

Measuring Forest-Based Revenue Capacity and Revenue Effort of the State Governments in Peninsular Malaysia: A Representative Revenue System (RRS) Approach

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In 2004, the Auditor General Office stated that seven out of 13 states in Malaysia are facing dire financial difficulties to the extent of being qualified as at the verge of bankruptcy. Several quarters have proposed that state governments be given more tax responsibilities in order to meet its increasing expenditure commitments. However, some authors have argued that the Malaysian state governments have not been using their tax base efficiently and the devolution of more tax responsibilities towards them will only result in more inefficiency. It is thus important to gauge the fiscal effort exerted by the state governments before any attempts being made towards increasing tax responsibilities of the state governments. The main objective of this paper is to measure the effort and capacity of the state governments in Peninsular Malaysia for their forest-based revenue. In order to achieve this, the Representative Revenue System (RRS) approach will be used. Our findings show that state governments differ significantly in term of their forest-based revenue capacity as well as forest-based revenue effort. Our results also show that level of development does not explain the differences in term of revenue effort. Our results also point to the conclusion that fiscal situation as well as level of tax arrears of a state government do not correlate with the level of revenue effort.

JEL Codes: H11, H72, H77

1. Introduction

Of late some of the state governments in Malaysia have been identified as facing dire financial difficulty to the extent of being qualified as at the verge of bankruptcy. The Auditor General Report 2004 revealed that seven out of 13 states in Malaysia were not financially viable as their resources could hardly match their expenditures. The report stated that these states have accumulated over the years up to RM 2.17 billion of arrears in their debts repayments to the federal government. The state with highest amount of arrears is Johor with RM512.24 millions, followed by Kedah (RM491.83 millions); Pahang (RM312.29 millions); Kelantan (RM153.62 millions); Sabah (RM49.15 millions); Perlis (RM48.18 millions); Terengganu (RM190.77 millions) and Negeri Sembilan (RM79.66 millions). Moreover, it was also reported that these states were facing deficit that ranges from RM94.88 millions to RM760.79 millions. However, it should be noted that the financial problem faced by the state governments will not be solved by simply devolving more revenues to the state governments as some authors have argued that the latter have not used their tax bases efficiently (Umi Kalsom, 1990; Ahmad Zafarullah, 2008).

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It is thus very important to measure the fiscal effort exerted by the state governments before any attempts towards devolving more tax responsibilities to the latter are made. It is thus the aim of this paper to measure the effort exerted by state government in Malaysia using the Representative Revenue System Approach (RRS). This measure can then be used as a basis for reforming the intergovernmental tax system of the country.

The paper is organized as follows. Section two will review both the theoretical and empirical literature on fiscal capacity. The methodology will be discussed in section three. In section four, we will present the preliminary findings of our research. Finally section five concludes.

2. Literature Review

The concept of fiscal capacity was first used in relation to the allocation of federal grants to state and local governments. Before 1962, the measure most used in the United States to represent fiscal capacity was per capita personal income. Controversy existed over this measure's validity as an indicator of revenue-raising ability. Two objections were raised: personal income fails to reflect the diversity of existing state tax and revenue sources, and it fails to take into account the ability of states to "export" taxes. In 1962, two economists (Selma Mushkin and Alice Rivlin) at the U.S. Advisory Commission on Intergovernmental Relations (ACIR) published a report detailing the representative tax system (RTS) as an improved measure of fiscal capacity.

In 1986, the ACIR introduced an expansion of the RTS—the representative revenue system (RRS). The RRS included nontax revenues such as rents and royalties, user charges, and lottery revenues. The terminology changed accordingly, and the fiscal capacity measure became a state's "revenue capacity" divided by its population. Analysts began to question the assumption that the cost of service provision could be proxied by a state's population without taking into account differences in income level or demographics. Accordingly, in 1990 the ACIR and Robert Rafuse developed the representative expenditure system (RES) to model more accurately the cost of providing public services in each state (Rafuse 1990a, 1990b.).

