



REVIEW ARTICLE

UNDERGROUND ECONOMY IN MALAYSIA: EVIDENCE FROM SMUGGLING  
ACTIVITIES IN PENANG

\*Tajul Ariffin Masron, Afizar Amir and Haslindar Ibrahim

School of Management, University Sains Malaysia, 11800 Minden, Penang, Malaysia

ARTICLE INFO

Article History:

Received 14<sup>th</sup> March, 2011  
Received in revised form  
5<sup>th</sup> April, 2011  
Accepted 9<sup>th</sup> May, 2011  
Published online 14<sup>th</sup> May 2011

Key Words:

Underground Economy; Smuggling.

ABSTRACT

This paper discusses the extent of underground economy in Malaysia, with a special reference to smuggling activities in Penang. Although the impact of underground economy on developed countries could be minor but it has a serious implication on developing countries. Nonetheless, the study about underground economy is relative scarce. By focusing on the smuggling activities, this study attempts to measure the extent of underground economy in Malaysia. The data are from the confiscated and contrabands smuggled to Malaysia, but limited to cases observed in Penang. All the illegal smuggling activities are recorded from year 2004 to 2008. The results explained the trend of this version of underground economy in Malaysia from the smuggling perspective.

© Copy Right, IJCR, 2011 Academic Journals. All rights reserved

INTRODUCTION

Underground economy is also known as black economy. In general, the terms include all unregistered and unregulated economic activities (Tedds, 2005). Since much of the details of underground economy known by its nature it is not amazed to see underground economy being replaced with various names. Kasipillai (1998) referred the underground economy as parallel, irregular, twilight, black, cash, subterranean, shadow, secondary and hidden economy. Meanwhile Oh (2009) substituted underground economy with a long list like black, hidden, subterranean, irregular, unofficial, submerged, informal, second, cash, traditional and shadow economy. To some extent, the economists tried to define underground economy as clear as possible. Feige (1979) define the underground economy as including those economic transactions which unreported or are unmeasured by the society's current techniques for observing economic activity. Giles and Tedds (2002), explains both narrow and broader definition of underground economy. They states the narrow interpretation would include only legal market transactions that are not included in the measured gross domestic product (GDP). While the broader definition includes both legal and illegal market transactions that are not included in measured GDP. The very broad definitions by Giles and Tedds (2002) would be one that included all transactions, legal and illegal, market and non-market that are meant to be dismissed from GDP or evade from the tax authority (Table 1).

Table 1. Definitions of the Underground Economy

Definition
1. Legal market based transactions missing from measured GDP
2. Legal market based transactions not reported to the revenue gathering agency
3. Legal and illegal market based transactions missing from measured GDP
4. Legal and illegal market based transactions not reported to the revenue gathering agency
5. Legal and illegal market and non market based transactions that escape detection or are intentionally excluded from measured GDP

Notes: The relationship between the resulting estimates from these definitions can be portrayed as follows 1<2<3<4<5. In other words, 1 is a subset of 2, 2 is subset of 3 and so on. No. 5 is the broadest definition of underground economy.

Sources: Tedds (2005, p. 4), which is originally extracted from Giles and Tedds (2002, p. 89).

To further discuss the components of underground economic activities, Table 2 demonstrates some potential activities classified under illegal and legal activities, which later on further segregated into monetary and non-monetary transactions. For legal activities, and for each transaction, we can break it down into two motives, namely tax evasion and tax avoidance. Obviously, Table 2 shows that the underground economy includes unreported income from the production of legal goods and services from both monetary and non-monetary transactions.

Table 2. Taxonomy of Types of Underground Economic Activities

	Monetary Transactions	Non-Monetary Transactions	
Illegal Activities	Trade with stolen goods; drug dealing and manufacturing; prostitution; gambling; smuggling and fraud.	Barter of drugs, stolen goods, smuggling etc. Produce or growing drugs for own use. Theft for own use.	
		Tax Evasion	Tax Avoidance
Legal Activities	Unreported income from self-employment; wages, salaries and assets from unreported work related to legal services and goods.	Employee discounts, fringe benefits	Barter of legal services and goods All do-it-yourself work and neighbor help

Note: Structure of the table is taken from Lippert and Walker (1997, Table 1,p.5) with additional remarks.

