after-tax wage rate. That wage rate will fall if the income tax is raised. It will also fall if the sales tax is raised, which affects the price index used in calculating the real wage rate.[4]

The actual economic argument for the superiority of a consumption tax is that it avoids the taxation of the income earned from the return to saving. The after-tax rate of return to savings theoretically determines the allocation of consumption over time. If you earn a dollar today, and spend it, you will not pay any more income tax on it. If you put that dollar away for a few years, you may have $1.50 to spend before tax, but perhaps only $1.25 after tax. Therefore, an income tax tends to reduce the savings rate and biases consumption toward the present.

It might be asked, if the concern is about saving, why not just exempt income from savings? The main reason is that income from savings is not always easy to identify. It is obvious when it is income on a deposit in a bank account, or dividends from a widely held stock. However, a significant proportion of the population works in situations where the division of income from their labour versus their capital is ambiguous, and subject to manipulation. This applies both to self-employed entrepreneurs and to the management of widely owned corporations, who can often choose to forego salary in exchange for stock options.

The argument in favour of savings is sometimes presented in a quasi-mercantilist way, as if to say that measures to boost national saving are vital to a country's long-term strength. Such an argument is a mis-use of the economic analysis, which is simply an issue of allowing each individual to make his utility maximizing decision, without taxation distorting his choices.

There is considerable doubt about whether this is as important an issue as its proponents claim. Economic theory is ambiguous about whether taxing the return to savings leads to reduced saving. There is both a substitution and an income effect. The substitution effect predicts that a higher

reward for waiting to consume will shift consumption into the future. On the other hand, if people save because they have a specific income target that they want to achieve in the future, they will not need to save as much if the rate of return has risen, and the saving rate would go down. Empirical evidence about the effect of the real rate of return on the savings rate is mixed. Some studies have found an elasticity close to zero.

Even if there is a significant elasticity of savings with respect to the rate of return, the argument in favour of consumption taxes versus income taxes is significantly impacted by the scope for tax evasion and the underground economy. As already noted, the underground economy has lower productivity, and therefore a tax move that encourages underground activity is undesirable. If consumption taxes do not encourage underground activity any more than income taxes, then this is not a problem. However, if it turns out that some kinds of consumption taxes increase underground activity, that may seriously undermine the claim that they are desirable because of their neutrality toward saving.

Cross-Section Studies on Tax Structure and Economic Growth

A number of economists have conducted cross-section studies that compare growth rates (usually of per capita real GDP) across countries, and some appear to have found that a higher growth rate occurs in countries which rely more on consumption taxes than income taxes. However, these studies are fraught with difficulties that render their results unreliable.

A recent study by Widmalm is probably the most rigorous of these cross-section studies. She found that a higher share of taxes from income is associated with lower growth. However, she is honest enough to admit (p. 209) that "if richer countries rely more on the taxation of individuals' income than do poorer countries, the effect on economic growth of personal income taxation is difficult to distinguish from the catching-up effect."[5]

There is good reason to suppose that rich countries do have a greater ability to rely more on income taxation simply because they are rich, as it takes a high level of economic development (and factors that come with it, such as literacy and a well organized government) to be able to successfully levy an income tax. By contrast, consumer taxes are generally easier to organize, and less developed countries inevitably have to rely much more on them.[6]

This creates a bias in the cross-section econometric estimation. Countries that are already at a high level of development at the beginning of the sample period have less scope for higher growth, since they are already using the best available technology, whereas countries that start out poorer can catch up by borrowing technology from the leaders. Therefore, the association between a higher share of tax revenues being from income, and lower economic growth may be an invalid *post hoc, ergo propter hoc* type of finding.

The Effects of Different Types of Taxation on the Underground Economy

The question of how the tax mix affects the size of the underground economy is one of the most important issues for its application to tax policy. However, the empirical evidence on this subject is limited and also somewhat ambiguous. As with most other aspects of the underground economy, there is no firm rule as to what will apply. The outcome will probably vary with circumstances, and the best tax policy will be the one that is sensitive to these differences.

People who earn income in the underground economy receive this income in the form of cash, and will want to spend it in that form as well to avoid leaving a record of spending that is in excess of their declared income.[7] However, there is no stigma to using cash for purchases in most above-ground transactions, so they are not forced to spend their income in the underground economy just because they earned it there.

There is a major asymmetry between the spending and income sides of the underground economy. Anybody can participate in the underground economy as a consumer, and many may do so without even knowing it, since they cannot know if the businesses they deal with report all their sales to the tax authorities. However, the vast majority of the population will not participate in the underground economy as a worker. The underground economy is not a closed system. It can only survive if those who work in it can capture the business of the vast majority of the population that works in the legal economy.

The majority of people in an industrial economy work for a large company or the government, and have no opportunity to participate in the underground economy unless they quit their employment and set up an underground business (or set up a part-time business to supplement their salary income). Participation in the underground economy is rarely feasible for any business that is too large to be privately owned and run by family members.