In all, ACIR produced 12 reports from 1962 to 1993. After ACIR was disbanded, Robert Tannenwald at the Boston Federal Reserve took over the project and published reports approximately every two years in the remainder of the 1990s (Tannenwald 1998, 1999, 2002, 2004). The latest report by Tannenwald was published in 2006 in which the author compares states in the United States in terms of their relative fiscal capacity, fiscal need, fiscal comfort, and tax effort in state fiscal year 1999 (Tannenwald and Turner, 2006). Compared with FY1997, the authors find less interstate disparity in fiscal capacity, fiscal need, and fiscal comfort. However, such disparity, though diminished, remains substantial. The New England and MidAtlantic regions remain the most "fiscally comfortable," while the East South Central and West South Central regions are still the most "fiscally stressed." According to the authors, the persistence of fiscal disparity suggests that perhaps Congress should increase the degree of fiscally equalizing intergovernmental aid. The argument in favor of such a policy grounded on equity and the merit good concept still holds. Other things being equal, households in similar economic circumstances should bear similar tax burdens in order to obtain a socially desirable minimum level

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of state and local public services. Moreover, modifying formulas that allocate federal aid more in favor of fiscally stressed states could ameliorate some of the disadvantages they sometimes face in economic competition for workers and employers.

Yilmaz et al. (2002) measure the fiscal disparities across the 50 states in the US in fiscal year 2002 by looking at each state's revenue capacity, expenditure need, and overall level of fiscal capacity. The authors find that Connecticut ranks first with the highest representative revenue capacity of \$6,272 per person. In comparison, Mississippi, which ranks last, would raise only \$3,352 with the same revenue system in place. Alaska displays the highest representative revenue effort of all states, collecting \$8,537 compared with its capacity of \$5,496; and New York had the second highest, collecting \$6,376 compared with its capacity of \$5,240. On spending, Mississippi has the highest expenditure need at \$6,800 per person, while Hawaii has the lowest at \$5,216. Alaska has by far the highest expenditure effort, spending \$13,175 per person, compared with a need of \$5,995; New York has the second highest expenditure effort, spending \$8,414 compared with a need of \$6,052. At the same time, differences in state revenue capacity and expenditure need might justify federal intervention in terms of equalizing grants. Indeed, the federal government might view supplementing revenues for states with low fiscal capacity as part of its redistributive role, as a widely embraced goal of many nations possessing a federalist form of government is to narrow interstate or inter-provincial fiscal disparity. The authors also found little relation between the amount of federal aid received by states and their fiscal capacity—federal money is not primarily distributed to offset differences in the ability to raise revenues or provide services.

RRS approach has also been used to measure tax capacity of local and county governments. Hy et al. (1993) examined property taxes and "combined lesser discretionary revenues"(CLDR) which include a variety of fees and other charges. The results show that Arkansas counties (and the state as a whole) generally underutilize tax capacity. Slightly more than 75 percent of the counties ranked below average in capacity with 45 percent of the counties having low capacity and low effort. More importantly, 60 percent of the counties had below average effort. Counties with high property tax capacity and effort were generally those with large residential populations. In the case of CLDR, 18 percent of Arkansas counties had high capacity and low effort. At the same time, 29 percent had low capacity low effort. Only 6 percent of the counties had both high capacity and high effort. Another 45 percent had a low capacity but exerted high effort. A variety of factors limits greater effort to raise additional revenues. First, the size of the tax bases is small compared to counties in most other states. Unfortunately, limited revenue capacities cannot be rectified in a short period of time. Continued economic development and growth, nevertheless, can improve these capacities. The second limiting factor is the reluctance of counties to increase their revenue enhancing efforts. More recently, Chervin (2007) applied the RRS approach to measure fiscal capacity of the counties in Tennessee. Calculated tax effort ranged from a low of 56% in DeKalb County to a high of 133% in Morgan County. Morgan County's high calculated tax effort index (133%) is not remarkable, given Morgan County's distinction for having both the lowest per capita property assessments and the smallest per capita local option sales tax base in the state. However, the same logic doesn't apply to Giles County, the second highest ranking county in tax effort. Giles County has both an average level of taxable assessments per student and local option sales tax base per student.

