

CHAPTER 8

CONCLUSION

Introduction

This chapter summarizes the findings of this study as discussed in the four chapter analyses (Chapters Four to Seven). The main empirical findings in accordance with the five objectives of this study are largely achieved. They concern the visibility of UE proxy indicators in Malaysia; income characteristics of UE; size and growth trend, and its impact on taxes; economic association of UE and government interaction to combat UE.

8.1 Overview

The anecdotal evidence of a flourishing UE in Malaysia over 1980-2009 was statistically significant at 95% confidence level. UE varies economically and large in bad time that exhibited an upward trend and reached its peak in 1997-98. UE growth subsided and its size relative to GDP exhibited a downward trend in the post 1997-98 economic crisis.

The Government had significantly suppressed UE growth but inadequate to reduce its absolute term because UE correlates positively with CPI, taxes and economic crises.

8.2 Findings

8.2.1 Size and growth of UE

Table 8.1 summarises the size of UE as discussed in Chapter Five and Chapter Six. The estimates are computed based on different data set and statistical techniques for comparison to provide comprehensive and non-unique estimate. The size of UE on income of legal activities (irregular economy) in short run data was between 33% and 50%. In a long run period of 1980-2009, its average size (examined in 5-year period) based on income of legal activities and illicit activities (irregular economy and illegal economy) fluctuate between 8.92% and 26.94%. Its lowest annual size was at 8.69% (2007) and its highest annual peak was at 39.87% (1998).

The proportion of institutional UE was about 82.21% and individual UE was about 17.79%. However, in terms of participation tendency, both institutional and individuals tend to participate in UE equally at about 50%. Estimates based on three types of participants (institutional, business and salaried individuals) also indicate approximate participation tendency, at about 33%. As estimates on data of different participants approximate, it implies that participation rate is not influenced by categories of participants. In other words everyone would equally participate in UE and the rate of UE participation is identical across participants.

The estimates obtained in this study are more comprehensive, as compared to past local estimates that range between 0.2% and 85% (as in Table 2.7 of Chapter Two). The size of UE is now updated in structural time series, its size fluctuates according to economic status, smaller in good time and larger in bad time. Evidence of association between UE and economic incidences (GDP per

capita, CPI, taxes, economic crises, cash in circulation, electricity consumption, business sectors, legal and illicit activities) are useful for policy measures.

Table 8.2 summarises the size of UE by its components based on unreported income, computed on time series data of legal and illicit activities over a period of 1980-2009. The irregular economy at least doubles the illegal economy. Most of the time the proportion of the irregular economy is about 4 times the illegal economy.

In terms of non compliance with regulation, non compliance with direct tax rule constitute the most, about 62.90% compared to 18.38% and 18.72% with regard to non compliance with indirect tax rule and criminal rule respectively.

With regards to irregular economy, about two third of it is due to non compliance with direct tax rules and a third is due to non compliance with indirect tax rules.

By the component of tax mix, direct tax gap mix constitutes two third unpaid tax and a third of unreported income but indirect tax gap constitutes two third of unreported income and a third of unpaid tax.

Table 8.1: Size of UE as a percentage of GDP

Data (entire enforcement data) / Period	Statistical method	Annual range estimates	Average of 5 year period
Non filing of Income Tax Return Form (1996-2006)	Percentage proportion*	<ul style="list-style-type: none"> • 34.66% institutional • 37.32% employees • 28.28% business individuals 	<ul style="list-style-type: none"> • 34% (inst, OG and SG) • 33 (OG) • 33% (SG)
Disaggregate reported and unreported income of direct tax (2005 – 2009)	OLS*	<ul style="list-style-type: none"> • 47.86% institutional • 41.61% - 55.46% individuals 	<ul style="list-style-type: none"> • 50% (based on inst and OG and SG data) • 50% (based on OG and SG data)
Disaggregate reported and unreported income of direct tax (2005 and 2008)	Correlation matrix*	<ul style="list-style-type: none"> • 12% - 57% individuals 	<ul style="list-style-type: none"> • 34% (based on OG and SG)
Aggregate unreported income from legal and illicit activities [enforcement time series] (1980-2009)	Ratio and amplifying technique	<ul style="list-style-type: none"> • 8.77% - 39.80% 	<ul style="list-style-type: none"> • 8.92% - 26.94%

*Denote that the proportion of individual (business [OG] and salaried [SG]) and institutional (inst) participating the UE in terms of non-compliance with tax rules is about the same

Table 8.2: Size of UE in components

Aggregate unreported income from legal and illicit activities [enforcement time series estimates]	Annual range estimates	Average of the three level series - 5-year period
<u>Size of UE by economic components as % of GDP (1980-09)</u> <ul style="list-style-type: none"> • Irregular economy • Illegal economy 	<ul style="list-style-type: none"> • 8.4% - 19.02% • 1.37% - 14.35% 	<ul style="list-style-type: none"> • 13.71% • 7.66%
<p style="text-align: center;"><u>Proportion of UE components</u></p> <p>i. <u>Economic mix (1990-09)</u></p> <ul style="list-style-type: none"> • Irregular economy • Illegal economy 	<ul style="list-style-type: none"> • 54.38% - 90.19% • 9.81% - 45.62% 	<ul style="list-style-type: none"> • 80% • 20%
<p>ii. <u>Non compliance (NC) mix (1990-09)</u></p> <ul style="list-style-type: none"> • Direct tax NC • Indirect tax NC • Illicit activities 	<ul style="list-style-type: none"> • 50.23% - 75.59% • 7.15% - 29.61% • 9.81% - 45.62% 	<ul style="list-style-type: none"> • 62.90 • 18.38% • 18.72%
<p>iii. <u>Irregular economy mix (1990-09)</u></p> <ul style="list-style-type: none"> • Direct tax NC • Indirect tax NC 	<ul style="list-style-type: none"> • 50.23% - 85.00% • 15.00% - 49.77% 	<ul style="list-style-type: none"> • 67.62% • 32.38%
<p>iv. <u>Direct tax gap (1990-09)</u> <u>Direct tax gap mix</u></p> <ul style="list-style-type: none"> • Tax evasion • Unpaid tax 	<p style="text-align: center;"><u>4.79% - 33.65%</u></p> <ul style="list-style-type: none"> • 25.69% - 78.26% • 74.31% - 21.64% 	<p style="text-align: center;"><u>19.22%</u></p> <ul style="list-style-type: none"> • 40% • 60%
<p>v. <u>Indirect tax gap (1990-09)</u> <u>Indirect tax gap mix</u></p> <ul style="list-style-type: none"> • Tax evasion • Unpaid tax 	<p style="text-align: center;"><u>55.93% - 111.86%</u></p> <ul style="list-style-type: none"> • 54.80% - 86.10% • 13.90% - 45.42% 	<p style="text-align: center;"><u>83.89%</u></p> <ul style="list-style-type: none"> • 70% • 30%
<p>vi. <u>Illicit activities mix (1990-09)</u></p> <ul style="list-style-type: none"> • Bribery • Drug trafficking • Frauds Others 	<ul style="list-style-type: none"> • 3.90% - 45.42% • 1.6% - 4.4% • 40.0% - 69.19% • 13.10% - 23.07% 	<ul style="list-style-type: none"> • 3% • 19% • 58% • 20%

Figure 8.1 illustrates the trend of UE size in 3 level range series based on enforcement time series computed as average of 5 year time period. These UE estimates were further examined to determine its structural composition,

income characteristics and correlation coefficient with priori macro variables. Since the upper series UE estimate generate best fit models of the different set of explanatory variables, it is recommended the appropriate size.