A higher income tax rate therefore increases underground activity through a relatively narrow channel. It encourages more people to become self-employed, in the realization that higher after-tax incomes (facilitated by evasion) are available through self-employment. As well, for those who are already self-employed, it increases the reward for evasion, and is likely to encourage more of it.[8]

The main body of research on this subject has consisted of general equilibrium models, whose data was to a considerable extent judgemental rather than based on direct statistical inference. Kesselman (1993) responded to previous suggestions that shifting toward greater reliance on indirect taxes would reduce evasion. He found that a shift to more indirect taxation would just lead to more evasion of indirect taxes, if less evasion of direct taxes, with little or no net effect on the total amount of evasion.

Considering the types of activities in which evasion is concentrated, Kesselman's observation appears to be intuitively plausible. From the viewpoint of the after-tax income of a producer in the underground economy, either the income tax or the sales tax will have approximately the same impact. Suppose that somebody is interested in having home renovation work done, and has a budget of $1000 to spend on it. From the viewpoint of the consumer, it does not matter whether the seller accommodates this by not charging sales tax, or by accepting a lower wage rate since he plans not to pay income tax on it.

From another viewpoint, however, one could argue that sales taxes create a greater likelihood of underground activity. The existence of a sales tax facilitates the bargaining process regarding the division of the spoils from tax evasion. Let us take the example of a home repair service provider who operates partly in the underground economy and partly legally. He will offer an alternative to the customer: "if you need a receipt, you will pay sales tax; if you pay in cash and need no receipt, you don't have to pay the sales tax."

In a frictionless model where bargaining costs do not exist, it would make no difference here if all taxation was on purchases or all taxation was on income. Even if there is no sales tax, the service provider can still give a price discount for cash transactions, since it facilitates his evasion of income tax. In the real world, such negotiations are more awkward, and having a sales tax in place creates an easy definition of a "fair" discount. It makes the customer more willing to collude in the evasion, particularly if the sales tax is perceived in some ways as objectionable and unfair (Spiro, 1997).

An alternative view, coming from Caragata and Giles (1998, 9-10) argues that direct taxes are more likely to promote evasion:

> "Income is easier to disguise than a sales transaction because individuals have more control over opportunities to disguise income than over opportunities to disguise business ... while purchases are generally made in stores owned and managed by people with whom the taxpayer has no personal contact."

This point is valid for certain types of purchases from mass merchandisers. However, it is less likely to be the case for taxes applied to services such as home renovation activities. Moreover, it does not take into account the limited ability of those who are not self-employed, and who have income tax deducted by their employer, to disguise income.

Maurizio Bovi (2002) has done perhaps the most comprehensive cross-country empirical analysis of the role of taxation versus other factors in determining the size of the underground economy. He took estimates of the size of the underground economy from previously published studies, and then he ran cross-section econometric analysis for the OECD countries. The dependent variable is the underground economy as a percentage of GDP (estimated by two alternative methodologies by other researchers). For independent variables, he uses measures of corruption, the quality of the legal system, restrictions in the labour market, along with the size of different types of taxes as a percentage of GDP.

By including such a diverse range of variables, Bovi is able to account for a considerable diversity in the character of different countries. Indeed, his starting motivation is the observation that the four southern European countries of Spain, Portugal, Italy and Greece are considered to have the largest underground economies in Europe, even though their tax rates are well below the European average. By contrast, the Scandinavian countries are believed to have moderate sized underground economies in spite of having much higher tax rates. In Bovi's model, this is explained by the fact that the Scandinavian countries rank much better on the indicators of corruption.[9]

Regarding the impact of tax variables, the results from Bovi's analysis are mixed. In his analysis of the share of the underground economy in GDP (his Table 1), taxes on consumption appear

to dominate, with a much higher degree of significance. Indeed, when tax on consumption and tax on labour income are included in the same regression, the latter has a coefficient not significantly different from zero. However, for this kind of levels regression, correlation does not prove causation.

In a second set of regressions, looking at the change in the size of the underground economy over the period from 1990 to 1998, it is income taxes which were the more significant determinant. However, given the small sample size, the result may just reflect the fact that consumption taxes did not vary much over this period.

As Bovi (2002) noted, the correlations between the underground economy and its determinants "seem to be different not only over time, but also across countries." To that, one might add that it is likely to be different for different sectors of the economy. There are some types of consumption where the scope for evasion is relatively limited, and in those areas a consumption tax may not have much impact. By contrast, there are certain types of services where consumers have an easy alternative in the underground economy to evade the tax.

There are two Canadian time series studies which use econometric analysis of different types of taxation on the growth of the economy which also comment on this issue. On casual inspection, the two studies appear to come to opposite conclusions. Hill and Kabir (1996) find that indirect tax increases have a much greater impact on the underground economy than direct tax increases. They conclude (p. 1576) that "a decrease in average direct tax revenues ... and its replacement by an increase in indirect tax revenues of the same amount ... would lead to an increase in currency holdings and presumably a corresponding increase in the underground economy." They note that "the sum of the estimated coefficients for the average indirect tax rate greatly exceeds the sum of the coefficients of the average direct tax rate."[10]

By contrast, Giles and Tedds (2001, 203) state that "if one wishes to reduce the hidden economy as a share of measured GDP, then one way in which to do it is to shift the tax mix away from direct personal taxes and toward indirect taxes." However, in the very next paragraph, they qualify this by noting that, for 1992, their estimated indirect tax elasticity was "roughly double our estimated indirect personal tax elasticity.... Given these figures, it is only reasonable that the introduction of the GST should have led to an increase in the underground economy."

