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tax) significantly, then Ho is not rejected so that it can be said there is not the case of tax competition. Conversely, if there is a significant difference between independent and dependent variables, then Ho is rejected and concluded that there is the case of tax competition.

In Table 3 it can be seen the results of model 1-5's regression, which shows the results of the panel data regression equation from estimation model basis for each dependent variable. Regression of Model 1 could not be performed in Hausman test because *cross-section variance test* was invalid. Hausman statistic was set to zero, so that the model that was used was the FEM. Regression of Model 2-5 was estimated using of Random Effects Model (REM) estimation. Based on the results of the Hausman test, it was shown that REM is more appropriately used in the estimation.

Table 3: Regression of Model 1 – 5 Result[a]

	Model 1	Model 2	Model 3	Model 4	Model 5
Dependent Variable	CORPGDP[a]	CORPTAX	EATR	EMTR	STATU
Independent Variable	FEM	REM	REM	REM	REM
Constant	-3.613*	5.389	70.391*	73.443*	72.925*
	(-2.619)	(0.443)	(6.116)	(3.236)	(16.230)
GDP Growth (-1)	0.045*	-0.187	0.254*	0.120	0.254*
	(2,699)	(-1.643)	(2.774)	(0.498)	(3.482)
Openness (-1)	0.014*	0.070*	-0.044*	-0.033	-0.047*
	(5.815)	(4.051)	(-2.830)	(-0.957)	(-5.075)
Participation Rate (-1)	0.085*	0.220	-0.517*	-0.314	-0.548*
	(4.578)	(1.472)	(-2.906)	(-0.897)	(-7.894)
Inflation Rate (-1)	0.027	0.060	0.123**	0.046	0.164*
	(1.657)	(0.861)	(1.981)	(0.535)	(4.312)
Crisis Dummy	-0.137	-2.146	-1.810***	-7.016*	-0.214
	(-0.817)	(-2.490)**	(-1.698)	(-3.739)	(-0.356)
No. Obs.	132	132	132	132	132
Number of Countries	6	6	6	6	6
Hausman Test	-	8.256	1.972	1.136	6.933
R^2	0.6504	0.1393	0.1926	0.0951	0.4723

Note: *, **, *** shows degree of significance at the level of 1%, 5%, 10%

[a]`GDP Growth Variable (PDBGROW), Openness (OPEN), Participation (PART), Inflation (INFL), and *Dummy* Crisis; [b] Hausman Test could not be done because *cross-section test variance was invalid. Hausman statistic set to zero*, thus the model that was used is FEM.

In Model 1, it is visible that almost all tested independent variables have significancy at the level of 1% with the dependent variable of corporate income tax revenue per GDP and have a positive relationship, except inflation rate variable even though it is not significant to corporate income tax revenue per GDP variable. It shows that all independent variables, except

inflation rate has a significant effect on the increase in corporate income tax revenue.

The coefficient of GDP growth amounted to 0.045 significant at the level of 1% and positively related to the corporate income tax revenue per GDP. Their relations are positive, which means that every 1% increase of GDP growth will be followed by an increase in corporate income tax receipts of 0,045 per GDP, *ceteris paribus*, that other aspects are considered fixed (*all other things being equal or held constant*). Thus, the increase in GDP growth reflects the increase in corporate's that has implications to the increase in corporate income tax revenue. The coefficient of Openness is 0.045 significant at the level of 1% level and positively associated with revenue receipts of corporate income tax per GDP revenue, which means that the increase in openness (exports and imports) will increase GDP, increase in GDP reflects an improvement in productivity and therefore contributes to the increase in tax revenue Corporate income.

So is a productive labor force (PART) varible which is significant at the level of 1% level, with a coefficient of 0.085 and positively related to the corporate income tax revenue per GDP. The condition means an increase of 1% in the productive labor force led to an increase in corporate income tax revenues of 0,085 per GDP. Increased labor force participation is expected to increase productivity and ultimately increase the company's profit so that the corporate income tax revenues increased.

