Pursuing Shadows: Tax Designs to Counteract the Shadow Economy in Indonesia

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I. EXECUTIVE SUMMARY

Indonesia suffers a serious problem from its underground, shadow economy. This hidden economy is estimated to make up approximately 24 percent of Indonesia's gross domestic product (GDP), which potentially erodes tax revenue over IDR 205 trillion (USD 15 billion) annually. On the other hand, Indonesia faces a low tax to GDP ratio and a high level of non-compliance behavior. The tax ratio is in a range of 10 to 13 percent during 2008-2016, which is low compared to neighboring countries such as Singapore (13.8 percent), Malaysia (14.8 percent), and Thailand (15.6 percent). In addition, the income tax return filling compliance rate is estimated at only 60 percent. This master's project is written to address the problems caused by the shadow economy and design tax strategies to improve compliance in Indonesia.

The first and second chapter of the paper provide an initial description, identifying the need for analysis, plus the policy scope, the logic of the problem, the severity and prior efforts to solve this matter in Indonesia. Chapter three further illustrates the problem by offering problem analysis, an overview of stakeholders, and a diagnostic structure using two policy tools: quantitative and causal analysis. The objective of this chapter is to find the driver of Indonesia's shadow economy using a regression model with a brief assessment of each possible causal factor. This quantitative analysis shows that six variables are statistically significant in the development of Indonesia's shadow economy, namely, voice and accountability, rule of law, political stability, unemployment, financial innovation, and the development of the official economy. In addition, the author reviews five major causes which are a high tax burden level, a high cost of compliance, a low tax morale, a high unemployment, and an unstable official economy.

In the fourth chapter, the author provides potential solutions from European Union and Australian Tax Office frameworks then provides four policy alternatives, which are, 1) the Status Quo; 2) the Deterrence Approach; 3) the Compliance Approach; and 4) a Strengthening Social Norms Approach. To choose the best alternative, the author measures seven different criteria: Cost Efficiency, Effectiveness, Social Acceptability, Financial Viability, Political Feasibility, Equity, and Time Frame.

Based on this analysis, the author recommends implementing the combination of Deterrence and Compliance Approach while providing details of the possible constrains and consequences. Lastly, the author outlines an implementation plan and specifies a monitoring and evaluation review to ensure the policy execution achieves positive outcomes.

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II. INTRODUCTION: THE SIGNIFICANCE OF SHADOW ECONOMY IN INDONESIA

A. Overview of the Problem and Policy Issue

Indonesia still depends on tax revenue as the primary source of national income. The tax portion in the Indonesian Budget Fiscal Year of 2016 was IDR 1,565 trillion out of IDR 1,848 trillion or 83.9 percent of total national income (Ministry of Finance, 2017). Unfortunately, as in many other developing countries, Indonesia has been experiencing a persistent gap between the actual and desirable levels of tax intakes due to a large shadow economy and tax evasion problems (Minh-Le, 2012). While tax evasion is undoubtedly harmful, because no one engaged in this sector wants to be identified (Faal, 2003), policymakers have difficulties to estimate the accurate size of the shadow economy.

Some researchers such as Medina and Schneider (2018) have measured the estimated average size of the shadow economy in Indonesia at 24.1 percent as a percentage of official gross domestic product (GDP), a rate that is significantly higher compared to that of developed countries of 14 to 16 . This high rate means Indonesia's tax evasion is high and voluntary compliance is low (OECD, 2015). Only 36 million taxpayers were registered in 2016 out of a total population of 260 million, and only 58.3 percent of corporations and 60.1 percent of individuals filed the tax return (Directorate General of Taxes, 2017). If left unchecked, the shadow economy problem will reduce tax revenues collection, undermine the financing of the social security system, distort fair competition and cause inefficiencies in the economy (Savona, 2015). To tackle its effects in Indonesia, it is important for the stakeholders to take proactive measures. This leads us to our primary question: what policies can the government execute to counteract the shadow economy in Indonesia?

B. Client and Client's Mission

The client in this policy sphere is the Directorate General of Taxes (the DGT), which is Indonesia's tax authority. The DGT is a single directorate within the Ministry of Finance of the Republic of Indonesia that reports directly to the Indonesian Ministry of Finance. It is led by a Director General appointed by the President of Republic Indonesia. The vision of the DGT is to become the best state tax administrator to ensure state sovereignty and autonomy. While its mission is to ensure the

implementation of a sovereign and autonomy state with revenue collection based on high compliance on tax voluntary and fair law enforcement, modern technology-based service to ease tax compliance fulfillment, tax officers with integrity, competency, and professionalism, and competitive compensation based on performance management system (DGT, 2016).

C. Need for Analysis

Understanding shadow economy is important to give an emphasis on forecasting and estimating tax revenue. Even though Indonesia is not a regional financial center or an offshore financial haven, the country remains vulnerable due to gaps in financial system legislation and regulation, a cash-based economy, weak rule of law, and ineffective law enforcement institutions (US Department of State, 2015). If stakeholders do not address the issue, there are several important consequences that is faced by the policymakers. First, unreliable data affects the credibility in estimating a model of an economic phenomenon. Second, the unreliable data could lead to inefficient policy prescriptions. Third, a significant shadow economy activity deteriorates the government ability to collect tax revenue to fund public works. Lastly, a massive shadow economy drives an unfair price competition of products and services affecting companies who choose to voluntarily comply with their tax obligations (Bajada, 2012).

An analysis is needed to find the primary motivating individuals and firms keep staying in the shadow economy in Indonesia, regardless of current government measures. The goal of finding the root causes is to identify potential effective policy options to address the problem.

III.   STRUCTURING KEY FEATURES OF THE SHADOW ECONOMY

A. Geographic, Demographic and Economics Context

Indonesia is the largest archipelagic country consist of 17,508 islands. Straddling equator, its archipelago is at a crossroads between two oceans, the Pacific and the Indian Ocean, and bridges two continents, Australia and Asia. Indonesia's population of 255.4 million in 2016 makes it the fourth most populated nation in the world after China, India, and the United States. Its population growth of 1.2% may surpass the population of the United States, leading it to become the world's third biggest after China and India by 2043 (Adam, 2014). Indonesia is vulnerable to development of shadow economy due to its geographical location, its long history of smuggling of illicit goods and bulk cash, made easier since there are thousands of miles of unpatrolled coastlines, sporadic and lax law enforcement, and poor customs infrastructure (US Department of State, 2015).

Indonesia's GDP of US$1,015 trillion in 2016 was the 16th largest in the world and a GDP per capita of US$ 3,870 with Human Development Index of 0.689. The country's gross national income per capita has steadily risen, from $560 in the year 2000 to $3,870 in 2017 (IMF, 2016). Indonesia is

the world's 8th largest economy based on purchasing power parity and a member of the G-20. The World Bank considered Indonesia as an emerging middle-income country since Indonesia has made enormous gains in poverty reduction, decreasing the poverty rate to more than half since 1999, to 11.2% in 2015 (IMF, 2016).

B. Scope: The Development of The Shadow Economy in Indonesia

1. Definitions

A variety of different terms are used to define shadow economy. These include "cash economy", "non-observed economy", hidden economy" and "informal economy" (OECD, 2017). One common definition is all currently unregistered economic activities that would contribute to the officially calculated or observed GDP (Schneider, 2010). This term is defined as consisting of four components: 1) unreported income arising from legal activities; 2) unreported income arising from illegal activities; 3) production of goods for own use; and 4) statistical underground reflecting shortcomings in statistical techniques and information resources (OECD, 2012)[1]. The Table 1 below offers a consensus for a definition of the shadow economy.

Table1: Typology of Shadow Economy

Type of activity	Monetary Transactions		Non-monetary transactions	
Illegal Activities	Trade with stolen goods; drug dealing and manufacturing; prostitution; gambling; smuggling; fraud; etc.		Barter of drugs, stolen goods, smuggling etc. Producing or growing drugs for own use. Theft for own use.	
	Tax Evasion	Tax Avoidance	Tax Evasion	Tax Avoidance
Legal Activities	Unreported income from selfemployment; 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

Source: Lippert and Walker, 1997

In this paper, the concept of shadow economy is limited only to all legal market-based production of goods and services that are deliberately concealed from public authorities for the following reasons: (1) to avoid payment of income and value-added taxes; (2) to avoid payment of social security contributions; (3) to avoid certain legal labor market standards such as minimum wages, maximum working hours, etc. and; (4) to avoid complying with certain administrative procedures (Dell-Anno, 2009). Therefore, the definition does not include all illegal activities that are against the law such as drug trafficking, theft, corruption, and money laundering.

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[1] See ANNEX 1 The Latest Definition of Shadow Economy from OECD (2017) in the appendices section.

2. *Scale of the Shadow Economy in Indonesia*

Estimating the size of shadow economy is very challenging. It is because the purpose to engage in it is often to avoid detection while governments have lack capacity to monitor shadow economy (IMF, 2012). While there are no direct methods to calculate the scale and development of shadow economy in Indonesia, researchers have been proposed some indirect methods.

A research by Medina and Schneider (2018) using multiple indicator multiple causes (MIMIC) model. Medina and Schneider estimated the size of the shadow economy based on multiple observed variables that are presumed to cause it namely the size of government, regulatory burden, GDP per capita and tax rates. Medina and Schneider shows that shadow economy in Indonesia accounted for 24.1 percent of GDP. This study differs to findings from Chatib Basri, the Indonesian ex-Minister of Finance and Faisal Basri, an Indonesian economist who used electricity consumption growth as a proxy resulted of 40 percent of GDP (Gunadi, 2004). Finally, an attempt was made by Purnomo (2011) when estimating the period of 2000-2009 using currency demand model. In this method, the assumption that most transactions in the shadow economy are conducted in cash. Therefore, this approach calculates the size of shadow economy from the excess for cash. He found that the size was about IDR164.4 trillion per year on average or equivalent to 6 percent of GDP (Purnomo, 2011).

Table 2: Indonesian Formal and Informal Worker Composition 2015

Sector Categories	Nominal (in million)	Percentage (%)
Total	**120.85**	**100**
Formal	58.19	48.15
Informal	62.66	51.85
Formal Sector	**58.19**	**100**
Men	37.63	64.67
Women	20.56	35.33
Urban Area	41.09	70.61
Rural Area	17.1	29.39
Informal Sector	**62.66**	**100**
Men	35.8	57.13
Women	26.86	42.87
Urban Area	24.79	39.57
Rural Area	37.87	60.43

Source: Indonesian Bureau of Statistics, 2015

Along with this massive scale of the shadow economy, the size of employment in informal sector should also be taken in to account. In Indonesia, approximately 70 percent of the workforce was estimated be engaged in the informal mostly in the agriculture sector (Alatas, et.al, 2010). The Indonesian Central Bureau of Statistics (2015) found that the number of the informal worker in Indonesia increased 12.1 percent from 55.81 million in 2001 to 62.66 million in 2015 (see TABLE 2).

Informal typically do not pay official taxes since the informal workers and economic activities remain outside the tax base. As a result, the government cannot collect taxes effectively due to fact that it gets harder to track profit, income, and sales. (Bird, et. al., 2004).

Finally, Indonesia suffers serious problems from tax evasion. Approximately, 24.1 percent of GDP is unrecorded and does not pay taxes (Medina and Schneider, 2018). The severity of tax evasion can also be seen from the level of tax gap. Tax gap is the difference between the potential revenue potential and the actual revenue collected (Minh-Le, 2012). In this respect, there is a huge gap when comparing Indonesia's average tax ratio of 11.9 percent and tax capacity[2] of 28 percent with a low tax effort[3] of 0.47 (less than 50 percent of Indonesia's potential tax revenue) (IMF, 2012). Typically, tax evasion reflects a typical of non-compliance behavior that contributes to revenue losses from taxation (OECD, 2008).

The IMF has estimated that Indonesia could increase taxes through broadening the tax base and improving tax compliance at current rates up to 21.5 percent of GDP in the long term with a realistic medium-term target of between 13.4 and 16.4 percent of GDP (IMF, 2012). The actual tax collections compared to official GDP ratio would be higher than if actual tax collections were to be compared to a revised GDP includes some measure of underreporting from the shadow economy. This fact implies that there is still room for the government to improve revenue collections by feasible policies to bring more of the shadow economy into the tax net.

3. Effects of the Shadow Economy

The fact of a massive scale of the shadow economy in Indonesia could put a crucial burden on tax administration effort and capacity. It makes official statistics on economic growth less reliable and this miss information may lead to an incorrect policy making (Park, 2005). Furthermore, weak law enforcement could provide strong incentives for the citizens to participate in the shadow economy where evasion is easier (Russel, 2010). In the long term, it will erode tax bases, undermine tax revenue collection, distorts the fair competition, and causes inefficiencies (Savona, 2015). Nevertheless, the policymakers found difficulties to gather accurate information of shadow economy activities since entities engaged in these activities do not want to be identified (Faal, 2003). Therefore, it is important for Indonesia tax authority to gather information about its magnitude, key determinants, who are the key players, and the effective policy to tackle the problem.

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[2] Tax capacity refers to the maximum level of tax revenue which a country can achieve. In some cases, tax capacity measures the predicted tax to gross domestic product ratio that can be estimated with the regression, considering a country's specific economic, demographic and institutional features (Minh-Le, 2012).

[3] Tax effort estimates the ratio between actual tax revenue and capacity. This ratio may be greater than 1 for countries with a high tax effort, equal to 1 for countries fully using their potential tax capacity, or less than 1 for countries with a low tax effort. The tax effort ratio is indicative of how well a country is exploiting its potential tax base (Minh-Le, 2012).

4. Severity of the Problem

There is an impediment to calculate accurately on how much shadow economy size in Indonesia. However, while recognizing the limitations of the data sets utilized, the assessment estimates that IDR 1,600 trillion (or USD118 billion) GDP is generated annually in shadow economy in Indonesia. The author estimates potential tax revenue loss approximately of IDR205 trillion (or USD15 billion) annually. From this, not all activities in a shadow economy is illegal. According to Feige (1990), shadow economy consists of (1) Informal Economy (which is activities that are not monitored by the government and are not taxed); (2) Illegal Economy (activities that are prohibited by law); (3) Unreported Economy (unreported activities to avoid taxes and often referred to as the cause of the "tax gap"; and (4) Unrecorded Economy (unrecorded because the government has not conducted a data collection but not because of tax evasion). As a result, prioritizing which sides to be focused more is crucial.

Unfortunately, the DGT does not regulate this shadow economy issue specifically. The tax authority sees the problem as a broader issue from the compliance aspects to the education framework. From the document of Performance Report Strategic Plans (2016), the DGT has set up 16 strategic goals that each of them is classified into detailed key performance indicators (KPI). The strategic goals that related directly to the shadow economy issue is "Enhancing Tax Extensification". This strategic goal can be seen from percentage increase of new taxpayers who conduct payments as its key performance indicator. The other important strategic goal is "Enhancing Taxpayer's Monitoring" with percentage of tax return counseling by the account representative (AR) as its key performance indicators.

In the long term, the less attention to this matter caused Indonesia faces two major signs that policy makers should be concerned. First, the official Indonesian GDP tends to be underreported due to the existence of a shadow economy which erode the potential tax base. On the other hand, Indonesia faces a low tax ratio and a high non-compliance behavior. These two problems can be drawn from the failure to understand key determinants of shadow economy and a lack of extensive plan to tackle a non-compliance behavior.

a. The official Indonesian GDP is underreported due to the existence of a shadow economy which erode the potential tax base

The author estimates potential taxes lost due to shadow economy activities in Indonesia (see TABLE 3). The potential taxes loss is a tax which is not reported by the shadow economy player. The author determined potential taxes loss based on the average tax rate which is proxied by shadow economy size multiplied by the ratio of total tax revenues to the Gross Domestic Product (tax to GDP ratio).

Based on Medina and Schneider (2018), the potential tax loss in Indonesia from 2006 to 2015 has been showing an uptrend amount. In 2006, the potential tax loss is estimated to IDR149.84 trillion (4.4 percent of GDP). Then in 2007, the size increased up to 10 percent compared to 2006 of IDR 164.22 trillion (4.16 percent of GDP). This increase keeps fluctuate until 2015. On average, the writer calculates tax revenue potential of shadow economy activities have been grown approximately 8 percent or IDR 205.57 trillion per year (3.17 percent of GDP).

TABLE 3: Potential Tax Revenue from Shadow Economy

Year	GDP of Current Price (trillion IDR)	Tax Revenue (trillion IDR)	Tax to GDP Ratio (%)	Shadow Economy Size (%)	Tax Revenue Potential from Shadow Economy (trillion IDR)	Shadow Economy Growth (%)	Ratio of Tax Revenue Potential Loss to the GDP (%)
2015	11,531.72	1,240.42	10.76	21.76	270.00	12%	2.34%
2014	10,094.93	1,146.87	11.36	21.05	241.40	2%	2.39%
2013	9,087.28	1,077.31	11.86	21.92	236.24	8%	2.60%
2012	8,230.93	980.52	11.91	22.22	217.82	10%	2.65%
2011	7,419.19	873.87	11.78	22.65	197.96	17%	2.67%
2010	6,446.85	723.31	11.22	23.44	169.55	-12%	2.63%
2009	5,603.90	619.92	14.18	24.29	193.02	-10%	3.44%
2008	4,948.70	658.70	18.62	23.40	215.62	31%	4.36%
2007	3,950.90	490.99	16.54	25.13	164.22	10%	4.16%
2006	3,365.90	409.20	17.90	24.87	149.84		4.45%

Source: Author's calculations

b. Indonesia faces a low tax ratio and a high of non-compliance behavior

Indonesia is still struggling with low tax revenue. This can be seen a low tax ratio and a poor tax compliance. Indonesia ratio of tax to GDP (tax ratio) is in the range of 10 to 13 percent during 2008-2016 (DGT, 2018). This tax ratio is relatively low compared to neighboring countries such as Singapore (13.8 percent), Malaysia (14.8 percent), and Thailand (15.6 percent) (World Bank, 2018). Usually, peer economies in the same region are likely common in their tax structures due to their similar economic and social factors (Poesoro, 2014). However, those tax revenues are varying considerably.