Another perspective on this is given by Hill and Kabir's Figure 1, which shows the different tax rates historically from 1947 to 1995. There was much less variance in the indirect tax rate than in other tax rates, until 1991 when it doubled with the introduction of the GST. This factor in the data should remind us of one of the pitfalls of time series analysis. If there is very little variance in an explanatory variable during the sample period, econometric analysis may find that it has a coefficient near zero even if its true elasticity is quite high.

Another point to keep in mind is that categories such as "direct tax" and "indirect tax" are very broad. It stands to reason that an indirect tax on manufactured goods (collected mainly from a few thousand large businesses) will induce much less underground activity than an indirect tax on hundreds of thousands of small service providers.

It is misleading to categorically state that direct or indirect taxes will have particular impacts on the underground economy. What matters is the specific tax change that is in question. Some kinds of direct taxes will encourage certain kinds of underground activity, while others will not. For example, income tax rates in the range that affect manual workers will likely encourage the growth of underground home repair services. By contrast, the marginal tax rate for people earning over $200,000 per year is unlikely to cause any surgeons or lawyers to abandon their licenses and go underground, but it might encourage some owners of profitable medium sized businesses to under-report revenue in order to evade income tax, even though the business operates "above ground." That is why intelligent tax policy needs to be based on a detailed knowledge of the structure of the economy, as will be discussed below.

VAT versus Retail Sales Tax

It is often suggested that a value added tax (VAT), because it is a multi-stage tax, is less likely to be fully evaded than a retail sales tax. Most of the OECD countries now have a VAT, in contrast to a single-stage retail sales tax. The United States (along with the majority of the Canadian provinces) remains the major exception. In the United States, there is no national consumption tax, but most of the states and some city governments impose a retail sales tax.

One can certainly think of instances where a VAT will be less prone to evasion. In spite of that, a broad based tax reform which imposes a new VAT on a wide variety of goods and services may still lead to an increase in overall evasion.

The argument for a VAT reducing evasion is that members of the underground economy are often forced to purchase inputs from the legal economy, on which they pay VAT. If they do not charge VAT on their own sales, they will not receive input tax credits for their purchases. Thus, it is argued, the government only loses the tax on the value added by the underground producer, rather than on the total sale.

For example, if a retail sales tax is charged on the final sale price, an underground dealer will submit no tax. However, if the dealer bought the goods from a wholesaler who charged tax, only the tax on the markup will be lost.

Insofar as the retail sale of goods is concerned, it is quite likely that the VAT does a better job of collecting taxes than a pure retail tax.[11] However, the consequence of introducing a VAT is usually to spread the consumption tax over a much wider range of goods and especially services. Retail sales taxes tend to be levied mainly on goods, while VATs encompass most services as well. In the case of services, the value of inputs purchased by the service supplier is often only a small portion of the cost of the service. The bulk of the value added is at the point of final sale, in the form of the service provider's own work. In this case, a VAT recaptures relatively little revenue when the service provider goes underground.

At the same time, the existence of VAT on the service makes the consumer more aware of the potential saving from dealing with an underground provider, and thus increases the demand for underground services.

There is an important related issue which is on the borderline of the underground economy, although it is not usually defined as part of it. This is the choice between purchasing a service or doing it yourself.

In the theory of income taxation, one usually talks about a choice between work versus "leisure." In reality, the range of choice is wider than that. One can choose among three main categories: leisure, work in the market, and work at home. The latter is clearly part of production, but is not counted in GDP and it is generally considered to be outside the pale for taxation.

Let us consider the example of a teacher. Teachers often have the opportunity to earn extra income by teaching evening or summer classes outside the regular curriculum. However, if the teacher does take on this extra work, he will pay income tax, possibly at a rising marginal rate. He will have less time around the home to do chores such as gardening, painting and repairs. If he hires a professional painter to paint his home, the painter (if he is honest) will have to pay income tax on that work.[12] If there is a VAT on the service as well, that further tilts the balance toward the teacher painting the house himself, instead of spending more hours teaching.

From an economic efficiency point of view, this choice is clearly inefficient. Adam Smith long ago pointed out that the source of increasing wealth in economic development is specialization. The teacher is better at teaching than at painting, and if it were properly measured, national welfare would be higher if he stuck to teaching and let someone else paint his house. Instead, the tax system encourages teachers to become part-time painters.

As often as not, if the teacher does not do the painting himself, he will hire an underground provider to do it, saving much of the tax. This is likely to be more efficient than the teacher doing it himself. However, the underground provider is still likely to be less specialized and operate at a less efficient scale than would be the case in the absence of this taxation.

However, the existence of these inefficiencies does not mean that these activities should not be taxed in this way. In tax policy, there are tradeoffs everywhere. If house painters are not required to charge VAT, the government will have to seek that revenue elsewhere, and the burden of taxation from that other source may cause an even greater efficiency loss. What we are trying to do is arrange the tax system so as to minimize the total efficiency loss to the economy.