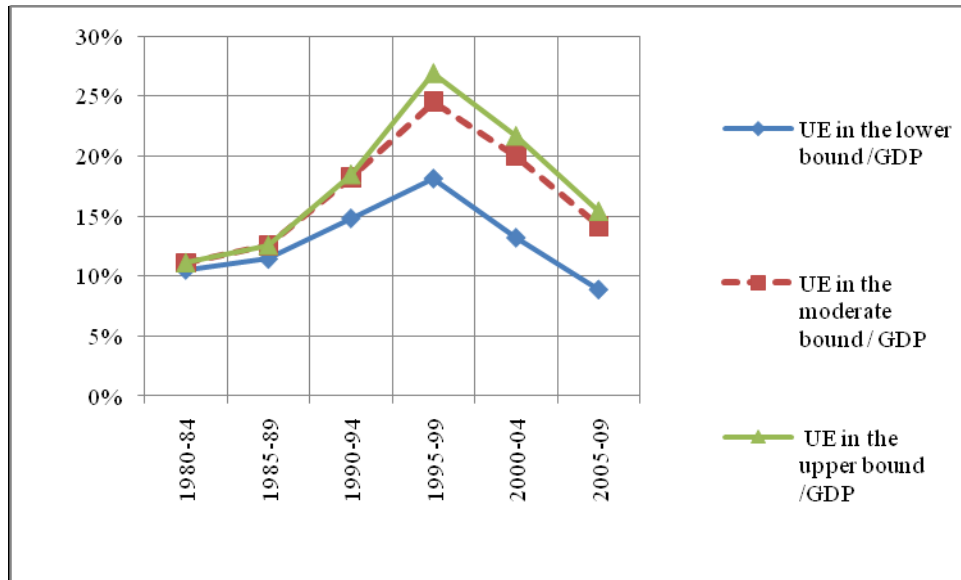


Figure 8.1: Size of UE - in three level range time series as a percentage of GDP

The size of UE hovers around 20% of GDP in normal time, climbed to its peak at 39.80% in bad time (1997-98) and reduced to 10.85% in good time (Figure 6.5). Over the period of 1980-2009, the amount of UE has increased in 5 folds amounting to MYR849 billion. However, the rising UE size relative to GDP prior to 2000 decade subsided from its peak at 1997-98 crises. This turning point is consistent with the findings of Schneider, F.A. Buehn, & C.E. Montenegro (2010), where UE exhibited a downward trend in the 2000 decade.

The slower UE growth is a good sign but its impact on taxes is alarming. Direct tax loss (direct tax gap) for the period 2000-09 is within a range of RM56.8 to RM153.3 billion (Table 6.15). Indirect tax loss (indirect tax gap) is between RM68.5 and RM137.1 billion (Table 6.18).

The opposite UE and GDP growth and size, doubling to tripling in the recession years compared to “normal years” suggest that they complement each other. The complementary association suggests that the “missing official economy” in bad time forms an economic gap that provides opportunities for an alternative economy, in this case the UE.

During economic recession, more people try to compensate their income losses from the official economy by employing UE activities. The larger the missing official economy, the larger would be the UE to “substitute” for the economic gap. On the other hand, in the phase of economic recovery the UE loses its importance as the official economy improves. The positive effect of this complementary association is that UE fills in the economic gap to stabilize the sluggish economy, and partly absorb some recession impacts. It implies that the “potential economy” would not be so badly affected when the official economy is down. This complementary association supports the contention that UE has a positive role in resolving “urban decay” and unemployment problem, as it scales down economic constrains.

The socio-economic reason explains likewise, during bad time, unemployed people would resort into any informal jobs or even to the extent of illegal work, as it could be the only option for “survival”. In this case, the UE is a “social shock absorber” allowing institutional to reduce production costs by employing informal workers who are willing to work as they are desperate for jobs.

A further interpretation of this phenomenon suggests that a rise in GDP, during an economic boom may not reflect a true total increase of a larger production. Instead, the increase may be partly due to a shift of economic

production from UE (unrecorded economy) to official economy (recorded economy). Nevertheless, as tax is a major component of federal revenue, a substantial shift of UE to the official economy would mean a wider tax base. Shifting taxable income of UE is of worth effort, as there will be more tax assessed to boost up tax revenue. Increase in taxes could lead to a surplus federal account for better welfare of the citizens.

8.2.2 Components of UE – irregular economy

The irregular economy comprise of income of legal activities that are not reported to tax authority while the illegal economy comprise of income of commercial illicit activities. The irregular economy is a major component of UE both in good and bad time, fluctuates between a minimum of 60% in bad time and 80% in good time. A large proportion of the irregular economy is substituted by the illegal economy in bad time.

The irregular economy in Malaysia is about 1.5 to 4 times more than the illegal economy, depending on economic status. This Malaysian estimate is modest as compared to the estimates of other countries. The illegal activities was at most 20% of the total US black economy (Vaknin (2000)); about 30% of the Japanese UE consists of illegal activities (Kadokura (2000)); and general estimates of the “legal black economy” is about 3 to 4 times more than the illegal one.

The major component of irregular economy is direct tax non compliance comprising of unpaid tax and unreported taxes. Tax system could influence the size of irregular economy (the major component of UE). An overview of the tax system over the period 1970-2009 as discussed in Chapter 4 indicates that there is a change in tax revenue mix from indirect to direct tax. Direct tax

revenue began to displace indirect tax revenue in the 1980s. The larger portion of direct over indirect tax revenue itself is believed to have channeled more opportunities of tax evasion. Indeed, the declination of tax to GDP ratio over the years is an evidence of slower tax growth compared to GDP.

In conjunction with more direct than indirect tax revenue, direct tax non compliance also constitutes a larger share of the irregular economy (ranging between 50.23% and 75.59%) compared to indirect tax non compliance (ranging from 7.15% to 29.61%). Intuitive reasoning to this mix is likely due to people felt more pinching when parting with earned income to a common fund as in the direct tax than parting with income to self consumption of goods or service.

Despite direct tax non compliance being a larger component of irregular economy, its proportion is gradually displaced by indirect tax non compliance. Direct tax non compliance share has reduced to almost a half (from 76% to 50%), while indirect tax non compliance increased to about a third (from 7% to 30%) over 1980-2009.

8.2.3 Characteristics of UE - irregular economy

Although 66% UE is institutional compared to 34% individual, their reporting gap characteristics are identical. They tend to conceal about 50% of income earned. Their unreported incomes increase with income level (wealthier states, industries by GDP contribution and individuals of high income brackets) and are prominent in certain industries and business sectors. In addition to “selective” sectors, the distribution of the unreported income is also of more left skew than the official economy, varying across and within economic sectors.

As UE of minor evasion (audit cases) and major evasion (fraud cases) have common characteristics, the characteristics of UE are not likely influenced by “intense of attempts”. The characteristics of UE are categorized into; economic industries (services, sales, manufacturing and construction [both in sales and services]); business sectors (logging, petrol kiosks, electrical and food dealers); job sectors (engineers, quantity surveyors, architects); and profession (managerial level -directors and partners).