Model 2 was regressing independent variables with the dependent variables, percentage of corporate income tax revenues per total tax revenue. The results of the regression is only level of transparency (openness) of independent varible with a coefficient of 0.070 that significantly affects the percentage of corporate income tax revenues per total tax revenue. These results are consistent with the results of the Model 1 where increasing openness is expected to improve productivity, which in turn increases the corporate income tax revenue. Meanwhile based on model 2, other independent variables did not have significant effect against the dependent variable. The relations between the openness variable and percentage of corporate income tax revenues per total tax revenue was positively related, which means the increase in value of exports and imports will increase the percentage of corporate income tax revenues per total tax revenue.

In Model 3 with GDP Growth as independent variable, coefficient value of GDP Growth is amounted to 0.254 has significant effect on EATR at the level of 1% and has positive relation. These results reflected a decrease in the value of GDP that will make the government lowered EATR rate in the hope that it can be used as a stimulus to improve productivity. Openness

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variable has negative relations with EATR with coefficient of 0.044 and significant effect at the level of 1% to the EATR, this means that the more open a country which is reflected in the total exports and imports value per GDP, it will affect the determination of EATR rate i.e. when total exports and import per GDP value climbed, EATR rates will go down with the assumption that the rate reduction would increase the corporate income and attract foreign companies to invest. EATR dependant variable is also affected significantly at the level of 1% by paticipation rate independent variable with a coefficient of 0.517, but had a negative correlation, which means that the higher levels of participation will decrease EATR rate assuming that the rise in labor force participation is expected to increase the productivity of the company resulting better earnings so even EATR rate is lowered but it did not affect the corporate income tax revenues due to the increase in profits. Meanwhile inflation rate variable has a significant effect at the level of 5% to EATR and has negative relations, higher inflation rate will cause rise of prices causing the company's profit to decline so it is expected that EATR rate's reduction can help the company to continue to produce.

Result of Model 4 shows that all the independent variables do not affect EMTR significantly. GDP Growth and inflation rate variables has a positive relation with EMTR meanwhile openness variable and participation rate variable have a negative relation.

Result of Model 5 shows opposite thing with the results of regression of model 4 which all independent variables significantly affect at the level of 1% to the dependent variable in the form of statutory tax rates. GDP Growth variable and inflation rate variable have positive relations with the statutory rates, which means every time there is an increase in GDP growth or inflation, there will be a rise in statutory tax rates. While openness variables and participation variables have negative relations, which means that any increase of openness or participation rate will reduce the statutory tax rates.

Table 3 shows the results of the regression of correlation between tax burden with GDP growth of (PDBGROW), the amount of exports and imports per GDP (OPEN), the amount of productive labor force (PART), the inflation rate (infl), and dummy crisis, without involving FDI variables. Tax burden variable is measured by corporate income tax per GDP, corporate income tax revenues per total tax revenue, EMTR, EATR and statutory tax rates, with the results as described above. The regression results show that only in Model 4, all independent variables did not affect the dependent variable (EMTR) significantly.

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This is due to the highly volatile EMTR value, which is formed of inflation and real interest rates that is also volatile.

Overall, almost all independent variables affect dependent variables, except in Model 4, at a significance level of 1% and inflation rates of independent variable that has a 5% significancy level towards dependent variable, EATR. Therefore, based on regression analysis, it is revealed that Ho is rejected. However, the basic model is considered unable to provide evidence of tax competition because FDI variable is not inputted yet, thus the assumption that globalization causes capital mobility (FDI) can influence the reduction in tax rates in some countries is not yet proven.

Subsequent analysis is conducting by looking at the effect of independent variables, that is foreign direct investment (FDI), the GDP growth, the size of the country's GDP, the value of exports and imports per GDP, the level of productive labor force, and the rate of inflation towards the dependent variable, that is the corporate income tax per GDP revenue, Corporate Tax per total tax revenue, EMTR and EATR. If there is no significant influence between independent variables and dependent variables, then Ho is not rejected and there was no tax competition, and vice versa.