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Using the same method, Sobarzo (2004) evaluated tax effort and tax potential of the Mexican state governments. The analysis of the results RTS reveals that with some exceptions, both the best and the worst tax performances occur in relatively rich states. The difference, however, is that the best positioned states are those whose capital cities are of medium size, as is the case of Aguascalientes, Colima, Veracruz, Baja California Sur, etc. The worst tax performances occur in states characterized by large capital cities, as is the case of Mexico City, Jalisco, Estado de Mexico, Puebla and, to a lesser degree, Nuevo Leon. The exception in this last group seems to be Oaxaca, which is one of the relatively poorest states in Mexico. According to the author, these findings suggest that large cities concentrate not only economic activity but also the typical problems of large cities, such as large informal sectors, tax evasion, tax elusion, and other illegal activities. Sobarzo (2004) also found that if the analysis is modified and adjusted by population, state tax efforts are conditioned by their heterogeneity. The point is particularly relevant in a country like Mexico which is characterized by accentuated regional disparities. In particular, it seems that while efficiency is a relevant criterion, it is certainly not the only criteria to be considered. Additional elements have to be taken into account when designing a strategy for tax decentralization, such as regional socio-economic disparities and unequal administrative capacities, to mention a few. Furthermore, a comparison of state and federal taxes shows that state taxes are close to the national average, whereas the performance of federal taxes is significantly below the national average. This result suggests that states are doing a "better" job of taxation than the federal government does in the states' territory. However, it could also imply that the federal government is responsible for the more complex taxes. This study also found that relative state tax performance is in principle determined by the number of taxes they impose. However, some states showed relatively good tax performance and, at the same time, levied relatively few taxes. A few states did not levy payroll tax, even though this is by far the most important state tax in terms of revenue. However, states may be competing for investment. This could suggest the existence of healthy tax competition, but this hypothesis needs empirical support. Finally, the quantitative results presented here are a valuable input for redesigning a scheme of intergovernmental fiscal relations. Future reforms could transfer more taxation responsibilities to state governments or they could simply change the formula for the distribution of unconditional transfers (*participaciones*). In any case, it will be important to keep in mind that the regional heterogeneity of the country will surely demand a strong federal government and therefore impose limits on how far a tax decentralization attempt can go, so as not to weaken social policy.

3. The Methodology and Model

3.1. Methodology

In order to estimate the fiscal capacity and the fiscal effort of the state governments in Peninsular Malaysia, we will use the Representative Revenue System (RRS) methodology which was originally developed by the U.S. Advisory Commission on Intergovernmental Relations (ACIR).

RRS is a very common instrument for analyzing tax capacity in different countries. This approach is conceptually simple and, unlike an econometric approach, RRS give more insight into the particular contribution of specific taxes to the relative accumulated tax effort. The cost of that, however, is that RRS is very demanding in

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terms of data requirements. Furthermore, if subnational tax bases were defined in a similar way, the use of RTS will be relatively easy and straightforward. However, if subnational governments define their tax bases differently, the definition and measurement of a common representative tax base becomes difficult.

RRS assesses the relative ability of a state to raise revenue from a particular tax by levying a “standard” tax rate on a “standard” tax base. This tax rate is computed in the following manner: First, it is assumed that the nation as a whole imposes the tax on a uniformly defined base. This base equals the nationwide value of all economic stocks or flows that would be taxed if the base were defined comprehensively. If defined in this manner, the tax base would be devoid (to the extent feasible) of exemptions, exclusions, deductions, and other tax preferences that favor certain forms of economic activity over others or that provide tax relief to taxpayers in certain circumstances. This broadly defined *potential* tax base is then divided into actual revenues collected from the tax in question from all state and local governments nationwide. The resulting ratio is the tax’s standard rate. Repeating this exercise for every tax in every state and indexing each state’s result to the national average creates an index of fiscal capacity (set equal to 100 for the national average). This measure reveals the ability of each state to raise tax revenue relative to the national average. Using the fiscal capacity index, we will be able to calculate the fiscal effort index. Fiscal effort is measured by looking at the amount of taxes/revenues collected based on the amount that should have been collected (fiscal capacity).