Ideally, the way to analyze these choices is through a general equilibrium model that describes the whole economy in considerable detail, looking at the effect of each kind of tax on each sector of the economy. An attempt at such a model was described by Piggott and Whalley (2001), and they applied their analysis to the introduction of the Canadian Goods and Services Tax (GST) in 1991. As they note (p. 1084), their analysis:

> "builds on the observation that, in a typical base-broadening exercise, newly taxed commodities (services such as haircuts, garden care and house repair) are easier to provide within the household.... As a result, tax-induced substitution into relatively inefficient household production occurs... a further effect is to stimulate underground activities that avoid the tax but that are again inefficient (at the margin) because of the tax."

The elasticities of substitution between purchased services and home produced or underground services cannot be known with precision, so Piggott and Whalley experimented with a range of estimates. They found that, with the most plausible values of the elasticities, there was a net loss in economic welfare due to base broadening. Not surprisingly, they found that the effect is exacerbated by the existence of a relatively high income tax rate.

The Underground Economy and the Scope for Commodity Substitution

It might be thought that there are certain types of goods and services in which there is no scope for underground economic activity. These would be sectors where, for reasons of economies of scale, essentially all output is provided by large companies. In that case, it might be argued that these are preferred targets for taxation. However, a careful analysis may call for some qualifications to this conclusion.

One example is electricity generation. Consumers have no choice but to buy their electricity from a large (and, in many countries, government owned) electric utility. There is no scope to pay cash under the table for electricity or to buy it from small independent producers. However, that does not mean that an increase in the taxation of electricity cannot have any underground economy impacts. There is an elasticity of demand for electricity, which is low in the short-run but rises with the passage of time as consumers have an opportunity to adjust.

Consumers can reduce their electricity consumption in a variety of ways. For example, they can improve the attic insulation in their homes to reduce the energy needed for heating in winter and cooling in summer. They can have electronic devices installed to automatically turn off lights and equipment that are not being used. They can ensure better and more frequent maintenance of their equipment so that it uses less power. All of these renovations and services have the potential for being provided by participants in the underground economy.

Another example might be the taxation of airline tickets. Apart from small charter operators, it can be assumed that there are no airlines in the underground economy. However, more expensive airline tickets cause people to look for more affordable alternatives. At the margin, some people will choose to take land transportation, increasing the demand for automobile maintenance and intercity buses, which do have underground economy components.

These examples show why a comprehensive tax policy analysis can only be done through general equilibrium modelling. A model of that kind would need to have several hundred or even thousands of equations that properly represent the scope for substitution among different goods and services. Needless to say, these models are only as good as the data that goes into them. The parameters have to be based on careful empirical studies rather than *ad hoc* assumptions about elasticities.[13]

The Importance of Microeconomic Estimates of the Underground Economy for Tax Policy

If there is a major risk that a tax change being contemplated will push people into the underground economy, then this should be a factor in setting tax policy. However, we have to step back, and take note of another layer of complexity. The size and importance of the underground economy is itself a controversial and unresolved issue. There is an immense literature on the subject, some of it covered in other parts of this volume. However, much of the empirical estimation regarding the underground economy is at a very general macroeconomic level. In order to be useful for formulating tax policy, more detailed information is needed about the nature and composition of the underground economy.

There are few areas of economic policy analysis where the key empirical fact is so elusive as in the case of the underground economy. There is a burgeoning literature arguing that the underground economy has grown, and linking this to high rates of tax.

Not to impugn the integrity of any researcher in this area, but we have to be particularly wary of the possibility that preconceived ideas about the desirability of tax cuts may influence researchers' views on this subject. It is not too hard to find examples of researchers who think the underground economy is large, and who think that may be a good thing. For example, Roger Smith (2002, p. 1660) writes in praise of the underground economy:

> "In a world of minimum wages, high payroll taxes, immigration and employment controls, limits on hours worked, and clawbacks of social transfers, the underground economy may enable some individuals to be employed who would otherwise not be employed, enable other individuals to increase their incomes by holding second jobs, and provide services that would otherwise be unavailable. Activity of this kind may add a dynamic element to an economy and increase competition in some sectors. These potentially positive aspects of underground activity deserved more attention..."

In the case of Canada, estimates of the underground economy range from about 5 to 20 percent of GDP. The upper end is based on econometric estimates, while the lower end comes from analysts at Statistics Canada, the national statistical agency, as exemplified in the study by Philip Smith (1994).

The Statistics Canada methodology is a microeconomic one, and thus very different from the macroeconomic approach embodied in the econometric studies, which are much more common. In effect, Statistics Canada shows a detailed structural breakdown of output in the economy. They apply a judgmental factor regarding the potential size of the underground economy in that sector – e.g., moderately large percentages among small service providers, and near-zero in areas such as electric and gas utilities and financial services.

One of the pitfalls in this approach, as noted by Spiro (1994a, 20) is that it starts out with the assumption that the official statistics of output by sector are correct:

> As these sectors [susceptible to evasion] total only 11 per cent of GDP, they conclude that the underground economy cannot be large. Unfortunately, this is a circular argument. It is only if one believes in Statistics Canada's ability to capture the underground economy that one can

> conclude that these sectors really do total only 11 per cent of the economy. In fact, if the underground economy is considerably larger than Statistics Canada believes, there will be considerable spending in the "susceptible sectors" that is already missing from their chart.

