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THE MYTHS AND REALITIES OF  
TAX PERFORMANCE  
UNDER SEMI-AUTONOMOUS  
REVENUE AUTHORITIES

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# THE MYTHS AND REALITIES OF TAX PERFORMANCE UNDER SEMI-AUTONOMOUS REVENUE AUTHORITIES

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Separation of the tax administration from the Ministry of Finance has become growing trends in the last two decades. Many countries have established more autonomous tax institution known as Semi Autonomous Revenue Authority (SARA).

SARA refers to the institutional framework and governance for organizations involved in the collection administration, where the framework is to provide a greater autonomy than regular departments or directorates. Pros and cons of the benefits of SARA is natural and basically can be seen through experiences in several countries. Unfortunately, limited empirical study on performance of the SARA created a little room for policy makers to determine their stance.

In this paper, we are not only analyze the main factors behind decision to implement SARA but also test the myths of impact of SARA model to tax performance and other relevant indicators through utilizing econometric approach in order to demystify SARA.

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# “IT IS INTERESTING TO NOTE HOW MANY OF THE GREAT SCIENTIFIC DISCOVERIES BEGIN AS MYTHS.”

-ROLLO MAY, *THE CRY FOR MYTH*, 1992

## 1. Introduction

During the last 4 months, discussions over factors related to institutional capacity and models of tax administration often more took place in many occasions in Indonesia. There is a strong desire or at least a great curiosity about: what if the tax authorities in Indonesia are given greater authority so as to become more autonomous? In other words, what if the Directorate General of Taxes is separated from the Ministry of Finance and becomes an independent institution?<sup>2</sup>

Currently, model of tax authorities under the Ministry of Finance around the world is slowly being abandoned. There are growing trends of separation of the tax administration from the Ministry of Finance, especially in the last two decades. Many countries have established more autonomous tax institution known as Semi-Autonomous Revenue Authority, hereinafter referred to as SARA.<sup>3</sup> The main justification of this phenomenon departs from the needs to collect sustainable revenue, better services, as well as improvement of governance in tax sector.

However, the idea is not without criticism. Some relevant parties see the weak performance of tax collection in Indonesia is not solely caused by institutional factors. Thus, they suggest that redesign of tax administration or transformation to a model of SARA is not necessary. In addition, there might be potential costs that might have arisen due to this institutional redesign which is not necessarily improve the performance of taxation.

The debate among academics about whether or not the SARA model should be adopted has been taking place for quite some time. Many literatures provides evidence of success and weakness of SARA model in various countries. Unfortunately, there are very limited empirical study to date on the

performance of the SARA model of taxation. Thus, it is norma to have pros and cons regarding the role of institutions, especially the SARA model of taxation for performance improvement. This article seeks to fill this gap, by analyzing differences in taxation situation and the impact on the performance of the SARA model of taxation, particularly in an effort to improve revenue collection. In addition, this article also explores main factors behind the decision to implement SARA.

## 2. Why SARA needs to be Considered?

From the scientific perspective of public policy, management, and economics, institutional aspects are considered as the framework that govern the functions or interactions among players. Furthermore, institutions provide guidance that ensure each agency works optimally and not deviate from the established corridor. Thus, it is not surprising that tax reforms in various countries include seeking the ideal form of tax institution. Over this fact, radical changes into the tax authorities suggested<sup>4</sup> including making the tax authorities into a more autonomous institution which runs like a private company.

SARA is a term that refers to the institutional framework and governance for organizations involved in the collection administration, where the framework is to provide a greater autonomy than regular departments or directorates under the Ministry.<sup>5</sup> Basically, the word “autonomous” can be interpreted as independence or self-government. In the context of public administration, autonomous generally refers to the extent to which a government agency is capable of operating independently covering several aspects such as funding and budgeting, finance, human resources, and administrative aspects.<sup>6</sup> As an autonomous

2 Based on our observation, the first article that provides complete institutional analysis about tax authority in Indonesia was provided by Darussalam, B. Bawono Kristiaji, and Hiyashinta Klise, “Desain Kelembagaan Administrasi Perpajakan: Perlukah Ditjen Pajak Terpisah dari Kementerian Keuangan” *Inside Tax Edisi 16* (Juli-Agustus, 2013): 6 – 15, 62 - 65. Although, ideas and opinions about the prospect in Indonesia not new.