ACIR (1993) summarized the step-by-step approach of calculating tax capacity and tax effort as follows:-

Step 1. Collect data on revenues received by each state (and its localities) for each of the bases in the representative revenue system.

Step 2. Construct the *standard base* for revenue source in each state, including all sources that could be potentially taxed (or incur charges/fees).

Step 3. Compute the *representative rate* for each revenue base, by dividing total nationwide collections by the national total base for that revenue item. This creates the *representative revenue system*.

Step 4. Apply each *representative rate* to the corresponding revenue item in every state. This determines the hypothetical revenue capacity if every state used the representative system as its revenue-raising system.

Step 5. Add together the hypothetical revenue yields from each revenue source in each state to obtain the total *revenue capacity* in each state.

Step 6. Divide total revenue capacity in each state by its population to determine per capita capacity.

Step 7. Divide each state’s per capita capacity by the national capacity collections and multiply by 100. The result is the revenue capacity index, with an index number of 100 corresponding to the national average.

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Step 8. Divide each state's actual revenue collections by the state's population to get collections per capita.

Step 9. To calculate *revenue effort*, divide each state's per capita collections by its per capita capacity and multiply by 100.

3.2. Data Description

The data on state governments' revenues are obtained from the Yearly Financial Statement Reports of the state governments. These reports are published by the State Governments' Financial Office. As for the tax base for forest-based taxes and revenues, we will use the size of forested area.

4. The Findings

4.1. Revenue Capacity and Effort

Table 1 displays the land tax capacity and land tax effort indices by state governments in 2008. The average revenue capacity per capita for Peninsular Malaysia is RM17.20. As can be seen from the table, several states have above average land tax capacity. The highest is Pahang with a revenue capacity of RM82.22 and a land tax capacity index of 478. This is followed by Terengganu and Kelantan with an index of 209 and 190 respectively. The state with the lowest revenue capacity is Penang with RM0.30 and an index of 1.77.

In terms of land tax effort, Perlis displays the highest effort collecting RM9.56 compared with its capacity of RM2.79 which corresponds to an revenue effort index of 342. This is followed by Kelantan and Kedah with an index of 211 and 160 respectively. The state with the lowest effort is Terengganu collecting only RM21.94 compared to a capacity of RM35.98. Other states who recorded low level of revenue effort index are Perak and Pahang with an index of 64 and 72.

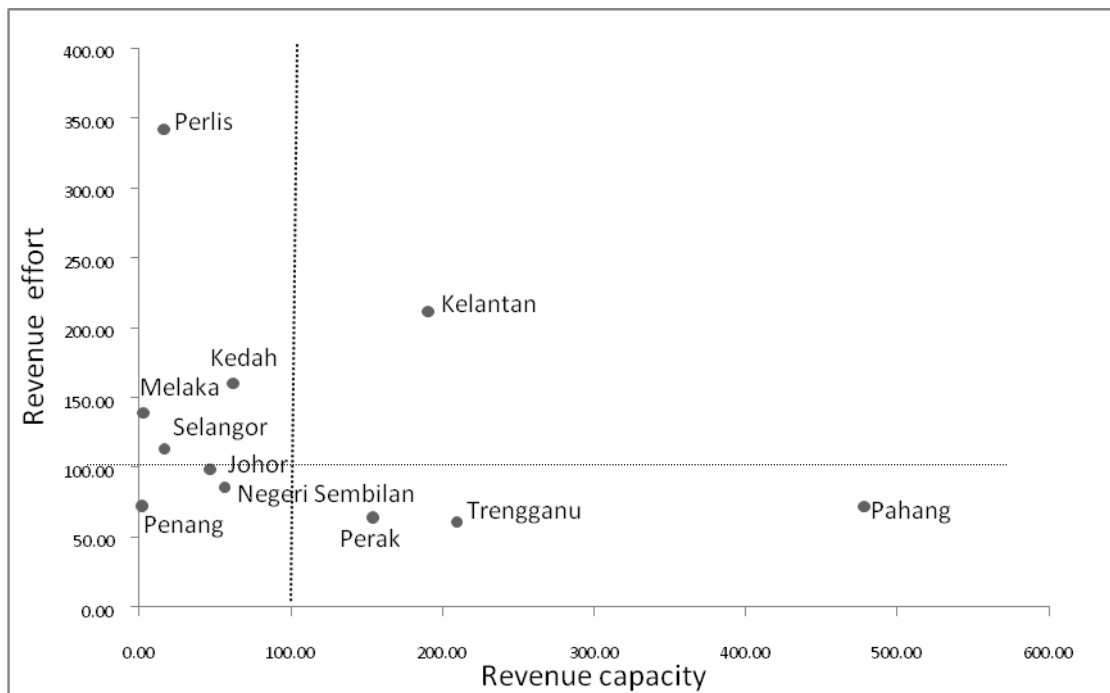
Table 1: Revenue Capacity Index and Revenue Effort Index, 2008.