According to Park (2003), the average size of underground economy for eight Asia countries under study, namely Bangladesh, Cambodia, Hong Kong, Indonesia, Korea, Malaysia, Thailand and Singapore, in percentage of official GDP increased from year 1992 to 2003. As presented in Table 3, none of these countries recorded a declining pattern of underground economic size. His study shows that Thailand has the highest size of underground economy in 2003 while Singapore is the lowest Country like Thailand which that recorded the biggest estimated underground economy in 1992-2000 period with the ratio of 52.6 percent (almost half of formal sector!) has also recorded an increasing pattern. The cleanest country under this study is Singapore, with the size of the underground economy estimated at 13.1 percent in 1992/2000, followed by slight increase in 2002/2003 to merely 13.7 percent. Malaysia has moderate level of underground economy with the size was around 30 percent in 1992/2000 and the recent estimated figure was 32.2 percent.

**Table 3. Underground Economy in selected Asia Countries (as % of GDP)**

	1992/2000	2000/2001	2002/2003
Bangladesh	35.6	36.5	37.7
Cambodia	50.1	51.3	52.4
Hong Kong	16.6	17.1	17.2
Indonesia	19.4	21.8	22.9
Korea	27.5	28.1	28.8
Malaysia	31.1	31.6	32.2
Thailand	52.6	53.4	54.1
Singapore	13.1	13.4	13.7

Source: Park (2003, slide 8)

For Malaysia, whether or not figure estimated by Park (2003) is really frightening, several comments reported in the Star Newspaper is worthy to mention here. As reported by Then (2010), referring to minister's word, it is argued that "black economy" in Malaysia has grown to RM10 billion recently. Among others, the activities that are under the spotlight are betting, gambling, human trafficking (of mainly women and children for prostitution), money laundering, drug trafficking and even terrorism-related activities. More importantly, the recent development in this area shows that it involves many countries. In other words, what really worrying is the money from this activities will then be used to finance a more transnational crimes. This is particularly true and pressing issue as Malaysia might also be countries like Mexico and Jamaica in which their corrupt politicians turn a blind eye on illegal activities being carried out by their paymasters – drug lords if there is no strict enforcement to combat these illegal activities (Ibrahim, 2010).

While there are lot of attention been given on the illegal activities, but less attention has been given on legal activities but transacted informally (or illegally). So far, we noticed few studies deal with this point such as Mohammad (2004). Nonetheless, the Mohammad (2004) only offered estimated Figure for 2002. Therefore, this study attempts to contribute to the literature by estimating the potential size of legal but informal economic activities in Malaysia through different angle. We gather information from Royal Malaysian Customs (RMC) about smuggling activities. Although our original intention was to collect data throughout the country, due to long process of getting full information from RMC, and only managed to get information from RMC Penang branch, we decided to report this finding in this study. We re-oriented our objective then to highlight the recent trend of underground economy in Malaysia as well as type of 'legal' goods smuggled.

The organization of this study is as follows: The next section reviews some studies related to underground economy from several aspects. The third section discusses the methodology used in gathering the information. The results of study are presented at section four and section five concludes the study.

## LITERATURE REVIEW

Most of previous studies on underground economy deal with the issues of its size and impact on a particular country such as Frey and Pommerehne (1984), Thomas (1992), Loayza (1996), Pozo (1996), Lippert and Walker (1997), Schneider (1994a, 1994b, 1997, 1998), Johnson, Kaufmann and Shleifer (1997), and Johnson, Kaufmann and Zoido-Lobaton (1998), among others, and for an overall survey of the global evidence of its size in terms of value added, Schneider and Enste (2000). Of course, in order to estimate the size of underground economy, researchers do need proper way to investigate it. Various methods have been suggested in the literature and they are well summarized by Tedds (2005). Among others, the methods that have been utilized are Currency Ratio Method, Transaction Method, National Account / Judgmental Method, MIMIC Model and Expenditure-Based Method<sup>1</sup>.