Demographic background of UE of individual participants indicate that about 90% of them are male, 74.06% are within the age group of 40 to 60 with annual income bracket between MYR70,000 and MYR170,000, whom are likely at the national top 10% income bracket. Participants of UE are consistent with labor force structure in Malaysia. More males are at the managerial level (about 1.7% and 4% are women and men managers - Ministry of International Trade & Industry (1995).

About 62% of the labor force is at the “senior age group” (40-60) whom are likely to be in the high income bracket. The four times larger business individuals to employee ratio, is likely due to the “invisibility” of the business income nature. The income of the prominent business of UE showed some inconsistent payment such as unclear “commission contracts” and often use cash as the medium of transactions as in food outlets and contract business.

The more skew income distribution of UE than the official economy and also prominent to certain economic sectors varying within and across economic sectors reflects an unfair tax burden. As size of UE is considerably large, selective and skew income characteristic may have partly contributed to income disparity. Indeed the national statistics showed that the trend of

inequality index by Gini coefficient for over 50 years has never restored to its origin of its independence. The tax base is also extremely disproportionate where only about 10% of the population's income falls in the tax bracket and barely 5% of them paying more than 70% tax. The unequal "private income" and unfair "tax burden" implies that UE reveals probable notes of contributing country's income disparity or unfair wealth distribution. UE prominence in certain sectors with unreported income in left skew distribution is consistent with the findings of international studies. Their consensus views on this phenomenon, is that income of these sectors are of "invisible nature" that facilitate "evasion of worth private profitable income". They also indicate the common features of UE are cash basis transactions, "tax creative accounting" and payment and receipts that are not subject to withholding tax system.

8.2.3 Tax gap and tax loss

How tax is imposed associate with tax non compliance or tax gap mix, comprising unpaid tax, tax evasion of the tax net and tax evasion outside the tax net (people who do not file tax form). Proportion of direct tax mix and indirect tax mix was opposite. Direct tax gap has a larger portion of unpaid tax (doubling tax evasion) while indirect tax has a larger portion of evasion (doubling unpaid tax).

Difference in proportion mix could be explained by different level of constrain. The burden of direct tax is at parting income earned to payment of compulsory tax liability while burden of indirect tax is parting income earned to payment of self purchase. Nevertheless the larger proportion of unpaid direct tax exhibited a downward trend implying an improvement of tax recovery system. But a rising small proportion of tax loss on income of

commercial illicit activities should not be ignored. The upward trend of unreported income within and outside the tax net is crucial, factoring for a worst case scenario as it implies an unhealthy economy in the future.

The gradual displacement proportion of indirect tax loss over direct tax loss relative to tax revenue and federal revenue, suggests that indirect tax enforcement must be improved. There is a risk that the immense amount of tax loss is a sizeable budgetary implication and the federal deficit may take a while to restore its surplus position as in the period of prior to 1998-99 crises.

To meet large federal spending, government would raise further taxes; increase borrowings; withdrawing subsidies or welfare of the citizens. However, more taxes would encourage a further flight into UE, more loans would put a further fiscal erosion of government account and taking austerity steps would put economic constrain on the citizens.

The eventual effect of these steps is a further federal deficit that would result to government flushed with lower welfare and more loans to service more debt. A prolonged federal deficit is a major threat to macroeconomic stability, such as, driving away trust or convince for investors, as seen by a larger investment and saving gap in the post 1997-98 crises.

UE burdens the existing tax payers, as reported by the Revenue of Quebec, “People who comply the law shoulder a heavier tax burden because they must compensate for others in the UE, and business that fulfill their obligations face unfair competition from those do not”.

8.3 Economic associations

8.3.1 GDP per capita and CPI

The opposite UE and GDP growth during recession and booming years suggests that they complement each other in a scalar or array manner according to economic performance. However, the complement association is only distinguishable during good and bad time. Its permanent existence hovering between 10% and 20% in normal time, and correlating with GDP per capita as immediate or delayed effect explains for the upward trend of UE in absolute term. Its elasticity up to 2% of GDP per capita at level and lag in nominal term supports its association with the upper income bracket, richer states and sectors of high GDP contribution.

One interpretation to this association is that the global and dynamic economic growth and complex socio-economic interactions could have exposed more opportunities of UE. For instance, the rising per-capita incomes has shifted people of lower to higher marginal tax brackets, where tax evasion is more “private profitable”. The increasing business sectors and mushrooming of small medium enterprises and companies as well as self employment individuals over employment sectors may have also shifted people’s income from “visible transactions” to invisible transactions”.

The correlation between UE and GDP percapita in real term, though in a delayed effect at a lower coefficient, implies that UE grew with CPI and GDP real per capita. This suggests that UE could be estimated by the GDP growth rate, implying that GDP could be a “boolean indicator” of UE (presence or absence of phenomenon).

The positive association between GDP and UE supports the contention of at least two studies. Giles and Tedds (2002) showed positive relationship between UE and the official economy in Canada while Adam and Ginsburgh (1985) indicated some positive relationships between shadow economy and official economy in Belgium.

Over 1980-2009 period, inflation by estimates relative to 1980 CPI index rose to almost 124%. The widening gap between GDP nominal and GDP real is likely due to CPI, which positively associate with the uprising UE in absolute term. The CPI being the major GDP deflator has been shown to be the most elastic positive indicator of UE in nominal terms as immediate and delayed effect of one year, ranging from 3.3% to 4.3% growth. In other words UE is incremental to inflation rate or CPI is an important contributing factor to the uprising UE.

Economists believed that inflation associate with an accumulation of cash in circulation. When money increases faster than supply of goods and services, demand could exceed supply and there is a tendency of reduction in purchasing power. Condition of insufficient supply is of no doubt part of economic constrains that lead to breaking of normal rules. This provides opportunities for people to opt out of the official economy for survival or to maintain to live comfortably. As GDP nominal per-capita increased is largely due to inflationary factor, it appears that its association with UE is due to CPI incremental. If CPI as the most elastic factor, is computed based on “bias basket of goods”, then the skew UE income distribution differing across and within certain economic sectors, and also more skew than the official economy, is likely a contributing factor to income disparity.

8.3.2 Cash in circulation

One would expect cash transactions would decline to a slower pace and be much displaced by an economy that is moving towards various cashless financial instrument systems and the liberalization of foreign currency. In contrast, Ringgit (MYR) cash in circulation level is opposite to expectation, implying that cash is likely the common medium of exchange in the underground transactions. UE is elastic to MYR cash in both nominal and real term (controlled for CPI), as immediate and delayed effect (dynamic) and insignificant to population variable. UE-cash elasticity is in the range of 1.0182% to 1.4784% and 0.9417% to 0.9676%, in nominal and real terms respectively. In addition to the rising MYR cash in circulation, its larger denomination notes rose sharply in the post 1997-98 economic crises. The accumulation of about 80% large denomination notes in circulation further supports MYR cash dominance in activities of UE in Malaysia.

Past studies highlighted that cash is the preferred medium of exchange in UE as it leaves minimum business trails for authorities to capture, unlike the traceable “financial instrument”. Malaysian UE cash association supports the contention made by Shabsigh (1995) in a study on Pakistan, a developing country with low level of per capita income. He indicated that the demand for cash currency and GDP per capita associate positively in country with low levels of GDP per capita while the “global financial instrument” may be used in countries with higher level of GDP per capita.

