

**THE ESTIMATION AND ISSUES OF INDONESIA
PERSONAL INCOME TAX COMPLIANCE AND
TAX OFFICE EFFICIENCY**

by

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ABSTRACT

The Asian Financial crisis in 1998 has resulted in increasing burden to two areas of Indonesian budget expenditure. The banking restructuring program, which cost Rp 648 trillion (US\$ 64.8 billion) plus the interest payment obligation, account for a significant portion of the fiscal expense associated with the crisis. The enormous depreciation of the Rupiah after the crisis, requiring expansion of energy subsidies, put additional pressure on the budget. This recent history presents challenges to Indonesia fiscal sustainability, with regard to expenditure, and hence, revenue. The traditional sources of funding for fiscal expansion had become less reliable. With Indonesia's transition to net oil importer, income from oil and gas has been decreased. Revenue from foreign loans also shows a decreasing trend. Under these circumstances, policy makers look to increase domestic revenue as an obvious option; important among these is domestic tax revenue.

With a view to recommending policy options for increasing personal income tax revenue, this dissertation reviews the current tax system in Indonesia, estimates the existing potential income tax and identifies sources of low tax compliance, both from taxpayers and tax collector's side. This dissertation consists

of three main papers which will be described in detail in Chapter II, III, and IV.

The first part aims to find the current problem in Indonesia Personal Income Tax collection through the estimation of the tax compliance rate. Chapter II describes the estimation of potential tax base by the application of Pareto distribution into the household income data, based on several scenarios. The estimation results are compared to the actual tax revenue in order to calculate the size of Indonesian tax compliance rate for 1996, 2000, 2002 and 2005.

The Pareto distribution is a power law probability distribution found in a large number of real-world situations. This distribution is originally used to describe the allocation of wealth among individuals since it seemed to show rather well the way that a larger portion of the wealth of any society is owned by a smaller percentage of the people in that society. The potential tax revenue calculation is based on the assumption that household structure is with a housewife and two children. This assumption is based on the Indonesia's family structure in Population Census 1990 and 2003 which shows that Indonesia's family size is 4.5 persons in 1990 and 3.8 persons in 2003.

Three scenarios are used in the estimation of potential tax revenue. The scenario 1 estimates the potential tax revenue of the total family income, followed by scenario 2 that removed agriculture income from the total family income since under the current tax system the agriculture income is exempted. In scenario 3, in addition to agriculture income, the transfer income and other income which are not object of taxable income are also removed from family income.

Result of Chapter II shows that Indonesia's personal income tax compliance rate is low, in year 1996 it is around 12%-28% 1996. It decreases into 10%-18% in

2002 but later it improves to 15.8%– 28.7% in year 2005. In addition, the estimation result also shows that there is space to expand tax revenue by broadening the object of income tax, e.g. income from the agriculture activities.

Chapter III investigates the source of low tax compliance, which on the taxpayer side is hypothesized to importantly associate with the underground or informal economy. The size of the shadow/informal economy size is estimated using two methods of shadow economy estimation: the currency demand approach and household electricity consumption approach.

The most commonly used definition of shadow economy is all currently economic activities which contribute to the officially calculated or observed Gross National Product but are not taken into account in the calculation of GDP or GNP either because they escape from registration or due to a convention (e.g. barter, illegal transactions). The currency demand approach was first used by Cagan (1958) for calculating the correlation of the currency demand and the tax pressures as one cause of the shadow economy for the United States. This later developed by Tanzi (1980, 1983) and Schneider (2000, 2002, 2007) for estimating the size of shadow economy in developed countries. Under the currency demand approach, it is assumed that the shadow activities are undertaken in the form of cash payments, so that no observable trace for the tax authorities. Thus, an increase in the size of the shadow economy will increase demand for currency. The excess increase in currency, which is the amount unexplained by the normal factors is then attributed to the rising tax burden and the other reasons that lead people to work in the informal economy. The size and the development of the informal economy can be calculated by comparing the difference between the development of currency when the direct

and indirect tax burden are held at its lowest value and the development of currency with the current highest burden of taxation, government regulation and other factors that motivates labor to work in informal sector. Assuming that the same income velocity for currency used in the informal economy as for legal M1 in the official economy, the size of the informal can be computed and compared to the official GDP.