Hypothesis 2 is built on following estimation model:

Model Estimation Including Capital Mobility Variable:

$$TaxBurden_{it} = \gamma_1 + \gamma_2 GDP_{it} + \gamma_3 Open_{it} + \gamma_4 Part_{it} + \gamma_5 Infl_{it} + \gamma_6 CapMob_{it-1} + \gamma_d Crisis + \eta_i + u_{it} \quad (2)$$

Result of regression of Model 6-10 can be seen in Table 4 as follows:

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Hypothesis 2

Table 4: Result of Regression of Model 6 – 10[a]

	Model 6	Model 7	Model 8	Model 9	Model 10
Dependent Variable	CORPGDP	CORPTAX	EATR	EMTR	STATU
Independent Variable	FEM	FEM	FEM	FEM	FEM
Constant	1.055	-1.481	60.599*	54.526**	71.536*
	(0.369)	(-0.105)	(4.551)	(2.094)	(10.144)
FDIPGDP (-1)	-0.006***	0.004	0.034**	0.062***	0.016***
	(-1,854)	(0.205)	(2.086)	(1.960)	(1.864)
GDP Growth (-1)	0.031	-0.153	0.282***	0.179	0.258*
	(0,993)	(-0.989)	(1.943)	(0.631)	(3.357)
Openness (-1)	0.025*	0.096*	-0.064*	-0.062	-0.062*
	(5.169)	(3.939)	(-2.800)	(-1.393)	(-5.097)
Participation Rate (-1)	0.002	0.260	-0.360**	-0.027	-0.507*
	(0.042)	(1.319)	(-1.936)	(-0.073)	(-5.158)
Inflation Rate (-1)	0.026**	0.066	0.132**	0.065	0.165*
	(2.037)	(1.065)	(2.245)	(0.564)	(5.295)
Crisis Dummy	-0.334	-2.143	-1.585	-6.604*	-0.095
	(-1.292)	(-1.678)**	(-1.318)	(-2.807)	(-0.150)
No. Obs.	132	132	132	132	132
Total Countries	6	6	6	6	6
Chow Test[b]	98.74*	108.27*	48.51*	29.64*	57.747
R^2	0.6022	0.5749	0.5585	0.3642	0.7136

Note: *,**,*** shows degree of significance at the level of 1%, 5%, 10%

[a]FDI Variable (FDIPGDP), GDP Growth (PDBGROW), Openness (OPEN), Participation (PART), Inflation (INFL), and *Dummy* Crisis; [b]Pengujian Hausman test can't be conducted because the model can't result *Random Effect Model* (REM) due to REM estimation required *number of cross sections > number of coefs for between estimator for estimate of RE innovation variance*

Table 4 shows the results of panel data's regression from estimation model equation that has incorporated capital mobility (FDI) variable. Regression Model 6-10 is estimated by using Fixed Effect Model (FEM) estimation, because it is not possible to use REM when the amount of cross section – six countries - is bigger than or equal to the number of independent variables (6 variables).

Model 6 seems to be the only variable which has openness variable with significance at the level of 1% to the dependent variable of corporate income tax revenue per GDP and positively correlated, which means the openness of a country will increase GDP value that will ultimately improve the company's revenue. Whilst, inflation rate variable significantly affects corporate income tax revenue per GDP at the level of 5% with positive correlation.

In Model 7 with the dependent variable income corporate income per total tax revenue (CORPTAX), It is visible that only openness variable has a significant effect at the level of 1% of the CORPTAX and

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positively related, which means an increase in the value of exports and imports will cause the productivity of the company increased which in turn increases the company's revenue and corporate income tax revenue for the government.

In Model 8, looks all independent variables have a significant influence on dependent variables reagarding EATR rates but with a different significance. Foreign investment per GDP (FDIPGDP) variable has affected significantly at the level of 5% to EATR and positively correlated while GDP Growth variable has significant effect on the level of 10% and a positive touch. This condition reflects situation where the EATR rates will rise if there is an increase in GDP and the increase in the percentage of foreign investment per GDP. In Model 9, only variable on foreign investment per GDP that has significantly influence to EMTR at the level of 10% and positively related, while the other independent variables did not significantly affect the EMTR.

