# Applying the Wtx System to the Shadow Economy

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**Introducion**

The withdrawals tax WTX; Colabella & Coppinger (1995) is a modern model for public finance whereby bank withdrawals of individuals and businesses alike serve as the main source of government revenue and a tool for implementing immediate fiscal policy. As a base system of taxation, it is, conceptually, consumption based, and administered nationally through a centralized electronic collection system of a small percentage of revenue flow of cash disbursements as they pass through bank accounts. The WTX uses a low composite rate of tax over a very broad tax base that consists of the sum total of  most disbursement transactions. Implementing the model requires transitional changes in the utility of physical currency, as we now know it.  While the model has not been instituted it has been studied, (Steel 2006). He concludes that WTX model offers a good starting to thwart the shadow economy provided certain undeveloped issues are addressed.

The shadow economy functions on the basis of unrecorded and therefore untaxed cash and barter transactions that are relatively untraceable. The WTX is seen as a means to effectively capture general tax revenue as it is consumed as part of the consumption tax base. In perfecting the WTX system there is a need to protect the tax base. In its original design it is recommended that government introduce an expiration feature into its currency. In effect, utilizing a form of electronically perishable currency. The perishable feature would synergistically with the WTX eliminate the loss of tax revenue from most shadow economy transactions. This paper I intended to isolate, quantify and evaluate the possible effect of the WTX model will have the shadow (underground/black) economy

**Perishable Currency**

Once introduced there would be a change over to a form of national electronic currency that has an adjustable electronic expiration. Renewal of the currency through nationally regulated financial intermediaries would require coincident taxation. It is much liken to a check drawn to "cash" that is negotiable only for a certain period of time and can only be renewed by flowing through the banking system. Sheel 2006 concluded that there is significant value in the WTX in this respect. He postulates that the WTX system could effectively defeat all of most of the shadow economy and concluded that it is a workable model for mainstream application. This paper I will identify and quantify the effect the WTX model will likely have on the shadow economy.

Measurement Methods

In order to isolate the effect of the WTX an evaluation of the most viable method of measurement must be accomplished. There have been several scholarly attempts at measuring the shadow economy. The questions posed here are simply what, how and why we attempt to measure. How to measure it why seems to have evaded researchers. Most tend look at the underground economy from an economic point of view placing a value in terms of GDP or lost tax revenue. Conceptually I would like to take a completely different approach using the WTX model as a base.

Several researchers have attempted to objectively achieve measurement through monetary methods that employ reported transactions and isolating a cash transaction effect using econometric modeling to develop to studies that engages known econmic relationships. However some of these attempts at measuring the shadow economy fall short in focusing on the objects of measurement. Monetary approaches were studied and postulated by Cagan (1958), Gutman (1977), Fiege (1979) and Tanzi (1982, 1983). Gutmann  introduced the Currency Ration Method, which dates back to Cagan.

Gutmann postulates that the underground economy is weakened or absent under systems of low taxation and minimum restriction and formulates a ratio of currency to demand deposits to measure the shadow economy. Gutmann hypothesizes that high taxation and restrictions are the parents of all underground income. The first step in Gutmann's method is to study a time when the taxes were low and the restrictions were at a minimum. The major flaw is the assumption that there existed a time when the underground economy did not exist and it has since grown. Gutmann also makes two other assumptions: that transactions in the underground economy are done solely through currency and. second that the income velocity in the underground economy is the same as that of currency and deposits in the reported sector. Gutman assumes that changes in the ratio of currency to deposits are due to growth in the underground economy and thus a measurement. Formulated in the ratio of currency to demand deposits. It postulates that increases in the ratio over some base year are the result of the need to hold cash for underground transactions. However to make this observation seems to fall short in objective quantifying am amount with no meaningful relationship.

Tanzi uses a function of the rate of interested, per capita income, various tax variables, and the share or wages in national income to measure the shadow economy, essentially re-working Gutmann's model. He uses econometric methods to recognize the concept of income-velocity and its effect on the underground economy. Tanzi's approachis more focused but lacks it too lack relevant objective of measurement.