8.3.3 Electricity consumption

Based on the concept that economy is energy dependent, electricity consumption as one of the physical resources is expected to associate

positively with economic activities. However, electricity consumption is insignificant in the official economy, perhaps electricity being the country's minor energy source (18%). For this reason, it is assumed that population growth (more consumers), upgraded domestic life that comes with "electrification development" (innovation gives more devices used) and psychological boost phenomenon of electricity as intensive life style (urbanization and more desire), do not significantly associate with electricity consumption.

In contrast, UE correlate positively with electricity consumption with coefficient ranging from 0.7710% to 1.0843% in nominal terms and from 0.9210% to 1.2881% in real terms. The larger growth of electricity consumption than GDP (as discussed in paragraph 4.13) suggests that electricity consumption is a significant physical resource in the production of UE activities. It implies that a significant amount of electricity has been utilized to generate income that is not reported to tax authority. Any unpaid electricity bill implies that the country loses taxes from unreported income as well as losses to "subsidized" supply of electricity. The double losses support the importance of shifting the UE to the official economy, so that production is taxed and flows back to the country to compensate for the cost borne.

8.3.4 Tax role

Lower tax burden has been shown to associate negatively with UE. There was a displacement of direct tax by indirect tax non compliance in the irregular economy. The displacement synchronizes with tax reform towards a "lower direct tax burden" and towards a "higher indirect tax burden". Direct tax of the 1970s has transformed to a lower burden to promote economic growth, and

support other government policies. Whereas part of indirect tax law was reformed to a higher burden to inhibit certain services and consumptions. It implies that “lower direct tax burden reform” has negative UE role (reducing proportion of direct tax non compliance), while “higher indirect tax reform” has positive UE role (increase proportion of indirect tax non compliance). The higher direct tax burden prior to 1985 implies that hiding incomes were more profitable than now because lower tax burden reform provide less incentive to evade as the “profits” of reporting one’s true income is reduced.

Lucrative tax incentives create opportunities of UE. The manufacturing industries have employed “fictitious tax claims” to reduce tax liability. Hence, the effects of “tax incentives” reduction of tax revenue to promote economic growth of certain industries and the possibility of tax loss due to opportunity of creative accounting through fictitious tax claims.

On the other hand the withholding tax collection system such as salary deduction scheme made by employers and withheld part payment made to non-resident tax payers have been shown to plug some opportunities of tax evasion. Tax evasion among employees and non- resident payment than businesses are relatively much lower than the business tax payers who are not subject to withholding tax system.

In the case of indirect tax, the increased tax rates to support other government policies to inhibit certain consumption of goods or services for health reason and dampen social problems are instead are “incentives” of smuggling activities. When price of formal goods increased due to taxes, people would seek alternative supply. Traders and consumers often turn to smuggled goods to sustain demand and supply. Hence the effects of policy that induce high tax

rate without appropriate law enforcement are besides failing to achieve the objectives of a better health and societal impact, the government loses tax through smuggling.

This phenomenon is consistent with the experience of other countries where higher tax rates and tariff on imports of traded goods were inadequate to suppress demand that seek for alternative, smuggling activities of UE.

When consumption is restricted, demand for cigarettes and liquor drive suppliers to smuggle. As goods and services were not subjected to taxes, they were made available to consumers at cheaper prices and “facilitated service”.

The downward trend of direct tax non compliance constituent compared to the inclining trend of indirect tax non compliance conforms to the economic theory of taxation that tax burden (tax reform) encourages people to evade income. The evidence of tax mix shift revenue and tax non compliance mix shift in this study is consistent with Gills and Tedds (2002). Direct taxes were viewed to provide more opportunities of tax evasion than indirect taxes.

Despite that direct tax non compliant being a major component of the irregular economy (the larger portion of UE), a further reduction of direct tax burden (e.g. tax rate and tax deduction) would not likely to further reduce much of the irregular economy. This is because UE also associate positively with other factors such as CPI, GDP and economic crises. This argument is supported by Schneider (2000) on the Australian study in the period 1988-89, who pointed out that the “hidden economy” did not shrink despite of a reduction in all the marginal tax rates on income and a general simplification of the tax system. Economists explain the limitation of tax role on UE as due to compound effects of other determinants.

Spiro argued that even if there should be an easing of economic burden, it is unlikely that it will be totally abandoned. Some participants of the hidden economy are not likely to return to the official economy, even in the long-run relationship, once this habit is developed; the “Spiro’s habit-forming effect”.

The hidden economy may persist, as social influences could affect peoples’ peer group attitudes, personal experience of the tax authority and information regarding taxation.

In Malaysia, intuitively, it is unwise to further reduce tax burden, as taxes contribute to about 70% of federal revenue and are important fiscal and social policy instrument. Indeed over 1980-2009, direct tax has been reformed to a lower burden substantially. A further reduction must be weighed against the benefits of the public goods and services, that is financed by tax revenue. An alternative to further reduction of tax burden is to suppress UE that escape taxes. Hence, the low detection risk, low to moderate enforcement efficiency and ineffective enforcement must be improved to curb and combat tax non compliance.

The illegal economy peaks in bad times with fraud cases as the major component in a proportion of at least 70%, followed by 4% to 20% of drug trafficking and bribery income up to 10%. The larger proportion of illicit activities in the recession years is a natural response of economic constraints such as inflation, unemployment and cost cutting business operations. They form opportunities of job creation from decent informal jobs to illicit works (bribery, drug offence, breach of trust etc) and other malpractices of survival. In other words, during an economic downturn, size of UE is larger than in normal times because people are pressured by economic and social constraints,

that force them to opt out of the official economy entering the irregular economy (legal activities but non compliance with tax rules) or illegal economy (naturally tax non compliance). Since both incomes are unlikely reported to tax authority, it is of no doubt that there will be more erosion of tax base in bad time than in good time.

Besides the influence of tax reform on UE (transformation of tax system and tax law), burden of tax payment has been shown to positively affect the size of UE. Prior positive association (“pro cycle”) between low level UE and taxes in nominal term partly implies that prior income losses to taxes would be compensated in the later year. People tend to limit income to taxes in the later year for “private benefit” to replace for the “private losses” made to taxes in the previous year.

However after eliminating for CPI, direct tax evasion loses this pro cycle positive effects suggesting that direct tax role effect is only significant in an inflated economy. On the other hand, pro cycle positive effects of indirect taxes remains in real term.

Association tax difference implies that direct tax burden role is dependent on CPI factor whereas indirect tax burden influence is independent of CPI. It implies that smuggling activities would likely to flourish in the future regardless of inflationary rate.

The positive indirect tax role reflects that people do not comply with tax rules when there is too much to lose (tax burden). Response to the refusal of meeting tax obligations is often argued as part of a consequence of tax payers’ conviction that their legitimate money on tax paid is being wasted.

However tax is not the only factor that contributed to UE growth. As UE size increases, role of indirect tax burden is replaced by other economic constraints that arises from structural changes as result of recession impact. This is consistent with shift of UE economic mix between good and bad time. In bad time the proportion of illegal economy increases up to 40%, displacing 20% of the irregular economy.

8.3.5 Other factors

High level of UE also correlates positively with post 1997-1998 economic crises in nominal term, but not in real term. This further supports that the uprising UE in the post crises is likely due to CPI incremental, rather than economic crises itself. Association between UE and economic crises may be viewed as a remote contributing factor since elasticity correlation is less than 1%.