## Size of Underground Economy

Tedds (2005) estimated the size of underground economy in Canada for the period from 1976 to 2001 and found that there is an upward trend of underground economy. It rose from around 7 percent in 1976 to 16 percent in 2001. More importantly, Tedds (2005) argued that this sizable grow of underground economy took place despite the increased enforcement efforts of Canada Customs and Revenue Agency (CCSR). The method used by Tedds (2005) is MIMIC model.

Faal (2003) estimated the size of underground economy in Guyana by using demand model for currency specification by looking at the excess sensitivity of real currency holdings to average tax rates. This model was pioneered by Cagan (1958), which later on refined by Tanzi (1983) and Bajada (1999). The size is calculated for the period from 1970 to 2000 and the results show that there is an inverse-U shape when the estimated values are divided by official GDP but recorded relatively a more constant ratio when the total GDP is used as a denominator. 1986 to 1992 is the period in which the ratio between the estimated underground economy and official GDP recorded the highest value, reaching historical peak of on average more than 90 percent. As a result, during that period, government had lost approximately more than 30 percent of tax revenue. Similar approach had been used by Tunyan (2005) to measure the size of underground economy in Armenia for the period from 1994 to 2004. The result suggested that there is a significant amount and increase over time of economic activities that are not captured by the official statistics. The amount of loss in terms of tax revenue is estimated around 14 percent of official GDP.

Scheider (2002) offered a more comprehensive study covering 110 countries in the world. Various methods have been utilized to estimate the size of underground economy such as MIMIC model and Currency demand approach. The estimated results showed that for OECD countries, the values have increased from merely 13.2 percent (of GDP) in 1989/1999 to 16.7 percent in 2001/2002. For the 23 transition countries in EU, the estimated average size for underground economy in 2000 is about 38 percent, with the highest value recorded by Georgia (67.3 percent) and Azerbaijan (60.6 percent) and the lowest figure recorded in Czech Republic (19.1 percent) and Slovak Republic (18.9 percent). The estimated average size of underground economy in 18 Latin American countries is higher than the 23 transition countries in EU, which is 41 percent of GNP. Out of 18 countries, Bolivia has the biggest size (67 percent) and in contrast, Chile has the smallest size (19.8 percent). The average size for 26 Asian countries is almost double of the figure for OECD countries, which stood at 26 percent in 1999/2000. Thailand is the champion in terms of size with 52.6 percent while the least is recorded in Japan (11.3 percent).

## Smuggling and Its Impact

Although smuggling is part of the underground economy, there is a scarce study on it with limitations in measuring this kind of activity. By definition, smuggling can be explained as the clandestine import of goods from one jurisdiction to another (Deflem and Henry, 2001). Merriman (2003) stated smuggling as the evasion of taxes on goods circumvention of border controls. In theory, the magnitude of supply and demand could create smuggling. Farzanegan (2008) corroborated that when the state intervention brings a wedge between international and domestic prices through customs and excise duties and trade restrictions, there is a chance for the underground economy to develop. By earning income from importing goods through the state border as violating the rules, smugglers could earn a handsome profit. Smugglers obtained their income by avoiding state control, regulations and related costs ((Lithuanian Free Market Institute, 2004). On the implication, smuggling has various effects towards our economy. It can caused losses in government revenues, bad impact towards internal structure of society by promoting illegal institution

<sup>1</sup> Can read the detail about each method and its founder(s) from Tedds (2005). Meanwhile, Busato, Chiarini & di Maro (2005) classified the methods available in the literature into only three categories, namely direct approaches, indirect approaches, and model approaches.

besides changing the patterns of consumption (Dominguez, 1975). Hence, the GDP and income distribution will also be effected (Farzanegan, 2008).

