

## **ROLE OF LABOR MARKET FLEXIBILITY IN THE FDI GROWTH NEXUS: PANEL THRESHOLD EVIDENCE**

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### **ABSTRACT**

Foreign direct investment (FDI) has developed rapidly and main contribution on economic growth in developing countries. The benefits of FDI to host countries are inward of capital and technology that enhance innovation thereby potentially improving economic growth. The inflows of FDI will be depending on favorable location factors at host country like labor market condition. The labor markets at host countries play an important role to adapt the inflows from FDI. Host country with low levels of employment protection and flexible of labor market are commonly perceived to provide an environment conducive to investment. The purpose of this paper is to examine the role of labor market flexibility in mediating the impact of FDI on economic growth in developing countries. This study employs threshold estimation method proposed by Hansen (1999, 2000) on a comprehensive sample period from 2000 to 2010. The data for labor market flexibility based on the labor market regulation in Fraser index, growth based on gross domestic product (GDP) and FDI based on the inflows of foreign direct investment. In line with previous literature this paper finds that countries that group above threshold value of more flexibility of labor market has a positive impact, where this result indicate that labor market flexibility play an important role in mediating FDI on economic growth in developing countries.

**Keywords:** Labor Market Flexibility, FDI, threshold estimation, panel data and developing countries.

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## 1.0 Introduction

Labor market institution is one of the important determinant of FDI inflows and also location of MNC's decision. This acknowledges government that labor market reforms are necessary for attracting the inflows of FDI. Labor market institution must be protected by employment protection policies in order to make sure that foreign market did not taking advantage on host country labor market. Pissarides (2001) define an employment protection policies encompasses regulations, either legislated or written in labor contracts that limit employer's ability to hire or fire workers without delay or cost. However, the rigid labors markets will slow down an inward FDI due to a reduction in an investment's profitability because the labor market rigidities will impact of high adjustment and exit cost on FDI, whereas this will prevent MNC's from reacting to changes in the comparative advantage at the host country. As a result, host countries government policies will affect the labor market indirectly to attract FDI.

The best alternative to the extent government policy aims at increasing the quantity of FDI are host countries need to provide the universal flexibility of labor market. Labor market flexibility can be determined if the operation of market force are freely from the rigidities and or restriction of powerful actors such as a monopsony employers, trade unions and government on the labor market. Thus, this would imply the elimination of all barriers to the free operation of market force and the labor market is perfectly flexible. Host countries with low levels of employment protection and a flexible labor market are commonly perceived to provide an environment conducive to investment, employment and structural change. Flexibility of labor market is one of the important factor attract FDI. Firms those seeking the maximization of profit are most interested to locate in countries with more flexible labor markets, which afford firms more freedom to adjust to prevailing economic conditions. Therefore, it seems reasonable to assert that, there will influx inflows of FDI to countries with flexible labor market. Labor market flexibility is a central element in determining the overall performance of the nation economy and describes how labor markets function. A flexible and efficient labor market, combined with a stable macroeconomic environment, implies an economy that is fairer, more competitive and more productive. It also implies an economy that is better able to adapt to the changing economic environment.

The globalization of production processes by MNC has further encouraged policymakers around the world to redesign their labor market regulations to provide greater flexibility to the operations of MNCs. The rationale is that, increased flexibility in labor market regulations will make a host country more attractive to MNCs looking at alternative locations and will result in greater FDI. The labor market flexibility being one of the various determinants of FDI selection of a favorable location, thus the degree of the labor market flexibility is likely overtime influence FDI. Location decision of MNCs points to the high priority attaching to labor market flexibility issues in determining the investment location. Labor market flexibility is fast becoming a key requirement for MNCs seeking to consolidate approaches to managing human capital in a global context.