TABLE 4. Comparison of Tax Ratio 2014 (Tax Revenue as Percentage of GDP)
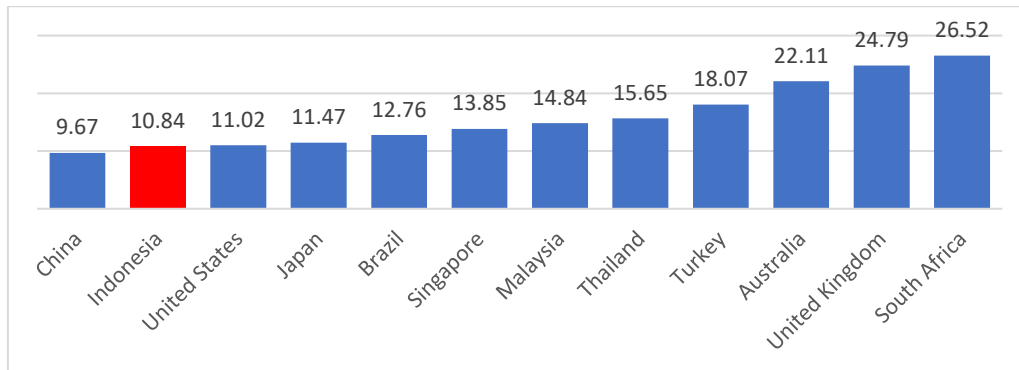
Source: World Development Indicators, 2018

The author sees that the low ratio of tax is not in-line with the growth of the population and labor forces which should reflects an increase in the tax base. Moreover, Indonesia's economic growth in average of 5% from 2006-2015 could be an indicator of the development of economic activity, which can be interpreted as an increase of income per capita. Therefore, the potential of tax revenue should be higher, but unfortunately, that does not happen. The question rises whether an increase of population and economic growth is not followed by an increase of Indonesian tax ratio. Hypothetically, the presence of hard-to tax sectors namely informal sector, small and medium enterprise (SME), and illegal economy are one factor caused this problem.

TABLE 5. Indonesia's Tax Ratio, 2008-2016
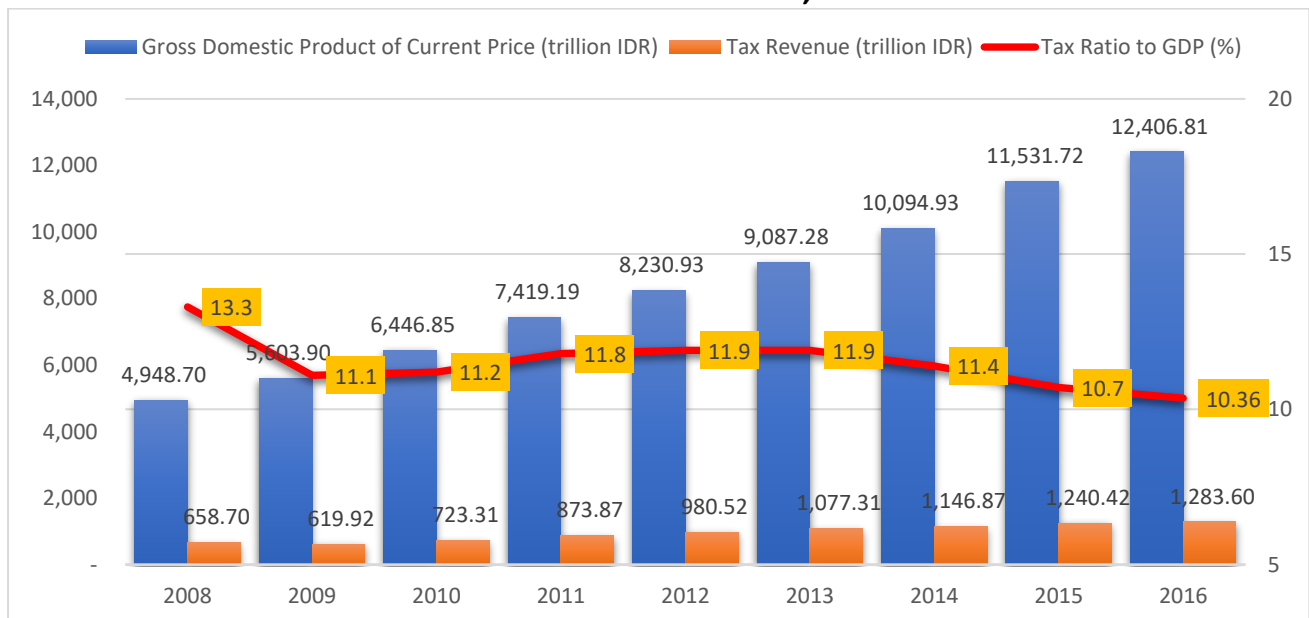
Source: World Development Indicators, 2018

Another factor is a poor tax compliance. If we see from the sort of taxpayers, in 2016 there were 18.95 million individual taxpayers and 1.21 million corporate taxpayers that obliged to fill tax return in Indonesia (DGT, 2017). From these amount, there were only 12.26 million taxpayers

reporting a tax return or less than one tenth of the workforce in Indonesia of approximately 120 million. In addition, over the past ten years, the ratio of compliance to submit the tax return is only accounted at 60 percent.

TABLE 6. Income Tax Return Filing Compliance Ratio, 2012-2016

Income Tax Return Filing Compliance Ratio of Corporate and Individual Taxpayers, 2012—2016					
Description	2016	2015	2014	2013	2012
Registered Taxpayers That Have to Fill Tax Return	20,165,718	18,159,840	18,357,833	17,731,736	17,659,278
• Corporate Taxpayers	1,215,417	1,184,816	1,166,036	1,141,797	1,026,388
• Individuals Taxpayers	18,950,301	16,975,024	17,191,797	16,589,939	16,632,890
Income Tax Return	12,264,131	10,972,529	10,852,304	9,966,834	9,237,948
Corporate Taxpayers	708,659	681,331	552,714	546,346	497,131
• Individuals Taxpayers	11.555,472	10,291,198	10,299,590	9,420,488	8,740,817
Compliance Ratio	60.82%	60.42%	59.12%	56.21%	52.31%
• Corporate Taxpayers	58.31%	58.00%	47.40%	47.85%	48.43%
• Individuals Taxpayers	60.98%	60.63%	59.91%	56.78%	52.55%

Source: DGT (2017)

From the pretext above, the author highlights some points that potentially caused the low tax compliance. First, a low public trust due to negative perceptions to the DGT in the past. Before tax reform in 2002, intensity of corruption has widely spread including in the DGT. The experience created a perception that tax paid by taxpayers are vulnerable to being diverted (Kristiaji, 2013). However, the DGT has transformed into a clean and professional institution following the success of its tax reform. It can be reflected that in 2016, the DGT scored 9.73 and 9.82 out of scale 10 for the ethic code of anti-corruption institution. Secondly, the author sees that the DGT could not be able to improve its own institutional capacity. This drawback can be seen from composition of the DGT employees. In 2016, the total number of DJP employees was 40,035 employees. From this, employees who work directly in revenue sections only accounted of 8,901 Account Representative Officers and 4,901 tax auditors (34 percent). Furthermore, the number of tax auditors in the DGT is only 12.2 percent of total employees with the ratio of the number of tax auditors to the taxpayer of 1: 6,733 (DGT, 2017). In other words, a DGT's tax auditor should responsible to approximately 6,733 taxpayers. Based on these premises, a higher tax compliance seems to be difficult to achieve since the institutional capacity to detect fraud and non-compliance behavior is very weak.

5.   Prior Efforts to Solve Problem

a. Overview of Indonesian Tax Administration

At the very beginning of 2002, Indonesia has been gradually establishing the tax administration reform to fortify tax collection and to improve the best practice of tax administration. According to Rizal (2011), the modernization focused on organization, business process, and human resources management. First in term of organization, the DGT has been shifting from type of tax-based organization structure into functional based organization structure (Rizal, 2011). The reform started with the establishment of large taxpayer units helped by the IMF. In this respect, the tax service offices, tax audit offices and land-building tax offices were merged and handled by Large Taxpayer Office (LTO), Medium Taxpayer Office (MTO) and Small Taxpayer Office (STO) which difference based on the size of the taxpayers (see TABLE 7).

TABLE 7. The Evolution of Organizational Design Ideas for Tax Administration

	Tax Focus				Function Focus		Taxpayer Focus	
					Registration				
					Accourding				
Functions	Sales Tax	Corporate Tax	Personal Income Tax		Taxpayer Education		Large Businesses	Medium/ Small Businesses	Individuals
					Collection				
					Audit				
					Appeals				
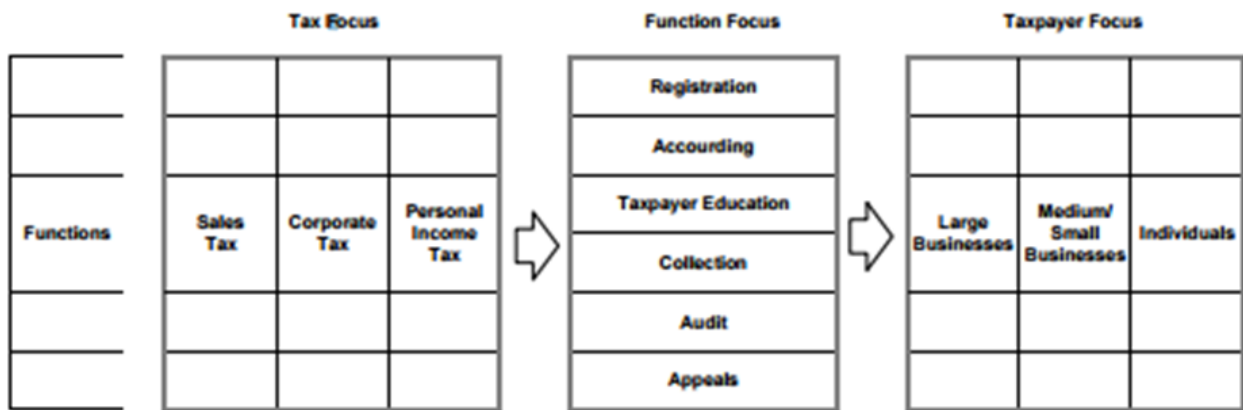
Source: Ebrill, HKeen, Bodin, and Summers, 2002, as cited by McCarten, 2003

The other basic change in the DGT is Account Representative (AR), a new position to serve tax-payers, monitoring and evaluating taxpayer's compliance. In general, the AR has responsibility to develop and maintain tax-payers profile and data, to supply data to other units, to provide counseling service, to monitor tax return, to monitor tax revenue collection, and to process tax refund claim.

Beside this organization element, the business process also becomes crucial in modernization of the DGT. If the tax system is easy and simple, it will increase the effectivity and efficiency of the tax administration. For instance, the DGT has implemented simple tax forms and filling procedure to minimize administration cost and compliance cost (Rizal, 2011). In addition, the use of information technology (IT) has been improved to streamline the business process. The DGT has built the DGT Information System (SIDJP) and developed e-SPT (e-filling), e-payment systems and preparing the Data Processing Center to collect data from tax payments, tax returns and third-party report (Rizal, 2011). Lastly, in term of human resources management, the DGT initiated modern office staff

selection procedures, providing special allowances/bonuses, and a continuing tax management and procedures training for tax officers (Rizal, 2011).

b. Previous Initiatives to Tackle Informal Economy

i. Overview of Tax Administration Initiatives

The DGT does not focus on a specific shadow economy issue. However, according to the DGT's Annual Performance Report (2016), the author found a term of "informal sector" in the extensification and intensification strategic plans with related to this problem. This section will explain two initiatives in counteracting shadow economy issue: tax extensification, and tax intensification programs.

Tax Extensification: The DGT is equipped with one unit namely Directorate Extensification and Valuation that focus on extensification program. Tax extensification is implemented to expand tax base by targeting potential taxpayers to contribute positively for national revenue (DGT, 2017). To pull more underground economy players into the tax net, the DGT has been conducting "Strategic Plan Number-06: Enhancing Tax Extensification Program", especially in article (e) reaching the informal economy by end-to-end approach; and article (f) sharpening taxpayer's extensification.

There are two examples on how those programs is implemented. The first one is National Tax Census in 2013. At that time, the Tax Census program has been capturing new business players which did not file or under-reporting tax return. The DGT collected 3.2 million new taxpayers into the tax net, consist of 300,000 corporate taxpayers and 2.9 million individual taxpayers (DGT, 2014).

Along with the Tax Census, in 2015, the DGT handled the informal sector using Business Development Services approach (DGT, 2016). The tax officers conducted tax information disseminations to Small and Medium Sized Enterprises (SMEs) by providing methods to encourage taxpayers in developing their business (DGT, 2016). This method was done by involving related parties, such as SME development agencies, banks, and government institutions in the field of trade and industry. In 2015, a pilot project of this dissemination was carried out by focusing on e-commerce sector in eight cities in Indonesia, namely Banjarmasin, Medan, Balikpapan, Semarang, Yogyakarta, Serpong, Jakarta, and Manado (DGT, 2016). These activities would enlarge the population of taxpayers in the tax system, enabling DGT to expand its tax intensification program.

The outcomes were considerably outstanding. In 2016, the DGT has increased 569,236 new taxpayers from extensification. In that 285,323 taxpayers conducted tax payment (DGT, 2017). In general, tax extensification program has multiplied number of taxpayers from 24.81 million in 2012 to 36.4 million in 2016 (DGT, 2017). Most of the new taxpayers were individuals who are encouraged to register by their employer. Unfortunately, if we compared to the total of Indonesian labor market of 121 million, the augment was not significant.

TABLE 8. Number of Registered Taxpayer 2012-2016

	2016		2015		2014		2013		2012	
	Taxpayer (million)	% of Total	Taxpayer (million)	% of Total	Taxpayer (million)	% of Total	Taxpayer (million)	% of Total	Taxpayer (million)	% of Total
Individual Taxpayer	33.04	90.76	30.19	90.06	27.68	90.54	25.10	89.64	22.13	89.19
Corporate Taxpayer	2.92	8.02	2.68	8.04	2.47	8.08	2.32	8.20	0.54	2.17
Treasurer	0.48	1.31	0.45	1.35	0.41	1.34	0.56	2.00	2.13	8.58
TOTAL	36.4	100.00	33.30	100.00	30.57	100.00	28.00	100.00	24.81	100.00

Source: Directorate General of Taxes, 2017

Tax Intensification: Besides the tax extensification, the DGT also performs the tax intensification program. It main goal is to fortify tax information system by verifying taxpayer's compliance (DGT, 2017). The DGT intensifies supervision on tax payments especially for the large taxpayers by utilizing internal and external data to be confronted with their tax return. For example, using Geotagging tools[4], the authority can handle a "no-report but data available" taxpayers. The tax officers send counselling letter to ask explanation and encouraging taxpayers to revise their tax return. Moreover, the DGT performed activities to enlarge tax base such as exploring tax potential, supervising taxpayers who perform aggressive tax planning through transfer pricing and increasing joint supervision with the Directorate General Customs and Excise in the tax-free zones (Special Economic Zone) (DGT, 2017).

The other important initiative is the role of Center for Tax Analysis (CTA). The CTA is a strategic unit who carry out tax data analysis nationally (DGT, 2017). The CTA analyzes tax potential based on promising sectors by optimizing the utilization of third party data. It is an ad-hoc unit that should be expired its duty on 2017. However, considering its output provide strategic impact to overall national revenue, the Minister of Finance extended the timelines for the CTA. In 2016, the CTA produced 2,544 tax analysis report with total tax potential of IDR23.70 trillion. Nonetheless, if we compared those progress to the potential tax revenue from underground economy of IDR 205 trillion per year, the DGT still have much room to be improved.

ii.   Overview of Indonesian Tax Policy

At the tax policy level, the DGT has been focusing on simplifying its tax laws, reducing taxes on micro and small businesses and enhancing new taxpayers to entry into the formal economy. In this respect, the DGT has been conducting policies to increase voluntary compliance. The policymakers have been lowering the corporate tax rate from 28 percent in 2009 to 25 percent from 2010 while in Personal Income Tax, the government reduced the tax rate from 10 percent up to IDR

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[4] Geotagging is a method of mapping the location of a Taxpayer as well as a tax object of the United Nations by marking the location of the Taxpayer on the map contained in the EC.Tag application and adding it with various information including location data, Taxpayer name / trademark, location address, type of location utilization, and location photos.

50 million to 5 percent in respect to pull more taxpayers into the system (Poesoro, 2015). The other policy was imposing a special low turnover income tax of 1 percent rate for small business (turnover below IDR4.8 billion or USD 360,000). Lastly, in July 2016 to March 2017, the Indonesian government implemented a tax amnesty and assets repatriation to boost the income generated from taxes in the national budget. The author will briefly explain these two policies related to shadow economy issue in Indonesia which are threshold and rates policy, and the tax amnesty program.

Threshold and Rates Policy. Most of informal sector constitutes in the micro and small business sector. Table 9 shows that in 2013, micro and small business reflects 44 percent of the national GDP which is greater than medium business of 13 percent and large business of 42 percent (Ministry of Cooperation and SME, 2018). These sectors hire more than 93 percent of labor force or 110 million workers (Ministry of Cooperation and SME, 2018). In general, micro and small business face same related problems such as lack to finance and market, lack of official documentation, but these businesses contribute much more into GDP and employment rates rather than tax revenues (Glenday and Shukla, 2017). Ideally, the approach of tax design is oriented to lower the administrative and compliance costs. For instances, decreasing frequent payment of VAT and filing return and educating taxpayer by assisting record keeping and return filling (Glenday and Shukla, 2017).

TABLE 9. Scale of Business Sectors in Indonesia, 2012-2013

Sort of Business	Scale of Business				Scale of Labor Force			
	2013		2012		2013		2012	
	IDR (trillion)	% of GDP	IDR (trillion)	% of GDP	Labor Force (million)	% of total	Labor Force (million)	% of total
Micro	3,326.56	34.65	2,951.12	35.81	104.62	88.90	99.8	90.12
Small	876.38	9.94	798.12	9.68	5.57	4.73	4.5	4.09
Medium	1,237.05	13.46	1,120,33	13.59	3.94	3.36	3.2	2.94
Large	3,574.94	41.95	3,372.29	40.92	3.53	3.01	3.15	2.84
TOTAL	9,014.95		8,241.86		117.78		110.8	

Source: Ministry of Small and Medium Enterprises

To lower the administrative and compliance cost, the DGT does not obligate for small business to register into the VAT system if their annual turnover less than IDR 600 million (USD 44,000). However, they still needed to pay an income tax with a flat-rate of 25 percent. This rate could drop to 12.5 percent if the annual turnover is below IDR 50 billion (USD 3.7 million). In addition, for selected taxpayers whose annual turnover less than IDR 4.8 billion (USD360,000), the government imposed a special low turnover tax of 1 percent on their monthly turnover.

For the individual taxpayer, the DGT has set up a deduction policy for single individual taxpayer whose income less than IDR 54 million as the non-taxable income with additional IDR 5.4 million if

he/she married or have dependents maximum of three dependents (DGT, 2016). The government also have been lowering personal income tax rate from 10 percent up to IDR 50 million to 5 percent to pull more taxpayers into the system.