State	Revenue capacity per cap	Revenue capacity index	Rank	Revenue collection per capita	Revenue effort index	Rank
Johor	8.02	46.65	7	7.91	98.58	6
Kedah	10.61	61.69	5	17.02	160.39	3
Kelantan	32.73	190.31	3	69.22	211.48	2
Melaka	0.43	2.47	10	0.59	138.71	4
N. Sembilan	9.65	56.11	6	8.27	85.70	7
Pahang	82.22	478.06	1	59.22	72.03	9
Perak	26.49	154.06	4	17.00	64.16	10
Perlis	2.79	16.25	9	9.56	342.12	1
Penang	0.30	1.77	11	0.22	72.33	8
Selangor	2.88	16.77	8	3.26	112.99	5
Terengganu	35.98	209.23	2	21.94	60.98	11
P. Malaysia	17.20	100.00	-	17.20	100.00	-

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Figure 1 looks at the simple linear correlation between tax effort and tax capacity. As can be seen, states such as Perlis, Selangor, Kedah and Melaka have below average index of tax capacity but have a high tax effort. This may reflect the state governments' capacity to utilize their tax resources in a more optimal way. On the other hand, states such as Perak, Terengganu and Pahang have a relatively high tax capacity but the tax effort is lower than the national average. This implies that these states have not fully utilize its capacity in order to generate more income. There are also states (Johor, Negeri Sembilan and Penang) who have both lower than national average revenue capacity and revenue effort. It is also noteworthy that one state, Kelantan, has both above average revenue capacity and revenue effort.

Figure 1: Correlation between revenue capacity and revenue effort.



4.2. Revenue Effort and Development

A question that may arise regarding revenue effort is to what extent revenue effort of a state government may be explained by the level of its economic development? One may argue that state government with higher level of economic development may be able to collect more revenues as it has relatively more resources that can be put into use in collecting its revenues. More developed state should be able to recruit better qualified staff to man its state apparatus and it also has the financial means to invest in better technology. In other words, more developed state is expected to be equipped with a better state apparatus that can be put into use in collecting more revenues.

In term of economic development, the states in Malaysia are categorized into two different groups: the more-developed states (comprising of Johor, Melaka, Negeri Sembilan, Penang, Selangor and Perak) and the less-developed states (comprising of Perlis, Kedah, Kelantan, Terengganu and Pahang). Table 2 displays the rank of the state governments' revenue effort according to their level of development. As can be seen from Table 2, the three highest ranking states are under the less-developed category. This implies that these less-developed states are exerting more effort in collecting their dues as compared to their more-developed neighbors. However, two

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of the bottom three states are also less-developed states. Together these results imply that level of development does not seem to explain the revenue effort of state governments. These results also imply that more developed state governments are not using the financial means in their hand to invest in a better tax collection mechanism.