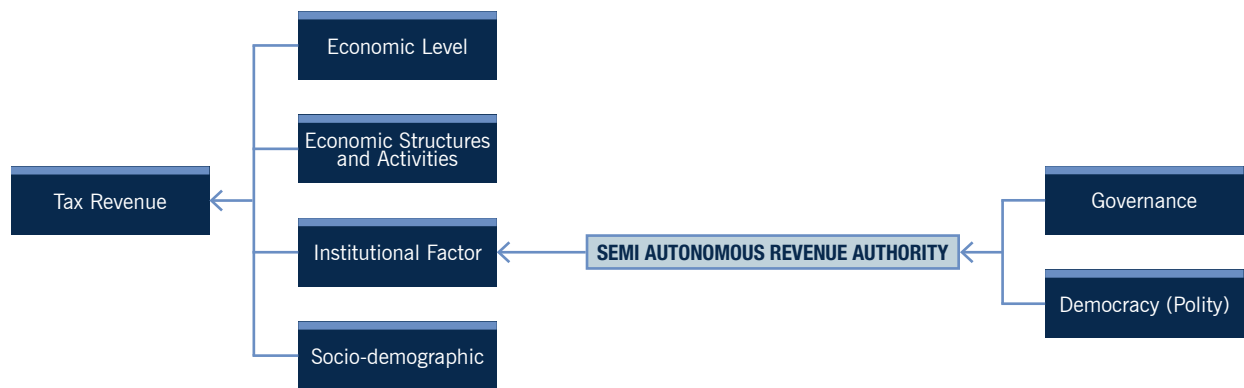
3 Previous literature named this term as Revenue Authority Model or Unified Semi-Autonomous Revenue Bodies.

4 See Rosario G. Manasan, “Tax Administration Reform: (Semi-) Autonomous Revenue Authority Anyone?” *Discussion Paper Series No. 2003-05*, Philippine Institute for Development Studies, 4.

5 As mentioned by William Crandall dan Maureen Kidd, “Revenue Administration: Autonomy in Tax Administration and the Revenue Authority,” *IMF Technical Notes and Manuals*, (2010). ... is simply a term to describe a governance regime for an organization engaged in revenue administration that provides for more autonomy than that afforded a normal directorate in an ministry.”

6 William Crandall, “Revenue Administration: Autonomy in Tax Administration and the Revenue Authority Model,” *IMF Technical Notes*

Figure 1 - Analytical Framework



and stand-alone institution, SARA is expected to be more focused in their duties, it can effectively manage its affairs, free from political interference in daily activities, and execute management strategies that can boast human resources (HR) independently (ranging from recruitment, retain, dismiss or to motivate HR).<sup>7</sup>

Myths and realities of the benefits of SARA basically can be seen through experiences in several countries. Most of the existing literatures attempt to formulate indicators appropriate to evaluate the performance of taxation before and after the implementation of SARA models. The indicators used in the evaluation generally still have weaknesses in measuring quantitatively the implications of the adoption of SARA, especially when it tries to measure the performance in the form of tax staff, culture, tax corruption, and so on. Therefore, it is not surprising that, rather than evaluate studies on the evaluation of the impact of SARA usually tends a survey on public perception.<sup>8</sup>

One of the previous studies that try to find relationship between tax revenues and other tax performances with the application of the SARA system is only study held at the sub-national government level in Peru.<sup>9</sup> This study showed that local governments that are adopting SARA models can better mobilize stable tax revenue.

In essence, it can be stated that the assessment of the implementation of SARA is still perplexing.<sup>10</sup>

and Manuals (Juni 2010): 2

7 William Crandall dan Maureen Kidd, "Revenue Administration: Autonomy in Tax Administration and the Revenue Authority," *IMF Technical Notes and Manuals*, (2010): 8

8 Survey conducted by IRAS in 2011 showed better tax services reaching 95%. In 1992, tax authority in Singapore changed its form from Inland Revenue Department (IRD) to Inland Revenue Authority of Singapore (IRAS). Please see Asian Development Bank, "Institutional Arrangements for Tax Administration in Asia and the Pacific," *ADB Governance Brief Issue 19*, (2012): 6

9 Please see Christian von Haldenwang, Armin von Scholler, dan Melody Garcia, "Tax Collection in Developing Countries – New Evidence on Semi-Autonomous Revenue Agencies (SARAs)", 31 July 2012.

10 Maureen Kidd dan William Crandall, "Revenue Authorities: Issues and Problems in Evaluating Their Success", *IMF Working Paper WP/06/240*

In some countries, SARA has been proved for improving tax performance; however, in other countries, adopting SARA does not impact on the productivity of tax revenue.<sup>11</sup> The ambiguous results clearly unable to convince the policy makers to immediately adopt institutional SARA for their tax authorities.

### 3. Research Methodology

In order to test the myths of impact of SARA model to tax performance and other relevant indicators, we utilize econometric approach. Please note that the criteria for SARA used in this paper refers to data that is originally published by the OECD<sup>12</sup>, ADB<sup>13</sup>, Mann<sup>14</sup>, and Taliercio<sup>15</sup>. Basically, SARA, according to those authors, refers to the authority and power possessed by the tax authorities rather than on the structural position of the agency (separately or is under the Ministry of Finance or Ministry of the other equivalent).

