Illuminating the Shadow Economy:
An Exploratory Study of Tax Evasion Predictors

Robert Hutchinson, University of Detroit Mercy,
hutchirl@udmercy.edu, (313) 993-1161

ABSTRACT

The shadow economy is estimated to be US$10 trillion and exists outside the scrutiny of tax authorities. Utilizing data from Hofstede's International Dimensions of Culture (2010) the World Bank from 2005-2010, this study develops a regression model that is able to predict a significant portion of this shadow superpower where it exists and serves as a major step toward developing an international tax compliance framework. The results of this research have major implications for other research areas and may be used to illuminate other dark areas international tax compliance such as international intra-firm transfer pricing and income shifting.

Keywords: International Taxation, Transfer Pricing, Income Shifting, Tax Evasion, Hofstede's Cultural Dimensions

BACKGROUND

Tax evasion is a violation of tax law, whereby the taxpayer fails to report taxable income. It is a widespread phenomenon that has become a growing problem for many countries. What we in the West call the "shadow" or "parallel" economy represents the majority of the real economy in many countries. In more than 50 countries around the world, the shadow economy represents at least 40 percent of real gross domestic product (GDP) (Prentice, 2010). In some states of the former Soviet Union that number may reach far higher. In 2007, it is estimated that the Republic of Georgia's shadow economy represented 73% of total GDP, but with a wide margin of error that number may even approach to 90% (Schneider et al., 2010). At the other end of the spectrum, the United State's shadow economy equaled only 9 percent of GDP, but even this relatively small share of the world's largest economy, valued at US$14.26 trillion, could represent US$1.2 trillion in taxable income that goes unreported every year (Prentice 2010).

The shadow economy, which is also known as the underground, informal, parallel economy, includes not only illicit activities such as narcotics and human trafficking, but also otherwise licit activities such as cleaning services, landscaping, construction, etc. It happens every time a taxi driver carries a passenger off the meter, when a plumber fixes his neighbor's sink, or when an accountant prepares a friend's tax return and receives payment in kind. According to Neuwirth (2010), even "kids selling lemonade from the sidewalk in front of their houses are part of [the shadow economy]". It includes all unreported income from the production of legal goods and services, either for pecuniary or barter transactions.

Although shadow economic activities have long been a fact of life, in all countries around the world, almost all societies attempt to control its growth because of the potentially serious consequences. The fear is that growth in these sectors can set off a destructive cycle of tax evasion leading to erosion of the tax base and diminished governmental services. Governments often respond with higher tax rates and more regulation, which can have the undesired effect of driving more business into the shadows (Schneider et al., 2010). Thus begins a vicious cycle of ever increasing tax rates shouldered by a shrinking tax base.

Unfortunately, empirical evidence has yet to provide a clear understanding of the exact factors that may contribute to the shadow economy or how tax authorities can effectively curb its growth. There even exists some debate as to whether or not the shadow economy is a net negative or positive to the overall economy, with 67 percent of the its production feeding back into the mainstream economy (Schneider & Enste 2002). Although it is generally seen as a drain on society, Schneider and others (2010) believes that the existence of a shadow economy, up to the 25 percent mark, can actually improve ordinary people's quality of life.

One thing is clear, with nearly half of the world's workforce engaged to some extent in the shadow economy and projections of that number to increase to two-thirds by 2020 (OECD), better understanding and predicting the shadow economy and tax evasion will become an ever more important task for researchers and policy makers.

This study explores several of the factors thought to be associated with tax evasion. Through regression analysis, it answers the question of which possible predictor variables are included in a model predicting the level of tax evasion. The obtained regression model resulting from a subset of the possible predictor variables allows us to reliably predict tax evasion. This is a major step toward predicting where and to what extent tax evasion is occurring and provides a solid foundation for future efforts in developing an international tax accounting compliance framework.

METHODOLOGY

The goal of this study is to determine a group of factors, particular to a nation, that significantly predict tax evasion. Following Tsakumis and others (2007) and Alm and Torgler (2006), this study builds on the idea that Hofstede's Cultural Dimensions (1980, 2010) are good predictors of behavior, which in this case is the reporting of income. This study is a major extension of the previous two works, both in theoretical scope and sample size. Alm and Torgler (2006) examined the relationship between culture and "tax morale" in 16 countries. Tsakumis and others (2007) examined the relationship between Hofstede's (1980) four dimensions of culture and tax compliance in 50 countries between 2000 and 2002. This study will examine the relationship between Hofstede's (2010) five dimension of culture and tax compliance within 69 different countries over a time period between 2005 and 2010. In addition, this study will incorporate other factors, previously suggested to be related to tax compliance (see Schneider et

al. 2010, Schneider & Enste 2002) such as Gross National Income (GNI), time to prepare taxes (TIME), average corporate tax rate (RATE), strength of legal system (LEGAL), and ease of conducting business (EASE). While these factors have often been suggested as being primarily related to tax compliance, we find little empirical evidence of this in the literature. A few studies have examined the role of penalties, audit rates, withholdings, compliance costs, and even social stigmatization on tax evasion within a single country (e.g. Porcano 1988, Porcano & Price 1993, White et al. 1993) and internationally (e.g. Alm et al. 1990, Richardson 2006).