The uprising of other priori UE indicators such as illicit activities, unemployment rates, crime index per population, bribery reports, collectively do not show any significant association with UE. Nevertheless, their insignificant associations may not be conclusive to indicate that they have no interrelationships at all. This is because the number of crimes and the amount captured are disproportionate, partly due to data of a shorter period (1998-2009).

Another reason for the large disproportionate between number of activities and amount of income involved is due to a “difficult prosecution”. Prohibited activities are subject to criminal acts and extensive court proceedings. For instance, corruption involves “agreeable contract” between two secret parties. Hence prosecutions on bribery cases are more difficult compared to frauds that

involve two parties of different situation where one is victimized and the other is the culprit. With regards to unemployment factor, as income distribution is of left skew, most informal income from the unemployed labor force, now is likely in the non taxable bracket as the increased tax threshold income has removed them from the tax base.

8.3.6 Government intervention

The government has significantly interacted on the issues of UE through tax expenditure and federal spending.

Tax reform has affected the composition of the irregular economy. The evidence of tax expenditure effects is seen on the shift of tax non compliant mix of the irregular economy; indirect tax non compliant portion increases with higher indirect tax burden whereas direct tax non compliant portion reduces with lower direct tax burden. It suggests that a lower burden of direct tax reform associates with a lower portion of direct tax gap and higher burden of indirect tax reform with a higher portion of indirect tax

UE associates negatively with federal expenditure in a robust manner (elastic in both nominal and real term, and at level year and lag of one to two years), but not with the official economy (GDP). A uni-causal relationship between UE and federal expenditure suggests that UE forces government to interact. Government's remedial efforts are supported by the evidence of a downward trend of UE growth and reduction of UE size relative to GDP. However the continuous increase of UE in absolute term (increased in 5 folds over 1980-2009 amounting to MYR 849 billion) is an indication that government intervention is inadequate.

Causal relationship implies that UE had placed large demands on federal fund which could have been utilized for the welfare of citizens. The “unnecessary expenses” could have possibly distorts federal’s allocation. It partly explains for the decreasing tax GDP ratio and prolonged federal deficit budget in the post 1997-98 crises. To compensate for excessive spending, any welfare cut is likely to initiate public’s liberation to resent government, an indication of a negative relationship between state and citizens.

Another interpretation to this response is that if federal spending had stimulated the activities of the official economy, the negative effects of a substantial size of UE could have nullified the positive effects of the official economy. If this is true then UE is a de facto increase of the fiscal deficit.

A further increase of federal spending may result to a further slide in UE growth. However, intuitively it is not wise to continually increase federal expenditure unnecessarily as monetary expansion could cause an unsustainable increase in public debt or inflation.

Problems of imbalance of federal account are often tackled either to increase federal revenue or reduce federal expenditure. In case where there are revenue shortfalls, the government would seek alternative financing either by increasing tax revenue (eg: increase tax rate and encourage compliance), or increase borrowings. On the other hand, the government could take up austerity approaches such as restricting development expenditure, limiting operation expenditure and reducing allocations for citizen’s welfare and withdrawing subsidies. However the consequence of shrinking budgetary resources is depriving government’s ability in providing public services, which is a vicious circle to more underground activities.

The uni causal relationship between UE and federal expenditure supports the argument of Bawly (1982), who pointed out that various government shortcomings (proxies of UE) frequently cause an increase in public expenditure. Shabsigh (1995) indicated that there is a significant misallocation of resources, including private investments in the existence of UE. He confirms that due to net loss of resources, the government is forced to compensate for public spending, therefore exacerbating the poor fiscal position of the government. However Kesner-Skreb (1997), suggested that “the government could increase supervision, control and punishments”, as UE risk could facilitate shifting of UE activities into the official economy are for short term steps.

8.4 Contributions

The contributions of this study are comprehensive empirical evidence of a flourishing UE and practical estimation procedure which are useful for policy measure and academic research. The empirical estimates extended additional notes of contributing knowledge to the reach of literature on UE specifically in Malaysia and as a general estimate for developing countries. Among important contributions of this study are; estimation technique that compute enforcement success rates; statistical estimates of the size of UE in total and in components of income of legal and illicit activities; statistical estimates of its derivatives (tax gap, tax loss and potential economy); inferred characteristics of UE (income and economic sectors); and coefficients correlation with economic variables.

Estimation approach based on four statistical techniques employed on four sets of enforcement data could reduced the perception of unique estimates. Any similarities and differences of estimates are interpreted accordingly, thus estimates are more comprehensive and informative.

The “seven-step” estimation equation as discussed in paragraph 3.6 of Chapter Three has covered a wider scope of activities that evade taxes compared to past studies. Estimate encompasses tax gap components consisting of unreported income and unpaid reported tax of tax payers who are in the tax net (irregular economy), and unreported income of tax payers who are outside the tax net (illegal economy). UE estimates drawn are in total and in structural components with insights into income characteristics and participants’ background.

The size of UE is generated in both point and range time series estimates in absolute term and in relative to GDP based on GDP value and tax non compliant ratio. The three range estimates based on amplifying techniques and ESR could account for under captured non compliant activities as enforcement statistics are likely far below beyond the true level. The trend of UE could be established as it uses considerable long run period (annual time series of 30 year period [1980-2009]).

The estimated UE in time series are evaluated whether it fit the hypotheses of priori macro association. Evidence of multiple economic associations as priori (economic variables of CPI, GDP per capita, cash, electricity consumption, economic crises, unemployment rate, crime rate and bribery index) partly reduced skeptical views over estimates and provides guidance for policy measures. The upper bound time series estimate ranging between 11.10% and

26.94% of GDP is likely the most appropriate size as it generates the most persistent coefficients and best fit models.

Models constructed in this study differ from the models of soft modeling that rely on close relationship among multiple factors to explain for the growth of UE. The function of causal variables is linked to the function of indicator variables to form a structural relationship that explains for the UE growth. However, the assumption of close proximity between causal and indicator variables relationship is often argued too heroic as economic interactions can be potentially complex. There is a possibility that UE could have associate with other variables as well and its value (UE in absolute term) relies on other method. In contrast, the models constructed in this study are to evaluate whether UE estimates associate with economic variables as priori. Robust models with significant coefficients of correlation are useful for policy measures.

This study has established transformation of enforcement data into more comprehensive statistical estimates compared to past studies. Estimates of size and growth of UE, estimates of its derivatives; potential economy; tax loss, direct tax gap, indirect tax gap, correlation coefficients for priori proxy indicator (elasticity and buoyancy) and income characteristics (economic and business sectors, job sectors, states, income level) and participant's background (age and gender) provide fundamental information for future studies and useful guidance for appropriate formulation in adjusting government policies and strategic enforcement.

Estimates of its derivatives include the size and proportion of UE in structural components by; economic components (irregular economy comprising legal

activities and illegal economy comprising illicit activities); direct tax gap mix (tax evasion due to under reporting of legal income, tax evasion due to non reporting of illegal income and unpaid assessed tax); indirect tax gap mix (tax evasion and unpaid assessed tax); illicit activity mix (frauds, drug trafficking, bribery and others; tax loss mix (direct and indirect tax loss); and federal account mix (federal revenue and federal expenditure).

Employment a 30 year time series data is reasonably long and has allow traces of growth trend of UE relative to GDP. UE growth fluctuates in the opposite direction of GDP resulting to an inconsistent UE size that notably increase in bad time and decrease in good time. The varying UE size relative to GDP reflects some inconsistent buoyancy or elasticity implying estimates formulated based on GDP can be misleading. The fastest UE growth in Malaysia was also traced in the 1990s, implying that the fastest UE growth in developing countries is similar to OECD and the transition countries.