Fiege, postulates, as does Gutmann, that the underground economy is directly related to taxation. Fiege's model for measurement of the underground economy can be summed up in a mathematical equation that takes into consideration the idea that the ratio of currency to checkable deposits is held constant. Fiege's method can be summarized using the quantity of money theory, expressed as $Mv = PT$. $M$ which is money, including deposits. $PT$ is the value of transactions. Fiege postulates that the estimated difference between total nominal income and observed nominal income is the size of the relative underground economy. In this effort he calculates the velocity of money. Fiege examines the relationship between the total value of transactions and measured GDP. He further postulates that underground activity is directly linked to changing attitudes towards government and changing rates of taxation. Fiege also states that indicators of domestic currency policy must be adjusted to account for variations in overseas holdings of US currency. Fiege tell us that the underground economy is directly related to taxes. With an increase in taxes, comes an increase in the underground economy. This is due to the fact that when federal and state taxes are raised, it is ultimately more cost-efficient to pay for things in cash and checks and to avoid the taxes associated with reporting these transactions. Fiege states qualitatively that the underground economy is fueled by higher taxes and distrust of the government.

**The Withdrawals Tax**

The WTX system eliminates this because of the money's limited velocity. Since there is no way around the WTX system, all transactions are now indirectly taxed. Because the underground economy uses its current imperishable currency, cash hoarding is a major issue. With the WTX and the idea of perishable currency (which can be summed up with the simple statement "use it or lose it") the underground economy can now be tracked and, more importantly, taxed. Since the underground economy is now taxed, the government can expect a major increase in tax revenue.

Given the measurement schemes postulated and the observable economic data studied, the WTX offers a structure that can be used to effectively measure the shadow economy in terms of "consumption". I therefore postulate the following as have sufficient external validity so as to serve as quantifiable variable:

> 1) all shadow economy transactions are either executed in cash or through barter transactions in some form or another.
> 2) the objective in execution of all shadow economy transactions in consumption and not invested and ;
> 3) all shadow economy transactions are current in or eventually enter the mainstream economy on a secondary mainstream transactions

This seems to be a valid viable measurement since consumption has been seen as a better means of measuring true wealth for tax purposes rather than the using the income tax approach. Taxation of consumption as a viable public finance system dates back to Thomas Hobbes. Who wrote ". . . the Equality of Imposition consisteth rather in the Equality of that which is consumed, than of the riches of the persons that consume the same" (Hobbes 1651: 387).

He made a logical argument that consumption is the material manifestation of the fruits of one wealth that is enjoyed and therefore consumption is the true focus of wealth and should be the base of taxation. Kaldor (1955) argue that for an expenditure tax as a coexisting surtax to income tax in the United Kingdom (UK) . The Meade Commission in the UK (Institute for Fiscal Studies 1973) made forceful case for consumption taxation however no country has totally shifted its tax system. However, there exists today a mix of income and consumption taxation. All EC members have implemented value added taxes and they now constitute between 15 and 25 percent of tax revenues for these countries (see Metcalf 1995).

Many economists have advocated a total shift to consumption taxation for three straightforward reasons: simplicity, efficiency, and fairness. Simplicity in that income taxes are difficult and costly to administer, nearly impossible to measure accurately while consumption is observable fairly aligned with income and more representative of the trappings of wealth. A tax on consumption tax is said to be mor efficient because it eliminates intertemporal consumption distortion by ending the tax on savings by reducing the tax on capital. This encourages economic growth through greater rates of investment.

Bradford (1995). Other economists have argued for a shift to consumption taxation based on fairness. Hobbes justifies consumption taxation on a benefits principle. Kaldor (1955) argued that complexities of the income tax are so great that a shift to an expenditure tax would in fact raise more revenue from the very wealthy than does the income tax.

The foundation of the WTX model is the fact based on these predecessors learned contributions. The uniqueness of the WTX is that it is a more practical model than it is a theoretical foundation \for the consumption tax The WTX focuses on how taxpayers use their economic equity, that is for some gainful purpose, consumption or just give it away. The WTX model unilaterally automates revenues collection in the process by using the banking system to collect and account for the tax. The WTX forges an unbreakable union of the banking system that will be very difficult to avoid or evade and at this focal point the shadow economy is defeated both systematically and philosophically. The simplicity of an automated tax collection system eliminates the human capital that is exhausted by taxpayers in the pervasive litigious confrontations between them and the government under our current system. This eliminates one major philosophical contributing factor to the underground economy, Gutmann and Fiege.