Table 2: Revenue effort and level of development

More Developed States	Rank	Less Developed States	Rank
Johor	6	Kedah	3
Melaka	4	Kelantan	2
N. Sembilan	7	Pahang	9
Perak	10	Perlis	1
Penang	8	Terengganu	11
Selangor	5		

4.3. Revenue Effort and Fiscal Situation

Forest-based revenues constitute one of the major sources of income for the state governments. It is thus interesting to see whether the fiscal situation of a state government can be explained by the effort that the latter put in collecting its revenue. It is expected that, *ceteris paribus*, state government that put relatively more effort in collecting its revenues should have a better fiscal situation as compared to those who put relatively less effort. Figure 2 displays the correlation between tax effort and fiscal situation. The figure shows that the three states that have a fiscal surplus are not among the ones that have the highest revenue effort. For example, Penang is ranked eighth in term of revenue effort while Perak tenth. It is also noteworthy that the three highest ranked state governments in term of revenue effort (Perlis, Kelantan and Kedah) are also the ones which have the highest deficit as a proportion of their total revenue. These results imply that fiscal situation cannot be explained by revenue effort. This may be explained by the fact that forest-based revenues despite its importance, is not the only source of incomes for the state governments. Some states may be very efficient in collecting their forest-based revenues but at the same time, they may be less efficient in collecting other types of taxes and revenues. As a result, their performance in forest-based revenue is compensated by their less than average performance in collecting other types of revenues.

Figure 2: Correlation between revenue effort and fiscal surplus/deficit.

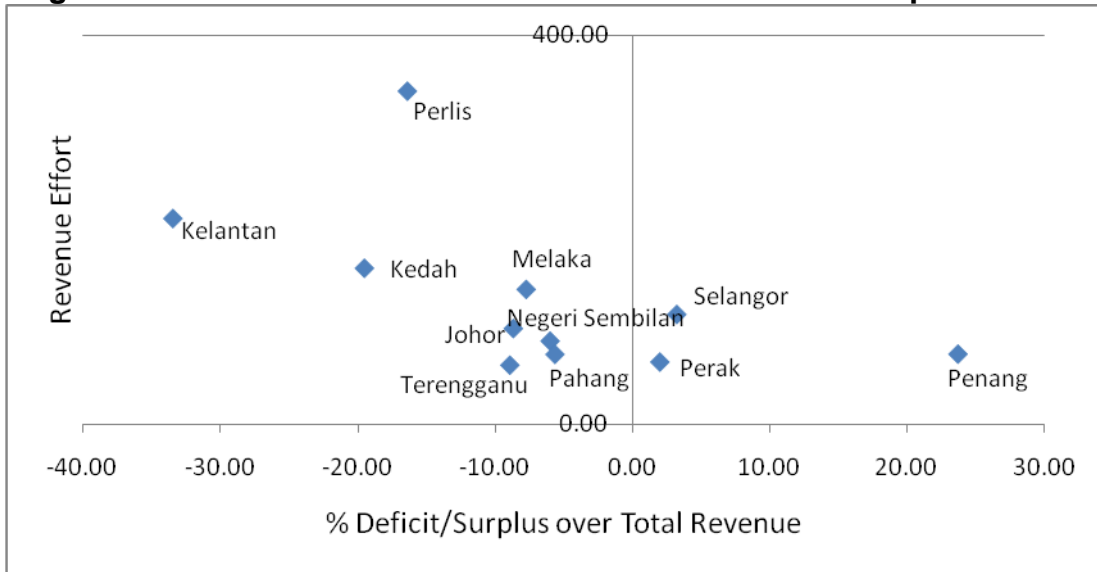
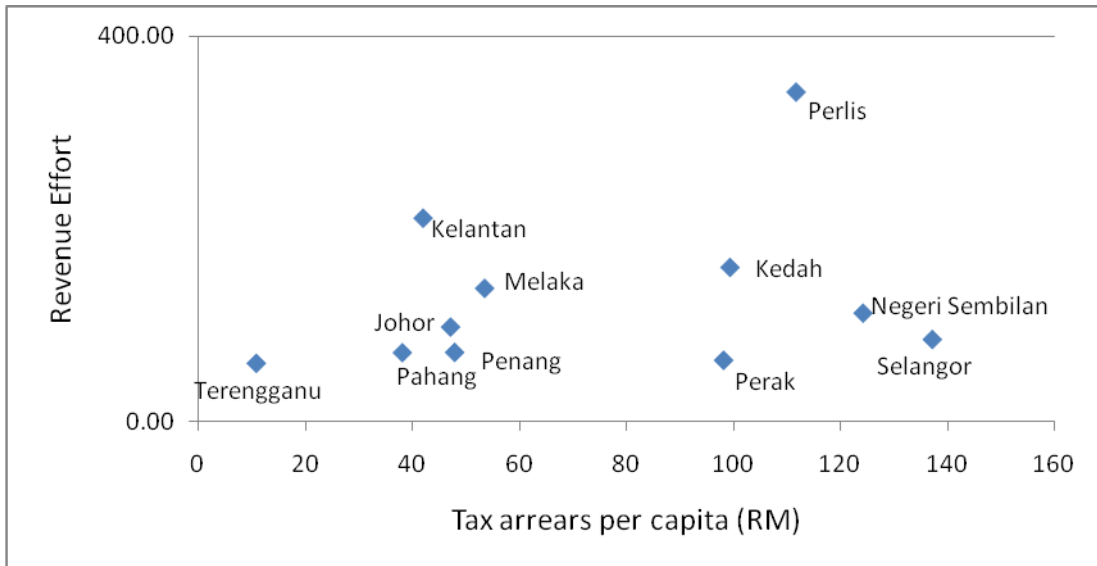