Assuming that the actual economy (i.e. potential economy) of a country approximates the sum of UE estimate and the GDP, the actual per capita income of a country would be higher than the official per capita. In other words, the per capita income may be formulated based on the potential economy instead of GDP. Per capita income computed this way reflects better economic impression and fairer international comparability.

Government policy and country's development plans formulated based on GDP instead of "potential economy" could be misleading as tax GDP ratio would be overestimated as denominator (GDP) of tax ratio is underestimated.

However, for long term effect, any policy and implementation must consider serious efforts to shift the UE into the official economy and capturing it into

the tax net. This argument supports the suggestion of Enste and Schneider (1998, 1999), such that the inclusion of hidden economy in the macroeconomic analysis is important, if its size is a global upward trend.

The estimate of UE derivatives which is tax gap or tax loss implies serious impacts of UE on taxes. It is an indicator of an ineffective tax system and denotes a benchmark of potential tax revenue. Small tax gap indicates an effective tax system while a substantial tax loss is an indication of weak enforcement, and unfair shouldering of tax burden.

The positive correlation between reported income and unreported income implies that evasion increase with income level. However, their modest associations suggest that audit selection could not rely solely on turnover or voluntary reported income, the type of business dealt with are as important.

It is important to practice “intelligent” audit selection as large amount captured within limited resources framework is cost effective. In other words the available enforcement resources must be utilized efficiently to uncover optimum tax lost. The characteristics of unreported taxable income (moderate to high income bracket, prominent in selective economic industries, business and job sectors, tax mix changes, age and gender of tax evaders and states’ wealth), not only provide the characteristics of income in the underground activities, but also some keys for formulating audit framework selection, as to whom are more inclined to tax non compliance.

Considering that researchers applaud the dynamism and flexibility of the underground activities, the low detection risk as well as low enforcement success rates reflected slacks in enforcement ability. Indeed the widening gap between lower series (finalised underground activities) and upper series

(potential underground activities) signifies enforcement deterioration. It highlights the importance and urgency of better efficient and effective enforcement.

Enforcement effectiveness has been examined and is supported by the insignificant association between audited and post audit reported income. A possible conservative reason could be partly due to substantial “taxes and fines” imposed during audit have sufficiently damage his business prospect.

On the other hand, the positive low correlation between audited income (reported income plus unreported income) and the post audit reported income implies that audit experience is insufficient to deter tax evasion. Probable reasons for low enforcement ability or rather poor tax audit deterrence have been discussed in past studies as likely due psychological barrier drawn from observation, experience with audits or habitual.

People who have been audited could have learned to evade using new tactics through experience with tax audit, where auditors have limited capacities to detect evasion. People who have not been audited learn through observation and people who are “tax agents” learn through knowledge to evade and avoid tax.

To sum up, the nominal and real models in different set of explanatory variables provide alternative employment under different circumstances and agenda. Government intervention through tax and federal expenditure has significantly affected UE mix and suppressed UE growth to a reduction in size relative to GDP.

However, enforcement ability (low detection risk, moderate enforcement success rate and ineffective deterrence to curb tax non compliance and illicit

activities) are often behind law and dynamic of economy. Low risk costs and continuous economic constrains (CPI, taxes, economic crises and GDP per capita) are main incentives of UE activities. People would opt out of the official economy and gamble for “private profit”. In other words Malaysian UE in absolute term is likely to rise under weak enforcement and growing inflation and GDP. This is consistent with Laoyza (1996) such that the shadow economy grew with larger tax burden and weaker enforcement.

8.5 Recommendations

Government intervention is important to reduce UE. This study has shown that the government has put in remedial efforts to suppress the UE growth through federal spending and tax reform of a lower tax burden.

It is not likely that government will increase tax rate or introduce new taxes, in an effort to increase tax revenue. The country has to maintain a low tax regime to promote economic growth and remain business competitive. Indeed, Malaysia’s impressive economic growth already grew in tandem with tax reform. Over the years direct tax has transform to a lower tax burden, covering tax administration (includes improve assessment and collection system) and tax law (includes abolishing certain taxes, lowering tax rates and widening tax deduction scope). However, a further tax expenditure is not recommended. An alternative option, to achieve continuous tax revenue in low tax regime, is to rely on “optimum compliance” through voluntary tax compliance program and enforcement on tax non compliance.

The improved tax system could have reasonably increase detection and positively associate with more tax non compliant cases captured. As UE size is

estimated based on enforcement statistic, the rise could have been partly due to an improved enforcement. In this context, law enforcement strength is of no doubt important to recover tax loss from the activities of UE. It implies that strengthening law enforcement i.e. to uncover tax non compliance with tax rules could increase tax revenue or suppress the UE. Hence, enforcement is of no doubt important to curb UE.

The enforcement success rate for irregular economy is between 40% and 70% while for illegal economy is between 10% and 20%. The wider gap between the lower and upper series estimated based on enforcement success rate signifies that enforcement efficiency is deteriorating.

These poor enforcement records highlight the urgency for improvement, unless enforcement efforts are improved, policies will prove futile. Enforcement agencies need to exploit full resources and optimize training; more enforcement efforts should be put into the repression of crime and tax evasion. Increase in the probability of detection enforcement success rate and fines, could increase UE participation risk and reduce chances of “uncertain private benefits”. Enforcement program must also be reviewed and updated as dynamic economy continues apace, and according to profile of UE prominent characteristics (income level and income “invisibility”) in order to be cost effective. Audit should focus on the prominent sectors of UE and income skew factor that varies across and within economic sectors, the disproportionate between number of evaders and amount evaded within and across business sectors.

Audit and investigation task forces must be supported by a system that is equipped with efficient and effective procedures, such as profiling of

industries and turnover, facilitated by intelligent tools and supported by ongoing research so that enforcement is not too far behind the dynamic technologies and businesses. The tax office should deploy more skilled staff (auditors equipped with knowledge, expertise and wide networking team). Audit selection should focus on the more prominent tax evaders by economic industries, business and job sectors and income level. Enforcement resources for effective audit includes higher audit selection rate, audit training and penalty entail costs.

Audit framework should consider commission income and businesses of food sectors based on the number of cases as the index for evasion. On the other hand business of petrol kiosk, logging, manufacturing and construction, should be selected based on amount of unreported income or business turnover as the number of tax evaders and evasion are disproportionate and extremely skewed.

Tax evasion risk could be increased by increasing detection probability (number of cases), early detection and intelligent information gathering. Task forces need to be strategized and synergized so that audits are effective deterrence. The enforcement efficiency or enforcement success rate could be improved by increasing “worth attempt” audit cases.

When making decision whether to opt out of the official economy or otherwise, people would balance between “risk costs” (fines) and “private gain” (reduce tax liability). The basic rule of punishment is that the amount of penalty should fit the crime. Whether punishment entails cost, penalty or punishment rate (fines, compounds and prison sentences) must be reviewed intuitively from time to time. In other words, for reasonable and fair

punishment, there should be limits of compassion. Fines schedules should be reviewed regularly according to degree of offences, extent of attempts made on tax evasion and amount involved, on timely basis to suit the current situation; updated and indexed to account for inflation rate.