### Malaysian Case

Kasipillai (1998) stated that in Malaysia construction is likely to be the sector in Malaysia that generates the highest hidden income. This is due to this building industry number one's position is due to its heavy reliance on foreign labor. The legal procedures of recruiting foreigners are complicated and costly. So, hiring illegal foreign workers is to be another unlawful cost advantage. The other sectors are prostitution, unlicensed money lending, cuts and kickbacks from contracts, and smuggling.

In addition, a study that originally done and prepared by Muhammad (2004) attempted to gauge the size of underground economy in six economic activities, namely (i) industry, (ii) education, (iii) professional, (iv) service, (v) transport, storage, and communication, as well as (vi) information technology for the year 2002. In terms of establishment, service has the largest ratio of informal sector relative to the formal sector with the estimated ratio of 4.19 percent. This is followed by professional (2.80 percent) and information technology (2.74 percent). However, in terms of employment, professional has the highest ratio but merely 1.05 percent, followed by service (0.89) and information technology (0.81). Finally, for contribution of informal sector on total production of each activity, only professional shows a slightly significant contribution with the ratio about 1.27 percent. The remaining activities have contributed vary minimum and in industry, its contribution is negligible (almost 0 percent)<sup>2</sup>.

### Data Collection

The data collected are from both confiscated and prohibited goods (contrabands) smuggled to Penang, Malaysia. All illegal smuggling activities that enter Malaysia illegally from both sea freight and air freight like cigarettes, liquors, drugs, vehicles, electrical and electronic items, VCD/DVDs, fire crackers and others illegal or prohibited import are recorded from year 2004 to 2008. The data source is from the Royal Malaysia Customs Penang. In this study, the data collected consists of commodities confiscated with total values and taxes involved. The data were then classified by using the latest industrial classification of the Malaysian standard Industrial Classification (MSIC) adapted from Department of Statistics Malaysia (2004).

## RESULTS AND DISCUSSION

Table 4 shows the values of confiscated commodities from year 2004 to 2008. It depicted those commodities under 'other sectors' has the highest mean of RM 3,676,954. The next to other sectors is food and beverages with the value of RM2,502,653. Tobacco and motor vehicles are also having high value of confiscated goods which are RM 1,892,698 and RM 1,548,846, respectively. Among items under 'other sectors' that helped a lot this section to top the table are items like fire crackers and VCD/DVDs. It shows that the fire crackers is the popular items for smugglers especially when comes to certain festival such as Chinese New Year or other celebrations day. The difficulty of having the permit for fire crackers, couple with high domestic demand while less supply domestically has contributed a lot. Table 5 shows the uncollected taxes due illegal economic activities, which mean values is the highest for tobacco (RM9,120,153) and followed by food and beverages, motor vehicles, and non-electrical machinery with the estimated loss in tax revenue at about RM3,903,133, RM2,889,002, and RM362,771, respectively.

The commodity tobacco which represented mostly by the cigarettes explained that the increment of taxes on the annual budget proved to enhance this informal sector activity. High tax has increased the

potential gain to smugglers. Similar to cigarettes, liquors have been imposed with high taxes in tandem with the annual increment on the national budget.