Result of the regression model 10 shows that all independent variables significantly influence the dependent variable, the statutory tax rate (STATU). This means STATU that is based on statistics is significantly influenced by independent variables at the level of 1% that GDP growth, the size of the country's GDP, the value of exports and imports per GDP, the level of productive labor force, and the rate of inflation. While the independent variable of foreign investment per GDP has significant influence at the level of 10%.

By referring to the results of the regression model is 6-10 and incorporating the independent variable (FDIPGDP), It is showed that the effect of all the dependent variable FDIPGDP is less significant. Even at Model 7 had no significant effect. Thus, the hypothesis 2 stated that Ho is not rejected, thus declared there is not enough evidence of tax competition among the ASEAN-6 member countries.

Hypothesis 3

Hypothesis 3 was based on the premise that there is influence of the size of a country on tax competition. The larger the size of the country, the smaller the capital mobility pressure on tax rates. In general, a large state sets tax rates relatively higher than the small countries. When it was viewed in terms of size, ASEAN-6 member countries are quite varied. Due to asymmetric object of the study, it was needed to study the influence country’s size which tested the effects of capital mobility and the size of the state tax burden.

This hypothesis was tested by doing regression combination of variables foreign direct investment (FDI), FDI and the size of the country's GDP (FDI_SIZE), GDP growth, export and import volumes per

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GDP, the level of productive labour force, and the rate of inflation on income tax receipts Board per GDP, corporate income tax revenue per total tax revenue, and the EATR. If there is no significant influence between independent variables with the dependent variable, then Ho is rejected and cannot be said not occur tax competition among the six ASEAN member countries studied. In statistical equation, the hypothesis can be delivered in the form of the following estimation model:

Model Estimation Including Capital Mobility Variable and Country's Size

$$\text{Tax } Burden_{it} = \gamma_1 + \gamma_6 CapMob*Size_{it-1} + X'_{it}\,\gamma_x + D'_{97\text{-}99,\ 08\text{-}09}\,\gamma_d + \eta_i + u_{it}$$

Result of Regression of Model 11-14 can be seen in Table 5 as follows:

Table 5 Result of Regression of Model 11-14[a]

	Model 11	Model 12	Model 13	Model 14
Dependent Variable	CORPGDP	EATR	EMTR	STATU
Independent Variable	FEM	FEM	FEM	FEM
Constant	0.839	60.603*	57.413**	70.353*
	(0.288)	(4.460)	(2.14)	(9.812)
FDIPGDP (-1)	-0.008***	0.034	0.078***	0.009
	(-1,688)	(1.598)	(1.895)	(0.837)
FDIPGDP*SIZE (-1)	0.0001	-0.000	-0.001	0.001
	(0,418)	(-0.002)	(-0.613)	(0.930)
GDP Growth (-1)	0.034	0.282***	0.145	0.272*
	(1,051)	(1.898)	(0.500)	(3.471)
Openness (-1)	0.026*	-0.064*	-0.066	-0.060*
	(5.158)	(-2.761)	(-1.462)	(-4.912)
Participation Rate (-1)	0.004	-0.360***	-0.055	-0.496*
	(0.094)	(-1.913)	(-0.149)	(-4.998)
Inflation Rate (-1)	0.026**	0.132**	0.058	0.168*
	(2.060)	(2.225)	(0.502)	(5.356)
Crisis Dummy	-0.345	-1.585	-6.461*	-0.154
	(-1.323)	(-1.306)	(-2.726)	(-0.240)
No. Obs.	132	132	132	132
Total Countries	6	6	6	6
Chow Test	98.23*	47.25*	27.35*	58.59
R^2	0.6028	0.5585	0.3662	0.7157

Note: *, **, *** shows degree of significance at the level of 1%, 5%, 10%
[a]FDI Variable FDI (FDIPGDP and FDI_SIZE), GDP Growth (PDBGROW), Openness (OPEN), participation (PART), inflation (INFL), and Dummy Crisis; [b]Hausman test can be conducted because the model cannot result on *Random Effect Model* (REM) due to REM estimation required *number of cross sections > number of coefs for between estimator for estimate of RE innovation variance*

Table 5 shows the results from panel data regression equation estimation model that has incorporated combined capital mobility (FDI) variable to the country's GDP size (SIZE). Regression Model 11-14 was estimated using estimation *Fixed Effect Model* (FEM) and *Pooled Least Square* (PLS). The use of this estimation was based

on the results of the Chow test as described in Chapter 3. On this model, it is not possible to use REM because the number of cross section (6 countries) is larger than the number of independent variables (7 variables).