Tax Amnesty Legislations: The latest policy came when the government passed the Law No.11/2016 in July 2016 on the Tax Amnesty bill. According to the Ministry of Finance of Republic of Indonesia (2016), the tax amnesty legislation has three objectives. First, to accelerate growth and restructuring the economy using the assets repatriation that will trigger positive outcomes such as an increase in domestic liquidity, improvement of the exchange rate of Indonesian Rupiah, a decrease of financial interest, and an increase of investment. Second, to support the tax reform in providing an equal taxation system and expanding the tax base. And finally, to raise tax revenues as a primary source to fund national development.

The historical background is that many of Indonesian taxpayer's store and invest their assets offshore. The DGT estimated that in 2016, Indonesia's high wealth individuals retained their wealth outside of Indonesia's territory of USD250 billion (DGT, 2016). From this, USD200 billion was stored in Singapore while the rest of USD50 billion was kept in Cayman Island, Macau, Luxembourg, and other tax heaven countries (DGT, 2016). Those assets mostly consist of stocks, bonds, properties and the assets kept stay in the shadow economy since the DGT could not tax them. Therefore, the DGT offered two treatments for the taxpayers who want to join the tax amnesty program (Said, 2017). First, the taxpayers could pay a low penalty rate (called redemption money of 2-5 percent rate multiplied by the asset's net value), repatriate their assets and invest it in the domestic investment instruments in Indonesia for a minimum of three years. Second treatment, the taxpayers can declare their assets without repatriated it but must pay a higher redemption money of 4-10 percent. In addition, the domestic taxpayers could also have an option to declare their domestic assets that located in Indonesian and pay for 2 – 5 percent redemption money) (Said, 2017).

At the end of the policy, the Indonesian government announced domestic asset declaration of IDR2,617.97 trillion, offshore asset declaration of IDR 728.66 trillion, and asset repatriation of IDR114.16 trillion (DGT, 2017). The DGT collected redemption money of IDR103.04 trillion with total participants of 615,881 taxpayers. However, many researchers criticized that tax amnesty program would negatively affect the tax compliance behavior in the future. It is because the taxpayers would think they does not have to pay taxes instead of waiting for the next tax amnesty program. The taxpayers tend to wait for a new tax amnesty program and they assume will be forgiven through the program (Torgler, 2005).

IV. PROBLEM ANALYSIS: UNDERSTANDING STAKEHOLDERS, DIAGNOSTIC A STRUCTURE

A. Interest and Power of Major Stakeholders

The strategies to minimize shadow economy has become concern for several stakeholders in Indonesia. From the executive side, interest and power are distributed among several government institutions, in that the Minister of Finance and the Director General of Taxes (DGT) are key stakeholders. Other institutions (namely, House of Representatives, the BKF, and Ministry of Administrative and Bureaucratic Reform) also have a significant interest. An effective cooperation among these stakeholders is needed to counteract shadow economy in Indonesia. The author provides a deep analysis of the stakeholder's power, interest, and connections in ANNEX 2 and 3 of the appendices section. For this paper, the stakeholders are separated by key stakeholders (has decision power), primary stakeholders (directly involved in the problem) and secondary stakeholders (no decision power but have some influence).

B. Using the Policy Tools to Identify the Problem

1. Empirical Analysis: Examining Key Determinants of The Shadow Economy in Indonesia

a. Overview of Empirical Analysis

The development of shadow economies has increased rapidly in most developing countries over few decades especially in Indonesia. However, there is still a lack of research investigating the causes of this area. This section empirically analyzes the key determinants of the size of the shadow economy in Indonesia compared to that of other developing countries in four stages as it is explained below.

First, the author builds a regression model based on the literatures to analyze what are the key features of a shadow economy. There are three papers that the author followed the structure which are Richardson (2006), Torgler-Schneider (2007), and Medina-Schneider (2018). Second, the author will look for the predictive sign of independent variables which affect dependent variable (shadow economy). In this respect, the author took the dataset of shadow economy from Medina and Schneider (2018) between 2006-2015. Third, the model will be used to construct hypotheses and quantifying the relationship between key determinants of shadow economy size. The objective is to examine whether certain variables are statistically significant to the development of shadow economy in Indonesia compared to the other developing countries. Fourth, the author uses the empirical result to support the causal analysis (problem tree analysis) while sounding the best practices from the

European Union (EU) and the Australian Tax Office (ATO) frameworks. And finally, proposing policy alternatives to counteract the issue in Indonesia.

b. Key Determinants of Shadow Economy: Theoretical Reasoning

There is rationale that individuals and firms keep staying in the shadow economy. From preliminary research on Richardson (2006), Torgler-Schneider (2007), and Medina-Schneider (2018), the author found that shadow economy decreases with the rise of tax morale, institutional quality, and the probability of detection while shadow economy will increase with the increasing of the cost of compliance. Furthermore, tax rates will be predicted either in positive or negative directions. Those assumptions provide logic that shadow economy size would not only affected by enforcement per se, for example, audit process and sanction level, but also influenced by morale factors namely institutional quality, cost of tax compliance, and the level of tax rate.

c. Research Design: Data Description, Dependent Variable and Independent Variables

The author took the data from various sources. The dependent variable in this research is the shadow economy size (SESIZE) as a percentage of official gross domestic product (GDP). The author collected it from Medina-Schneider (2018). In addition, the independent variables are written in this study consists of twelve various variables which is assumed as the key features of the development of shadow economy. The author runs panel data from twenty-two developing countries for ten years (2006-2015) with the number observations of 220 (see ANNEX 4 and 5). The statistical software of Eviews version 10 is used to run the regression analysis. To test the key determinants of shadow economy, the following ordinary least squares (OLS) regression equation is estimated:

$$SESIZE = \beta_0 + \beta_1 TAXBURD + \beta_2 TAXCOMPL + \beta_3 COR + \beta_4 VOC + \beta_5 GOV + \beta_6 REG + \beta_7 LAW + \beta_8 POL + \beta_9 UNEMP + \beta_{10} LNATM + \beta_{11} LNGDP + \beta_{12} LNPOP$$

Where:

1. SESIZE is the shadow economy size as a percentage of GDP. The data is taken from Medina-Schneider (2018);

2. TAXBURD is tax burden data taken from the Heritage Foundation (2018). It is the index level of three components: the top marginal tax rates on individual income, the top marginal tax rate on corporate income, and the tax burden as a percentage of GDP. The index is a scale up between 0 to 100 which the higher the tax rates, the lower the index. Therefore, the author subtracts the index by 100 to get an uptrend scale of tax rates.

3. TAXCOMPL is the index of tax compliance cost taken from The Fraser Institute (2018). It is the taxpayer's cost compliance to fulfil to the tax regulations. The higher the index, the

lower cost of tax compliance. Therefore, the author subtracts the index by 11 to get an uptrend scale of tax rates.

4. COR is control of corruption as a proxy of tax morale. Public perception on corruption will influence tax morale level. This will be represented by the Control of Corruption index from the Worldwide Government Indicators (WGI, 2018) dataset. The higher the index, the higher control of corruption and the lower the shadow economy. I expect the negative sign for this index.

5. VOC is voice and accountability from the World Government Indicators. Voice and accountability represents perceptions that a citizen can participate in selecting their government, as well as freedom of expression, freedom of association, and a free media (WGI, 2018).

6. GOV is government effectiveness level. It represents four perceptions of (1) the public services quality; (2) the quality of the civil service and the degree of its independence from political pressures; (3) the quality of policy formulation and implementation; (4) and the credibility of the government's commitment to sound policies (WGI, 2018).

7. REG is regulatory quality. It represents perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development (WGI, 2018).

8. LAW is rule of law. Rule of law represents perceptions that the government have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence (WGI, 2018).

9. POL is political stability. Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism (WGI, 2018).

10. UNEMP is unemployment rate. It is the national estimation of percentage of unemployment in one country to the total labor force. The higher the rate of unemployment, the higher the probability to work in the shadow economy (World Development Indicators, 2018).

11. LNATM is number of automated teller machines (ATM) in natural logarithms term. Automated teller machines (ATMs) is one of the financial innovation that affect the shadow economy. It is denoted by number of ATM per 100,000 adults. According to Faal (2003), the more number of ATM, the less cash demand, hence, the less the size of shadow economy (World Development Indicators, 2018).

12. LNGDP is GDP per capita. According to Medina-Schneider (2018), it is one indicator of official economic development in one country. The GDP is transformed as a natural

logarithm as control variable to distinguish countries from cross sectional effect, 2006-2015 (World Development Indicators, 2018).

13. LNPOP is population in term of natural logarithms as a control variable to distinguish countries from cross sectional effect, 2006-2015 (World Development Indicators, 2018).

The author resumed the result of descriptive statistics below.

Date: 03/23/18   Time: 14:52
Sample: 2006 2015

	SESIZE	TAXBURD	TAXCOMPL	COR	VOC	GOV	REG
Mean	28.03959	19.00545	3.129063	-0.025210	-0.051274	0.243157	0.228255
Median	28.93000	19.25000	2.959262	-0.280863	-0.016448	0.190394	0.288405
Maximum	51.36000	36.80000	7.969831	2.247644	1.151500	2.436975	2.260543
Minimum	9.200000	0.100000	0.403536	-0.954058	-1.608372	-0.996869	-1.720110
Std. Dev.	10.11212	7.491332	1.476640	0.782443	0.687242	0.734245	0.748207
Skewness	0.210057	-0.333266	1.020509	1.231113	-0.271704	0.808136	-0.107569
Kurtosis	2.418923	3.398362	4.656377	3.900723	2.559233	3.441258	3.747029
Jarque-Bera	4.713004	5.527112	63.33565	63.01036	4.487704	25.73125	5.539750
Probability	0.094751	0.063067	0.000000	0.000000	0.106049	0.000003	0.062670
Sum	6168.710	4181.200	688.3939	-5.546097	-11.28038	53.49459	50.21619
Sum Sq. Dev.	22393.86	12290.29	477.5217	134.0757	103.4342	118.0663	122.5993
Observations	220	220	220	220	220	220	220

Date: 03/23/18   Time: 14:52
Sample: 2006 2015

	LAW	POL	UNEMP	LNATM	LNGDP	LNPOP
Mean	-0.035057	-0.227040	7.035909	3.608436	9.552102	16.85559
Median	-0.230081	-0.306653	6.100000	3.704789	9.425669	17.18576
Maximum	1.824775	1.378178	25.20000	5.665152	11.77028	19.36910
Minimum	-1.251499	-1.778313	0.200000	1.466835	8.256403	13.82584
Std. Dev.	0.773689	0.785117	4.991274	0.742128	0.767597	1.440448
Skewness	0.621479	0.146515	1.679147	0.180849	1.140118	-0.342444
Kurtosis	2.373568	2.210504	6.728440	4.021072	4.400327	2.089859
Jarque-Bera	17.75916	6.500731	230.8112	10.75629	65.63692	11.89309
Probability	0.000139	0.038760	0.000000	0.004616	0.000000	0.002615
Sum	-7.712527	-49.94869	1547.900	793.8558	2101.462	3708.230
Sum Sq. Dev.	131.0922	134.9936	5455.906	120.6152	129.0361	454.4009
Observations	220	220	220	220	220	220

Source: Author's calculation

d. Panel Data Steps: Deciding the Appropriate Model

To decide the appropriate model, the author describes how to estimate panel data. There are three models in panel data: (1) Pooled OLS Regression Model; (2) Fixed Effect/Least Square Dummy Variable Model; and (3) Random Effect Model. The writer will describe these three panel data models.

First is the Pooled OLS Regression. In this model, the author pools all 220 observations in the same time and running the OLS regression model without considering cross section and time series data. In other words, we assume that all countries are same. However, the drawback of this model is that it does not differentiate between the various countries that we have. In general, we assume that the coefficients including the intercepts are the same for all of countries. Therefore, when combining twenty-two countries by pooling, the model denies heterogeneity or individuality which may exist amongst twenty-two countries.

Second is the Fixed Effect or Least Square Dummy Variables (LSDV) Model. The Fixed Effect model allows for individuality or heterogeneity amongst twenty-two countries by allowing them to have their own intercept value. The term fixed effect is considered that even though the intercept would differ across countries, but the intercept does not vary over time. It means that the twenty-two countries should be individual.

Finally, the Random Effect Model. In this model, our twenty-two countries have a similar mean value for the intercept for all cross-sectional intercept and putting the error components to represent random deviation of each individuals from the mean intercept value (Gujarati, 2006). Therefore, the author conducts six steps to estimate the model. The hypothesis below will describe those steps.

Step 1. Estimating the Pool Effect and the Fixed Effect regression;

Step 2. Conducting Chow-Test (Pool vs Fixed Effect);

(a) If Null Hypothesis is accepted, then the Pool Effect will be used (stop until this step),

(b) If Null Hypothesis is rejected, then the Fixed Effect will be uses (continue to step 3);

Step 3. Estimating the Random Effect regression;

Step 4. Conducting Hausman-Test (Random Effect vs Fixed Effect)

(a) If Null Hypothesis is accepted, then the Random Effect will be used (stop until this step),

(b) If Null Hypothesis is rejected, then the Fixed Effect will be used (continue to step 5);

Step 5. Conducting Lagrange Multiplier (LM-test) to find if there is a heteroscedasticity in cross-section data in that the Null Hypothesis is Homoscedastic, while the Alternative Hypothesis is Heteroscedastic.

(a) If Null Hypothesis is accepted, then the model is homoscedastic (stop until this step),

(b) If Null Hypothesis is rejected, then the model is heteroscedastic. In this respect, the solution is using the cross-section weight (continue to step 6);

Step 6. Conducting Likelihood Ratio Test (LR-test) to find if there is a heteroscedasticity and autocorrelation between cross-section data, in that the Null Hypothesis is Heteroscedastic, and the Alternative Hypothesis is SUR (Seemingly Unrelated Regression).

(a) If Null Hypothesis is accepted, then the model is heteroscedastic. In this respect, the solution is using the cross-section weight (similar to step of 5.b),

(b) If Null Hypothesis is rejected, then the model is SUR (Seemingly Unrelated Regression).

e. Explanation of Steps

Step 1. Estimating the Pool Effect and the Fixed Effect Regression

First, the author runs the Pooled Regression Model. Here, we assume that all these twenty-two countries are the same which is in fact, that normally does not happen. Therefore, we cannot accept the outcome of this pooled regression since we assume that all countries are not the same. Another way using Redundant Fixed Effects Tests, we can clearly see that the probability of cross section chi-square is less than 5 percent. It means that Fixed Effect is better than pooled regression model (Common Effect).

TABLE 10: Pooled Regression (Common Effect)

Dependent Variable: SESIZE
Method: Panel Least Squares
Date: 03/24/18   Time: 00:56
Sample: 2006 2015
Periods included: 10
Cross-sections included: 22
Total panel (balanced) observations: 220

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	119.0141	9.807692	12.13477	0.0000
TAXBURD	0.101199	0.068879	1.469232	0.1433
TAXCOMPL	0.522047	0.273167	1.911087	0.0574
COR	-4.027856	1.241151	-3.245257	0.0014
VOC	-5.849629	0.817895	-7.152057	0.0000
GOV	-4.392067	1.354501	-3.242572	0.0014
REG	14.85357	1.065077	13.94601	0.0000
LAW	-4.841460	1.352305	-3.580155	0.0004
POL	-6.073661	0.902132	-6.732566	0.0000
UNEMP	-0.355800	0.073593	-4.834704	0.0000
LNATM	4.018537	0.714591	5.623550	0.0000
LNGDP	-6.867150	1.087891	-6.312351	0.0000
LNPOP	-2.681928	0.367450	-7.298753	0.0000

R-squared	0.830129	Mean dependent var		28.03959
Adjusted R-squared	0.820282	S.D. dependent var		10.11212
S.E. of regression	4.286851	Akaike info criterion		5.806255
Sum squared resid	3804.058	Schwarz criterion		6.006787
Log likelihood	-625.6880	Hannan-Quinn criter.		5.887235
F-statistic	84.29790	Durbin-Watson stat		0.297397
Prob(F-statistic)	0.000000			

TABLE 11: Fixed Effect or LSDV model

Dependent Variable: SESIZE
Method: Panel Least Squares
Date: 03/20/18   Time: 19:49
Sample: 2006 2015
Periods included: 10
Cross-sections included: 22
Total panel (balanced) observations: 220

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	175.7631	34.01172	5.167721	0.0000
TAXBURD	0.015957	0.043274	0.368747	0.7127
TAXCOMPL	0.336874	0.235697	1.429267	0.1546
COR	0.996271	0.943035	1.056451	0.2921
VOC	1.572677	1.295169	1.214264	0.2262
GOV	-0.287558	1.166183	-0.246580	0.8055
REG	2.199667	1.203367	1.827927	0.0692
LAW	-6.348037	1.538544	-4.126004	0.0001
POL	-1.632388	0.629058	-2.594974	0.0102
UNEMP	0.123520	0.103083	1.198266	0.2323
LNATM	1.007039	0.463080	2.174653	0.0309
LNGDP	-15.86582	2.053868	-7.724851	0.0000
LNPOP	-0.175097	1.822120	-0.096095	0.9235

| Effects Specification | | | |

Cross-section fixed (dummy variables)

R-squared	0.981396	Mean dependent var	28.03959
Adjusted R-squared	0.978095	S.D. dependent var	10.11212
S.E. of regression	1.496612	Akaike info criterion	3.785495
Sum squared resid	416.6117	Schwarz criterion	4.309965
Log likelihood	-382.4044	Hannan-Quinn criter.	3.997290
F-statistic	297.3315	Durbin-Watson stat	1.061165
Prob(F-statistic)	0.000000		

Step 2. Conducting Chow-Test (Pool vs Fixed Effect);

(a) H0: Pool effects is better than Fixed Effects model

(b) H1: Fixed effects is better than Pooled Effects model

TABLE 12: Redundant Fixed Effects Tests (Chow-Test)

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	72.016934	(21,186)	0.0000
Cross-section Chi-square	486.567203	21	0.0000

Cross-section fixed effects test equation:
Dependent Variable: SESIZE

Method: Panel Least Squares
Date: 03/24/18   Time: 02:05
Sample: 2006 2015
Periods included: 10
Cross-sections included: 22
Total panel (balanced) observations: 220

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	119.0141	9.807692	12.13477	0.0000
TAXBURD	0.101199	0.068879	1.469232	0.1433
TAXCOMPL	0.522047	0.273167	1.911087	0.0574
COR	-4.027856	1.241151	-3.245257	0.0014
VOC	-5.849629	0.817895	-7.152057	0.0000
GOV	-4.392067	1.354501	-3.242572	0.0014
REG	14.85357	1.065077	13.94601	0.0000
LAW	-4.841460	1.352305	-3.580155	0.0004
POL	-6.073661	0.902132	-6.732566	0.0000
UNEMP	-0.355800	0.073593	-4.834704	0.0000
LNATM	4.018537	0.714591	5.623550	0.0000
LNGDP	-6.867150	1.087891	-6.312351	0.0000
LNPOP	-2.681928	0.367450	-7.298753	0.0000

R-squared	0.830129	Mean dependent var		28.03959
Adjusted R-squared	0.820282	S.D. dependent var		10.11212
S.E. of regression	4.286851	Akaike info criterion		5.806255
Sum squared resid	3804.058	Schwarz criterion		6.006787
Log likelihood	-625.6880	Hannan-Quinn criter.		5.887235
F-statistic	84.29790	Durbin-Watson stat		0.297397
Prob(F-statistic)	0.000000			

Interpretation: the probability of F-statistics is 0.00000 which is less than 5 percent. As a result, we can reject the Null Hypothesis. **Conclusion:** Fixed effect is better than common effect. Therefore, since the Fixed Effect Model is better than Pooled Effects/Common Effects, the author should test whether the Random Effect Model is better than Fixed Effect Model using Hausman Test.