This research will determine which combination of these factors is the best predictor for tax evasion. The dependent variable, tax evasion (EVASION) is measured using the relative size of the shadow economy as a proxy. The size of the shadow economy is relatively hard to determine exactly, but we follow a commonly used methodology of measuring the change in cash and cash equivalents in circulation for a given year. The difference between the growth in currency circulation and official GDP is used to estimate the growth in the shadow economy. We go back to 2000, which is the last year for which the World Bank conducted a large-scale survey of the shadow economy and measure its growth from that point forward.

With the exception of Hofestede's Cultural Dimensions, all other data are available through the World Bank and will be collected and analyzed over the summer in SPSS.

RESULTS

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.710[a]	.505	.503	.122381890146	.505	419.778	1	412	.000
2	.722[b]	.522	.519	.120423129250	.017	14.512	1	411	.000
3	.734[c]	.538	.535	.118474023773	.016	14.635	1	410	.000
4	.740[d]	.547	.543	.117402505290	.009	8.518	1	409	.004
5	.744[e]	.553	.548	.116764808028	.006	5.480	1	408	.020
6	.748[f]	.560	.554	.116025775402	.007	6.214	1	407	.013

a. Predictors: (Constant), GNI_2

b. Predictors: (Constant), GNI_2, MAS

c. Predictors: (Constant), GNI_2, MAS, Ease

d. Predictors: (Constant), GNI_2, MAS, Ease, PDI

e. Predictors: (Constant), GNI_2, MAS, Ease, PDI, Rate_2

f. Predictors: (Constant), GNI_2, MAS, Ease, PDI, Rate_2, UAI

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.287	1	6.287	419.778	.000[a]
	Residual	6.171	412	.015		
	Total	12.458	413			
2	Regression	6.498	2	3.249	224.028	.000[b]
	Residual	5.960	411	.015		
	Total	12.458	413			
3	Regression	6.703	3	2.234	159.185	.000[c]
	Residual	5.755	410	.014		
	Total	12.458	413			
4	Regression	6.820	4	1.705	123.708	.000[d]
	Residual	5.637	409	.014		
	Total	12.458	413			
5	Regression	6.895	5	1.379	101.146	.000[e]
	Residual	5.563	408	.014		
	Total	12.458	413			
6	Regression	6.979	6	1.163	86.401	.000[f]
	Residual	5.479	407	.013		
	Total	12.458	413			

a. Predictors: (Constant), GNI_2

b. Predictors: (Constant), GNI_2, MAS

c. Predictors: (Constant), GNI_2, MAS, Ease

d. Predictors: (Constant), GNI_2, MAS, Ease, PDI

e. Predictors: (Constant), GNI_2, MAS, Ease, PDI, Rate_2

f. Predictors: (Constant), GNI_2, MAS, Ease, PDI, Rate_2, UAI

g. Dependent Variable: Shadow Percentage

IMPLICATIONS

The results of this study show that income per capita is the single largest and most significant predictor of tax evasion. This factor alone is responsible for predicting more than half of the total variance in the shadow economy. What is clear from this research is that lower levels of per capita income are associated with higher levels of tax evasion. This supports the common belief that growth in the shadow economy leads to a vicious cycle of increasing burden on legitimate tax payers and declining governmental investments in infrastructure.

Interestingly enough, this study suggests that Hofstede's Cultural Dimensions are not as strong a predictor of tax evasion as was suggested in previous research. Our research, using a larger sample of countries over a longer, more recent time period, did not find that the cultural dimensions were significantly associated with tax evasion. What might be more accurate, is that they do not provide much in terms of prediction value beyond GNI.

The only exception to this is masculinity (MAS), which marginally explained an additional two percent of the variation in tax evasion. Although previous research had predicted a positive association, this study confirmed this variable to be negatively associated with tax evasion. One potential explanation is found in Hofstede's own definition of a "masculine" culture as one that seeks recognition of society. In this light, one sees how shadow business would not fulfill this particular need. Success in the shadows is by its very nature secretive. A successful "debrouillard" may find it difficult to advertise his success without attracting the scrutiny of governmental tax officials.

 The only other factor that was significant enough to include in the predictor model was business ease, which added roughly another two percent to the overall predictive ability of the model. This factor has long been suggested as a primary factor in the growth of tax evasion, along with tax rates. What is interesting is that this study shows that it is not nearly as important as what has been suggested. Moreover, tax rates were not found to be significantly associated with tax evasion at all. It contributes at most half a percent to the model, but lowers the overall significance of the entire regression.

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