The low non compliant rate for income subjects to withholding tax (payment to employees and to non-resident group) compared to incomes that are not, suggests that withholding tax system should be extended to other type of payments. The conflict between “losing taxes to promote economic growth” of selective economic sectors by granting lucrative tax incentives to manufacturing companies and “opportunities of UE” highlights the importance of monitoring employment of tax incentive. Typically, lucrative tax incentives are meant to promote manufacturing industries. On the other hand they allow creative accounting as opportunities for UE. It is proposed policies on tax deduction must be checked regularly to deter fictitious claim and plug the possible loopholes of exploiting taxable income.

With regard to illegal economy, the rising unreported income of illicit activities is alarming. The income of illicit activities should be considered to be in the tax net, ignoring it, would be a “double unfair wealth” to the obedient citizen. In other words, could a portion of income and wealth derived from illicit activities as captured by enforcement be withheld for taxes?

As illegal economy grow substantially in bad time, and enforcement efficiency of criminal offence is deteriorating (exhibiting a downward trend), agencies of anti corruption commission and police forces should allocate more task forces particularly during recession period. Low prosecution success rates of criminal enforcement and bribery cases highlight that government should also consider

transparent investigation and simplification of law and procedures, as well as conducting cases in specific courts according to offences to expedite court proceedings. As for UE of drug offences, enforcement must be continually reinforced to reduce misery spread and commonly known as the mother of criminal activities.

From a rational view, besides the punitive measure against corruption and other criminal activities, agencies should also step into encouraging compliance. For instance, to conduct program on promoting public awareness of forbidden activities combining with preventive approach through education and good leadership practices by example. As preventive measures, it is also wise to plug as many opportunities and avenues of criminal activities and misuse of power in public bodies by improving existing work systems and procedures.

It is important to shift UE to the official economy because a portion of it contributed to taxes and recorded economy. The overall economic growth is essential for country's development and welfare of its citizen. Moreover "productive investment" is not likely coming from UE, shifting it to the official economy could also reduce savings investment gap. "Productive investment" is essential for economic growth, its absence or low growth will cause an adverse impact, for instance a persistent deficit (Ariff, 2007).

Any government policies and implementations made must consider to plug the opportunities of UE and to insert strategies of shifting UE to the official economy. The impacts of CPI, taxes and economic crises are determinants of UE while large denomination of cash in circulation and rising federal expenditure are proxy indicators of UE. Ignoring it for a period of years could

lead to re-leveraging of the public sector as fiscal stimulus. Indeed, the government has significantly incurred “extensive federal expenditure” (rising federal expenditure growth) and employed lower “tax burden” compared to the early years. These associations have shown to suppress UE growth in the last five year period (2005-2009) and plug some opportunity of underground activities by the shift of tax non compliant mix. However, further lowering tax burden is not advisable as taxes are important fiscal tool. Likewise a continuous rising federal expenditure would lead to a long run federal deficit. The enforcement strength is crucial to curb UE. However, considering that people by nature would always come up with mechanisms to defeat the system, by becoming more accustomed to the reporting mode, enforcements must be upgraded.

As efficient enforcement is costly, its limited ability suggests that agencies need to consider alternative approach to non compliant tasks. The ability of discerning audit capability adding to the low detection rate with poor enforcement efficiency rate, implies that the underground activities, would become insatiable, with non compliant increasing. So, rather than relying solely on curbing non compliant activities, alternative step is to develop an efficient and transparent system to encourage compliance. In other words besides punitive measures, agencies need to establish a climate of public opinion against cheating the country and government attempt to solving negative public perception. One way is to ensure that the rising federal expenditure growth is spelled out, accountable and assessable for examination to avoid public doubts and deteriorate tax morale that increased the level of UE.

Improved services on voluntary compliance such as compliance program and efficient and effective tax administration working towards a tax system that incumbent on tax payer to report are as important. Among others are careful and concerted ongoing efforts that include taxpayer service and education programs, IT innovation, transparency in audit, investment in its human capital in terms of training and capacity building, good governance and leadership. Fallan (1999) indicate that encouraging tax compliance is as important, he found that citizens with more tax knowledge have better perception of tax ethics and fairness of the tax system, tend to less evade, suggesting that education and transparent policies could improve non compliance.

In summary, as resource limitation often challenges the efforts to minimize non compliance and making it a losing battle, the system should be rooted in cognitive networks. Financial supports for more manpower, better training and facilities for enforcement as well as efficient and effective services must be considered dynamically and treat as essential budget. Policy makers and tax administrators must intervene (tax reform and federal expenditure) by considering the prominent income characteristics and macro associations (CPI, GDP and cash) when making policy to suppress its size and remedy its impacts.

The shift of tax gap component mix to a declining trend of unpaid tax, a modest upward trend of tax evasion on legal activities, but a more inclined upward trend of tax evasion on income of commercial illicit activities is alarming. This upward trend reflects a growing tax base that need to be captured into the tax net.

8.6 Limitations and future study

Estimating a hidden variable is a challenge and estimates are often argued arbitrary. Estimates are often discussed elliptically and subject to skeptical views because the operation of UE is unknown. The size measured could be argued as representing a small portion of a larger one like the volume of the tip of an iceberg seen protruding above the waves. There is a fear of underestimation where the bottom of the “iceberg” could be much larger. If this is so, then the upward trend is a more alarming indicator of a potential tax loss in the future. Yet without any guesstimates, judgment and development on the area of the “second economy” or its portion (UE) is not possible.

Nevertheless, this study has qualify estimates to account for any skeptical views. Despite measuring a major component of UE i.e. income that escapes taxes, the estimates must be interpreted and qualified according to assumptions made considering limited data availability and its hidden nature.

The estimates were also computed by employing several statistical techniques on different data sets to generate a reasonable size range for comparison. Four data sources used are non filing of income tax forms; reported and unreported income difference (time series aggregate data and disaggregate panel data); and enforcement statistic of legal and illicit activities. The four statistical techniques employed are percentage proportion, correlation matrix, OLS regression and inferred ratios. The comparative estimates approach could smooth out the idiosyncrasy of their underlying components or the “tendency of unique estimates”.

Estimates are interpreted according to assumptions as discussed in paragraph 3.7. Differences and similarities in estimates are justified and qualified according to data sampling and statistical techniques

Employing enforcement time series data is an advantage as it represents UE of actual non compliant activities of which researcher has no control over data to reduce bias estimates. However the enforcement statistic is not likely capturing the entire taxable income of underground activities. As such estimate based on activities captured by enforcement is regarded as the low bound estimate (under estimated UE).

The “under estimated UE” or “under coverage”, has been accounted for in this study, as it is amplified by the product of enforcement success rate and tax non compliant ratio assuming it approximates the economic non compliant ratio. In other words the tax gap to tax revenue ratio is assumed to mirror in the UE to GDP ratio.

On the other hand, the assumptions of; tax base structure resembling the entire country’s economy; consistent characteristics between finalised and non-finalised enforcement cases; unreported taxable income representing value added income; parallel taxable income of the tax gap components (under report, non report and non-payment do not come from the same taxable income); and all captured unreported income is within in the tax bracket, could have resulted to an “over estimated UE” and “over estimated potential tax loss”. Assuming that the “under estimated UE” and “over estimated UE” contra each other, estimate should be the best approximate of UE that escape taxes.

Data and calculation technique may be argued as imperfect but considering a latent variable, its hidden nature and illicit financial flows are dynamic and globalised, hence data limitation, the UE size should be accepted as conservative estimates. It could at least be used to gauge formulation on any adjustment to government policies.