Step 3. Estimating the Random Effect Model Regression

TABLE 13: Random Effect Model

Dependent Variable: SESIZE
Method: Panel EGLS (Cross-section random effects)
Date: 03/24/18   Time: 02:11
Sample: 2006 2015
Periods included: 10
Cross-sections included: 22
Total panel (balanced) observations: 220
Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	144.7560	16.57815	8.731732	0.0000
TAXBURD	0.048468	0.041451	1.169290	0.2436
TAXCOMPL	0.270910	0.206274	1.313352	0.1905
COR	2.175148	0.860304	2.528348	0.0122
VOC	-1.014620	0.993551	-1.021205	0.3083
GOV	-0.594721	1.108475	-0.536522	0.5922
REG	2.385449	1.065539	2.238726	0.0262

LAW	-4.986953	1.349207	-3.696210	0.0003
POL	-2.380250	0.594572	-4.003302	0.0001
UNEMP	0.014747	0.088716	0.166230	0.8681
LNATM	0.538429	0.421762	1.276621	0.2032
LNGDP	-9.858877	1.299554	-7.586353	0.0000
LNPOP	-1.629797	0.606905	-2.685425	0.0078

Effects Specification		
	S.D.	Rho
Cross-section random	4.012311	0.8779
Idiosyncratic random	1.496612	0.1221

Weighted Statistics			
R-squared	0.485422	Mean dependent var	3.284626
Adjusted R-squared	0.455592	S.D. dependent var	2.317863
S.E. of regression	1.710212	Sum squared resid	605.4391
F-statistic	16.27264	Durbin-Watson stat	0.805882
Prob(F-statistic)	0.000000		

Unweighted Statistics			
R-squared	0.507914	Mean dependent var	28.03959
Sum squared resid	11019.71	Durbin-Watson stat	0.044276

Step 4. Conducting Hausman-Test (Random Effect vs Fixed Effect)

Next step, the author runs Hausman Test to see whether Random Effect is better than Fixed Effect. The null hypothesis is that the random-effect model is appropriate, while the alternative hypothesis is that fixed-effect model is appropriate. If the author can get a statistically significant P-value, the author will use the fixed effect model, otherwise random effect model is taken. It means that if p-value is less than 5 percent we can reject null hypothesis and accept alternative hypothesis (Fixed Effect model is appropriate). But, if the P-value is more than 5 percent, we cannot reject null hypothesis meaning that Random Effect model will be appropriate.

H0: Random Effect model is better than Fixed Effect model;

H1: Fixed Effect model is better than Random Effect model.

TABLE 14: Hausman Test

Correlated Random Effects - Hausman Test Equation: Untitled Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	75.303699	12	0.0000

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
TAXBURD	0.015957	0.048468	0.000154	0.0089
TAXCOMPL	0.336874	0.270910	0.013004	0.5630
COR	0.996271	2.175148	0.149192	0.0023
VOC	1.572677	-1.014620	0.690318	0.0018
GOV	-0.287558	-0.594721	0.131265	0.3965
REG	2.199667	2.385449	0.312720	0.7397
LAW	-6.348037	-4.986953	0.546757	0.0657
POL	-1.632388	-2.380250	0.042198	0.0003
UNEMP	0.123520	0.014747	0.002755	0.0382
LNATM	1.007039	0.538429	0.036561	0.0143
LNGDP	-15.865824	-9.858877	2.529533	0.0002
LNPOP	-0.175097	-1.629797	2.951789	0.3972

Cross-section random effects test equation:
Dependent Variable: SESIZE
Method: Panel Least Squares
Date: 03/24/18   Time: 02:15
Sample: 2006 2015
Periods included: 10
Cross-sections included: 22
Total panel (balanced) observations: 220

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	175.7631	34.01172	5.167721	0.0000
TAXBURD	0.015957	0.043274	0.368747	0.7127
TAXCOMPL	0.336874	0.235697	1.429267	0.1546
COR	0.996271	0.943035	1.056451	0.2921
VOC	1.572677	1.295169	1.214264	0.2262
GOV	-0.287558	1.166183	-0.246580	0.8055
REG	2.199667	1.203367	1.827927	0.0692
LAW	-6.348037	1.538544	-4.126004	0.0001
POL	-1.632388	0.629058	-2.594974	0.0102
UNEMP	0.123520	0.103083	1.198266	0.2323
LNATM	1.007039	0.463080	2.174653	0.0309
LNGDP	-15.86582	2.053868	-7.724851	0.0000
LNPOP	-0.175097	1.822120	-0.096095	0.9235

Effects Specification			

Cross-section fixed (dummy variables)

R-squared	0.981396	Mean dependent var	28.03959
Adjusted R-squared	0.978095	S.D. dependent var	10.11212
S.E. of regression	1.496612	Akaike info criterion	3.785495
Sum squared resid	416.6117	Schwarz criterion	4.309965
Log likelihood	-382.4044	Hannan-Quinn criter.	3.997290
F-statistic	297.3315	Durbin-Watson stat	1.061165
Prob(F-statistic)	0.000000		

Interpretation: the significant value of Chi-square of 0.00000 is very low which less than 5 percent is. As a result, we can reject the Null Hypothesis. **Conclusion:** Fixed Effect is better than Random Effect. Therefore, since the Fixed Effect Model is better than Random Effect, the author should now look for the estimator structure.

Step 5. Conducting Lagrange Multiplier (LM-test) to find if there is a heteroscedasticity in cross-section data. The hypothesis in this test are:

H0: $\sigma\mu i2 = \sigma\mu2$ (Varian-covariance structure of Fixed Effects model is same or homoscedastic);

H1: at least there is one $\sigma\mu i2 \neq \sigma\mu2$, in that i = 1, 2, 3, ..., 22 (at least there is one Varian-covariance which is not same or Heteroscedastic).

TABLE 15. Lagrange Multiplier Test

LM test for hetero versus homo	
chi-sqr(21) =	109.0070
p-value =	7.12E-14

Interpretation: From LM-test above, we get the p-value of 7.12E-14 (0,0000000000712) which is less than 5 percent. It means that the Varian-covariance structure from the Fixed Effect model above is heteroscedastic. **Conclusion:** Since the Varian-covariance structure from the Fixed Effect model above is heteroscedastic, the author should test whether there is a correlation in the cross-section (Seemingly Uncorrelated Regression (SUR)).

Step 6. Conducting Likelihood Ratio Test (LR-test) to find if there is a heteroscedasticity and autocorrelation between cross-section data.

H0: Varian-covariance structure of the residual is heteroscedastic and there is no cross-section correlation;

H1: Varian-covariance structure of the residual is heteroscedastic and there is a cross-section correlation (Seemingly Uncorrelated Regression (SUR));

Interpretation: Since in the panel data, the number of series is less than the cross-section, therefore the author cannot do the test. Consequently, the author uses the last model which is the Fixed Effect with Heteroscedastic Varian-covariance. It means that the model has error/residual which is undistributed random variable (Baltagi, 2005). **Conclusion:** The author uses the Fixed Effect model with heteroscedasticity and cross-section weight as structure estimator.

f. The Regression Results, Interpretations and Analysis

The Regression Results

Based on the calculation above, the estimates the appropriate model of shadow economy over developing countries, which is,

SESIZE = 167.976649955 + 0.0252790694673*TAXBURD + 0.105250437685*TAXCOMPL + 0.585797904574*COR + 2.5946563782*VOC + 0.462149786062*GOV + 1.07190656777*REG - 5.72965777674*LAW - 1.38969174346*POL + 0.190829110725*UNEMP + 0.841892821403*LNATM - 13.7068010623*LNGDP - 0.885419262843*LNPOP

TABLE 16. The Complete Results

Dependent Variable: SESIZE
Method: Panel EGLS (Cross-section weights)
Date: 03/24/18   Time: 02:47
Sample: 2006 2015
Periods included: 10
Cross-sections included: 22
Total panel (balanced) observations: 220
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	167.9766	21.31147	7.881982	0.0000
TAXBURD	0.025279	0.023993	1.053617	0.2934
TAXCOMPL	0.105250	0.141762	0.742447	0.4588
COR	0.585798	0.633906	0.924108	0.3566
VOC	2.594656	0.857646	3.025323	0.0028
GOV	0.462150	0.847524	0.545294	0.5862
REG	1.071907	0.807512	1.327419	0.1860
LAW	-5.729658	1.040066	-5.508939	0.0000
POL	-1.389692	0.426033	-3.261938	0.0013
UNEMP	0.190829	0.075871	2.515185	0.0127
LNATM	0.841893	0.307304	2.739613	0.0067
LNGDP	-13.70680	1.232567	-11.12054	0.0000
LNPOP	-0.885419	1.220332	-0.725556	0.4690

Effects Specification

Cross-section fixed (dummy variables)

Weighted Statistics

R-squared	0.990477	Mean dependent var	36.94245
Adjusted R-squared	0.988788	S.D. dependent var	17.14828
S.E. of regression	1.446549	Sum squared resid	389.2057
F-statistic	586.2485	Durbin-Watson stat	1.387750
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.980737	Mean dependent var	28.03959
Sum squared resid	431.3673	Durbin-Watson stat	1.052388

In this model, the author differentiates each country on its common intercept. It means that by assuming all independent variables are the same, we can clearly see that South Africa has the lowest shadow economy size compared to the other developing countries. While Indonesia has a moderate-low shadow economy size. The specific country effect for each of country are:

TABLE 17. Country Effect

No	Country	Common Intercept (i)	Cross-section Effect (ii)	Each Country Intercept (i+ii)
1	Chile	167.97665	-6.885067	161.091583
2	Costa Rica	167.97665	-6.875307	161.101343
3	Dominican Republic	167.97665	-3.335867	164.640783
4	Ecuador	167.97665	-6.499677	161.476973
5	Egypt	167.97665	1.643154	169.619804
6	El Salvador	167.97665	2.038819	170.015469
7	Honduras	167.97665	-5.962096	162.014554
8	Indonesia	167.97665	-11.72404	156.25261
9	Iran	167.97665	-9.292708	158.683942
10	Jamaica	167.97665	-9.867374	158.109276
11	South Korea	167.97665	7.750851	175.727501
12	Malaysia	167.97665	11.99151	179.96816
13	Mauritius	167.97665	-4.969478	163.007172
14	Mexico	167.97665	1.668782	169.645432
15	Morocco	167.97665	-7.670637	160.306013
16	Peru	167.97665	7.265299	175.241949
17	Philippines	167.97665	-7.518261	160.458389
18	Qatar	167.97665	22.72661	190.70326
19	Singapore	167.97665	12.49177	180.46842
20	South Africa	167.97665	-12.00298	155.97367
21	Thailand	167.97665	20.06104	188.03769
22	Turkey	167.97665	4.965664	172.942314

Source: Author's calculation

There are four indicators that this is a good model. First, the R-square value should be greater than 60 percent. As we can clearly see that the R-square of our model is 99.04 percent. It means that the fluctuation or variation size of shadow economy as a dependent variable can be explained by our twelve other variables jointly. In other words, 0.96 percent fluctuation/variation (100 percent – 99.04 percent) can be explained by other variables which are not included in this regression model. As a result, the size of shadow economy and twelve independent variables are related, and this model is good fitted. Second, most of the independent variables should be statistically significant which can be reflected by the P-value. The guideline is that if the P-value is less than 5 percent, than the variable will be significant. From the Fixed Effect model that is chosen, six variables are statistically significant, namely vocal and accountability (VOC), rule of law (LAW), political stability (POL), unemployment (UNEMP), financial innovation (LNATM), and GDP per capita (LNGDP). Third, all the independent variables should be jointly significant to explain the dependent variable of shadow economy size. In this respect, the writer uses F-statistics and corresponding P-value. In the calculation above, the

probability of F-statistics is 0.000 (less than 5 percent) meaning that this model is significant, and all variables jointly can influence the shadow economy size. Finally, the sign of coefficient should follow either economic theory or expectation to become a good regression model. We can clearly see that TAXBURD, TAXCOMPL, COR, VOC, GOV, REG, UNEMP, and LNATM has positive sign meaning that if those variable goes up by one unit, the Shadow Economy Size (SESIZE) would increase in respect of the number given that other independent variables are constant.

g. Interpretations and Analysis

From the empirical research above, the author resumes six variables namely voice and accountability, rule of law, political stability, unemployment, financial innovation, and the size of official economy are very important in the development of shadow economy. The result is explained briefly in the next paragraph.

First, assuming all other variables are same, a decrease in the tax burden (proxies by tax rates) at one point shall reduce the shadow economy size to 0.02 percent. Vice versa, an increase of tax rates by one point will increase the shadow economy size to 0.02 percent. Second, a one-unit decline in the cost of compliance index will decrease shadow economy size to 0.1 percent. Third, a one unit increase in rule of law will reduce the size of shadow economy to 5.7 percent. In addition, a one unit increase of political stability will decrease the size of shadow economy to 1.38 percent. Fourth, an increase of unemployment rate by one percentage point would raise the shadow economy by 0.19 percent. And finally, assuming other variables stand at a constant level, a one unit increase in the size of official economy represented by GDP per capita would decrease the size of shadow economy to 13.7 percent respectively.

All in all, the author concludes three points. First, the individual and company's behavior to keep stay inside the shadow economy is influenced by low tax morale in the economy represented by low level of voice and accountability, weak rule of law, and unstable political circumstances. These factors are key determinants of the size of the shadow economy. Second, countries with a high unemployment rate and a massive financial innovation leads to a higher shadow economy size. On the other hand, an increase of official economy proxied by GDP per capita will reduce the shadow economy significantly. Finally, a higher tax burden and a cumbersome tax administration with a large cost of compliance has also caused the size of shadow economy even though they are not statistically significant. Therefore, it is not a higher taxes rates per se which leads to increased shadow economy but rather dismal institutional quality and poor rule of law. As a result, individuals and companies are incentivized to enter the shadows not only to avoid paying high taxes but also to decrease the burden of regulation.

2.   Causal Analysis (Problem Tree Analysis)

Based on the quantitative approaches from the previous section, the author highlights an intersection of two problems: an increase of the shadow economy that erodes the Indonesian potential tax base and a low tax ratio with a high non-compliance behavior. Those two focal problems were particularly caused by five major factors: a high tax burden, a high cost of compliance, a low tax morale, a high unemployment rates and an unstable official economy.

a.   High Tax Burden

Some researchers suggested that one factor determines the development of shadow economy is the tax burden. According to Feige (1980), higher taxes encourages resources movement to the underground sector. Furthermore, a raise in tax rates could encourage greater marginal benefits of evasion rather than the marginal costs, that in long term, it will increase evasion (Cagan, 1958). A high tax burden, probably came from a legacy of past economic regimes that emphasized the state's role in resource allocation (Tanzi and Zee, 2001).

The author's empirical analysis result supports this idea. Assuming all other variables are same, a decrease in the tax burden (proxies by tax rates) at one point shall reduce the shadow economy size to 0.02 percent. Vice versa, an increase of tax rates by one point will increase the shadow economy size to 0.02 percent. This finding conforms the World Bank (2018) that the low income, lower middle-income, and low middle-income countries with a higher size of shadow economy has a higher average tax rates of 48 percent to 72 percent compared to high-income of 38 percent. As a result, countries are pressurized to lower their tax rates to draw individuals and firms into official economy. For example, in Indonesia, the government reduced personal income tax rate from 10 percent (up to IDR 50 million) to 5 percent and decreased the corporate income tax rate from 28 percent to 25 percent to attract more individuals and firms into the system. In this respect, the author sees that a lack of research to define the proper tax rates, threshold, and other tax policy will jeopardize the performance of tax administration.

TABLE 18. Total Tax Rates in High and Low-Income Countries (percentage of commercial profits)
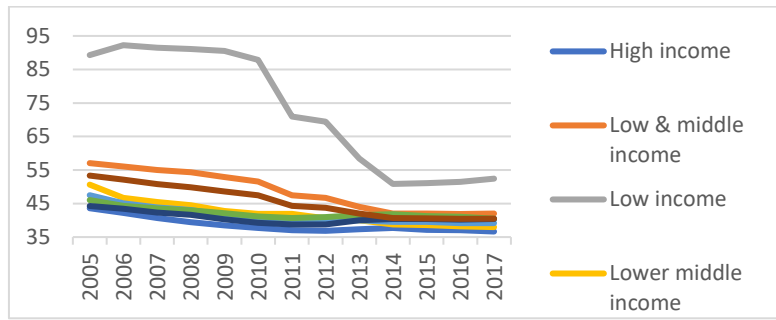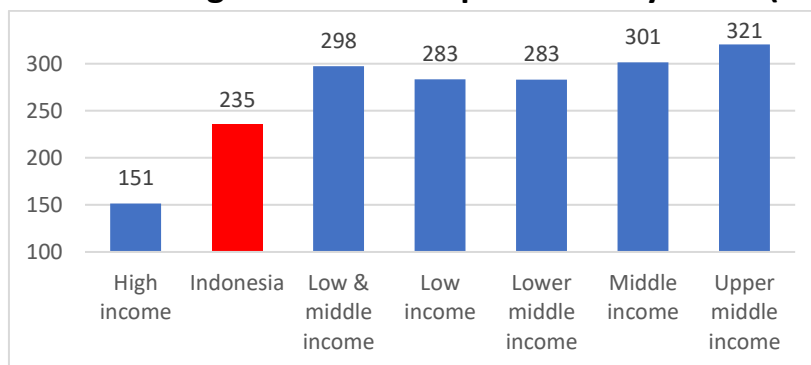

Source: World Development Indicators, 2018

b. High Cost of Compliance

A complex regulation will promote a higher cost of compliance. Cost of compliance is the cost which taxpayers incur to comply obligations imposed under tax regulation (Godwin, 1978). Countries with more complex regulations tend to have a higher share of the shadow economy (Johnson, et.al.,1997). According to the World Bank (2018), taxpayers in the low income and low middle-income spent approximately 283 to 298 hours to prepare and pay taxes compared to high income of 151 hours (see TABLE 19). This complexity is caused by a poor quality of tax legislations, an inefficient bureaucracy, and a lack of taxpayer's education.