Our hypothesis is that with more autonomy in tax administration will positively impact the tax revenue performance as consequences of effective and efficient tax administration. Further, we also think that there are specific indicators which may drive the decision to be more or stagnant autonomy (see out analytical framework on Figure 1)

(2006).

11 For example, SARA model applications in African countries. Most of those countries are still facing non-compliance problem as well as steady tax ratio.

12 OECD, *OECD Tax Administration 2013: Comparative Information on OECD and Other Advanced and Emerging Economies* (Paris: OECD Publishing, 2013), 29.

13 Asian Development Bank, "Institutional Arrangements for Tax Administration in Asia and the Pacific", *the Governance Brief Issue 19* (2012).

14 Arthur Mann, "Are Semi-Autonomous Revenue Authorities the Answer to Tax Administration Problems in Developing Countries? A Practical Guide", *USAID Review for Fiscal Reform in Support Trade Liberalization Project* (2004).

15 Robert Taliercio Jr., "Designing Performance: The Semi-Autonomous Revenue Authority Model in Africa and Latin America" *World Bank Policy Research Working Paper 3423*, (2004)

### 3.1. Data

In this study, we will use panel data (cross-countries and over time). The panel data covers 49 countries, over the period of 2000-2011 (12 years). We choose the analysis period based on several considerations. At the end of the 1980s to the 1990s, many countries were changing the institutional model of the tax authority into SARA. As assumed in the post-transition from a model of non-SARA, SARA in some countries becomes stable so that more reliable for comparison. Therefore, it would be valid if the period of analysis begins in 2000, 49 countries that are chosen represent countries that apply SARA (28 countries) and non-SARA (21 countries), regional coverage (Asia, Pacific, Africa, America, and Europe), income level (low-middle income groups, medium-high, and income high) classification according to United Nations or the World Bank classifications.

The data used for this analysis is extracted from various reliable sources. For economic and social indicators, data was extracted from Government Finance Statistics (IMF) and the World Development Indicators (World Bank). The institutional variables extracted from OECD (2013), ADB (2012), Mann (2004), and Talierno (2004). For the data covering taxation conditions were taken from the World Bank Enterprise Survey, while the governance indicators were taken from the Worldwide Governance Indicators (World Bank). In addition, there are several other data taken from a variety of sources, e.g. tax morale and shadow economy.

### 3.2. Estimation Strategy

The analysis will be divided into 3 stages. The first phase provides some descriptive statistics of the characteristics of taxation in the non-SARA and SARA countries, for example: tax compliance, tax bribery indications, to the structure of tax revenues. We will testing the so-called myths concerning that tax conditions under SARA were much better.

The second stage, or the core of the research, will try to measure the magnitude of the impact of institutional tax authorities to tax revenues by multivariate model. It is true that, in the literature, SARA is not necessarily statistically linked to tax revenues or the ratio of tax revenue to Gross Domestic Product (GDP), but more on the efficiency and effectiveness of the agency in collecting taxes. From this perspective, aspects of efficiency and effectiveness will indirectly increase tax revenue. At this stage, the tax revenue is assumed to be influenced not only by factors of institutional models, but also from an economic level, economic structure, demographic and social factors. In the

second phase, we use a panel regression using pooled OLS, fixed effect and random effect. All three approaches are used to find the relationship between tax institutions and all ex-ante related factors.

For multivariate model where there are at least 2 variables, we initially conduct diagnostic test to describe data normality, check multicollinearity, heteroscedasticity, and autocorrelation test in order to select best linear unbiased estimators. We use Breusch-Pagan and White-Hetero tests to detect heteroscedasticity problems. Furthermore, we also did error plotting to identify autocorrelation. After conducting diagnostic test, we come up with model specification below:

$$\begin{aligned} &Tax\ ratio_{it} \\ &= \alpha_i + \beta_{1it}instmodel_{it} + \beta_{2it}independent\ variables_{it} + \epsilon_{it} \end{aligned}$$

We choose tax ratio as dependent variable; whereas, institutional model and other control variables as independent variable. We, then, apply multivariate analysis to find robust results, which are: pooled ordinary least square (pooled OLS) and linear panels consist of fixed and random effect.

Please note, regression with panel data contains possibility that the unobservable variable ( $u_{it}$ ) will be correlated with the explanatory variables (independent). If there is a conviction that unobservable variables are not correlated with the explanatory variables, it is better to use random effect (RE). Whereas, if there is a possibility that there is correlation among the two variables, it would be better to use fixed effect (FE).