Her Majesty's Treasury<sup>3</sup> (commonly known as HM Treasury) identify three basic 'overall' definitions of the labor market flexibility; (1) Flexibility as the speed with which the labor market can adjust in response to an economic shock; (2) A flexible labor market as one that exhibits a good equilibrium, i.e. a low structural unemployment rate; and (3) A flexible labor

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<sup>3</sup> Her Majesty's Treasury (HM Treasury) is the United Kingdom's economics and finance ministry.

market as one that has institutional features that allow wages and employment to adjust smoothly and freely to equate supply with demand. There are three determinants of labor market flexibility identify by HM Treasury. First is wage flexibility that including the wage bargaining system (e.g. whether collective bargaining takes place in the workplace, whether there is centralized bargaining across industries or sectors, or the economy as a whole); the existence and level of a minimum wage; non-wage labor costs (i.e. the extent of payroll taxation). Second is working time flexibility that comprises: regulations on working time, the extent of part-time and flexible working. Third is geographical and job mobility. That comprise employment protection legislation (i.e. restrictions on employers' ability to “hire and fire” employees).

## 1.2 Problem statement

For many years, researchers have debated about the economic growth and total factor productivity. Among the key factors of growth and productivity are the level FDI and location of MNC's. One of the important motives of inflows of FDI and MNC's to invest in transition countries are exactly to capture of new markets. For this purpose, Babic and Strucka, (2001), it is important to know whether the market is a growing market. The growing market can be identified based on GDP of the host country, GDP per capita and growth rate of GDP. Larger host countries markets may be associated with higher FDI due to larger potential demand and lower costs due to scale economies. There are few factors at host countries that attract the location of MNC and investment decision. One of them is labor market. Relocation of production to regions with lower labor costs has been reported as an important or crucial motive of MNC for FDIs in developing countries. The location decision of MNC's points to the high priority attaching to labor market flexibility issues in determining the investment location.

## 1.3 Research question and objective of study.

The main question that arises here is does labor market flexibility play a significant role in mediating the impact of FDI on economic growth? To answer this question, we examine the role of labor market flexibility in mediating the impact of FDI on economic growth in developing countries.

## 1.4 Conceptual framework

Based on the goal of this study, we propose a conceptual framework that diagrammatically reflects the intention.



**Figure 1: The Conceptual Framework.**

## **1.5 Significant of the Study**

This study contributes to the literature by providing the empirical evidence on the significant role of labor market flexibility in mediating the impact of FDI on the output growth. Threshold analysis is better way to understanding the relationship between the labor market flexibility and FDI and it can accommodate the meaningful possibility that FDI boost economic growth only after including the labor market flexibility.

## **1.6 The Scope of the study**

Based on the arising issue that discusses previously, the further discussion need to be conduct to answer the issue. The selection of countries based on the developing countries over the 2000 - 2010 periods. In order to examine the role of labor market flexibility in mediating the impact of the economic growth, we estimate by using threshold estimation based on Hansen (2000).

## **1.7 Organization of study**

The rest of the paper is structures as follow. In section 2, we provide an overview of related empirical work on labor market flexibility, FDI and economic growth. In section 3, we describe the data set that we use and methodology to analyze. The empirical analysis based on threshold in section 4 and finally in section 5 is conclusion and recommendation.

## **2.0 Literature Review**

The issues of FDI in promoting growth have been studies by numerous of researchers (i.e Lipsey (2000), De Mello (1997); Oliva and Rivera-Batiz, (2002); Ma (2009) and Choe (2003)). Some of them study the significant of FDI and growth on specific countries. Study on Latin America countries by Bengoa et al. (2003) for a sample of 18 countries for 1970-1999 shows that FDI is positively correlated with economic growth in the host countries and De Gregorio (1992) finds a positive and significant impact of FDI and growth in a panel of 12 countries over the period 1950-1985. Another country-specific study that explores the link between FDI and economic growth includes Mattaya and Veeman (1996) on Malawi; Kabarsi et al. (2000) on Egypt and Ouattara (2005) on Senegal, they found positively relationship between FDI and growth. Dees (1998) found that FDI played an important role in promoting economic growth in China. By analyzes on a sample of OECD and non-OECD countries for the period 1970-1990, De Mello (1999) claimed that FDI has a positive impact on growth. In order for newly industrializing economy to catch up with the world's most advanced countries, Yao and Wei (2007) stress that FDI is a powerful driver of economic growth. Based on the discussion, we can conclude that the important role of FDI on economic growth has been prove and discussed by the past literature.