### Fundatmentals of the Wtx System

In order to make an econometric model of how the WTX can impact the shadow economy a clear understanding of the mechanics of the system is needed. The focus of the WTX is *generic* withdrawals by check, debit advices, exiting wires from the taxpayer's financial institution regardless of most intended purposes. All funds deposited in the account go into the operating account, such as paychecks, business receipts and rents etc. unless they are earmarked for non-taxable distribution and placed in the non-taxable sub account. Currency, once withdrawn from the account cannot be replaced in the account without taxing it again. Certain control mechanisms are in place to avoid double taxation.

"Securities" accounts are a taxpayer's investment account encompassing all monetary assets held in the form of securities, money market funds, commodities and the like that under the management of a particular custodial/broker institution. The income making activity of the account namely the security purchases and sales is not be taxed. Instead, the account would be treated like an IRA account, taxing all withdrawals regardless of their nature. This account would have no escrow component. Redeposit of cash would have treated like a normal account

"Insurance" accounts are essentially insurance policies**.** Theoretically, all insurance premium payments are taxed, as they are withdrawn from the taxpayer's bank account. Claims paid are only be subjected to tax in excess of premiums paid. Therefore, an insurance account will be comprised of an escrow fund. "Accumulated premiums paid" would act as a contra-account to the operating portion, which taxable disbursements are to be made from as claims are paid.

The tax base derived for individuals would be different than for commercial enterprises. Individuals pay tax as they withdrew or transferred cash or a cash equivalent from their accounts for any purpose.

Individual transactions subject to the WTX include the following:

- Check withdrawals
- ATM or Cash withdrawals of any kind from checking or savings accounts
- Inter-bank transfers or wires of money directed by an individual for any purpose
- Title transfers by gift at fair market value [1]
- Transfer of an estate at death at fair market value
- Distributions from trusts in cash
- Distributions of property from trusts and estates at fair market value
- Check cashing

Individual's transactions not subject to tax would be:

- Credit card purchases
- Cash advances
- Use of credit lines
- Disbursement of mortgage proceeds
- Transfers to similarly titled accounts (rollovers)
- Transfers to trusts
- Transfers of cash and property to controlled entities

The commercial enterprise tax base derived for business entities is more problematic but it is intentionally designed to be simple to avoid any exceptions to certain businesses and cause inequities. The following would be subject to tax at the source:

- All business operating expenditures made in cash or by cash equivalent
- All transfers of cash or cash equivalents that are not rollovers
- Payments of all dividends
- Retirement of debt paid in cash or cash equivalents
- Boot paid

The following corporate transactions not subject to tax:

- Transfers of cash or property to a wholly owned subsidiary
- Rollovers of cash to similarly titled accounts
- Disbursement of bond proceeds
- Disbursements from credit line
- Letters of credit

The nature and complexity of business transactions creates allocation problems, but none of these problems are less workable in the WTX system than are those of the income and sales tax systems. It is possible for businesses to avoid the tax by shifting the burden and measures are expected to counter unforeseen situations. Title transfers and non-cash transfers of title for any purpose can be affected without liquidation and escape the WTX. Accordingly, a tax all significant title transfers at fair market value would be collected upon legal recordation of titles and levy the tax on only those large items such as real estate, vessels and vehicles. Finally, the WTX electronic currency system can short-circuit the shadow economy on many fronts. Notably, rising tax rates and distrust of the government cited as main catalysts to the underground economy's growth and maintenance. This paper should further support the installation of consumption tax systems as mainline public finance systems that facilitate fiscal policy initiatives and bring to shadow economy out of darkness.

**Just What Are We Measuring?**

The research on the shadow economy to date focuses on econometric measurement methods of different focal views of what is being quantified. Some on GDP others on gross transactions and others on lost tax revenue. In order to focus the WTX effect of the shadow economy we must clearly define the effect we are measuring. I first postulate that all underground economy effects get measured in the mainstream or legitimate economy sooner of later.