FE estimator is unbiased under the assumption of strict exogeneity for explanatory variable. FE allows to have correlation between unobservable variable and independent variable in each time period. However, the FE approach has implications for the possibility of a variable that is not constant over time, such as gender or distance. Generally, choices over FE or RE will be decided through several methods, such as hausman test. Nevertheless, we will not do hausman test for this analysis.<sup>16</sup>

Lastly, we will also show factors that influence the decision to adopt the SARA system using binary choice model. In this model, the dependent variable is in the form of binary variables, which in this case is the institutional model of tax administration, i.e. SARA (1) and non-SARA (0). We utilize a panel logit

<sup>16</sup> For more detail explanations, please refer to Jeffrey M. Wooldridge, *Econometric Analysis of Cross Section and Panel Data*. (Massachusetts: The MIT Press, 2002).



and probit to estimate the model and include three independent variables: government effectiveness (*goveffec*), rule of law (*rulelaw*), and the level of democracy (*polity*). Model specification that will be tested as follows:

*Instmodel*<sub>(1 or 0)</sub>

$$= \alpha_i + \beta_{1it} \text{goveffec} + \gamma_{it} \text{rulelaw} + \delta_{it} \text{polity} + \varepsilon_{it}$$

The difference between the logit and probit lies in the error distribution. In the logit model, the error distribution is assumed to follow a standard logistic distribution; meanwhile, in the probit model, the error distribution is assumed to follow a normal distribution. Model selection is based more on personal judgment without concrete theoretical aspect.<sup>17</sup>

#### 4. Some Preliminary Findings

From the previous literature, SARA model is considered as superior and would have a positive impact on the performance of tax collection. In this section, we compare some of the taxation situation in countries that adopt SARA and non-SARA.

First, shadow economy. Shadow economy data used in this article is based on calculation by Schneider, Buehn and Montenegro (2010).<sup>18</sup> Definition used by them in estimating the amount of shadow economy is the production of goods and services across the legal market which deliberately hidden from public authorities for several reasons: (i) avoid payment of taxes or levies; (ii) avoid payment of social security contribution; (iii) avoid any over labor provisions or regulations; and (iv) efforts to avoid compliance with administrative procedures. Thus, research done by Schneider, Buehn and Montenegro (2010) is actually considered to give a more precise definition because it does not involve criminal or for any illegal activity.

In countries that adopt SARA, the percentage of shadow economy are fewer (compare to the size of the economy), which only amounted to 25.92%. Meanwhile, percentage of shadow economy in countries with non-SARA models are at 28.87%. The difference between these two groups is essentially not too drastic, but it is important to be observed (see Figure 2).

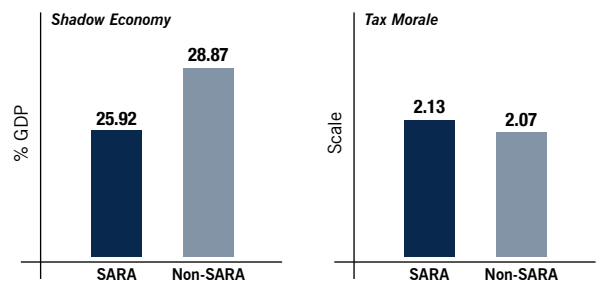
17 For a more detailed explanation of the binary choice model can be found in James H. Stock dan Mark W. Watson. *Introduction to Econometrics, 2nd edition*. (New York: Addison Wesley, 2007).

18 See Friedrich Schneider, Andreas Buehn, dan Claudio E. Montenegro, "Shadow Economies All Over the World: New Estimates for 162 Countries from 1999 to 2007", *World Bank Policy Research Working Paper* No 5356 (2010).

Next, tax morale. Tax morale is a variable that is trying to gauge how much the willingness of a person to pay tax liability that are influenced by moral values ethics, and culture. Data on tax morale is taken from the World Values Survey (WVS).<sup>19</sup> Data is a scale of 1 (cheating taxes altogether unacceptable) to 10 (very acceptable tax fraud). The data from the WVS also used by many other empirical studies<sup>20</sup>.

In the context of tax morale, there is no significant difference between countries that adopt SARA and non-SARA. Taxpayers in the two groups of countries, tend to have the same views on justification in doing tax fraud (see Figure 2). In other words, the institutional model of the tax authority has nothing to do with tax morale.

Figure 2 - Shadow Economy and Tax Morale in SARA and Non-SARA Countries (2000-2011)



Source: tax morale data is from World Values Survey, various years. While, shadow economy data are extracted from Schneider, Buehn, dan Montenegro (2012).

The next difference lies in the structure of tax revenue in the two groups of countries. From the Government Finance Statistics data released by the IMF, the tax structures are grouped into three general categories, namely: (i) tax on goods and services (refer to VAT, luxury sales, and so on); (ii) income tax; and (iii) taxes on international trade transactions.<sup>21</sup>

We found that tax revenue in the non-SARA countries has a greater dependence on the type of indirect tax, shown by the ratio of direct to indirect tax revenue.<sup>22</sup> This is indicated by the relatively

19 Data only available for 2000, 2003, 2008, and 2010. The question rose for the survey: "If there is a chance, would you think that doing tax evasion is permissible or not?"