Economic environment at the host countries also play an important role in order to adapt the inflows of FDI. Bezuidenhout (2009), FDI is seen as a vital factor in inducing the growth rate, but only if the inflows is properly managed it will lead a growth. In other words, FDI generates "growth effects" only when the business environment is suitable (Xu and Zhong , 2011), where both home and host country characteristics significantly play crucial role in determining the FDI. Beside trade openness index, human development index, population and

infrastructure found to have significant factors motivating FDI inflow, the inflows of FDI also depend on economic condition at host country especially the degree of labor market. Issues of labor market flexibility and rigidities are among the important issue discussed by the past literature. Thus, the degree labor market flexibility is likely over time to be influenced by FDI, in addition to it being one of the various determinants of its selection of a favorable location in which to cite its production facilities. Thus, the technological and other competitive advantages inherent within FDI are likely to increase the productivity of skilled workers in the domestic sector (Barrell and Pain, 1997; Blomström, 1989; Driffield, 1999; Driffield and Taylor, 2000). Whyman and Baimbridge (2006) classified the determinants of FDI based on non-policy and policy factors and labor market flexibility include in policy factor. In order to encouraging greater levels of foreign direct investment and establishment of MNCs, the national governments have to reduce labor market rigidities by increased internal flexibility necessitates both the legal authorization to engage in such practices and openness of nation. Study by Gunnigle and McGuire (2001) on the location decision of MNCs, points to the high priority attaching to labor flexibility issues in determining the investment location outcome. Therefore, it is likely that the approach adopted by national governments to labor market flexibility will have a substantial impact on the nature of foreign direct investment and will affect the practices and behavior of inward investing organizations.

Storey et al. (2002), labor market flexibility is fast becoming a key requirement for multinational organizations decision to make investment. A few studies indicate that MNC's give substantial weight to national differences in deciding upon levels of investment; i.e Cooke and Noble (1998); Cooke (2001); Ferner and Quintanilla (1997). Bentolila and Bertola, 1990; Cooke, 1997; Cooke and Noble, 1998; Görg, (2002); Dewit et al. (2003) indicate that flexible labor markets are significant attractors for FDI. Similarly with Haaland et al. (2003) in theoretical paper demonstrate a trade-off between FDI incentives and labor market flexibility and conclude that a country with a more flexible labor market should find it easier to attract FDI. Javorcik and Spatareanu (2004), suggest that greater flexibility in the host country's labor market is associated with a higher probability of investment taking place as well as with a larger volume of investment.

### **3.0 Methodology**

#### **3.1 Introduction**

This section comprises the discussion regarding the estimation model, data and econometric methodology that will be built and used to test the role of labor market flexibility in mediating FDI effects on economic growth. This study employed model specification that is broadly similar to Mankiw et al. (1992) and extension the model based on Aiginger (2004) and Lorenzo et al. (2012). We analyze the model using the threshold regression estimation technique proposed by Hansen (2000) to capture the role of labor market flexibility in mediating the impact of FDI on economic growth.

#### **3.2 Empirical Model specification**

In this section, the purpose of study is to estimate a growth model by examine the role of labor market flexibility in mediating the impact of FDI on growth in samples of countries. We

used R software (The R Foundation for Statistical Computing) to analyze the econometric specification. The following specification of growth is motivated by influential paper Mankiw et al. (1992) (MRW) and support by Aiginger (2004), beside the basic economic growth determinants, the characterizes a set of institutions, such as product or labor market regulation, or legal and institutional variables, the rule of law, corruption etc. should be accounting in the growth model, so that this model estimation include the labor market flexibility.

$$\text{GROWTH}_{it} = \beta_0 + \beta_1 \text{INITIAL GDP}_{it} + \beta_2 \text{FDI}_{it} + \beta_3 \text{LMF} + \varepsilon_{it} \quad (1)$$

Where GROWTH is growth rate of GDP per capita for country  $i$  in period  $t$ , INITIAL GDP is logged level of per capita GDP, FDI is foreign direct investment. LMF is as a labor market flexibility that will be examined based on regulation.