This study is more informative compared to past studies. The comprehensive estimates provide useful information for further research on point areas of new statistical needs and extent to other related issues. In order to tackle the issues of UE and to better understanding on the mechanism of UE, it is proposed that there should be a continuous research on the issues of UE in Malaysia. Successive studies could reduce skeptical views on the estimates obtained in this study and give more comforts for its employment on policy decisions and enforcement strategies. In other words, it is time to view the UE as an enduring institution in the Malaysian society. As quoted by Bicanic and Ott (1977), research on UE would lead not only to a more comprehensive view and its awareness, but also to better efficacy of economic policy.

Continuous assessments on the shortcomings of other enforcement agencies are useful to validate and replicate the findings of this study. Agencies should conduct studies on the effectiveness of the consequences of its own policy decisions as to whether it is still practical, employable or totally be replaced. Studies to support whether tax enforcement has significantly improved its efficiency and effectiveness would also be useful to confirm whether the upward trend of UE is due to more cases captured by an improved tax system or efficient law enforcement or true increase of underground activities.

Other future studies include analyses of; federal expenditure for fiscal positioning and as to what type of remedial expenditure has been incurred; contributing issues on the extent of income disparity such as the attribution of selective tax incentives; extension of the withholding tax system to other transactions; and integrity and fairness of tendering for projects.

As income distribution of UE is more left skew than the official economy, varying within and across economic sectors, UE is likely a contributing factor to income disparity. If it does, disparity would be worsening if CPI as the most elastic UE factor, were based on “biased selection basket of goods”. It is proposed that a CPI study concerning basket of goods considered is useful to evaluate the extent of effects of UE on income disparity.

Based on the contention of Parkin (1990), where an economy is a mechanism that determined what is produced, how it is produced and for whom it is produced; comparative studies on the activities and issues between UE and official economy would also be useful in an attempt to shift UE to the official economy.

As business transactions are now facilitated by more computer technology across unlimited borders (e-commerce), there will be more opportunities of underground activities in the future. The traditional tax enforcement audit trails will disappear in the cyberspace as verification of identity and document of proof is limited, hence e-commerce transactions pose challenges in enforcing tax laws, according to Mattson (1997). It partly implies that UE would be continuously thriving and remain as an important component of country’s potential economy. Taxing the e-commerce transactions is a new challenge for tax administrators to determine the issues on taxation rights as

well as tackling issues on tax evasion especially in the light of global economy where it is becoming an inevitable preferred new business feature. Existing tax laws were not developed to face the taxation issues brought about by the emergence of the internet based business model. Therefore, research on how to trace e-commerce transactions for tax purposes would be useful for the tax authority to identify unreported income from e-commerce for tax revenue.

Summary

The empirical estimates of UE in components of economic activities provide great contribution to both researchers and policy makers. The five objectives of this study mainly the development of proxy indicators of UE; its characteristics, size and growth trend, and economic association; and extent of remedial effort are largely achieved.

Estimation approach by amplifying enforcement time series data is reasonably practical as it reflects approximate actual or potential underground activities. The association between estimated UE series and economic incidences as priori implies that estimated size is appropriate. Correlation differences between nominal and real models are due to CPI incremental and insignificant causal association are likely due to complexity of economic interactions, as people joint UE for too many reasons: not only to avoid taxes, but also to escape other regulations.

A substantial size of UE that fluctuates between 8.69% (1980-84) and 26.94% (1995-99) high in bad time indicates that UE and the official economy complement each other. But the positive effect of UE in bad time to buffer

economic depression must not be left unchecked as its impact on taxes is serious federal fiscal imbalance.

UE components mix fluctuates between a minimum of 60% of irregular economy and a maximum of 40% of illegal economy in bad time. Though institutional irregular economy (88.37%) is larger than individual irregular economy (21.63%), both tend to participate UE equally where about 50% of income earned are concealed. The structural proportion and association trend remark that UE in part, was a consequence of; higher direct tax burden in the 1980s, higher indirect tax burden in the 1990s and growing commercial illicit activities in the 2000s decade.

Characteristics of skew income in UE (distribution, economic sector, opportunity) are indicators of unfair tax burden and income inequality, that partly led to unfair wealth, income disparity and spendthrift culture.

Taxes affect UE growth and components mix; high tax rates and the “pinch of sharing income to taxes” (pro-cycle positive tax revenue association) are economic constrains that drive people to seek opportunities for “future private benefits”. However, in bad time tax role is displaced by other economic variables.

The broadly economic association most elastic to CPI with cash as the common medium of transaction and electricity as the physical resource for production, and associating with the upper income level, contributing economy ([manufacturing and construction industries], [business sectors - logging, vehicles, food outlet, electrical, vehicles, and petrol kiosk] and [states wealth] are important issues to be considered for audit framework and policy measures.

Government interaction by the employment of federal expenditure and tax expenditure (lower burden tax reform) are effective remedy to suppress UE growth and size relative to GDP (which now hovers around 15%), but inadequate to reduce its absolute value. UE in absolute term rose to almost 5.46 folds, amounting to MYR850 billion between 1980 and 2009. Its impact on taxes is substantial tax loss, in about 13.85% and 24.96% of federal revenue for direct tax and indirect tax respectively. The suppression of tax revenue and increased federal expenditure has led to an exceeding 10 years of federal deficit in the post 1997-98 crises. The substantial size and rising unreported income within and outside tax net partly indicate a potential tax loss that explains for the declining trend of tax to GDP ratio.

The unpaid tax being the highest component of tax gap exhibited a declining trend, tax evasion of the tax net gradually increased, but a sharper increase of tax evasion outside the tax net is an alarming issue. The uprising range value in a wider gap between lower and upper UE estimates signifies that law enforcement is deteriorating. The low detection risk (8%), moderate enforcement efficiency (50%), insignificant enforcement ability (low audit and post audit taxable income correlation), and declining criminal enforcement highlighted the urgency of more efficient and effective law enforcement to curb UE. Government should improve enforcement to curb UE activities and review related law regularly to keep with the pace of a dynamic and global economy.

To conclude, the positive correlation between UE and; tax, CPI, economic crises suggest that people who are under economic constrains are vulnerably to UE. Government had successfully suppressed UE growth but a continuous

increase of UE in absolute term must not be ignored as its skewed feature is detrimental to federal account and income disparity. It is likely to be intensified by the dynamic of e-commerce in the future, causing a further erosion of fiscal imbalance. Government must continuously shift the UE to official economy to reduce further erosion of federal fund, that lead to service more debt, withdrawing subsidies and drive away public's confidence as well as investors. Shifting the UE to the official economy could partly increase GDP estimate (i.e. from the unrecorded to recorded form). Although it may not be a true net increase of country's production, at least there will be more taxable income captured into the tax net.

As a concluding remark, although Malaysia's economic performance is impressive, a flourishing UE would tarnish the GDP per capita through unfair wealth, unfair opportunity of "private benefit" and federal wastage. Important key policy measures to reduce the size of UE in Malaysia are: government intervention through tax expenditure (tax reform) and federal expenditure (law must be reviewed and enforcement must be improved). Nevertheless, a further lower burden of tax reform and federal spending are not recommended to avoid further federal deficit. Resources should be mobilized to identify the dynamics of UE and a continuous research to encounter the issues of UE is essential as a society with a declining inequality is a country excellence.