20 Benno Torgler, "Tax Morale and Compliance: Review of Evidence and Case Studies for Europe", *World Bank Policy Research Working Paper* No. 5922 (2011); Christian Daude, Hamlet Gutierrez, dan Angel Melguizo, "What Drives Tax Morale?", *OECD Development Centre Working Papers* No. 315 (2012); and Recep Tekeli, "The Determinants of Tax Morale: the Effects of Cultural Differences and Politics", *PRI Discussion Paper Series* No. 11A-10, (2011).

21 There is another type of tax, known as social contribution tax.

22 According to Atkinson (1977), direct tax is type of tax that attached to individual characteristics of taxpayers; meanwhile, indirect tax is considered as the type of taxes that bring buyers and sellers. See A. B. Atkinson, "Optimal Taxation and the Direct versus Indirect Tax Controversy", *Canadian Journal of Economics*, Vol. 10, No. 4, (1977): 590 – 606.

lower contribution of income taxes (see Table 1). Moreover, this condition can be interpreted as limited institutional capacity in collecting taxes. Tax agencies tend to focus on type of tax that is easier to apply (i.e. sales tax and international trade).

**Table 1 - Tax Revenue Structure in SARA and Non-SARA Countries (Yearly Average 2000-2011)**

Contribution (% to Tax Revenue)	SARA	Non-SARA	Number of Observation
Tax on goods and services	30.47	31.03	521
Tax on income, profit, and capital gains	31.15	23.91	529
Tax on international trades	5.07	5.80	428
Ratio of direct to indirect taxes	0.88	0.65	428

Source: Author's estimation using data from Government Finance Statistics (IMF), various years.

**Table 2 - Tax Condition in SARA and non-SARA (2000-2011)**

Indicator	SARA	Non-SARA
Yearly average number of company meet with tax agent <sup>a</sup>	2,7	1,7
Percentage of company that is expected to provide gifts to tax officials <sup>b</sup>	19,7	28,1
Percentage of company that is not reported whole of its sales/income in the context of tax <sup>c</sup>	43,8	44,0
Number of tax payments <sup>a</sup>	18,4	29,7
Number of time needed to prepare and pay tax <sup>c</sup>	367,5	289,2

Notes: <sup>a</sup>) numbers; <sup>b</sup>) % of enterprises; <sup>c</sup>) in hours.

Source: Author's estimation using data from World Bank, Enterprise Survey, various years.

In addition, it is also important to review tax situation between these two groups. Data from the survey done by the World Bank on the business climate in various countries, identified 5 indicators associated with the tax situation (see Table 2). First, meeting intensity between taxpayer with tax officials, which is taken from the average number of the company meet tax officers annually. Surprisingly, countries that adopt SARA actually has higher intensity of meetings with tax officials than that of non-SARA countries. According to the World Bank, frequency to meet tax official will open possibility to do tax bribery. However, we thought that in SARA countries, the power to detection or tax audit are more, therefore firms will have to spent more times with meeting with tax official. This also shown by the time required to prepare

and pay taxes, where the taxpayer in the country adopting the model of SARA apparently spent more time (367.5 hours) than in countries that adopt a model of non-SARA (289.2 hours). Both indicators show that the SARA model is not always associated with effectiveness and efficiency of the tax system. The high intensity of meetings with tax officials as well as the amount of time spent on tax affairs clearly can also increase the cost of compliance. However, this can be understood as the stronger institutional capacity under SARA models that require meetings and more detailed tax payments.

On the other hand, the existence of tax bribery is more apparent in the countries that adopted the model of a non-SARA. The evidence shown by percentage of the company that is expected to provide 'gifts' when meeting with tax officials. In countries that adopt the model of non-SARA, the number reached 28.1%, much larger compared to what happens in countries that adopted the SARA model of which only 19.7%. This may imply that the tax administration system under SARA models are much more transparent. The prevalency of the SARA model can also be seen from indications of simplification and ease of paying taxes.

Further, when we move to tax compliance issue, apparently, tax compliance is at the same level for both models. Based on percentage of companies that do not report all sales or income for tax purposes data, there is very little difference between the two groups (43.8 % and 44 %). It can be concluded that, institutional difference will not affect tax compliance mindset.

## 5. SARA and Tax Revenue

In order to identify the effect of the performance of SARA to tax system, the question often comes down to the tax revenue collection. As have been mentioned above, we utilize three panel econometric approaches (pooled OLS, fixed effect and random effect).