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[1] **If fair market value is less than cost, then cost is the applicable base**

This has to be true because measurement is first in the unit of measurement being currency transactions are at the base of activities that government focuses on in making estimates of the shadow economy. However the governments definition is scattered and there seems to be no focus precisely what we are measuring

Government agencies calculate Gross National Product (GNP), based on information gathered from legitimate "income" reports, usually through the tax system generated by business entities, non-profit organizations and individual taxpayers. Government cannot use the estimated billions of dollars in "cash" circulating through what is known as the underground economy. The underground economy from the government's point of view includes income generated through illegal means, such as prostitution or gambling, as well as legitimate but cash-based activities such as online auctions or bartering services. The government has a number of methods for tracking the exchange of goods, services and currency an above-board economy, but very few ways of tracking the activities of an underground economy. Question, while the unit of measurement is currency there is no clear definition of income so just what is income, gross income or net income?

Some economists estimate that the underground economy in the United States alone accounts for up to $1 trillion Dollars per year in unreported "cash holdings".  Just what is a "cash holding?"  The US government also estimates that 80% of all US one hundred dollar bills printed every year-end up overseas within weeks of their circulation. The underground economy supports any number of overseas operations, including covert wars, raw drug production and human slavery rings but not all underground economy transactions are criminal activities. Legitimate occupations contribute to the shadow economy particularly those, which work off cash sales that go unreported. Estimating the actual extent of the underground economy is no an exact science, the government observes financial changes in the legitimate economy coming from to the flow of hard currency. Assuming that most citizens' spending habits don't vary much from year to year, any sudden increase or decrease in the amount of currency circulating is indicia of more active movement in the shadow economy. .

When taking into account economist and government's collective conceptual focus of the shadow economy, one postulates the following.

The notion of an amount of the shadow economy is not meaningful unless it is related to and element of something lost by society or the quantification of a burden disproportionably spread in society. Question, what is lost and what burden are disproportionate?  In answering this, we can observe with moderate external validity that he shadow economy does not represent anything lost by society. This is valid because the shadow economy must feed the legitimate economy. Unreported cash transactions have to flow into either legitimate or illegitimate hands. In defining the variables we have only variations of monetary transactions measured in terms of cash/ currency such as:

(P) Cash withdrawn from financial intermediaries by individuals or businesses to pay for goods and services that are either illegal (drugs etc) or legitimate goods and services both reported and not reported as a taxable sale or cash receipt.

(Q) Cash collected through shadow economy transactions and either reentered into the shadow economy such as cash sales skimming, such as paying hired help off the n\books or expended in the legitimate sector.

R) Cash disbursed by governments to be used in used covert operations domestically and overseas.

(S) Cash collected in country and physically expatriated to foreign countries.

(Z) Currency outstanding in the shadow economy

Given any values to these variables at any one given point in time will yield the Z factor which will precisely be the currency outstanding in the shadow economy.

$$( P+R ) - ( S+Q ) = Z$$

However, is this the valid measurement of the shadow economy? To gain validity we turn towards a widely used approach to measure the size of the shadow economy which is "the monetary method", It is based on the assumption, that I agree with, postulating that only cash is used in transactions to hidden from official recordation and measurement. In this method, the amount of currency used to make hidden transactions is estimated, and multiplied by the "income-velocity of money" to get a measurement of the shadow economy let's call that *M* factor. This monetary approach was first presented by Gutman (1977) and used by Feige (1979) and it further evolved in estimates made by Tanzi (1982, 1983). Many have followed with empirical studies. The fault in the processes is the econometric modeling that is used.

It is predicated on estimating the demand for currency coupled with other factors present in the general economy such as income elasticity. I don't diminish this effort by saying that actual traceable currency flows will yield more accurate measurements. It is this element that the WTX perishable electronic cash can yield a truer measurement that will replace the *M* factor with a more accurate *Z* factor. In deriving a *Z* factor we are merely attempting to measure the amount of useable currency inside the imaginary walls or the shadow economy. Is this where we want to go?