Our research supports this hypothesis. From the author's analysis, a one-unit decline in the cost of compliance index will decrease shadow economy size to 0.1 percent. According to G.P. Shukla (2011), a single positive rate lowers the cost of compliance by reducing the need to keep records and invoices and simplifies tax forms. Consequently, taxpayer's behavior to refuse paying tax is mostly influenced by the high level of complexity and cost structure to comply to the country's regulation.

TABLE 19. Averages Times to Prepare and Pay Taxes (hours)

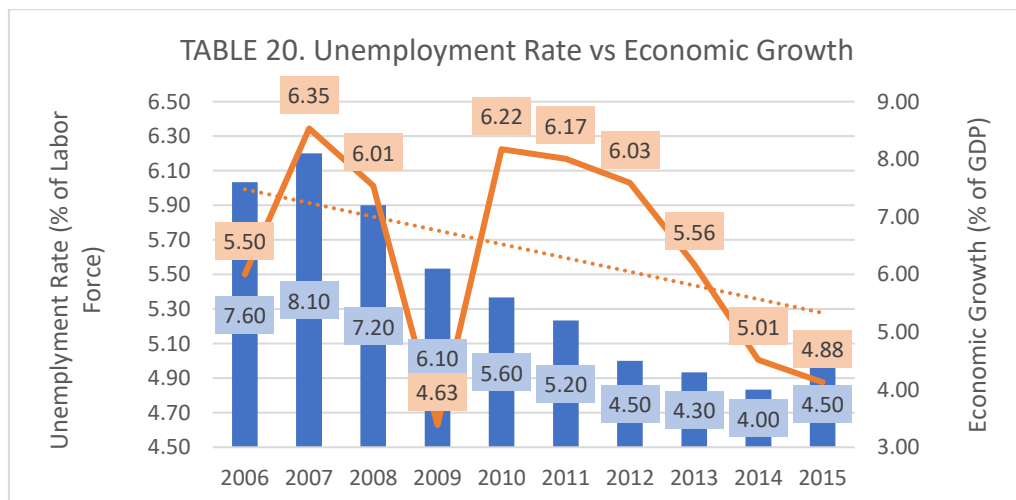Source: World Development Indicators, 2018

c. Low Tax Morale

Tax morale is defined as the intrinsic motivation to pay taxes (Torgler, 2006). A decrease in tax morale would incentivize to work in the shadow economy. Alm, et.al (2004) proposed that the size of the shadow economy can measure of the extent of tax evasion. The author proxies tax morale by control of corruption, voice and accountability, government effectiveness, regulatory quality, rule of law, and political stability. A negative correlation between the size of the shadow economy and tax morale indicates individuals and firm's reluctance to pay taxes would increase the shadow economy.

From the empirical analysis, the author concludes that tax morale variables namely rule of law and political stability, are statistically significant in the development of shadow economy. Assuming other variables stand at a constant level, a one unit increase in rule of law will reduce the size of shadow economy to 5.7 percent. In addition, a one unit increase of political stability will decrease the size of shadow economy to 1.38 percent. On the problem tree analysis, the author proposes that lack of education, lack of awareness, and low enforcement to the taxpayer's hampers voluntary compliance thus increase the incentive to engage in the shadow economy.

d. High Unemployment

Unemployment also plays crucial role causing an uptrend of shadow economy in Indonesia. An increase of unemployment rate by one percentage point would raise the shadow economy by 0.19 percent. Even though the trend of unemployment in Indonesia has been decreasing in the last 10 years from 7.6 percent in 2006 to 4.5 percent in 2015, the official GDP growth only grows at 4 to 6 percent (World Development Indicators, 2018). Culturally, a high unemployment is caused by lack of education, a poor business environment, and low competitiveness level of labor force. Therefore, the author suggests that providing more job vacancy is important by pay attention more to the informal sector to disincentives being in the shadow.
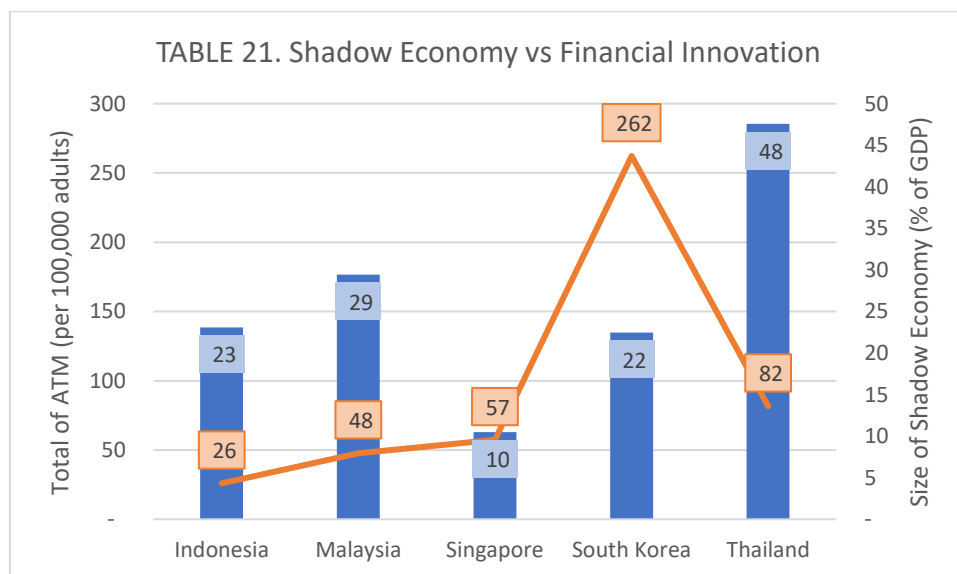

Source: World Development Indicators, 2018

e. Unstable Official Economy

From the empirical research above, we can conclude that the size of official economy is statistically significant in the development of shadow economy. Assuming other variables stand at a constant level, a one unit increase in the size of official economy represented by GDP per capita would decrease the size of shadow economy to 13.7 percent. It means that if the government improve the quality of official economy namely increase expenditure of public education and health, decrease public debt, increase business environment and public services, and increase economic growth, the level of shadow economy would deteriorate.

On the other hand, an increase of financial innovation would raise the size of shadow economy by 0.84 percent. The logic is that there is a large utilization of cash-in hand to support shadow economy and a more advance financial innovation does not correlate to the development of shadow economy. For example, although Malaysia and Thailand have a more sophisticated financial innovation (represented by number of ATM per 100,000 adults) of 48 and 82 points respectively compared to Indonesia of 26, it does not avoid Malaysia and Thailand to experience a higher shadow economy level of 29 percent and 48 percent respectively compared to Indonesia of 23 percent.

Source: World Development Indicators, 2018

Interestingly, one variable to keep up a stable official economy which is corruption control, this variable is not statistically significant. It means that even though a country has a robust anti-corruption regime, for example Indonesia with its anti-corruption agency namely Commission of Eradication Corruption (KPK) which has an anti-corruption special law, Indonesia does not escape from a massive scale of shadow economy. In addition, we can also see from the Corruption Perceptions Index (2017) that more advance economy such as South Korea (CPI Index rank of 51)

and Malaysia (62), they both have a better CPI ranking than Indonesia (96) but have almost the same average size of shadow economy of 22 percent and 29 percent respectively compared to Indonesia of 23 percent. However, the author agrees that a conducive environment with a minimum intensity of corruption would reduce the shadow economy.

All in all, if we consider all these causes, we can see a relationship between all these factors and a combination that creates a broader perspective on this problem (see ANNEX 6 Problem Tree Diagram).

C. Problem Statement

The official Indonesian GDP is underreported due to the existence of a shadow economy which erode the potential tax bases. On the other hand, Indonesia faces a low tax ratio and a high non-compliance behavior. These problems can be drawn from the failure to find key determinants of shadow economy and a lack of extensive plan to tackle an uptrend of the shadow economy.

D. Goals and Objectives for Revised Policy

The goal of the DGT for this policy reform is to improve current strategies concerning shadow economy particularly in compliance aspect. This goal suggests that the DGT should capable to identify the drivers of shadow economy. To achieve this goal, the following objectives should be attained which is (1) improving DGT's ability to detect, prioritize, and tackle the root causes of shadow economy that leads to an increase of compliance; and (2) minimizing the shadow economy size to the limit that is tolerable for the government and the community; and (3) guarantee sustainability of tax revenue.

V.   ANALYSIS OF ALTERNATIVES

A. POTENTIAL SOLUTIONS, CASE LEARNINGS AND GENERIC POLICIES

The shadow economy has evolved globally over past decades. Despite the magnitude, there is a large distinction on how policy is implemented. The pretext of ongoing policies, objectives and problems lead the writer to look for best practices over tax administration. These chapter will provide an in-depth tax design from best practices to tackle the shadow economy. Accordingly, the Indonesian government can adopt empirical experiences as a foundation for its generic policies. The author analyzes generic policies in ANNEX 7.

1.   European Union Framework: Deterrence and Enabling Compliance

The best practice comes from the European Union framework. The EU provide a typology of possible policy approaches adopted by its member states. In this respect, the EU stakeholders has been differentiating two major approaches to counteract shadow economy: The Deterrence and the Compliance Approach.

From TABLE 22, we can see that the Deterrence Approach tries to propagate compliance by enhancing detection and punitive sanction while the Compliance Approach aims to promote compliance by preventing individuals and firms from not declaring works, facilitating movement from shadow to official economy, and by promoting an increase of tax morale (Williams, 2008).

TABLE 22. EU Framework to Tackle Shadow Economy

Approach	Method	Measures
Deterrence	Enhance detection	Data matching and sharing Joining up strategy Joining up operations
	Imposing penalties	Increase penalties for evasion
Enabling compliance	Prevention	Simplification of compliance Direct and indirect tax incentives Smooth transition into self-employment Introducing new categories of work Micro-enterprise development
	Legitimizing undeclared work	Employer incentives: • service vouchers • targeted direct taxes • targeted indirect taxes Worker incentives: • society-wide amnesties • voluntary disclosure • business advisory and support services

	Changing attitudes	Promoting benefits of declared work Education Peer-to-peer surveillance Tax fairness Procedural justice Redistributive justice

Source: Williams (2008)

The author will explain the first approach: Deterrence. In the EU, framework to counteract shadow economy has been dominated by Deterrence Approach that tries to minimize a change in behavior by detecting and punishing non-compliance (Williams, 2008). This approach is structured based on a common understanding that individuals and firms which are not-comply tend to evade tax if the trade-off from evasion is greater than the cost of being caught and punished (Allingham and Sandmo, 1972). The goal of this policy is to deter involvement by changing the cost/benefit ratio for individuals and firms which are engaged in shadow economy (Williams, 2008). The policymakers achieve this goal by raising risks and costs of two-fold. First, increasing the possibility of detection namely by enhancing the cooperation on strategy and data exchange. Secondly, increasing the penalties and sanctions for those caught. Consequently, the policymakers perform a "negative support" framework approach using a "stick" to penalize the shadow economy player (Williams, 2008).

Along with this deterrence framework, the other approach is enabling Compliance Approach. The policymakers can influence behavioral change by promoting a "positive behavior" instead of stricter punitive sanction. The rationale is that penalty is relatively ineffective compared to positive approach of such as promoting a "positive behavior" (Williams, 2008). This approach can be divided by three concerns Firstly, the government can adopt prevention measures such as simplifying regulatory burden, providing business support and advice, and implementing tax facility. Secondly, the tax authority could provide incentives to promote shadow economy players to transfer into the official. These include: offering tax amnesties, providing business support services to individuals and firms who eager to formalize their business, and facilitating direct or indirect tax incentives. Thirdly, the tax authority can set up a commitment measures to promote a high tax morality level (Torgler, 2003). This include not only tax incentives, but also tax education and awareness raising about doing business in the official.

Nevertheless, these approaches can be executed concurrently. Governments might simplify regulatory burden as well as providing incentives, such as tax amnesty, encouraging players to enter the official economy while imposing a robust penalty for those who does not comply. At the same

time, the government may also do campaigns to increase tax morale. The question is raised which one should the EU prioritize from those approach?

A study from Williams (2008) ranked that the most effective policy from the national stakeholder opinion is: 1st Deterrence, 2nd Preventative Measures, 3rd Curative Measures, and 4th Commitment Measures. These results are the same across all European regions except Nordic nations in that Commitment measures ranked 1st (Williams, 2008). All in all, we can see the complete policy approaches in the EU member states in ANNEX 8 from 2001-2005.

2. Australian Tax Office (ATO) Overarching Strategy for the Cash Economy

According to the OECD (2012), ATO performs a qualitative aspect of leadership, coordination and research to design strategies in mitigating cash economy. The ATO defines cash economy risk as the deliberate underreporting of non-reporting of income that results from business using cash transactions to hide income and evade tax obligation. Before implementing the program, the ATO conducts consultation and coordination in identifying and assessing risk. The objective of the strategy is that the ATO will work together with industry, professionals and the community to improve participation of small businesses. The author will briefly explain six strategies from ATO to tackle cash economy issue.

First, the ATO performs Communication Program which aims to raise awareness, change community perceptions and encourage behavioral changes for the cash economy. The ATO coordinates the strategy with the Cash Economy Advisory Group, business, and community researchers using perceptions surveys and intelligence gathering, including community referrals. From this works, the ATO has identified 58 industries categories that overall account for 75 percent of successful compliance activities.

Second, conducting Small Business Benchmarks and Record Keeping Program. The ATO uses tax return data & externally gathered information from industry sources to benchmark key business ratios for over 100 industries. The benchmarks are published as a guide for taxpayers to what others in their industry are reporting. The ATO also focus compliance on improving record-keeping practices.

Third, performing Data Matching Program. This program demonstrates ATO's ability to the community in identifying those not paying their fair share by matching and accumulating data from a wide range of sources. Moreover, the ATO also shows to the businesses in the cash economy the ATO's ability to detect if they have not properly complied such as not registered, not fully reported income, etc.

Fourth, Differentiated Response Program. The ATO classifies various differentiated responses based on level of risk to address non-compliance. These programs include: visits and phone calls to offer advice, mailing letters advising potential under-reported income and allowing the taxpayer to

do a self-correction. From the enforcement sides, the ATO conducts desk-based and record keeping audits and field audits/investigations and prosecutions.

Fifth is return filling strategy. The ATO offers various strategies to support and encourage taxpayers to comply with filing obligations such as education products, media releases and small business assistance program. In addition, the ATO develops other important features such as Automated Risk Model, large value cash transactions data (Australian Transaction Reports and Analysis Centre), debt management and prosecution of serious non-compliers.

Lastly, doing monitoring and evaluation. The ATO monitors and evaluate those programs above to achieve specific goals which is the ability to detect & respond; community is properly educated, and tolerance of cash economy participation is reduced; and community confidence in integrity & fairness of tax system.

B. Alternative Policy Options

In relation to the generic solutions based on Weimer and Vining (2011), the author arranges four different policies[5] including the status-quo as shown in ANNEX 9. All of them consider the connectivity, complication, and causality of the increasing of shadow economy and addressing low compliance of the taxpayers. Those alternatives are: (1) Status Quo; (2) Deterrence Approach; (3) Compliances Approach; and (4) Strengthening Social Norms Approach.

1. Alternative 1 Status Quo

This alternative is continuing the current trends of policy including to enhance both the intensification and extensification program while promoting well-targeted incentives for compliant taxpayers. The DGT may carry on its Taxpayers Compliance Scheme to explore potential tax revenue, fill the tax gap, and conducting traditional audit for non-compliant taxpayers. In the Status Quo, the DGT, specifically, the Directorate Tax Potential, Revenue, and Compliance plays a focal-point in formulating policy in national level. On the other hand, the Account Representatives and Tax Auditor are the competent players directly in term of revenue collection. However, low institutional capacity, lack of national framework in mitigating shadow economy, and insufficient bureaucracy (as authors explained in problem tree analysis) has become a serious handicap. The magnitude of current effort cannot perform a significant effect to address an ideal shadow economy regime.

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[5] The following policy alternatives are taken from the best practices in the EU (2008), the IMF (2010), OECD (2012), and the OECD (2017).

2. Alternative 2 Deterrence Approach

The author proposes a framework on "deterrence" as central point focused on two pillars: enhancing detection and imposing penalties. The basic idea is to force individuals and firms to move from shadow economy into official economy using "stick" type measures (Williams, 2008). This approach aims to alter the cost-benefit ratio for shadow economy players (Williams, 2008). Shadow economy activities, by definition, cannot fully visible by tax administrations (OECD, 2017). Therefore, the government needs to enhance its visibility using some instruments which are increase the perceived or actual likelihood of detection; and imposing penalties to ensure that the cost of being caught and punished is larger than the benefit of engagement (Sandford, 1999). As a result, if the probability of being detected is raise, then shadow economy can be tackled significantly.