**Table 4. Descriptive Statistics for Values of Commodities from year 2004 to 2008**

No.	Commodities	Values (RM'000)		
		Min	Max	Mean
1.	Food & Beverages	1,331.303	4,235.260	2,502.653
2.	Tobacco	1,037.909	2,809.705	1,892.698
3.	Textile Products	0	628.150	213.650
4.	Wearing Apparel	0	290.650	97.527
5.	Wooden Products	13.040	446.079	130.339
6.	Furniture & Fixtures	0	345.456	96.798
7.	Paper & Printing Products	0	2,080.747	769.093
8.	Industrial Chemicals	0	0	0
9.	Petroleum, Coal Product	0	66.356	13.271
10.	Rubber & Plastic Products	0	344.350	170.096
11.	Other Non-Met Mineral Product	0	0	0
12.	Metal Products	6.675	939.270	457.562
13.	Non-Electrical Machinery	0	3,033.137	892.717
14.	Electrical Machinery	188.386	853.069	554.603
15.	Motor Vehicles	389.420	3,311.447	1,548.846
16.	Other Transport Equipment	40.461	1,375.214	402.909
17.	Other Manufacturing Products	0	187.555	42.011
18.	Other Sectors	1,345.589	6,298.856	3,676.954

Notes: Food and beverages included liquor, tobacco means cigarettes, electrical machinery is electrical and electronic items like handphones and other sectors included VCD/DVDs and fire crackers.

**Table 5. Descriptive Statistics for Taxes of Commodities from year 2004 to 2008**

No.	Commodities	Taxes (RM'000)		
		Min	Max	Mean
1.	Food & Beverages	1,322.385	9,237.273.29	3,903.133
2.	Tobacco	2,923.178	12,518.123	9,120.153
3.	Textile Products	0	119.567	43.773
4.	Wearing Apparel	0	70.976	20.518
5.	Wooden Products	0	21.766	6.082
6.	Furniture & Fixtures	0	90.076	25.156
7.	Paper & Printing Products	0	265.586	101.032
8.	Industrial Chemicals	0	0	0
9.	Petroleum, Coal Product	0	21.234	4.246
10.	Rubber & Plastic Products	0	144.926	60.804
11.	Other Non-Met Mineral Product	0	0	0
12.	Metal Products	0	158.475	54.562
13.	Non-Electrical Machinery	0	1,301.205	362.771
14.	Electrical Machinery	33.333	134.467	74.563
15.	Motor Vehicles	864.197	6,380.586	2,889.002
16.	Other Transport Equipment	0	207.886	57.325
17.	Other Manufacturing Products	0	38.044	9.078
18.	Other Sectors	801.665	5,346.573	2,540.106

Notes: Food and beverages included liquor, tobacco means cigarettes, electrical machinery is electrical and electronic items like handphones and other sectors included VCD/DVDs and fire crackers.

Hence, it has increased the prospect of higher profitability to smugglers. In order to protect local car producers (PROTON and PERODUA), Malaysian government had also a tendency to maintain the high tax for foreign cars. The development of this underground activity is well supported by Hubbard and O'Brien (2006) by stating that high taxes will induce more growth of underground economy.

**Table 6. Values for Main Smuggled Commodities (RM'000)**

Commodities/Year	2004	2005	2006	2007	2008
Food & Beverages	3,190.654	1,331.303	4,235.260	1,995	1,760.735
Tobacco	2,036.207	1,037.909	2,809.705	2,060.299	1,519.370
Non-Electrical Machinery	297.458	0	1,132.990	3,033.138	0
Motor Vehicles	471.500	1,073.976	2,497.886	3,311.447	389.420
Other Sectors	3,024.819	3,380.735	6,298.856	1,345.589	4,334.770

Table 6 shows the values of top five commodities confiscated from year 2004 to 2008. The trends shows commodities such as food and beverages and tobacco move in parallel, which shows they are at their peak in 2006 but dropped in 2005 and 2007. The intermittent up and down explained the inconsistent results as the retaliation between enforcement and smugglers to overcome each other. The trends for

<sup>2</sup> This is summarized in Table 1, pg. 24. There is another interesting finding in Table 2, looking from different angle and could be worth to read it.

motor vehicle and non-electrical machinery move in tandem which shows 2007 as their peak period but fell drastically in 2008. Similar to the case of food and beverages as well as tobacco, the up and down year by year signifies reaction of smugglers towards enforcement although theoretically, effective enforcement will reduce smuggling activities besides the regulations and tax rates.