### 3.3 Estimation procedure: Threshold regression

In this paper, we apply the test by Hansen (2000) to assess the null hypothesis of a linear regression against a threshold regression (TR). This method allows the sample data to determine the number and location of the thresholds, such that the form of the non-linearity is not imposed. The method is based on a threshold regression model where observations fall into a regime that depends on an unknown value of an observed value. In terms of our model we want to examine whether there is a non-linear relationship between labor market flexibility and growth. As such we want the parameter associated with labor market flexibility to be able to change discretely depending upon the level of labor market flexibility. We can achieve this by estimating the following threshold specification;

$$\text{GROWTH}_{it} = \begin{cases} \beta_0^1 + \beta_1^1 \text{INITIAL GDP}_{it} + \beta_2^1 \text{LNFDI}_{it} + \varepsilon_{it}, & \text{LMF} \leq \gamma \\ \beta_0^2 + \beta_1^2 \text{INITIAL GDP}_{it} + \beta_2^2 \text{LNFDI}_{it} + \varepsilon_{it}, & \text{LMF} \geq \gamma \end{cases} \quad (2)$$

Where  $\gamma$  is unknown threshold. Here the observation can divided into two or three regimes or groups depending on whether threshold variable that is labor market flexibility (LMF) is smaller or larger than the value  $\gamma$ . The impact of labor market flexibility in mediating the impact of FDI on growth will be given by  $\beta_2^1$  for countries in the low LMF regimes (i.e. with an LMF level less than  $\gamma$ ) and by  $\beta_2^2$  for countries in the high LMF regimes (i.e. with an LMF level greater than  $\gamma$ ).

In order to estimate this model we firstly need to jointly estimate the threshold value  $\gamma$  and the slope parameters. Chan (1993) and Hansen (2000) recommend obtaining the least squares estimate of  $\gamma$  as the value that minimize the concentrated sum of squared errors across all possible values of  $\gamma$  (see Hansen, 2000). After obtaining a value of  $\gamma$ , we can estimate the parameters of our growth model. Having found the threshold we need to identify whether it is statistically significant. To do this we need to test the null hypothesis. Rejecting the null hypothesis allows us to conclude that a threshold exist in the LMF- growth relationship. Once complication in testing for the significance of significant threshold is that the threshold  $\gamma$  is not identified under the null hypothesis, implying that classical test do not have standard distribution tables and critical values cannot be read off standard distribution tables. We follow Hansen (1996) and bootstrap to obtain the p-value for the test of a significant threshold. The procedure for this test is as follows. Firstly, one estimates the model under the null (linearity) and alternative (threshold occurring at  $\gamma$ ). This gives the actual value of the likelihood ratio test, ( $F_1$ ).

$$F_1 = \frac{S_0 - S_1(\text{LMF}^*)}{\hat{\sigma}^2} \quad (3) \quad \text{where} \quad \hat{\sigma}^2 = \frac{1}{n(t-1)} S_1(\text{LMF}^*) \quad (4)$$

Then a bootstrap is created by drawing from the normal distribution of the residuals of the estimated threshold model. Using this generated sample, the model is estimated under the null and alternative and likelihood ratio  $F_1$  is obtained. The bootstrap estimate of the p-value for  $F_1$  under the null is given by the percentage of draws for which the stimulated statistic  $F_1$  exceed the actual one.

If evidence is found in favor of a threshold we need to be able to form some kind of confidence interval around the value in order to be able to place countries in to the two regimes. Once again standard methods of doing this are not ideal when estimating an unknown threshold (see Dufour, 1997). Hansen (2000) derives the correct distribution function and provide the appropriate critical values,  $c(\alpha)$ , for the likelihood ratio statistic as given by  $LR_n = n \frac{S_n - S_n(\gamma)}{S_n(\gamma)}$ . The confidence interval of the threshold estimate  $\gamma$  consists of those values of LMF for which the likelihood ratio statistic is less than  $c(\alpha)$ .