TABLE 23. Description of Alternative 2 Deterrence Approach

Sort of Fields	Proposed Policy Designs (Country Model)
Reducing opportunities and Increasing Detection	
1. Research	Conducting **research in finding the driver (individual, social, structural)** behind customer behaviors with respect to hidden economy including a range of typology of the reason why individuals and firms fall into the shadow economy (country model United Kingdom).
	Developing a compliance study including tax gap and the anatomy of black income. The study focuses on types of incentives, attitudes and the extension of black income in different sectors (country model Denmark and Sweden).
	Establishing research group and communities (Cash Economy Task Force, Cash Economy Advisory Group, and Business Perception Survey) involving university, tax officers, business and community to gain a better understanding in cash economy structure, compliance issues, and steps the tax authority can handle tax evasion in the cash economy (country model Australia).
2. Use of data	Using a **simple and readily benchmarks** to compare to compare and review taxpayer's performance against similar businesses (country model Australia)
	Identifying individuals who borrowed (credit) from the bank and matched this data against taxpayers registered in the tax administration. For individuals that hold credit and did not have a tax ID number, or no payments could be flagged as a potential tax evader (country model Peru).
	Extending **data gathering** powers to online intermediaries (businesses that help to facilitate trade, for example, introducing sellers to buyers, booking orders on behalf of the seller; and electronic payment providers who operate digital wallets) (country model UK).
	Collecting **open sourced data on property and property related transactions** from central and local government agencies involved in property and combined this with taxpayer data to build a data pool to be used to identify compliance risk areas across the property sectors (county model New Zealand).
	Using the **research-based audit Program to detect compliance risk**. Choosing a random sample of small and medium enterprises from different segment in the population each year for audit to estimate a reliable compliance rate. Then, capture

		assessment and the reason of non-compliance as a rich source of information (country model Canada).
		Provides the opportunity for taxpayers to choose to **pre-fill information** directly into individual income tax returns, such as salary, interest, and health insurance data directly from employers, banks and insurers (country model Australia).
3.	**Advanced analytics**	Develop **predictive models** to estimates taxpayers that have not filed returns and to enhance taxpayer services by predicting self-resolution and responsiveness to a specific compliance action (country model Canada).
		Expanding risk management scope by **incorporating real-time risk** analysis in VAT compliance and collection programs. The VAT Real-Time Risk approach is a hybrid rules and predictive analytics-based compliance model to improve prevention and detection of non-compliance in both payable and repayable VAT returns (country model Ireland).
		Developing **concept risk tools** such as Virtual Street Sweep (VSS) to pull together all the data about a specific address and use this to identify and then visualizing compliance risks right down to property level (without the tax officer having to leave the office) (country model UK).
4.	**Technology to reduce fraud**	Built a nationwide **biometric database** based on fingerprints and iris scans. Those residents are issued with an identity number which is used for security purposes in many government and private sector applications, from pensions to wages, telecoms and the distribution of benefits (country model India).
		Using **cybercriminals** unit to improve features of data elements transmitted by industry with every tax return providing information to strengthen the authentication that a tax return is being filed by the real taxpayer (country model US).
		Enacting e-invoicing: electronically sending, receiving and storing invoices between suppliers and buyers (country model Brazil, Italy, Russia, and Czech).
5.	**Whole of government approaches**	Establishing a **Shadow Economy Unit** which operates under legislation to get access to bulk information from other public agencies and to promote the fight against shadow economy by producing, publishing and sharing information regarding the shadow economy and its control to wide target groups (country model Finland).
		Maintaining **close cooperation with all the anti-fraud agencies** enhancing the collective ability to tackle tax fraud including formalized memoranda of understanding (MOU) (country model France).
6.	**International cooperation**	Conducting **Information sharing through bilateral treaties**, automatic exchange of information, etc. The tax administrations will be able to match the information received with that reported by the taxpayer, allowing them to enforce the law. Initiating the activities in the Joint International Taskforce on Shared Intelligence and Collaboration (JITSIC), a 37 tax administrations forum, to share experiences and expertise to handle the issues (country model OECD).
Innovative Enforcement Program		
7.	**Naming and Shaming**	The government may publish names of delinquent taxpayers on the tax authority's Website, including taxpayer's city of residence and the nature of violation that is done by the taxpayer (country model Ireland and Korea).

Source: Williams (2008), OECD (2012), and OECD (2017)

However, the approach is criticized by some researchers. A study from Webley and Halstead (1986) resulted that lack of implementation in detection measures leads to a growth in undeclared work. Increasing penalties may cause a reduction in tax morale and therefore raising growth in undeclared work (Williams, 2008).

3. Alternative 3 Compliance Approach

The Compliance Approach is designed to cover four major causes in the problem tree analysis consists of: simplifying compliance, introducing new categories of legal activity to promote individuals and firms move from shadow economy to official economy, offering an assistance to help business established in a formal economy, and promoting initiatives into self-employment (Williams, 2008).

TABLE 24. Description of Alternative 3 Compliance Approach

Sort of Fields	Proposed Policy Designs (Country Model)
1. Prioritizing Compliance Simplicity	
Making registration and payment of tax easier	Tax authority cooperates with the agency serving for birth registrations to establish a service that parents may apply for **a tax number for their new-born child** in one process after completing the registration of the birth (country model New Zealand).
	The government sets up **one mailbox** for all businesses and individuals and send digital private information (tax, health, etc.) from all public authorities. Taxpayers are obliged to retrieve their secure mailbox and response the notification (country model Denmark).
	Using a **unique national registration code** that contains identification data to register tax online. This unique number is also used to access other public services such as social security (country model Mexico).
	Oblige all companies to deal with the tax administration through **electronic channels** including all notifications. Only natural persons can now deal with the agency in-person (country model Spain).
Support taxpayers to make tax become their natural environment	**Extending the functionality of mobile app** to support taxpayers. The app should offer useful platforms such as key dates, reminders to their calendar, report concerns (including whistle-blowing) and a tax withholding calculator. The service is provided to facilitate tax compliance such as: invoice issuing, database queries, access to a virtual tax guide, access to administrative information and the ability to report tax evader (country model Australia, Chile, Peru).
	Implementing 'conditionality' by making access to licenses or services for businesses conditional on tax registration. It is a tool to minimize the size of the hidden economy (country model UK).
2. Incentive-based initiatives	
Decreased Rates for Compliant Taxpayers	The government may apply a **different withholding tax rate** for certain sectors, for example, construction services depend on the taxpayer's compliance record. This policy is expected to draw more firms to comply (country model Ireland).

Monetary incentives	Establishing **Cash Receipts System** endorsing taxpayers to request receipts transactions and submit these receipts online to the tax authority website. The government gives a tax credit for taxpayers. This tax credit is also given to business that comply with Cash Receipt System. Then, the taxpayers can enter those receipts with prize rewards (country model Korea)
Encouraging Good Record-Keeping	Launching a s**pecial book keeping system** for taxpayers who want to keep accounting books keeping with certain accuracy. Taxpayers who eligible using this book keeping system can receive various tax incentives. For instance, special deduction, treat the wages paid to family employees as qualified expense, and carry over losses (country model Japan).

4. Alternative 4 Strengthening Social Norms

This alternative focus on influencing customer's and third-party behavior. The tax authority could put downward pressure on the shadow economy by increasing transparency and lowering cash-in hand payments (OECD, 2017). In the long term, the policy is expected to avoid making cash-in hand payments. The author proposes policy designs consists of evolving education, shifting the behavior, developing support from third party, and encouraging voluntary disclosure initiatives.

TABLE 25. Description of Alternative 4 Strengthening Social Norms

Sort of Fields	Proposed Policy Designs (Country Model)
Strengthening Social Norms: influencing taxpayers to comply with tax obligations and working through other stakeholders by not facilitating shadow economy behavior.	
1. **Education**	Setting up a national and provincial **Underground Economy Working Group** and initiate (1) the school curricula module (Trade-School initiative) about shadow economy for potential taxpayers; (2) promoting national campaign to curb demand of cash-economy using mass-media (country model Canada).
	Introducing **a public taxpayer compliance classification system** to foster a partner relationship with compliant taxpayers and to force risky taxpayers to comply with regulations by rating taxpayers in the business registry and comparing it to the legal regulations. Thus, the rating allows taxpayers to recognize their compliant behavior. Uncompliant taxpayers, on the other hand, face stricter regulations. (Country model Hungary).
2. **Changing the Behavior**	Conducting **the "nearest neighbor" model** to compare a taxpayer's work-related deduction claims against those in similar jobs and earning similar amounts of income to determine how far they differ from the norm (country model Australia).
	Focusing more on sectors where there are larger risks of tax-evasion behaviors, such as construction, hospitality, etc. and those operating outside the tax system (country model New Zealand).
3. **Support from third parties**	Introducing a regulation that **payments for services over certain amount should be made electronically**. If not, then individuals and businesses could be responsible themselves for any non-payment of taxes/VAT, for example, they cannot deduct cash payments (country model Denmark).

	Launching **"writing campaign"** as a part of industry campaign approach to provide businesses with sector-specific information that help them comply with tax obligations (country model Canada).	
4. Voluntary disclosure initiatives	Announcing a voluntary program that will allow an opportunity to persons with **undisclosed foreign accounts or entities** (debit/credit card, bank accounts, etc.) to retroactively disclose such accounts and entities. This initiative will avoid the person from civil penalties and criminal offence (country model United States).	

C. Evaluation Criteria

1. Selection Criteria

The selection criteria in this analysis are used to determine the most feasible and effective policy alternative, including: Cost Efficiency, Effectiveness, Social Acceptability, Financial Viability, Political Feasibility, Equity, and Time Frame. The author measures a weight score in a scale of 1 and 5 to each of the objectives, where 1 is a VERY LOW score to consider as an alternative against the criteria, and 5 is a VERY HIGH score (see ANNEX 10).

2. Selected Alternative "Combination of Deterrence and Compliance Approach"

The author considers the combination of the second alternative, **"Deterrence Approach"** and the third alternative **"Compliance Approach"** as the best policy alternatives (see ANNEX 11). Continuing the "Status Quo" is feasible in the short time. However, as mentioned before, it is not effective enough to counteract the shadow economy issue or to increase Indonesian taxpayer's compliance due to trends in the last 10 years. In terms of cost efficiency, the status quo performed at low level. In addition, the status quo has a high level of social and political feasibility with a reasonable time frame.

The second alternative, "Deterrence Approach" would be the preferred solution. It has a good score on cost efficiency, effectiveness, and social acceptability, although scored low in financial feasibility and equity. Moreover, the European Union member states have accommodated this policy effectively. This alternative should be complemented by the third alternative, "Compliance Approach". The policy scores medium in cost efficiency, high in effectiveness and social acceptability, but low in financial and political feasibility. The propose plans to construct a Single Identity Number to encourage voluntary compliance increases social cost and may create social dismay. However, it takes time to enact the law from legislative side.

The last alternative "Strengthening Social Norms Approach" is the next-best choice for three reasons. First, it amplifies tax administration from social perspective. Second, the model has been tested in the EU and OECD (Williams, 2008). Third, it scores highly in terms of social acceptability, efficiency, effectiveness, and time frame.

D. Implementation design

Considering the previous conditions, the implementation of the selected alternative becomes crucial to provide a desired outcome for the proposed goal. The author has explained logic and limitations of the plan as well as the general inputs to reach a high level of implementation under the budget constraints. Based on cycle of policy implementation (see ANNEX 12), there are five aspects that should be evolved to improve a general accomplishment of the strategy.

LEGITIMACY: Indonesia has established an adequate social and political legitimacy. The DGT achieved high level of support from citizens through public perception trust index. Thus, capitalizing support from the taxpayers especially small and medium enterprises (SMEs) using prominent spokesperson can the DGT campaign shadow economy awareness.

CONSTITUENCY BUILDING: An effective policy reform need a strategic cooperation between Ministry of Finance, tax administration, non-governmental organizations, legislative members, and the Central Bank. The DGT should communicate continuously with these stakeholders. It should also entrust and promote a strategic plan with participation from mass media to counteract shadow economy in Indonesia using SWOT analysis.

RESOURCE ACCUMULATION: The policy makers design implementation action and budget in three different cluster of time: Short term (1 year, based on DGT annual report), Medium term (5 years, based on Indonesian National Medium-Term Development Plan (RPJMN) 2015-2019), and long term (20 years, based on Indonesian National Long-Term Development Plan (RPJPN) 2005-2025). Within this plan, the DGT calculates a budget allocation from the national budget (APBN).

MOBILIZE ACTIONS AND RESOURCES: Extensive resources should be concentrated in implementing detailed plans for all levels of stakeholders, with a focus on vulnerable SMEs, the potential gatekeepers, and tax administrations. Moreover, to gain social acceptance and political likelihood, the DGT should allocate the budget transparently and make a clear connection between budget spent and revenue collected.

ORGANIZATIONAL DESIGN AND MODIFICATIONS: The stakeholders can engage an inter-ministerial assistance, which include the Ministry of Bureaucracy Reform, Ministry of Cooperative and SMEs, and ministerial-level agencies such as the Central Bank, and the Financial Service Authority in the long term. The legislative and executive should consider a broader organizational capacity to be developed which is a Semi-Autonomous Revenue Authority (SARA). A research from the World Values Survey (2012) shows that countries with SARA, the percentage of shadow economy is lower of 25.92 percent than non-SARA of 28.87 percent (Poesoro, 2015).

E. Monitoring and Evaluation

As a key stakeholder in this policy reform, the DGT should guarantee an efficient and reliable monitoring and evaluation system as the last component of this implementation plan using a key performance indicators (KPI). Within this objective, it is also important to follow the OECD Forum on Tax Administration (FTA) SME Compliance Sub-Group and adopting the OECD Compliance Risk Management framework. The FTA conducts monitoring and report on trends in compliance approaches, strategies and activities. It also discusses member's compliance objectives, behavioral compliance models and assumptions being used (OECD, 2012).

F. Limitation and Challenges

An effective result of our preferred alternative primarily relies upon an effective prioritization within some limited resources. The shadow economy forms a massive tax compliance risk in Indonesia and all countries. The DGT needs comprehensive long-term targeted compliance risk management risk strategies that focus on major causes of non-compliance behavior and comprise a combination of research, education, assistance, encouragement and enforcement action (Russell, 2010). However, given caveats on scarce resources, it is important for the DGT that the objective is not to eradicate the shadow economy entirely but to minimize it over time (Russell, 2010). Therefore, attempting to go ahead without a scale of priority may be less cost-effective.

The other challenges are a rising of globalization and shifting business model in Indonesia (Nazara, 2017). In term of globalization, there are an increase of investment between countries, massive tax tariff competition and a raising on foreign domestic investment (FDI). In addition, shifting business model is represented by an uptrend of digital economy products (namely Uber, Google, Facebook, etc.), an increase trading of intangible goods, services and cross border trading business that may lead to transfer pricing issue. These two issues may lead to a higher shadow economy size given that monitoring the flow of goods and services become more difficult. As a result, the DGT needs also to reform its regulation on international tax policy.

G. Conclusion

Indonesia faces an uptrend of shadow economy issue in the past decades. It erodes the potential tax base thus affect a low national revenue from tax. The author provides an empirical analysis to find key determinants of shadow economy development using twenty-two developing countries data from 2006 to 2015. The author found that a massive shadow economy size is determined by a high tax burden, a high cost of compliance, a low tax morale, a high unemployment, and an unstable official economy. In this respect, Indonesia's Directorate General of Taxes (DGT) has made significant progress in recent years with its implementation on tax administration by intensification and extensification program, and tax policy such as, special Low Turnover Income Tax, and the Tax Amnesty legislations. However, these is still much room to improve within these policies.

The author attempts to provide alternatives to be engaged within the current strategy. This project proposes that adopting EU and OECD framework on tackling shadow economy would provide the DGT insights to revisit its current strategy in mitigating shadow economy, detecting non-compliance behavior, and thus in the long term improving Indonesian tax revenue. The preferred policy embraces the indispensable precondition to tackle the root of the problem. Nonetheless, a well-executed implementation will play an essential key to yield a good outcome.

VI.   REFERENCES

Adam, Shamim (2014). "Indonesia Population Approaching U.S. Revives Birth Control" Bloomberg.com

Alatas, V & Newhouse, D. (2010). Indonesia jobs report: Toward better jobs and security for all. Washington DC. Main Report World Bank.

Alm, J. and Martinez-Velasquez and F. Schneider. (2004). Sizing the Problem of Hard to Tax. Amsterdam. Elsevier

Alm, J. and Torgler, B. (2006). 'Culture differences and tax morale in the United States and in Europe', Journal of Economic Psychology, 27(2), 2006, pp. 224–46.

Allingham, M. and Sandmo, A., (1972). Income Tax Evasion: A Theoretical Analysis. Journal of Public Economics, 1(2).

Bajada, C. (1999). Estimates of the Underground Economy in Australia. Economic Journal Vol.75, pp 369-84.

Brinkerhoff, Derick W. (2005). Organizational Legitimacy, Capacity and Capacity Development. Discussion Paper. European Center for Development Policy Management.

Baltagi., Badi H. (2005). Econometric Analysis of Panel Data. Third Edition. John Wiley and Son.

Bird, et.al. (2004). Societal Institutions and Tax Efforts in Developing Countries." Working Paper 04-06. Andrew young School of Policy Studies, Georgia State University: Georgia, Atlanta.

Cagan, Phillip (1958). The Demand for Currency Relative to Total Money Supply. National Bureau of Economic Research.

Ebill., L; M. Keen, JP Bodin and V. Summers. (2001). The Modern VAT. IMF

Faal, Ebrima. (2003). Currency Demand, the Underground Economy and Tax Evasion – The Case of Guyana. Washington DC. The International Monetary Fund.

Feige, Edgar L. (1990). Defining and Estimating Underground and Informal Economies: The New Institutional Economies Approach. University of Wisconsin-Madison. World Development Vo.18 No.7, 1990.

Firdausy, Carunia Mulya. (2000). "Size, Nature, Issues and Policies of International Migration from Indonesia to Asia". Ministry of Research and Technology.

Directorate General of Taxes (2016). Performance Report 2016. Jakarta. Directorate General of Taxes.

Directorate General of Taxes. (2017). Annual Report Fiscal Year of 2016. Jakarta. Directorate General of Taxes.

Directorate General of Taxes (2016). Annual Report 2015. Jakarta. Directorate General of Taxes.

Directorate General of Taxes (2015). Annual Report 2014. Jakarta. Directorate General of Taxes.

Directorate General of Taxes (2014). Annual Report 2013. Jakarta. Directorate General of Taxes.

Directorate General of Taxes (2013). Annual Report 2012. Jakarta. Directorate General of Taxes.

Directorate General of Taxes (2012). Annual Report 2011. Jakarta. Directorate General of Taxes.

Dell'Anno, Roberto. (2009). Tax Evasion, tax morale and Policymakers Effectiveness. The Journal of Socio-Economics no. 38: 988-997.

Glenday, Graham and G.P. Shukla (2017). Taxing Informal Sector. Tax Administration Course Work Materials. Durham. Duke University.

Godwin, Michael (1978). Compliance costs - The cost of paying tax. Elsevier vo.6 issue 5, 389-398

Gujarati, N. Damodar. (2010). Basic Econometrics. 6th Edition. McGraw Hill Inc. New York

Gunadi, Aloysius. (2004). Crisis and Underground Economy in Indonesia. Jakarta. Badan Perencanaan dan Pembangunan Nasional (BAPPENAS).

IMF. (2011). Revenue Mobilization in Developing Countries. Washington DC. IMF Policy Paper.

IMF. (2012). Inclusive Growth, Institutions and the Underground Economy. Washington DC. IMF Working Paper

IMF. (2012). Inclusive Growth, Institutions and the Underground Economy. Washington DC. IMF Working Paper

IMF (2016). Reported for Selected Countries and Subjects: Indonesia. World Economic Outlook.

Indonesian Central Bureau of Statistics (2015). Indonesian Formal and Informal Worker Composition.

Iqbal, Z. and Qureshi, S.K. (1998). The Underground Economy and Tax Evasion in Pakistan: A Fresh Assessment. IMF Working Paper. 00/26. Washington DC. The International Monetary Fund.

Kay, Jon. A (1980). The anatomy of tax avoidance in income distribution: Limits to redistribution. University of Bristol. Proceedings of the 31st symposium of the Colstor Research Society, John Write and Sons Ltd: 135-148.