**Table 7. Taxes for Main Smuggled Commodities (RM'000)**

	2004	2005	2006	2007	2008
Food & Beverages	3,090.509	1,322.385	9,237.273	4,219.766	1,645.734
Tobacco	11,467.572	2,923.178	10,703.753	7,988.138	12,518.123
Non-Electrical Machinery	89.237	0	423.415	1,301.205	0
Motor Vehicles	994.865	1,752.555	4,452.806	6,380.586	864.197
Other Sectors	1,829.265	2,152.760	5,346.573	801.665	2,570.267

Table 7 shows the five commodities with the highest estimated uncollected taxes from 2004 to 2008. Similar pattern can be observed as in Table 6, where commodities of tobacco and food & beverages are moved in tandem while both motor vehicles and non-electrical machinery have similar plots. As the high values means the high taxes, the intermittent up and down slopes for all the five commodities are strongly influenced by the development of taxes, policies and general moral attitudes as supported by Morgensen, Kvist, Körmendi, and Pedersen (1995).

## CONCLUSION

Underground economy is expected as having serious implication on a country's long run economic development such as losses in government revenues (thus hamper long run development program due to limited fund); hurt the society well being by enhancing illegal institution besides changing the consumption patterns. Thus, measuring the size and impact could be a pressing issue that needs to be done. This study devotes to this point by focusing on a section in underground economy, namely smuggling activities. While the original intention is to measure the size of smuggling at national level, due to data collection problem, we limit to cases in Penang only. The study covers the period from 2004 to 2008. The collected data revealed that the size of smuggling activity is cyclical in pattern. The same observation found for the loss value in terms of uncollected tax revenue.

## REFERENCES

Bajada, C. 1999. Estimates of the Underground Economy in Australia. *Economic Record*, 75, 369-384.

Busato, F., Chiarini, B., and di Maro, V., 2005. Using theory for measurement: an analysis of the underground economy. *University of Aarhus Working Paper No 2005-19*.

Cagan, P. 1958. The Demand for Currency Relative to the Total Money Supply. *Journal of*

Deflem, M. and Kelly Henry-Turner, 2001. "Smuggling, The Encyclopaedia of Criminology and Deviant Behaviour", Clifton D. Bryant, Editor-in-Chief. Volume 2, *Crime and Juvenile Delinquency*, Philadelphia, PA: Brunner-Routledge.

Department of Statistics Malaysia 2008. Malaysian Standard Industrial Classification (MSIC).

Dominguez, J. 1975. "Smuggling", *Foreign Policy*, No. 20, pp. 87-96+161-164.

Farzanegan, M.R. 2008. *Illegal Trade In The Iranian Economy: Evidence From A Structural Model*, Cesifo Working Paper No. 2397, Category 7: Trade Policy, presented at Cesifo Venice Summer Institute, Workshop On Illicit Trade and Globalization, September 2008.

Feige, E.L. 1979. How Big Is The Irregular Economy? *Challenge*, 22, 5-13.

Frey, B.S. and Pommerehne, W. 1984. The hidden economy: State and Prospect for Measurement, *Review of Income and Wealth*, 30/1, pp. 1-23.

Giles, D.E. and Tedds, L.M. 2002. Taxes and The Canadian Hidden Economy, *Toronto: Canada Tax Foundation*.

Hubbard, R.G. and O'Brien, A.P. 2006. *Economics*, Pearson Prentice Hall, Upper Saddle River, New Jersey, 07458.

Ibrahim, H. 2010. Beware threat of underground economy. *The Star Newspaper*, Friday, June 25, 2010.

Johnson, S., Kaufmann, D., and Shleifer, A. 1997. *The unofficial economy in transition*. Brookings Papers on Economic Activity, Fall, Washington D.C.

Johnson, S., Kaufmann, D., and Zoido-Lobaton, P. 1998a. Regulatory discretion and the unofficial economy. *The American Economic Review*, 88/ 2, pp. 387-392.