This “bottom-up” or microeconomic methodology is clearly susceptible to incorrect assumptions, as is the macroeconomic methodology. Nevertheless, I would argue that it is a valuable adjunct to the macroeconometric approach, and more work needs to be done in this area. Having an understanding of the microeconomic sectors where the underground economy is most important is vital to the intelligent design of tax policy.

First of all, estimates of the overall size of the underground economy will have more credibility if they have a microeconomic counterpart. If we tell policymakers that the underground economy is 15 percent of GDP, based on econometric analysis of the money supply, they are likely to be skeptical, because they will not understand the analysis behind the estimate. If we can fill in the blanks by telling them where, on the ground, the underground economy is located, they are likely to take it more seriously as a factor in designing tax policy.

The reality is that the macroeconometric approach has a very large margin of error. Any econometric methodology is sensitive to the specification of the model, although this can be accounted for if the modeller is sufficiently careful. Bajada (2002) suggests a methodology for evaluation this aspect of the uncertainty. However, even if these concerns are accounted for, there are issues such as not knowing the value of the underground economy in a base year, and not knowing the velocity of circulation of cash in the underground economy.[14] The macroeconometric analyses gain credibility when they are grounded in microeconomic studies that give reference points.

Perhaps the ideal form of such a study is the Taxpayer Compliance Measurement Studies that used to be undertaken by the Internal Revenue Service (IRS) in the United States. In these studies, the IRS picked a scientifically chosen random sample of businesses and individuals to audit. (This is different from the normal practice, where audits are directed to areas where the largest revenue gains are expected relative to the effort.) The results of one such study are described in the Schoepfle (1992). Among the remarkable findings of this study is that sole proprietors as a group reported only about 40 percent of their true income (including those that did not file a return at all). Looking at the whole population, the study estimated that tax returns under-reported actual personal income by about 11 percent.

Of course, the IRS studies are not perfect either. On the one hand, there are forms of evasion that even the most persistent auditors cannot detect. On the other hand, the estimates of evasion in these cases are the opinions of the auditors, and there is a risk that auditors may occasionally exaggerate malfeasance to justify their own value. Nevertheless, this kind of detailed information greatly enriches our knowledge of the underground economy. As it happens, the IRS has discontinued these large random studies, both because of their cost and their unpopularity with the auditees. They are, instead, investigating the feasibility of adjusting the data from regular audits so that the results can be extrapolated to the general population.

A variety of methodologies is available for microeconomic analysis, not all of them as expensive as the IRS randomized audits. Inevitably, public opinion surveys would be one of the tools for deriving this information. These surveys have many potential pitfalls, as noted by Schneider and

Bajada (2003). People are reluctant to admit to doing something illegal, and therefore the more anonymous the survey, the more accurate it will be. A Norwegian study (Isachsen and Strom, 1989) found that almost twice as many people admitted to underground activity when they responded to an anonymous mail-in written questionnaire as when they participated in a face to face interview.

A recent study that is a very good model for this approach was done for Australia by Schneider et al (2001), using a written questionnaire. It provides quite a lot of detail about the underground economy in Australia, including income earned per individual and the types of services offered. Interestingly, the result implies that income earned in the underground economy was up to about 8.8 percent of national income, a considerably lower figure than Schneider's econometric estimate for that country.

The empirical research needs to try to answer questions such as the following: What kinds of goods or services are provided in the underground economy? What is the predominant income distribution in the underground economy? Knowledge about these issues can make a very large difference concerning the best tax policy. For example, marginal income tax rates in the middle range of income may become a more important concern if it is found that those are the people who are most susceptible to moving into the underground economy. Likewise, it is best to avoid sales tax increases on those services that are most prone to evasion.

Understanding the Business Structure of the Underground Economy

To know how tax policy affects the underground economy, the policymaker must learn who the participants are. This is something that can vary considerably from country to country, depending on its customary institutions and forms of regulation and business organization. To understand it does require a certain effort at investigation.

Inevitably, a large part of the focus of microeconomic studies has to be on the structure of the business population. There are three main types of participants in the underground economy: small to medium-sized family run firms; self-employed individuals, usually in service occupations, and criminal enterprises (including some larger units in the form of organized crime mobs).

Under-reporting of sales can be carried out with a tolerable risk only when the firm is small enough that the accounting is done by an owner or a member of the family rather than an employee. An employee in a large organization can only be relied on when the business is part of organized crime, which can then use the threat of violence to discourage employees from revealing embarrassing secrets.

The self-employed population has different definitions in different countries. In the classic sense, a self-employed person works alone, without employees. However, this definition can be quite fluid. A person who owns a small corporation, and may have dozens of employees, can still be considered self-employed.

There is a tendency to think of the underground economy as mainly consisting of self-employed individuals such as babysitters or home repair people, who ask their customers to be paid in cash

without a receipt. The self-employed with no employees are no doubt an important component of the underground economy. There are some self-employed individuals with substantial income who never file a tax return. In most democratic countries, a citizen is able to go through life without being called on by anybody to explain his source of income to the government. However, the demand for such services is largely restricted to the household sector, and it is unlikely that these "ghosts" make up a large part of the labour force. If it were restricted to such individuals, the underground economy would have to be much smaller than it is usually estimated to be by economists.