In addition, we examine the determinants of tax revenue involving two models which have different independent variables. The dependent variable in these models is the tax ratio. Further, the independent variables in model 1 are: a dummy variable of institutional tax authorities (SARA=1 and non-SARA=0), the level of consumption (% of GDP), the value-added of industrial sector (% of GDP), economic openness (% of total exports and imports to GDP), and the ratio of the number of non-productive age population to total population of productive age (scale 0 to 1). In model 2, independent variables tested are: binary variable of institutional tax authorities (SARA=1 and non-

SARA=0), the amount of net FDI inflows (% of GDP), value-added of industrial sector (% of GDP), population growth (%). Variable SARA is tested in two different models, to find robustness of the variable.

The results of the second stage of the analysis, can be seen in Table 3, 4, and 5. Institutional SARA model gives significant results at the 99 % level in both models. Coefficient sign indicates a positive result (+) with a range between 3.0 to 5.1. That is, in a SARA type country, the tax ratio will increase by 3-5 % of GDP SARA model positively affects tax revenue because of its ability to adapt to rapid changes in the economic landscape, forming an effective and efficient tax authorities, as well as the openness factor, and governance better.

In addition, several other control variables such as: the level of consumption, the contribution of the industrial sector, economic openness, and population age dependency ratio of non-productive to productive population also has significant impact and gets the expected sign. Rate of consumption, contribution of industrial sector, as well as economic openness significantly have

positive effect on tax revenue because those reflect the rising level of a country's economy. Especially for the contribution of the industrial sector, it can be understood tax revenue will increase as a movement towards a modern economy.

Of the four independent variables included in the model only age dependency ratio is negatively affecting the tax ratio. This can be understood as follows. An increase of the ratio of numbers of non-productive age population (aged 0-15 years and  $\geq 65$  years) to the population of reproductive age (age 15-65 years) leads to a decrease in the tax revenues. The burden of non-productive age population to the population of productive age will actually inhibit the rate of increase in economic activity (both consumption and investment).

Number of observations used for the analysis is 519 for model 1 and 515 in model 2.  $R^2$  value for model 1 (0.23) is higher than the model 2 (0.15). Although model 1 provides better results, this model can only explain 22-23 % variations of all observations. Furthermore, in a panel data regression with a low  $R^2$  can be considered not problematic.

**Table 3 - Pooled OLS**

Indicator	Model 1		Model 2	
	Coefficient	T-Stat	Coefficient	T-Stat
Institution (SARA or Non-SARA)	3.425	3.05***	3.002	2.89***
Consumption (% PDB)	0.062	2.24**		
FDI Inflows			-0.002	-0.47
Value added of industrial sector	0.220	6.07***	0.23	7.50***
Openness (international trade/GDP)	0.014	2.63***		
Population Growth			-0.103	-0.50
Age dependency ratio	-0.145	-5.34***		
Number of observation	519		515	
$R^2$	0.225		0.150	

Dependent variable is tax revenue (% PDB). Symbol\*\*\*, \*\*, and \* indicate that coefficient of independent variable is statistically significant at 99, 95, and 90 %.

**Table 4 - Fixed Effect**

Indicator	Model 1		Model 2	
	Coefficient	T-Stat	Coefficient	T-Stat
Institution (SARA or Non-SARA)	5.104	3.43***	4.407	3.16***
Consumption (% PDB)	0.064	2.71***		
FDI Inflows			-0.002	-0.58
Value added of industrial sector	0.245	7.15***	0.258	8.19***
Openness (international trade/GDP)	0.015	2.67***		
Population Growth			-0.078	-0.45
Age dependency ratio	-0.138	-6.00***		
Number of observation	519		515	
$R^2$	0.227		0.151	

Dependent variable is tax revenue (% PDB). Symbol\*\*\*, \*\*, and \* indicate that coefficient of independent variable is statistically significant at 99, 95, and 90 %.



Table 5 - Random Effect

Indicator	Model 1		Model 2	
	Coefficient	Z-Stat	Coefficient	Z-Stat
Institution (SARA or Non-SARA)	3.425	2.92***	3.002	2.62***
Consumption (% PDB)	0.069	2.65***		
FDI Inflows			-0.002	-0.42
Value added of industrial sector	0.219	6.45***	0.23	7.36***
Openness (international trade/GDP)	0.014	2.62***		
Population Growth			-0.103	-0.59
Age dependency ratio	-0.145	-6.36***		
Number of observation	519		515	
R <sup>2</sup>	0.225		0.150	

Dependent variable is tax revenue (% PDB). Symbol\*\*\*, \*\*, and \* indicate that coefficient of independent variable is statistically significant at 99, 95, and 90 %.