Kasipillai, J. 1998. An Insight Into The Workings of The Hidden Economy, *Asean Academic Management Journal*, Vol.3, 1.

Lippert, O. and Walker, M. 1997. *The underground economy: Global evidences of its size and impact*. Vancouver, B.C.: The Frazer Institute.

Lithuanian Free Market Institute 2004. A Study on Economic Causes of Smuggling. Available at: <http://www.freema.org/Projects/Smuggling.pdf>

Loayza, N.V. 1996. The economics of the informal sector: a simple model and some empirical evidence from Latin America. *Carnegie - Rochester Conference Series on Public Policy* 45, pp. 129-162.

Merriman, D. 2003. Understanding, Measure, and Combat Tobacco Smuggling", Toolkit No. 7, World Bank.

Morgensen, G.V., Kvist, H.K., Körmendi, E., and Pedersen, S. 1995. *The informal economy in Denmark 1994: Measurement and results*, Study no. 3, Copenhagen: The Rockwool Foundation Research Unit.

Muhammad, A.F. 2004. Measuring the non-observed economy in Malaysia. OECD/UNESCAP/ADB Workshop on Assessing and Improving Statistical Quality: Measuring the Non-Observed Economy, Bangkok, Thailand, 11 – 14 May 2004.

Oh, E. 2009. The Black Economy, *The Star*, 10 January 2009.

Park, N.W. 2003. Underground Economy: Causes and Size, *Korea Institute of Public Finance*. <http://siteresources.worldbank.org/PSGLP/Resources/UndergroundEconomyPark.pdf>, (MS Power Point Slides 1-26)

*Political Economy*, 66, 303-328. Faal, E. 2003. Currency Demand, the Underground Economy and Tax Evasion- The Case of Guyana. *IMF Working Paper Western Hemisphere Department, WP/03/7*.

Pozo, S. 1996. *Exploring the underground economy: Studies of illegal and unreported activity*, Michigan: W.E. Upjohn, Institute for Employment Research.

Schneider, F. 1994a: Measuring the size and development of the informal economy. Can the causes be found and the obstacles be overcome? in: Brandstaetter, Hermann, and Güth, Werner (eds.): *Essays on Economic Psychology*, Berlin, Heidelberg, Springer Publishing Company, pp. 193-212.

Schneider, F. 1994b. Can the informal economy be reduced through major tax reforms? An empirical investigation for Austria, *Supplement to Public Finance/ Finances Publiques*, 49, pp. 137-152.

Schneider, F. 1997. The informal economies of Western Europe, *Journal of the Institute of Economic Affairs*, 17/3, pp. 42-48.

Schneider, F. 1998. Further empirical results of the size of the informal economy of 17 OECD-countries over time, *Paper to be presented at the 54. Congress of the IIPF Cordoba, Argentina and discussion paper, Department of Economics, University of Linz, Linz, Austria*.

Schneider, F. 2002. Size and Measurement of The Informal Economy In 110 Countries Around The World, Workshop of Australian National Tax Centre, ANU, Canberra, Australia, July 17, 2002

Schneider, F. and Enste, D. 2000. Informal Economies: Size, Causes, and Consequences, *The Journal of Economic Literature*, 38/1, pp. 77-114.

Tanzi, V. 1983. The Cash Economy in the United States: Annual Estimates, 1930-1980. *International Monetary Fund Staff Papers*, 30, 283-308.

Tedds, L. 2005. The Underground Economy In Canada, *Munich Personal RePec. Archive (MPRA)*, 4229.

Then, S. 2010. *Underground economy growing with many illegal activities*. *The Star*, Wednesday June 23, 2010.

Thomas, J.J. 1992. *Informal economic activity*, LSE, Handbooks in Economics, London: Harvester Wheat sheaf.

Tunyan, B. 2005. The Shadow Economy of Armenia: Size, Causes and Consequences. Third International AIPRG Conference on Armenia, January 15-16, Washington, DC: World Bank.

\*\*\*\*\*