On Model 11-14, it is seen that the independent variable in the form of a combination of capital mobility (FDI) and the country's GDP size (SIZE) are denoted by FDIPGDP*SIZE does not significantly affect the dependent variable CORPGDP, EATR, EMTR and STATU.

Based on Table 5 it appeared that the Model 11 Foreign investment per GDP (FDIPGDP) have a significant effect at the level of 10% to the revenue of corporate income tax per GDP (CORPGDP) and negatively related, which means the increase of foreign investment percentage per GDP will lead to a decrease in the percentage of revenue receipts of corporate tax per GDP. Openness variables has a significant effect at the level of 1% to CORPGDP and positively related, which means the more open a country, GDP will increase and eventually corporate income will also increase. Inflation rate is also a significant variable at the level of 5% and positively related to CORPGDP.

On models 12, the openness variable also had significant influence at the level of 1% to the dependent variable and negatively related to the EATR, meaning that the more open a country which was characterized by an increase in the value of exports and imports, the EATR would go down with the assumption that the development of export import transactions reflecting the state of productivity increases. This means that in order to encourage productivity, the government will reduce tax rates as incentives for businesses and invite investors to enter. Whereas if the state is more closed, it causes not much income generated by a country from foreign trade, the government tends to raise the EATR rates in order to earn income from the business world. This condition is consistent with the openness variable relation to the statutory tax rate in the Model 14 which have a significant effect on the level of 1% and a negative relationship.

In model 13, only FDIPGDP variable that has a significant influence at the level of 10% of the EMTR and positively related while the other independent variables insignificantly influence to EMTR. In Model 14 it is seen that almost all independent variables except the foreign investment variable (FDIPGDP and FDIPGDP * Size) have a significant influence on the level of 1% of the statutory tax rate.

Hypothesis 3 intended to test whether the effects of capital mobility on the corporate income tax was influenced by the

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size of the GDP of the country, as having been stated by asymmetric tax competition literature. This hypothesis was tested with regression of FDI variables combined with the size of the country's GDP (FDI_SIZE) in three sizes of tax on capital investment, ie corporate income tax revenue per GDP (CORPGDP), corporate income tax revenues per total tax receipts, and the EATR. In accordance with the results shown in Table 5, the Ho hypothesis 3 was not rejected because it is not a significant difference between the country with the size of tax burden. Thus, based on the results of regression Hypothesis was stated that there is no tax competition among ASEAN-6 member countries.

Overall, the result of statistically examination showed there were relations between the independent variables and the dependent variable on the hypothesis 1 (the basic model of tax competition) and hypothesis 2 (tax competition model by including a variable FDI). Thus it could be stated that there was a statistically significant link between FDI and corporate income tax rates. Reduction of tax rate gave effect to increasing FDI due to improving returns on investment. While in hypothesis 3 (tax competition by inserting *country size* variable), the test results did not prove the existence of the influence of the size of a country can lead to asymmetric tax competition.

Final Conclusion

Based on results of analysis by referring to research purpose, the study concludes that there are not enough evidence or existing indications of tax competition among ASEAN-6 member countries. Econometric methods explained effect of capital mobility (FDI) and income tax. The result shows a significant relationship between FDI with corporate income tax revenue per GDP, corporate income tax revenues per total tax revenue, EATR and statutory tax rates, especially when data of Singapore was entered. Singapore has been implementing *thy beggar neighbour tax policy*, which is setting a lower tax rate than tax rates in neighbouring countries; it may increase FDI and affect income tax rate reduction in other ASEAN-6 member countries. However, it seems there is no *race to the bottom* in the ASEAN-6 member countries because the tax revenue is a source of state revenue, so that government of each country consider the implications of a tax reduction for acceptance.

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