However, a considerable part of the underground economy consists of fully legal and registered business, who are only underground in the sense that they hide part of their income. This is not as difficult as it may appear. It should be realized that the profits in a business are always a residual after expenses are deducted from receipts. A small understatement of sales can lead to a large percentage understatement of income.[15] For example, suppose a business has sales of $1 million and expenses of $800,000, for a true net income of $200,000. Suppose that the proprietor understates his sales by just 10 percent, and reports the total as $900,000. As a result, net income is understated by 50 percent.

The underground economy needs cash transactions in order to avoid leaving an audit trail. However, a business does not have to go out of its way to ask its customers for cash in order to participate. In the normal course of events, a substantial portion of receipts will be in cash, in a retail business, for example.[16] Of course, some businesses encourage cash transactions more than others. For example, some retailers offer a cash discount of 2 or 3 percent (on the grounds that this allows them to avoid the service charge that credit card companies charge).

As long as a family member is in charge of keeping the books (and altering the computerized cash register database, if necessary) it is easy enough to substantially understate sales, and hence net income. Family firms with several millions of dollars of annual turnover can easily be substantial participants in the underground economy, without their employees or customers knowing anything about it. The owners of the company merely have to take a substantial portion of their income in cash, and be a little bit discrete in how they spend it.

The greatest scope for the understatement of sales through cash transactions is for businesses that deal directly with the public. However, these businesses in turn can use cash to pay their suppliers, thus understating both their sales and their expenses. The latter is not directly beneficial to them, but by enabling their suppliers to evade tax, they can purchase goods and services more cheaply. This can even apply to small local manufacturers supplying retailers with merchandise, although the scope for this has diminished through the globalization of manufacturing. Where a small business has trusted employees, they can be paid partly in cash as well. In this case, they too are evading tax, and as a result of this complicity there is less risk that they will report the underground cash to the authorities.

In analyzing the underground economy, the investigator needs to look at these key aspects of the structure of the business population. In each segment of business, how many firms are there that are small enough to be family run? What proportion of total employment do they account for in that sector? It is particularly important to establish the "susceptible population" according to approximate income categories, in order to discover how important marginal tax rates in a particular range are for influencing underground economic activity.

In the extreme case where businesses employ unregistered workers paid entirely in cash, even the total employment may not be accurately reported to the statistical authorities. However, in these cases it can reasonably be assumed that the pay rates are relatively low, and the employees in question are mainly illegal immigrants. The evasion of taxes is a secondary motivation in those cases, and therefore less of a concern for the design of the income tax rate schedule.

The Impact of the Self-Employed and the Underground Economy on Productivity

The self-employed population is of particular interest for studying the underground economy, as people in these occupations have the greatest scope for participating in the underground economy. There is also evidence from Schuetze (2000) that higher tax rates encourage greater participation in self-employment.

There is evidence that in some countries the productivity of the self-employed is significantly lower than that of workers in the regular economy. This was emphasized by Stabile (2004), who studied the consequences of higher payroll taxation, and found that it significanlty encourages participation in self-employment.

Palda (1998) emphasizes the welfare loss that results because taxation gives a competitive advantage to smaller scale firms, which means especially the self-employed. He notes that "in the presence of differing abilities to evade taxes, markets select producers for their evasive skills and their abilities to keep costs of production low. Inefficient firms crowd out efficient firms. If the least efficient firms are the best tax evaders, adverse selection is severe and output comes entirely from the high cost end of the supply curve."

It is very hard to assess empirically just how much less productive the self-employed sector is. The income in this sector is under-reported due to evasion, and statistical agencies rarely attempt to correct for this under-reporting. A particularly impressive example of the importance of this question, not just for tax policy but for broader economic policy, can be found in Baldwin and Chowhan (2003).

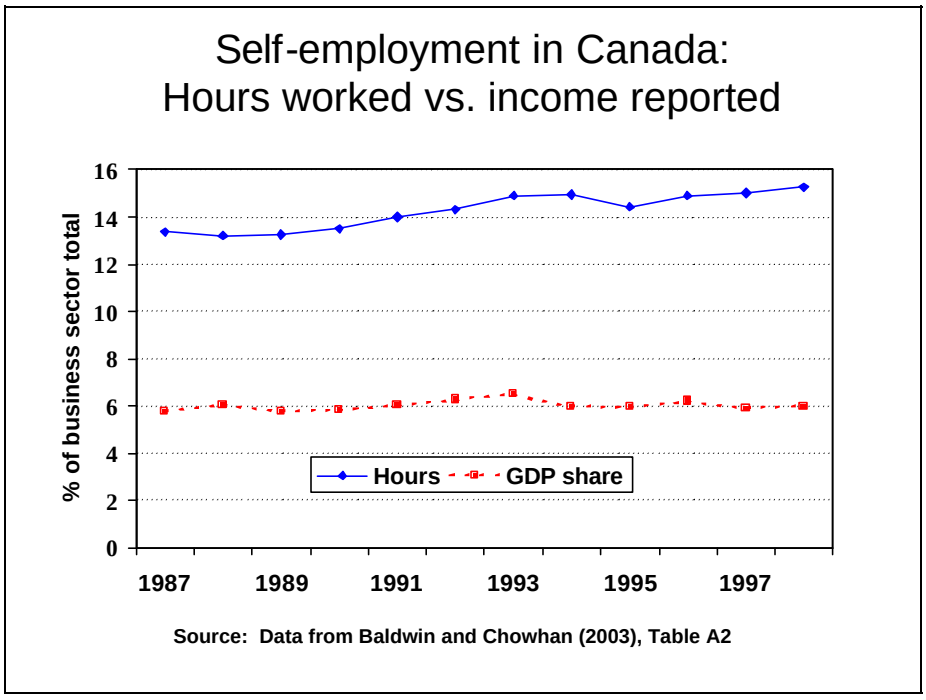
Since the mid-1990s, one of the most persistent sources of concern in Canadian economic policy literature (and the news media) has been the belief that Canada has fallen behind the US in productivity growth. Quite remarkably, Baldwin and Chowhan found that, when both the GDP contribution and the hours worked of the self-employed are excluded, there was virtually no difference between Canadian and US productivity growth in the 1990s.