Figure 3: Correlation between revenue effort and revenue arrears.



Another important aspect that can be examined using the tax effort index is the correlation between tax arrears and tax effort. One of the major problems facing the state governments in Malaysia is the ever increasing amount of tax arrears that are yet to be collected. For some states, tax arrears constitute up to 30 percent of total income. In other words, these tax arrears if collected would help solve financial problems that state governments are facing. Figure 3 looks at the relationship between tax arrears per capita and tax effort. Is the amount of tax arrears correlated to the level of revenue effort exerted by the state governments? As shown by the figure, it seems that there is no obvious relationship between tax arrears and revenue effort. State governments that have high revenue effort such as Perlis also have a relatively high tax arrears per capita. At the same time, there are also state governments with low revenue effort that have low tax arrears per capita (Terengganu and Pahang). These findings may imply that the amount of tax arrears is not due to the lax of efforts exerted by the state governments. It may simply due to the low level of tax compliance among the taxpayers of these states.

5. Summary and Conclusions

This paper is aimed at measuring the revenue capacity and revenue effort of the state governments in Malaysia. The underlying objective is to gauge the fiscal performance of the state governments in order to see whether state governments are fully using the tax responsibilities that are devolved to them. Furthermore, these measures can be used as a basis in the formulation of a better intergovernmental fiscal system especially in the redesigning of federal transfers.

Our findings show that state governments differ significantly in term of their forest-related revenue capacity as well as forest-related revenue effort. For example, Pahang has a revenue capacity of RM82.22 and a revenue capacity index of 478, while Penang has a revenue capacity of only RM0.30 and an index of 1.77. Our results also show that level of development does not explain the differences in term of revenue effort. Our results also point to the conclusion that fiscal situation as well as level of tax arrears of a state government do not correlate with the level of revenue effort.

It should be noted that these findings are not sufficient to conclude on the effectiveness of the conduct of tax policy by the state governments as this study focused only on one type of revenue. Even though forest-related revenue constitutes a major source of revenues for the state governments, we still need to analyze the capacity and effort of other types of revenues notably the land-related revenues in order to make any conclusion on the performance of state governments' fiscal policy. The study is also conducted on a single fiscal year (2008) and therefore does not provide a dynamic picture of the issue.

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