A measurement of unrecorded GDP may be a viable representation of the shadow economy. The focus of the measurement would comprise the sum total of the accumulated the goods and services paid for with cash or barter in the "illegitimate sector" either in the aggregate of over a period of time. However, the cash contribution to the illegitimate sector is not traceable or even defined in the methodology researchers propose. The WTX may offer a means to accomplish this.

Many other attempts at estimating the shadow economy are addressed in terms of GDP. Generally, using the GDP approach is more complex. An often used method is the MIMIC model, which stands for "multiple indicator multiple cause". While many other pioneers preceded them Giles and Tedds (2002), is considered the most concise detailing of the methodology. Bajada and Schneider (2005), later studied the Australian and other Pacific Rim nations using the method, and Dell'Anno and Schneider (2003), estimated the underground economy in Italy. The MIMIC approach represents the output (or income) of the underground economy as a latent variable or index, that is not directly observed but inferred through a mathematical model from other variables that are observed and directly measured. There are two kinds of observed variables in the MIMIC model, "causal" and "indicator" variables, which are connected by an unobserved index. Values of this index over time are derived from data on the causes and indicators by using a statistical model and to predict the index. This index is then interpreted as a time-series estimate of the magnitude of the underground economy. Usually the measure is inside output or incomes as a percentage of recorded GDP. Proponents of the methodology claim this measures hidden economic activity.

MIMIC modeling has been criticized. Helberger and Knepel (1988) show that the pioneering results of Frey and Weck-Hannemann are relatively unstable given minor changes in data period or the country studied. Smith (2002) and Hill (2002) criticize Giles and Tedds for the absence of general economic theory. Interestingly Breusch (2005), shown that the time path of Giles and Tedds estimates have little to do with any underground activity and reflect price inflation and real growth in the observed economy.

Does the MIMIC model solve the riddle? What did we measure and what is the significance of what we measured? I agree that measurement of undocumented GDP is significant but hypothesize that ultimately the amount of GDP that really goes unmeasured is negligible. If we return to the *Z* factor, we see that the only amount of undocumented GDP is the portion that remains within that economy at any given point in time. This may be so because the initial cash contributions to the shadow economy are the only amounts that escape documentation. It may be that most of that initial cash disbursement eventually works its way into the legitimate economy. This lends support for the hypothesis in that only the amount of cash outstanding in the shadow economy is the unrecorded GDP. Using standard accounting principles, the annual rollover of that outstanding cash would be a truer measurement of the GDP for a given time period. Accordingly, the following variables can be formed:

$$\frac{\dfrac{\Sigma\ CW \ \mathrm{x}\ IR}{(Z_1 +\ Z_2\ )}}{2} = M$$

The numerator representing the sum total of cash infused into the shadow economy as a derivative of the total cash withdrawals from financial intermediaries C*W* and a latent variable *IR* being the likely percentage of those withdrawals entering the shadow economy. This variable is yet to be developed but I am confident that empirical study will yield a reliable factor. However, absent a reliable factor a minimum maximum scale can be calculated to give parameters to the computation. The denominator is the average *Z* factor with $Z_1$ representing the factor at the beginning of the measurement period and $Z_2$ the factor at the end of the period.

**Applying the Wtx**

In either methodology the derivative of the factors is achievable with the perishable cash feature of the WTX. Assume for the moment that the sum total of currency issuances came solely from banks and not the government.

This is not to say government cannot control the money supply just that issuances of perishable currency would be traceable an accountable much the same as outstanding checks in a bank account are tabulated. Given full compliance, the total amount of currency outstanding and the actual flow of cash can be determined. With precise accounting for the cash redeposited in the legitimate sector the illegitimate factor is derivable. The curtailment of the shadow economy can be accomplished by adjusting the length of time that currency is negotiable. This will shorten the ability of cash payers to negotiate into the illegitimate sector. While the shadow economy cannot be totally eliminated in this way, two factors emerge from the WTX and become prevalent in society. First, the WTX will eliminate much of the motivation of taxpayers to enter the shadow economy. Second the tax burden will be so widespread that the tax will be more acceptable to taxpayers. Predecessors postulate that increases in taxes induce taxpayers into the shadow economy. While illegal transactions are by their nature clandestine activities, shadow transaction will never be eliminated but n theory the WTX can limit shadow economy transactions and include it in the tax base.

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