The reason for this is two-fold. In Canada, the self-employed share of employment grew, while in the US it fell. In Canada, productivity growth among the self-employed was essentially zero, while in the US it was greater than for the rest of the economy. The growth rate of productivity of the self-employed was relatively high in the US in the 1990s, but in both countries the output per hour worked in the self-employed sector was considerably less than the economy's average.

In the late 1990s, the self-employed represented about 15 percent of hours[17] worked in Canada, but only about 6 percent of GDP.[18] In the US, the self-employed represented about 11 percent of employment, and 8 percent of GDP.

Baldwin and Chowhan provide what appears to be a plausible macroeconomic explanation of the productivity problem in Canada, so it is useful to quote some key sections of it directly:

> "It is tempting to conclude that it was our entrepreneurs who were the cause of the productivity slowdown in the early 1990s. But that is probably too simplistic an interpretation. It is more likely that in comparing total business sector productivity growth in the two countries in the 1990s, we are making the mistake of comparing two quite different ratios—even though we are calling them by the same name (output per worker), they are capturing different phenomena



(page V)."

> "Restructuring led to substantial layoffs of many individuals who did not find regular work and it is possible that these individuals chose not to call themselves unemployed, but to classify themselves as self-employed.... The income earned by those choosing, or those being forced into self-employment, was not zero; but it was considerably below the income of those who normally classified themselves as self-employed."

However, one remarkable point of omission in this paper is the complete absence of any mention of the underground economy. Most analysts believe that the underground economy is larger in Canada than in the United States, and that it grew more in Canada during the 1990s. That is an obvious alternative explanation for at least part of the divergence in productivity growth that ties in neatly with Baldwin and Chowhan's findings.

Baldwin and Chowhan's study is an important piece of the puzzle, even though it so completely ignores the underground economy. It is likely that Baldwin and Chowhan's data understates the true output of the self-employed sector. If that is the main explanation for the low level of productivity in the self-employed sector, their analysis is still very useful for showing how the underground economy can obscure the macroeconomic data, possibly leading to serious macroeconomic policy errors.

To the extent that productivity in the self-employed sector really is much lower than in the rest of the economy, that takes us back to our tax policy concerns. The main force through which higher tax rates increase the size of the underground economy is by increasing self-employment. The tax wedge between legal businesses and underground businesses "subsidizes" inefficient production, as argued by Palda, and it is one of the main economic costs of the underground economy.

Conclusions

Tax policy debates, more than most other areas of economics, have been driven by ideology rather than evidence. The level of taxation is at the core of the debate between those who want more versus less government participation in the economy, between collectivists versus individualists. Not too far behind the ideological debate is the battle over income shares and economic rents, and the reality that some of the most profound impacts of tax policy are on the distribution of income among different factors of production and different income groups.

However, for those who are interested in positive tax policy, it is possible to penetrate this fog. A great deal of good empirical research about the effects of specific kinds of taxation already exists, and this body of knowledge will grow as increased computer processing power gives researchers access to immense new databases.

This survey of the issues only scratches the surface of a very complex subject. This complexity, most of all, is what I want the reader to take away from what I have written. There are no easy, cut and dried axioms that can be used for setting good tax policy. The correct answer varies with circumstances, and specific choices need to be subjected to detailed empirical analysis. A change in taxation may appear to increase economic welfare when viewed in isolation, but could actually lead to a decline in welfare due to distortions elsewhere in the economy.

In the end, good tax policy analysis has to be empirical, and based on a very well articulated general equilibrium model of the economy. Along with all the other information going into this model about the response to tax changes, the modellers have to pay due regard to how each kind of tax change

influences participation in the underground economy. As I have noted, this can only be done through a very detailed microeconomic analysis. The underground economy is not a monolith that exists at a distance from the rest of the economy. Tax evasion is always a potential part of individuals' economic responses. How it plays out varies greatly from sector to sector, based the opportunities for tax evasion that arise due to the character of that sector.