Four models are estimated under this approach: model based on Cash per capita, M1 per capita, Aggregate Cash, and Aggregate M1 by using OLS time series for year 1969-2004 data. The main findings from this study are the significant potential tax base, the informal economy, which is estimated to be 39.6%-83.6% of the formal economy in 2004. In average Indonesia shadow economy size is 46.9% for estimation based on M1 per capita model and 46.9% for estimation based on Cash per capita during the period of estimation.

For robustness check the household electricity approach is also implemented. To measure overall economic activity in an economy, it is assumed that electric power consumption is the best physical indicator of overall economic activity. Economic activity (both formal and informal) and electricity consumption have been empirically observed throughout the world to move in lockstep with and electricity/GDP elasticity usually close to one. By using a proxy measurement for the overall economy and subtracting it from estimates of official GDP, an estimate of unofficial GDP is derived. This means that the growth of total electricity consumption is an indicator for representing a growth of formal and informal GDP. Thus, the difference between the gross rate of registered GDP and the gross rate of total electricity consumption can be attributed to the growth of the informal

economy.

This dissertation follows the idea of Lacko model that assumes in countries where the section of the informal economy associated with the household electricity consumption is high, the rest of the hidden economy, will also be high. Unfortunately, for the calculation of the actual size of the informal economy, elasticity that shows how much GDP is produced by one unit of electricity in the informal economy, should be known. And since this elasticity value is not known for Indonesia case, only the index of shadow economy and its change overtime obtained.

The household electricity consumption approach result shows that that index movement under this method and the shadow economy size change under the currency demand approach move in a similar direction except in four periods. However, most of the source of this difference is caused by special financial policies which were conducted by the government or central bank in order to control the overheated economy and 1997 Asian financial crisis which is captured better in currency demand approach rather than household electricity approach.

Chapter IV looks the low tax compliance source from the tax collection side, specifically at the efficiency of regional tax offices post year 2000 tax reform. The relative efficiency of performance of Indonesia's regional tax offices is measured by the Data Envelopment Analysis (DEA) method based on variable return to scale assumption, Banker-Charnes-Cooper Output Oriented (BCC-O) model, and based on constant return to scale assumption, Charnes-Cooper-Rhodes Output Oriented (CCR-O) model. In addition, in order to capture the productivity efficiency change over time, Panel DEA method is also implemented. The output-oriented Malmquist Productivity index is calculated to compare data from two different period, t and $t+1$,

to the same reference technology from period t . If the value of the index is greater than one, it means that there is an improvement in productivity between two periods.

In addition to DEA and Panel DEA method, the cross section and panel data analysis are also performed to observe the source of inefficiency and determine factors that improve efficiency in regional tax offices' performance.

Chapter IV result shows that the efficiency performance during 2001 and 2003 improves around 10% in average. However after the segregation process from 19 regional offices to 31 offices in year 2005, the average efficiency score rapidly decrease. Result from Panel DEA method shows that the decrease efficiency score is due to a technology change, which increase during year 2001-2003 but decrease during year 2003-2005.

From the cross section regression it is found the region with high Regional GDP per capita does not guarantee a high efficiency score. There is a tendency that the more the tax base, the less able the regional tax office to handle or service it well. Both cross section and panel regression shows that the influence of salary is negative, which means that any program to increase officer's salary does not directly improve the efficiency performance. On the other hand, the coefficient of percentage of officer with high education, which shows the effect of education, shows a significant positive value. This result indicates the importance of education for tax office human resources in order to improve the service. To increase Indonesia's tax compliance rate, the study recommends improving national basic education of the citizen and taxpayers, and professional training for tax administrators.