Table 6 - Results from Logit and Probit Model

Independent Variable	Logit		Probit	
	Coefficient	Z-Stat	Coefficient	Z-Stat
Government effectiveness	0.405	1.75*	0.111	1.67*
Rule of law	-2.951	-1.35	-0.075	-1.27
Democracy level	0.527	1.71*	0.102	0.94
Number of Observations	587		587	
Pseudo R2	0.015		0.136	

Dependent variable is tax revenue (% PDB). Symbol\*\*\*, \*\*, and \* indicate that coefficient of independent variable is statistically significant at 99, 95, and 90 %.

In essence, it concludes that institutional model of tax authorities plays an important role to improve tax revenue. A country which adopts SARA models will have the potential for increasing tax ratio by 3-5%. These findings provide evidence that SARA model does impact tax revenue as a result of more effective and efficient tax authorities.

## 6. Decision to Adopt SARA

A question, then raises: why not all countries adopt the SARA model when it is thought to be more superior? There is no exact answer theoretically and empirically. Therefore, we tried to do a binary choice regression models to reinforce what criteria that can provide better answer for a country's decision to adopt SARA.<sup>23</sup>

The adoption of SARA is not solely influenced by economic considerations but also take into account political and institutional factors.<sup>24</sup> Or in other words, countries only choose SARA if there are conducive and supporting political and economic environments. To include variables related to political and institutional structure, we

use the governance indicators which are taken from the Worldwide Governance Indicators, World Bank, namely: government effectiveness and rule of law. In addition, we use political indicator that shows the level of democracy in a country, which is taken from the Polity IV database.

From the regression analysis using panel logit and probit models, we find that government effectiveness factors have a significant impact to the SARA at the level of 90 % (see Table 6). Any increase in the value of government effectiveness by 1 point will drive the decision to adopt SARA possibilities between 0.11 to 0.40 points, considering other factors constant. In other words, SARA will tend to be adopted in countries that have better government effectiveness. Government effectiveness variable indicates captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.<sup>25</sup> In addition, this variable also indicates the quality of policy making and implementation, as well as the government's commitment to policies

<sup>23</sup> Binary choice regression with institutional model of tax authority (SARA=1, non-SARA=0) as dependent variable.

<sup>24</sup> Maureen Kidd dan William Crandall, "Revenue Authorities: Issues and Problems in Evaluating Their Success", *IMF Working Paper WP/06/240*, 2006.

<sup>25</sup> Details on the description on governance indicator could be access: <http://info.worldbank.org/governance/wgi/index.aspx?fileName=wgidataset.xlsx#doc>.

taken<sup>26</sup>.

On the other hand, what about the level of democracy? Variable of level of democracy is measured based on the value system of governance spans from very democratic to very autocratic. This indicator is taken from the variable polity released by Polity IV which is a ranking values ranged from -10 (highly autocratic) to 10 (very democratic).<sup>27</sup> Data polity is regarded as the best proxy of the political situation, as calculated from the difference between the democracy index ('democ') and autocracy ('autoc'). Index 'democ' in the Polity IV is basically measure democracy that consists of three elements: (i) the presence of institutions and procedures through which citizens can express their choice over policies and their leader's performance; (ii) a system that limits the power of the executive; (iii) guarantee of civil liberties in everyday life and political participation.

While the index 'autoc' measured from institutional care to a less autocratic political freedom and political competition system. Each of these indices ('democ' and 'autoc') has a value of 0 to 10. So the difference between the two will result in values that spanned from -10 to +10. Unfortunately, the results of the regression are performed, the level of democracy is only significant in the logit model. Variable rule of law<sup>28</sup>, the law enforcement variables do not give a significant result. That is, both countries with rule of law, low and high were equally likely to adopt SARA.

## 7. Conclusion: Demistifying SARA

There are very limited empirical researches on the implications of the SARA model. This condition creates little room for policy makers to determine their stance. Or in other words, there are no clear explanations that is able to convince the policy makers to immediately adopt institutional SARA for their tax authorities. Policy makers are clearly still weighing this decision, especially as proof of the success of SARA is also offset by the unsuccessful cases.

From our analysis, it appears that the SARA model is identical to relatively low percentage of shadow economy, lower tax bribe, as well as its

ability to further explore the potential of direct taxes from the taxpayer. However, the model of SARA is also increasingly related to a more complex taxation system, which is shown by an increasing number and intensity of meeting between taxpayers with tax officials. Interestingly, both SARA and non-SARA model still face the same problem of non-compliance. This is indicated by the number of tax morale and the percentage of firms that hide the sales data in order to reduce tax payments.

Furthermore, this study proved that the institution is a significant factor in affecting tax revenues. These results are consistent and robust in various econometric approaches. A country that adopts the model of SARA have a better ability to mobilize revenue. On the other hand, aspects of economic level, economic structure, and demographics have also important roles. The higher the level of consumption, more modern economic structure, as well as the economy openness will impact positively on the tax revenue. On the other hand, the higher the dependency ratio of the number of non-productive age population to total population of reproductive age (age dependency ratio) will reduce tax revenue in a country.