Kristiaji, B. Bawono (2013). Memahami Kepatuhan Pajak. Understanding Tax Compliance. Jakarta. Inside Tax.

Lippert, Owen; Michaels Walker. (1997). The Underground Economy: Global Evidence of its Size and Impact. Vancouver, Canada. The Fraser Institute.

Minh-Le, Tuan et.al. (2012). Tax Capacity and Tax Effort: Extended Cross-Country Analysis 1994-2009. Washington DC. World Bank Research Working Paper, PREM.

Ministry of Finance. (2017). Indonesian Budget Fiscal Year 2016. Jakarta. Ministry of Finance of the Republic of Indonesia.

Medina, Leandro and Friedrich Schneider (2018). Shadow Economies Around the World: What Did We Learn Over the Last 20 Years? IMF Working Paper.

Nazara, Suahasil. (2017). Tax Reform to accelerate Infrastructure Growth. Canbera. Presentation Ministry of Finance of Republic Indonesia.

OECD. (2008). Monitoring Taxpayer's Compliance: A Practical Guide Based on Revenue Body Experience. FTA Compliance Sub-Group. Washington DC. OECD Publishing.

OECD. (2012). Reducing Opportunities for Tax Non-Compliance in the Underground Economy. FTA Compliance Sub-Group. Washington DC. OECD Publishing.

OECD. (2017). Shining Light on the Shadow Economy: Opportunities and Threats. Washington DC. OECD Publishing.

OECD (2015), Revenue Statistics in Asian Countries – Trends in Indonesia, Malaysia and the Philippines, OECD Publishing.

Park, No-Wook. (2005). Underground Economy: Causes and Size. Korea Institute of Public Finance.

Poesoro, Adri A. (2015). Narrowing Tax Gap: Cross Countries Experience. Jakarta. Tax Law Design and Policy Series No. 0915.

Purnomo, Kuntarto. Et.al. (2011). Underground Economy Activities in Indonesia. Munich Personal RePEc Archieve. Munich. MPRA Paper No.65608, posted July 21, 2015.

Rizal, Yond (2011). Lesson from Indonesian Tax Administration Reform Phase I (2001-2008): Does Good Governance Matter? Limits of Good Governance in Developing Countries. Yogyakarta. Gadjah Mada University Press.

Richardson., Grant (2006). The Determinants of Tax Evasion: A Cross-Country Study. School of Accounting and Finance, The University of Adelaide. Springer International Publishing

Switzerland 2016. M. Dion et al. (eds.), Financial Crimes: Psychological, Technological, and Ethical Issues, International Library of Ethics, Law and the New Medicine 68. Switzerland.

Russell, Barrie. (2010). Revenue Administration: Managing the Shadow Economy. Washington DC. The IMF.

Said, Emmiryzan Wasrinil. (2017). Tax Policy in Action: 2016 Tax Amnesty Experience of the Republic of Indonesia. University of Sussex. United Kingdom. Laws 2017, 6, 16; doi:10.3390/laws6040016

Sandford, C., (1999). Policies dealing with tax evasion, in Feige, E. and Ott, K. (eds.), Underground economies in transition: Unrecorded activity, tax evasion, corruption and organized crime, Aldershot, Ashgate.

Savona, Ernesto (2015). An Academic Overview of the Shadow Economy and Illegal Trade.

Schneider, Friedrich. Buehn, Andreas, and Montenegro, Claudio E. (2010). Shadow Economies All Over the World: New Estimates for 162 Countries from 1999 to 2007. World Bank Policy Research Working Paper (5536, July). Washington: World Bank.

Shukla, G.P. et.al. (2011). Tax Reform in Vietnam: Toward a More Efficient and Equitable System, Poverty Reduction and Economic Management Unit, East Asia and Pacific Region.

Spiro, Peter S. (2005). Tax Policy and the Underground Economy. Chapter 10 in Christopher Bajada and Friedrich Schneider (Eds.). Size, Causes and Consequences of the Underground Economy. Aldershot, England. Ashgate Publishing.

Tatariyanto, Firman. (2014). Taxing the Underground Economy: The Case of Indonesia. Journal of Economics and Sustainable Development. ISSN 2222-1700. Vol.5 No.27, 2014.

Tanzi, Vito. (1983). The Underground Economy in the United States: Annual Estimates, 1930-80. IMF Staff Paper. Vol 30. No. 2. Washington DC. International Monetary Fund.

Tanzi, Vito. (2002). The Shadow Economy, Its Causes and Its Consequences. Edited Lecture. Brazilian Institute of Ethics.

Tanzi, Vito and Howell Zee. (2001). Tax Policy for Developing Countries. IMF.

Torgler, B. (2003). Tax Morale in Transition Countries. Post-Communist Economies, 15(3).

Torgler, B. and Schaltegger, C.A. (2005). Tax Amnesties and Political Participation. Public Finance Review, 33(3).

Torgler, Benno. (2006). The importance of Faith: Tax Morale and Religiosity. Journal of Economic Behavior & Organization 61 (1) (2006):81-109.

Torgler, B. and Friedrich Schneider. (2007). Shadow Economy, Tax Morale, Governance and Institutional Quality: A Panel Analysis. Working Paper No. 2007 – 2. Department of Economics, Johannes Kepler University of Linz, A-4040 Linz-Auhof, Austria

Transparency International (2017). Corruption Perceptions Index.

US Department of State. (2015) "Money Laundering and Financial Crimes Country Database" Bureau

Webley, P. and Halstead, S. (1986). Tax Evasion on the Micro: Significant Stimulations per Expedient Experiments. Journal of Interdisciplinary Economics, 1, pp. 87–100.

Weimer, D. L., & Vining, A. R. (2005). Policy analysis: Concepts and practice.

Williams, Colin et.al. (2008). Tackling undeclared work in the European Union. Dublin. European Foundation for the Improvement of Living and Working Condition.

World Development Indicators (2018). The World Bank. Washington DC.

World Government Indicators (2018). The World Bank. Washington DC.

VII. APPENDICES

ANNEX 1. Definition of Shadow Economy Based on the OECD (2017)

No	Activity	Examples
1	Non-registered businesses	Businesses that do not register with the tax administration for either income tax or value added tax (VAT). They may still register with other agencies or service providers.
2	Under-reporting of business income	Ranges from businesses or sole traders which skim off some cash sales to those which engage in large scale fraud.
3	Unreported sources of income	Businesses or individuals receiving sources of income not known to the tax administration from investments, property etc.
4	Inflation of costs	Inflation of costs Those who inflate tax deductible expenses, for example through the use of false receipts or invoices or collusion with others.
5	Identity fraud	Use of fake identities to avoid tax liabilities or to claim refunds due to others. Also commonly used to continue to claim benefits while working.
6	Phoenix companies	Companies that are created with the intention of becoming insolvent before paying tax and other bills (with the business being transferred but not the debts). Similarly companies may strip assets and disappear prior to paying tax due.
7	Moonlighters	People registered with the tax administration for some employment but not for all, for example someone with a part-time job paid by cash on top of regular employment.
8	Ghosts	Those unknown to the tax administration, never having registered for tax. Examples may be some informal market traders, day or seasonal labourers, those providing domestic services and those carrying out serious crimes.
9	Cross-border fraud	Those who carry out activities across border with the aim of exploiting gaps and being able to hide out of reach of another tax administration.
10	Employer fraud.	Not registering workers with the tax administration or requiring such registration as a condition of employment; not complying with requirements to withhold tax or social security liabilities; employing illegal workers – for example those without a permit or underage; not carrying out identity checks; paying less than required minimum wages etc.
11	Money laundering	Bringing money from illegal activity into a legal business in order to make its origin appear legal.
12	VAT fraud	Claiming refunds or deductions for VAT that has not been paid by the supplier, including through organised cross-border fraud.
13	Distance selling	Evading the payment of VAT by selling into one country from another online without registration.
14	Illicit trafficking	Smuggling of goods on which duty has not be paid or which are fake for sale informally or through established businesses.

Source: OECD (2017)

ANNEX 2 – STAKEHOLDERS DESCRIPTION AND TABLE

Key Stakeholders

- ✓ **Ministry of Finance.** Directly related to tackle the issue. Ministry of Finance keep national macroeconomic and fiscal stability, economic growth, and budget effectiveness. The Minister of Finance has objective to collect of national revenue through the DGT. The law aimed that the Minister of Finance must keep up an optimum revenue collection and a high voluntary compliance.
- ✓ **Directorate General of Taxes.** The DGT aims at counteracting shadow economy, minimizing the tax gap while improving compliance. The DGT has the authority to design administration in collecting revenue from tax. In this respect, the Directorate of Tax Potential Compliance and Revenue has responsibility to maintain taxpayer's compliance.

Primary Stakeholders

- ✓ **House of Representatives (DPR).** Commission XI Indonesian DPR address Indonesian Finance and Banking. DPR pass the Tax Amnesty Law into national laws on 2016. Their role to amend and adopting new framework of tax policy legislation.
- ✓ **BKF (Fiscal Policy Body)**. Directly involved to design Indonesian tax policy. The BKF is under Ministry of Finance as a supporting agency to analyze fiscal policy.
- ✓ **Ministry of Administrative and Bureaucratic Reform**. Directly involved to strengthen institutional capacity. In the future, it is expected that the Minister helps formulating the framework of new Semi-Autonomous Revenue Agency for the DGT.
- ✓ **Small and Medium Enterprises**. SME's has put burden on a compliance cost that avoid them to enter the official economy. Therefore, a simple tax administration and policy, and education approach such as assistance program will encourage them to comply voluntarily.

Secondary Stakeholders

- ✓ **Ministry of Cooperative, Small and Medium Enterprise**. The Ministry of Cooperative and SMEs aims to provide assistances to small medium company especially informal sectors through business incubation and administration assistantship. Therefore, Minister would likely to support the policy reform.
- ✓ **Central Bank.** As a monetary policy maker, Central Bank reduce systemic risk cash economic in the financial institution using Know Your Customer Principles.
- ✓ **Financial Service Authority (OJK).** OJK Supervises and control banking financial institution while making micro prudential regulation.
- ✓ **Civil Servant Investigators.** Is an investigator organ which has similar rights and position as police officer unless they work for non-military civil institution, for instance, Home Affairs Department, Directorate General of Taxes, Ministry of Forestry, etc. They have capacity enforce tax fraud cases.
- ✓ **Non-Bank Financial Institution (Insurance Company, Pension Fund and Finance Company, Security/Capital Market Company).** These sectors were proxy of financial innovation. A higher financial innovation level is expected to decrease informal sector.
- ✓ **Banks.** Banks has an enormous capacity to mobilize money from citizens. Although they implement "Know Your Customer", their role to promote non-cash transaction is not high. They have low power and medium interest in this issue.
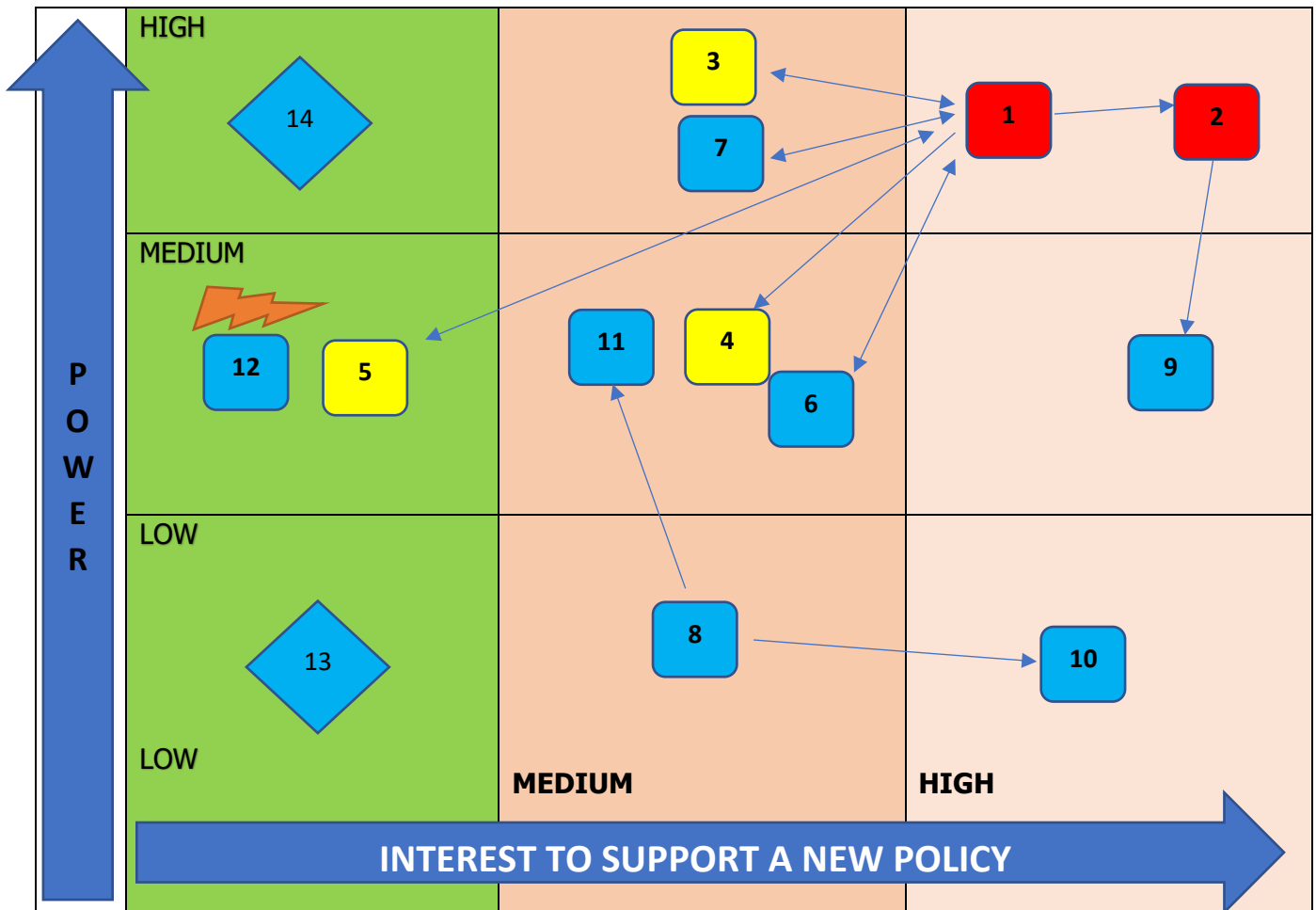
- ✓ **The Gatekeepers.** Gatekeepers consist of some lawyers, accountants, property agent, notaries, financial planner and other designated nonfinancial businesses and professions who assist transactions involving the movement of money in the domestic or international financial systems. They help criminals to place assets from crime to become difficult to trace. Their interest to make profits tends them to protect the identity of culprits.
- ✓ **International Organizations Financial Action Task Force (FATF), Tax Justice Network, ICIJ, Global Finance Integrity, TII.** They make framework and capacity to provide information for policy maker but limited influence over national government.
- ✓ **Media and Press (Journalists).** They have a capacity to campaign public awareness of cash-less society and ability in mobilizing public opinion.

Stakeholders Table

NO	STAKEHOLDERS	ATTRIBUTE		INTERESTS	RESOURCES	POSITION IN THE POLICY REFORM
		POWER	INTEREST			
1	**Key Stakeholders** Ministry of Finance	High	High	Macroeconomic Stability, Economic Growth, Fiscal Stability, Budget Effectiveness	Economic Policy, Fiscal Policy	Improve current policy, Increase tax revenue,
2	Directorate General of Taxes	High	High	Minimum non-compliance, minimum tax gap, optimum tax-ratio	Regulations/tax law, human resources	Improve tax ratio, encourage undeclared economy to enter offical economy
	Primary Stakeholders					
3	House of Representatives	High	Medium	Reduce shadow economy, Increase public trust	Political power, Impeach power, Social Influence, Enacting legislations	Increase tax revenue
4	The BKF	Medium	Medium	Policy formulation, macroeconomic forecasting	Economic Policy, Fiscal Policy	Improve current policy
5	Ministry of Administrative and Bureaucratic Reform	Medium	Low	Regulate a clean and professional bureaucracy	Regulations	Improve institutional capacity
	Secondary Stakeholders					
6	Minsitry of Cooperative, Small and Medium Enterprise	Medium	Medium	Encourage SME to enter offical economy	Regulate SME, Assistanship/Training	Increase tax revenue
7	Central Bank	High	Medium	Macroeconomic Stability, Economic Growth, Monetary Stability	Monetary policy	Reduce cash-in hand transaction
8	Financial Service Authority	High	Low	Monitoring Non Bank Financial Institution	Monetary policy	Reduce cash-in hand transaction
9	Tax Investigators	Medium	High	Reduce shadow economy from illegal activity,	Criminal Law, Human resources	Increase tax revenue
10	Non-Bank Financial Institutions	Low	Low	Increase profit	Capital mobilization	Reduce cash-in hand transaction
11	Banks	Medium	Medium	Increase profit	Intermediation function	Reduce cash-in hand transaction
12	The Gatekeepers	Medium	Low	Doing tax planning, reduce tax	Aggressive transfer fricing plan, offshore accounts	Reduce tax obligation
13	International Organizations	Low	Low	International cooperation, common understanding in counteracting shadow economy	Mobilizing opinion, International proceedings	Improve tax administration
14	Media and Press	High	Low	Endorsing national campaign	Mobilizing opinion	Improve good governance

ANNEX 3. POWER MATRIX ON NEW POLICY REFORM OF COUNTERACTING SHADOW ECONOMY
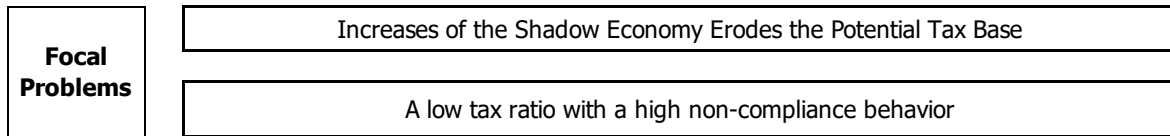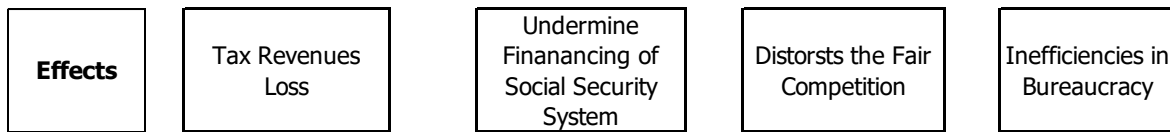

Source: Author's thought

ANNEX 4. COUNTRY SAMPLES, 2006-2015

Chile, Costa Rica, Dominican Republic, Ecuador, Egypt, El Salvador, Honduras, Indonesia, Iran, Jamaica, South Korea, Malaysia, Mauritius, Mexico, Morocco, Peru, Philippines, Qatar, Singapore, South Africa, Thailand, Turkey.