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Notes

* The views expressed in this article are the author's personal opinions and should not be attributed to any organization with which he may be affiliated.

1. On this view, it is possible that the underground economy causes tax rates to be lower than they would otherwise have been, contrary to the common view (expressed above) that the underground economy forces legal activities to bear a larger tax burden. An economist who believes that government spending would otherwise go beyond the point where its marginal cost exceeds its utility could argue that the underground economy increases fiscal efficiency.

2. A useful new study by Davis and Henreksen (2004) properly takes this into account, estimating both the decline in hours worked in the market sector and increased informal sector activity due to higher tax rates.

3. The Congressional Budget Office (1997) provides an extensive survey and analysis. This 90 page paper is also a good example of the short shrift that has been given to the underground economy in tax policy analysis. The paper devotes a total of three paragraphs to the question of whether a consumption tax would be less prone to evasion than an income tax, and concludes in the negative.

4. The only instance in which there would be a different impact is when workers who earn their income in one country plan to move later to another country to spend it. In that case, raising the sales tax would have (for the same amount of revenue raised) a smaller impact on the supply of work than raising the income tax.

5. Widmalm (2001, p. 209). She also notesthat "when the share of personal income tax is included in the growth regressions the coefficient on the proxy for initial GDP becomes insignificant in many specifications."

6. North America provides a dramatic example of this, in the contrast between the United States (15 percent of tax revenue from consumption) and its neighbour Mexico (48 percent of tax revenue from consumption taxes). Among other recent OECD member countries, one finds consumption taxes accounting for 38 percent of the total in Korea, 37 percent in Poland and Hungary, and 45 percent in Turkey. These are well above the average for the more developed OECD countries. (Data from the OECD's Revenue Statistics, 1965-2003, Table 27).

7. It is not necessary for tax auditors to be able to find proof of underground business income to secure a conviction for tax evasion. In Canada, at least, the tax authorities have successfully prosecuted tax evaders based on the evidence of a high level of spending, without an adequate explanation for it in the form of legally declared income. Therefore, a careful evader would not buy a house that is much more expensive than his declared income could support, as this would be fairly obvious evidence of evasion.

8. It should be noted that economic theory is somewhat ambiguous about whether higher income tax rates inevitably lead to evasion. Allingham and Sandmo (1972) pointed out that this is not necessarily the case where individuals are risk averse. Therefore, this becomes an empirical issue. Probably the best empirical study is Clotfelter (1983). He used the results of IRS audits of tax evasion in different states, taking into account the fact that tax rates vary from state to state. Clotfelter's study did find that evasion rises with tax rates, but interestingly he concluded (p. 372-3) that "whether it should become an explicit consideration in formulating tax policy depends, of course, on its magnitude, and the estimates in this paper suggest that it is probably not large compared to other objectives."

9. To some extent, this is a circular argument. The index of corruption comes from an international agency which does surveys of the extent to which public officials are bribe-takers in different countries. However, as bribes to government officials often come from members of the underground economy, it might be questioned whether this is really an independent variable in these regressions.

10. Brou and Collins (2001) update Hill and Kabir's estimates and concur (p. 1555) that "a government interested in reducing informal economic activity will find it better to raise revenue through direct rather than indirect taxation. Higher indirect taxes will increase price distortions between the formal and informal sectors and encourage consumption of informal production."

11. It should be noted, however, that in this sense it is no different than a wholesale goods or manufacturer's sales tax. A tax of this kind existed in Canada prior to 1991, when a VAT (Goods and Services Tax, or GST) replaced it. The GST was spread over a much larger range of goods and services. Spiro (1993) argues that the larger evasion potential on the services portion led to an increase in the underground economy.

12. Services are more labour intensive than goods, and therefore the personal income tax imposes a larger burden on the cost of providing services. The analysis by Kleven et al (2000) suggests that services which are a close substitute for home production should bear a lower rate of tax than other consumer goods.

13. The study by Chirinko et al (2004) includes some interesting examples of the dramatic differences in policy implied by varying assumptions about key elasticities.

14. These problems are discussed by Spiro (1994b and 1996).

15. In addition to understating sales, income can be understated by overstating expenses. A self-employed entrepreneur has a lot of scope to make purchases in the name of his company which are actually for personal consumption purposes. For example, a dentist who renovates his office may ask a contractor to do work on his home as well, and charge it to the same bill. This would represent an illegal understatement of income, and is an aspect of the underground economy.

16. Robert Shiller (2003) envisions a future in which electronic means of payment become so pervasive that "paying in cash may become regarded as a suspicious activity," and he predicts that this will restrict the underground economy. However, it is possible to envision anonymous forms of electronic payment as well. If privacy laws remain sufficiently strong that they prevent pervasive monitoring of private transactions by the state, the underground economy could continue to thrive even with electronic payments.

17. It should be noted that some participants in the underground economy would be reluctant to divulge the fact that they are working at all to statistical agencies. Both the amount of work and the income in self-employment are understated, but income data (which comes from income tax returns) would be even more understated.

18. The percentage of GDP produced by the self-employed is remarkably low when one considers that most of the highest earning professions in the economy (physicians, lawyers, dentists, and professional accountants) are found primarily in the self-employed category.