Finally, the decision to adopt SARA is clearly not solely influenced by the internal administration calculation, but also should include broader political-economic considerations. If a country has a system of government that is effective in the sense that, every policy is decided and executed with consistency and efficiency, then there is a tendency to adopt a model of SARA. Further, level of democracy also has an important effect. In a democratic political system, the decision of adopting SARA is not something that is impossible. This implies that democracy is more compromised form of fiscal exchange relationship between society and the state so that tax affairs should be given the place that is more autonomous and free of political interference.

<sup>26</sup> Worldwide Governance Indicators (WGI) released by World Bank and developed by Kaufmman, Kraay, dan Mastruzzi.

<sup>27</sup> Extracted from database Polity IV which developed by Political Instability Task Force, Societal-Systems Research Inc, and Center for Systemic Peace. Available for all countries from 2002 – 2011.

<sup>28</sup> Rule of law variable describes the perception about obedience against rules and regulation apply in the community, especially about law on property ownership, quality of police enforcement and court, law enforcement quality, police and court quality. See Worldwide Governance Indicators (WGI) released by World Bank and developed by Kaufmman, Kraay, and Mastruzzi.

## Appendices

### Statistical Summary: Tax Ratio in SARA and Non-SARA Countries

Categories	Mean	Quartile 1	Median	Quartile 3	Obs.
Non-SARA Countries	17.34	11.49	16.03	21.07	245
SARA Countries	17.21	12.56	16.50	21.98	324
Total	17.26	12.01	16.17	21.63	569

### Statistical Summary: Variable used in Multivariate Approach

Variables	Source	Obs.	Mean	Std. Dev.	Min.	Max.
Tax ratio	Government Finance Statistics (IMF)	569	17.26	6.60	6.82	54.14
SARA	OECD, ADB, and government websites	588	0.57	0.50	0.00	1.00
Population growth	World Development Indicators (WB)	588	1.01	0.82	-2.85	5.32
Age dependency ratio	World Development Indicators (WB)	588	53.17	10.62	35.55	89.00
Industry, value added	World Development Indicators (WB)	538	29.68	7.15	12.97	48.53
Final consumption	World Development Indicators (WB)	587	76.54	9.86	46.77	102.71
FDI, inflow	World Development Indicators (WB)	584	4.31	12.28	-161.24	172.72
Openness (trade, % of GDP)	World Development Indicators (WB)	586	89.50	66.96	20.26	460.47

### Statistical Summary: Variable used in Binary Approach

Variables	Source	Obs.	Mean	Std. Dev.	Min.	Max.
SARA	OECD, ADB, and government websites	588	0.57	0.50	0	1
Level of democracy (polity index)	Polity IV database	587	7.45	4.15	-7	10
Government effectiveness	Worldwide Governance Indicators (WB)	588	68.44	25.15	9.76	100
Rule of law	Worldwide Governance Indicators (WB)	588	63.55	28.53	9.09	100

**Countries Sample and Tax Administration Model**

No	Country	Tax Administration Model
1	Australia	SARA
2	Austria	Non-SARA
3	Bangladesh	Non-SARA
4	Belgium	Non-SARA
5	Bolivia	SARA
6	Brazil	SARA
7	Cambodia	Non-SARA
8	Canada	SARA
9	Chile	SARA
10	China	SARA
11	Colombia	SARA
12	Croatia	Non-SARA
13	Cyprus	Non-SARA
14	Estonia	Non-SARA
15	Finland	SARA
16	France	Non-SARA
17	Germany	Non-SARA
18	Ghana	SARA
19	Greece	Non-SARA
20	India	SARA
21	Indonesia	Non-SARA
22	Ireland	SARA
23	Israel	Non-SARA
24	Italy	SARA
25	Japan	SARA

No	Country	Tax Administration Model
26	Kenya	SARA
27	Korea, Rep.	Non-SARA
28	Lao PDR	Non-SARA
29	Luxembourg	SARA
30	Malaysia	SARA
31	Mexico	Non-SARA
32	Netherlands	SARA
33	New Zealand	Non-SARA
34	Paraguay	SARA
35	Peru	SARA
36	Philippines	Non-SARA
37	Poland	Non-SARA
38	Portugal	SARA
39	Russian Federation	SARA
40	Singapore	SARA
41	Slovenia	SARA
42	South Africa	SARA
43	Spain	SARA
44	Switzerland	Non-SARA
45	Thailand	Non-SARA
46	Turkey	SARA
47	Ukraine	Non-SARA
48	United Kingdom	SARA
49	United States	SARA

Source: Government Finance Statistics (IMF); World Development Indicators (WB); OECD Tax Administration Comparative, 2012



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