ANNEX 5. DATA DESCRIPTION AND SOURCES

No	Variables	Description	References
	Dependent Variable		
1	Shadow Economy (SESIZE)	The shadow economy scale as a percentage of GDP	Medina and Schneider (2017)
	Independent Variables		
1	Tax Burden (TAXBURD)	The index level of three components: the top marginal tax rates on individual income, the top marginal tax rate on corporate income, and the tax burden as a percentage of GDP. The index is a scale up between 0 to 100 which the higher the tax rates, the lower the index. Therefore, the author subtracts the index by 100 to get an uptrend scale of tax rates.	The Heritage Foundation (2018)
2	Tax Compliance (TAXCOMPL)	The index of tax compliance cost. It is the taxpayer's cost compliance to fulfil to the tax regulations. The higher the index, the lower cost of tax compliance. Therefore, the author subtracts the index by 11 to get an uptrend scale of tax rates.	The Fraser Institute (2018)
3	Control of Corruption (COR)	CORRUPTION is a proxy of tax morale. Public perception on corruption will influence tax morale level. This will be represented by the Control of Corruption index from the WGI dataset. The higher the index, the higher control of corruption and the lower the shadow economy. I expect the negative sign for this index.	The Worldwide Government Indicators (2018) ,
4	Voice and Accountability (VOC)	Voice and accountability represents perceptions that a citizen can participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	The Worldwide Government Indicators (2018) ,
5	Government Effectiveness (GOV)	Government effectiveness represents four perceptions: (1) the public services quality; (2) the quality of the civil service and the degree of its independence from political pressures; (3) the quality of policy formulation and implementation; (4) and the credibility of the government's commitment to sound policies.	The Worldwide Government Indicators (2018) ,
6	Regulatory Quality (REG)	Regulatory quality represents perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	The Worldwide Government Indicators (2018) ,
7	Rule of Law (LAW)	Rule of law represents perceptions that the government have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	The Worldwide Government Indicators (2018) ,
8	Political Stability (POL)	Political Stability and Absence of Violence/Terrorism measures perceptions of the likelihood of political instability and/or politicallymotivated violence, including terrorism.	The Worldwide Government Indicators (2018) ,
9	Unemployment Rate (UNEMP)	Unemployment rate is the national estimate as a percentage of total labor force. The higher the rate of unemployment, the higher the probability to work in the shadow economy.	The Worldwide Development Indicators (2018) .
10	Number of ATM (LNATM)	Automated teller machines (ATMs) is one of the financial inovation to understand the shadow economy denoted by number of ATM per 100,000 adults. The more number of ATM, the less the size of shadow economy.	The Worldwide Development Indicators (2018) .
11	GDP per capita (LNGDP)	Natural log of GDP per capita as control variable to distinguish countries from cross sectional effect, 2006-2015	The Worldwide Development Indicators (2018) .
12	Population (LNPOP)	Natural log of population as control variable to distinguish countries from cross sectional effect, 2006-2015	The Worldwide Development Indicators (2018) .

ANNEX 6. PROBLEM TREE DIAGRAM

Effects	Tax Revenues Loss	Undermine Finanancing of Social Security System	Distorsts the Fair Competition	Inefficiencies in Bureaucracy

Focal Problems	Increases of the Shadow Economy Erodes the Potential Tax Base
	A low tax ratio with a high non-compliance behavior

Causes	Empirical Analysis Results	Coeff.	P-value
	High taxes burden	0.02	0.29 Not Significant
	Legacy of past economic regimes		Lack of research on tax administration
	High cost of compliance	0.1	0.45 Not Significant
	Poor Quality of Tax Legislations	An Inefficient Bureaucracy	Lack of Taxpayer's education

Low Tax Morale			
1. Low corruption control level	0.58	0.35 Not Significant	Low Enforcement
2. Low voice and accountability	2.59	0.002 Significant	Low of Tax Administration Capacity
3. Poor government effectiveness	0.46	0.58 Not Significant	
4. Low Regulatory Quality	1.07	0.18 Not Significant	
5. Weak Rule of Law	-5.72	0.000 Significant	
6. Low Political Stability	-1.38	0.001 Significant	

Empirical Analysis Results	Coeff.	P-value
Causes		
High Unemployment Rate	0.19	0.01 Significant
Lack of Education		Poor Business Environment	Low Competitiveness of Labor Force
High Financial Innovation	0.84	0.00 Significant
Increase of Aggressive Tax Planning		Increase of Technological Penetration
Low Official Economic Development	-13.7	0.00 Significant
Low quality Public Expenditure on Education and Health		High public debt	Low public services level
High Population Rate	-0.8	0.46 Not Significant
Increase of life expectancy		Increase of Urbanization	Low Mortality Rate

Source: Author calculations

ANNEX 7. GENERIC POLICIES

	Market Mechanism	Incentives	Rules	Nonmarket-supply	Insurance and cushions
Traditional Market Failures					
Public goods – Optimum Revenue Policy to ensure the financing on national development		Supply – side Tax Amnesties, voluntary disclosure, smooth transition to formality	Amend current tax administration to improve institutional capacity, Enacting legislations to reduce shadow economy	Educate taxpayers/potential taxpayers to avoid shadow economy	
		Simplifying compliance, Tax Incentives, Tax Facilities, Support and Advice	Enacting data matching and sharing regulations/joining up operations; Consider increasing the penalties and sanctions for tax evaders.	Change norms, values and beliefs	
Information Asymmetries				Develop a "whistle-blower" community to control aggressive tax planning/ unreported income	
Government Failures					
Bureaucratic Supply – Agency Loss				Improve inter-agency cooperation	
Decentralization – Diffuse authority and Fiscal Externalities				Increase number of Tax Auditors and Account Representatives	

Source: Author's thought

ANNEX 8: Measures Used to Tackle Shadow Economy in the EU, 2001–2005

Country	Deterrence						Enabling compliance								
	Improve detection			Imposing Penalties			Prevention			Legitimizing undeclared work			Changing attitudes		
	2001	2003	2005	2001	2003	2005	2001	2003	2005	2001	2003	2005	2001	2003	2005
AT	●	●	○			●	●	●				●			
BE	●	●	○					●	○	●	●	●○			
CY									○						
CZ															
DE	●	●		●	●	○	●		○	●	●	○		●	
DK	●	●	●			●		●			●	○			●
EE			●○						○						
EL	●	●		●			●	●	○			●			
ES		●	●					●	●○			●			
FI	●			●				●	○		●	○			
FR	●							●	○		●	○		●	
HU			●						●			●			
IE	●	●		●	●		●								
IT									○	●	●				
LT			●○						●○			●			
LU															
LV		●							●			●			
MT															
NL	●	●	○	●	●		●	●		●		●○			
PL															
PT		●	●					●		●					
SE		●	●					●	●○						●○
SI			●												
SK			●○						●○						
UK		●	○		●	○		●	○		●	○		●	●
Total (●)	9	11	10	5	4	2	5	11	6	4	8	8		3	3
Total (○)			7			2			13			7			1

Note: ● = Mentioned in the 2001 or 2003 National Action Plans, and the 2005 National Reform Programs; ○ = Mentioned in the European Employment Observatory (Autumn 2004) and in EIRO (2005).

Source: Williams (2008)

ANNEX 9. DEFINITION OF POLICY ALTERNATIVES

Definition of Policy Alternatives	
Alternative 1: Status Quo	Enhancing the role of intensification and extensification program in mitigating shadow economy; and retaining on current tax policy e.g. Tax Amnesty and Special Low-Income Tax.
Alternative 2: Deterrence Approach	Policy designs on "deterrence" as focal point focused in seven pillars: 1. Conducting research in finding the driver (individual, social, structural) behind customer behaviors with respect to hidden economy. 2. Using data such as benchmarking, data from bank, research-based audits, and other source of data. 3. Advancing analytic using predictive models, real-time risk, and concept risk tools. 4. Technology to reduce fraud (biometric database, cybercriminal unit, and e-invoicing). 5. Establishing "Shadow Economy" unit. 6. International cooperation. 7. Naming and Shaming strategy.
Alternative 3: Compliance Approach	Tax Administration strategy focusing in "softer" method rather than enforcement, consists of two keys: 1. Making registration and payments of tax easier (tax number for new-born child policy, one mailbox, Single Identity Number Policy, electronic channels). 2. Support taxpayers to make tax become their natural environment (mobile-apps, conditionality in license). 3. Initiating tax-incentive (different withholding tax rates, cash receipts system, and special book-keeping system).
Alternative 4: Strengthening Social Norms	Engaging a comprehensive action to counteract shadow economy from social perspective, using four pillars: 1. Education (Underground Economy Working curricula, national campaign, taxpayer compliance classification system). 2. Changing the behavior "nearest neighbor" model, focusing audit and monitor in large-risks sector) 3. Support from third party (electronic payments, writing campaign). 4. Voluntary disclosure initiatives of undisclosed foreign accounts.

Source: Author's thought

ANNEX 10. Weighted Assignment to Evaluate Criteria

Weight Assignment to Evaluate Criteria		
Evaluation Criteria	**Explanation**	**Weight**
Cost Efficiency	Ensure the efficiency of policy in tackling shadow economy in Indonesia achieve the outcome	Very High (5) High (4) Medium (3) Low (2) Very Low (1)
Effectiveness	Likelihood to achieve the policy reform	
Social Acceptability	High support legitimacy from public	
Financial Viability	Feasible budget allocation	
Political Feasibility	Willingness-level to support and generate the alternative	
Equity	Fair distributional supply of apparatus to provide tax policy	
Time frame	Time needed to implement the model	

Source: Author's thought

ANNEX 11. Goals Alternatives Matrix, Selection Criteria

Goals and Objectives	Weight	Alternatives			
		1. Status Quo	**2. Deterrence Approach**	**3. Compliance Approach**	**4. Strengthening Social Norms Approach**
Cost Efficiency	20%	2*20%= 0.4	4*20%= 0.8	4*20%= 0.8	3*20%= 0.6
Effectiveness	30%	2*30%= 0.6	5*30%= 1.5	4*30%= 1.2	4*30%= 1.2
Social Acceptability	10%	4*10%= 0.4	4*10%= 0.4	5*10%=0.5	4*10%= 0.4
Financial Feasibility	10%	5*10%= 0.5	2*10%=0.2	2*10%=0.2	2*10%= 0.2
Political Feasibility	10%	4*10%= 0.4	3*10%=0.3	2*10%=0.2	2*10%= 0.2
Equity	10%	5*10%= 0.5	2*10%=0.2	3*10%= 0.3	3*10%= 0.3
Time Frame	10%	5*10%= 0.5	3*10%=0.3	4*10%= 0.4	1*10%= 0.1
Score		3.3	3.7	3.6	2.9

Source: Author's calculation

ANNEX 12: Implementation Plan (Drawn from Brinkerhoff and Crosby's Framework)

Legitimization:
- Developing citizen's awareness on shadow economy.
- Public education campaign.
- SME taxpayer's assistantship and Support
- Finding prominent spokesperson.

Constituency Building:
- Build a strategic cooperation through policy-makers.
- Introduce and empower local leadership.
- Communicate clearly in long-term to its constituents.
- SWOT analysis.

Resources Accumulation:
- Implement official budget.
- Analyze budget using Cost Based-Analysis.

Mobilizing Resources and Actions:
- Implement detail plans to all stakeholder's levels.
- Develop concrete plan using "Gantt chart"
- Identify vulnerable sectors.
- Promote accountability in budget distribution.

Organizational Design and Modification:
- Establishing implementation capacity (Semi-Autonomous Revenue Agency).
- Developing inter-department assistance.

Monitoring and Evaluation:
- Monitoring and Evaluation Report.
- Benchmarking and key-performance indicators.
- Customer Based Survey on Public Perception Index on Shadow Economy.

ANNEX 13. Comparison of Tax Revenue Target 2017 to Tax Revenue Target and Tax Revenue Realization 2016
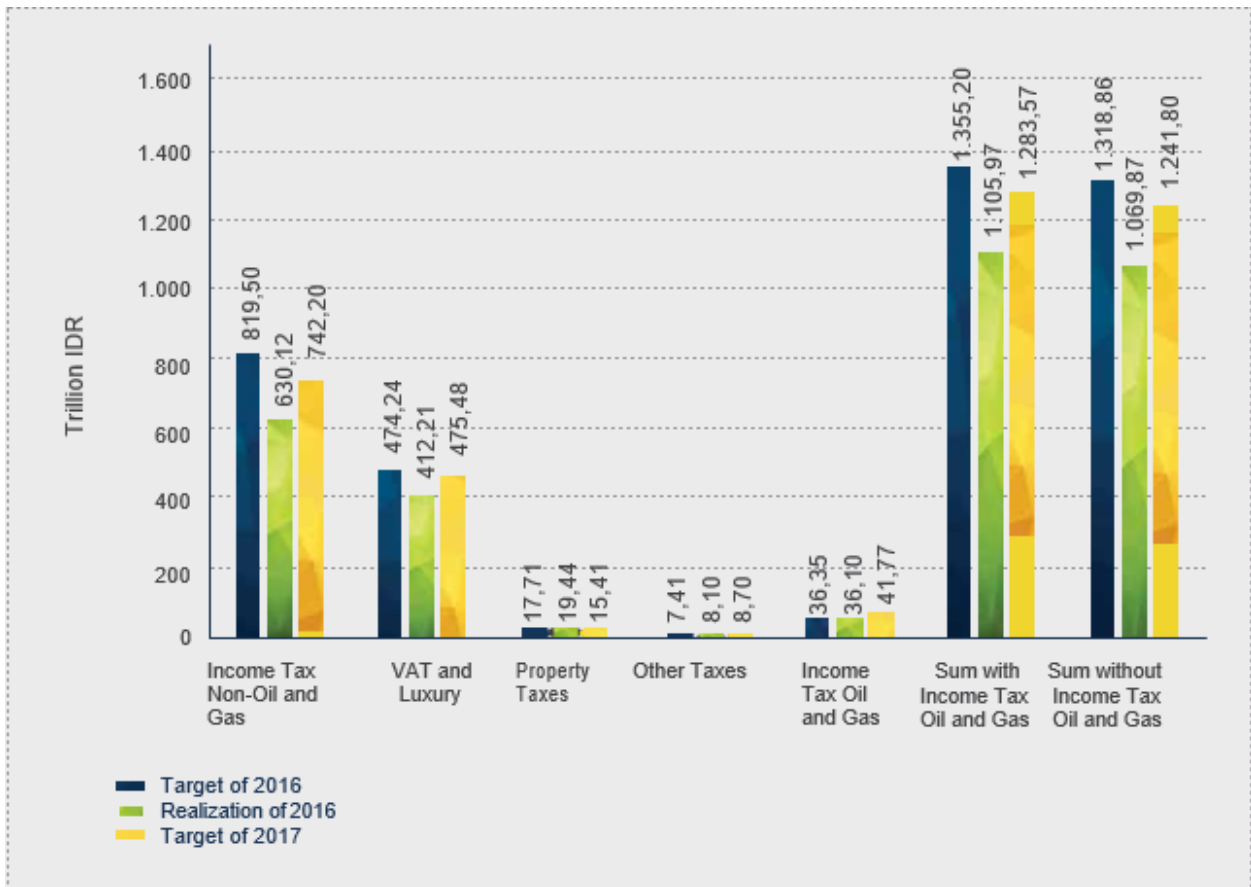
Source: DGT (2017)

ANNEX 14. PERFORMANCE OF TAX REVENUE BASED ON TYPE OF TAXES

Performance of Tax Revenue Based on Type of Taxes					
Type of Taxes	Target of 2016 (billion IDR)	Realization of 2016 (billion IDR)	Achievement in 2016 (%)	Realization in 2015 (billion IDR)	Realization Growth (%)
Non-Oil & Gas Income Tax	**819.496,74**	**630.117,80**	**76,89**	**552.222,38**	**14,11**
IT Article 21	129.345,38	109.640,85	84,77	114.043,99	(3,86)
IT Article 22	16.114,52	11.351,78	70,44	8.477,96	33,90
IT Article 22 Import	64.553,27	37.977,78	58,83	40.249,40	(5,64)
IT Article 23	53.010,16	29.142,42	54,98	27.881,87	4,52
IT Article 25/29 Individual	28.800,02	5.313,75	18,45	8.258,23	(35,66)
IT Article 25/29 Corporate	265.744,13	169.697,32	63,86	182.273,99	(6,90)
IT Article 26	56.291,70	36.095,24	64,12	43.001,94	(16,06)
IT Final	182.822,34	117.676,78	64,37	119.665,59	(1,66)
Another Non-Oil & Gas IT	13.108,43	104.175,06	794,72	189,39	54.905,58
Overseas Fiscal IT	0,03	(0,05)	(166,67)	0	0
Government-paid IT	9.706,76	9.046,87	93,20	8.180,03	10,60
VAT and Luxury	**474.235,34**	**412.205,46**	**86,92**	**423.710,33**	**(2,72)**
Domestic VAT	309.940,94	272.997,09	88,08	280.002,09	(2,50)
Import V AT	146.114,34	122.774,62	84,03	130.131,56	(5,65)
Other VAT	305,84	262,61	85,87	200,84	30,76
Domestic Luxury	12.656,66	11.810,03	93,31	9.293,13	27,08
Import Luxury	5.113,48	4.295,38	84,00	4.008,32	7,16
Other Luxury	104,08	65,73	63,15	74,39	(11,64)
Property Taxes	17.710,60	19.443,23	109,78	29.250,64	(33,53)
Rural Prop. Taxes	0	(0,66)	0	0	0
Plantation Property Tax	1.501,54	1.885,67	125,58	1.595,46	18,19
Forestry Property Tax	419,65	402,63	95,94	491,69	(18,11)
Mining and Renewable Mineral Property Tax	842,28	1.637,94	194,47	1.243,78	31,69
Oil-Gas Mining Property Tax	14.817,87	15.267,80	103,04	25.721,16	(40,64)
Geothermal Property Tax	98,12	215,85	219,99	196,78	9,69
Another Prop. Tax	131,13	33,99	109,19	1,77	1.820,34
Other Taxes	7.414,88	8.104,90	109,31	5.568,30	45,55
Oil and Gas IT	36.345,93	36.098,65	99,32	50.108,94	(27,96)
Amount include Oil and Gas IT	1.355.203,52	1.105.970,04	81,61	1.060.860,57	4,25
Amount without Oil and Gas IT	1.318.857,59	1.069.871,39	81,12	1.010.751,63	5,85

Source: DGT (2017)