### 3.4 Data set

The data set consists of panel data for 82 selected developing countries (over the 2000 – 2010 periods). GROWTH is the average growth rate of GDP per capita for country  $i$  in period  $t$ , INITIAL GDP is logged level of per capita GDP, FDI figures represent the net inflows of foreign investment to acquire a lasting management interest (i.e. 10 percent or more of voting stock) in domestic enterprise, and is expressed as a ratio to GDP; and LMF is labor market flexibility that can be measured by regulation from Fraser Index of Economic freedom, that has been rescaled to range between 0 and 10 and in order for higher values to indicate more flexible labor market.

Table 1 present the descriptive statistics of the variables that we used in this dissertation. Growth rate as the dependent variable indicate the minimum value is -17.67 and reach the maximum value of 33.63. The first quantile indicate value of 2.71 and third quantile is 6.70. The other variables that shown in Table 1 are independent variables where the minimum value of initial GDP is 2.60 and maximum value is 6.70, minimum and maximum value of FDI is -0.05 and 0.56. Our interest variable as a threshold are labor market flexibility, first based on minimum wage indicate the minimum value is 0.00 and maximum value is 10.00 and the second indicator is based on regulation that the minimum value is 2.00 and maximum value is 9.70. Value of first and third quantile for all the independent variables are reported in Table 1.

Table 1: Summary statistics

	Minimum	25% quantile	Median	75% quantile	Maximum
Growth	-17.67	2.71	4.71	6.70	33.63
Initial GDP	2.60	3.82	4.27	4.99	6.70
FDI	-0.05	0.01	0.03	0.05	0.56
LMFREG	2.00	4.80	6.00	7.10	9.70
No. Observation			82		

Note: Data for 82 selected developing countries covers periods from 2000-2001 and estimation using R statistical Software.

## 4.0 RESULTS AND DISCUSSION

### 4.1 Introduction

In this section, we estimate the role of labor market flexibility in mediating the impact of FDI on economic growth by using threshold regression based on Hansen (2000). The empirical results are present and discuss in the next sections. The analysis and discussions are based on 82 selected developing countries over the period 2000-2010 and labor market flexibility that we use in this study that is based on regulation.

### 4.2 Estimation of model.

Before we examine the existence of threshold effects in the models, the first step of our analysis is to estimate the best model to use in the whole analysis. The tested models are stated in Equation (5) and (6), where the equation (5) is without interaction variable and equation (6) we examine the interaction variable of FDI and labor market flexibility.

$$\text{GROWTH}_{it} = \beta_0 + \beta_1 \text{INITIAL GDP}_{it} + \beta_2 \text{FDI}_{it} + \beta_3 \text{LMFREG}_{it} + \varepsilon_{it} \quad (5)$$

$$\text{GROWTH}_{it} = \beta_0 + \beta_1 \text{INITIAL GDP}_{it} + \beta_2 \text{FDI}_{it} + \beta_3 \text{LMFREG}_{it} + \beta_4 \text{LMFREG}_{it} \times \text{FDI}_{it} + \varepsilon_{it} \quad (6)$$

The results are presented in Table 2 and Table 3. Table 2 present the result without interaction variable and Table 3 present the result with the interaction variable. As shown in the Table 2 and Table 3, all the models that we tested are highly significant at 1 percent significant level. We decide to use model without interaction variable because based on reported result, with interaction variable, for both indicator of labor market flexibility, FDI has not directly effect on growth rate as the estimated coefficient is insignificant at the usual level that can be seen in Table 3. Result for model without interaction is reported in Table 2, and we find that FDI are highly significant in influencing growth rate. This finding are consistence with the past the literature of De Mello (1997), Lipsey (2000), Olivia and Rivera-Batiz (2002), Choe (2003) and Ma (2009) who also find that the role of FDI in promoting country growth rate.

Table 2: Ordinary least square estimation

Initial GDP	0.81	0.16	4.98	7.58e-07 ***
FDI	11.71	2.57	4.56	5.85e-06 ***
LMF	0.04	0.09	0.44	0.66
Constant	0.41	0.93	0.45	0.65
F-test	15.33			
p-value	9.865e-10***			
Multiple R <sup>2</sup>	0.049			
Number of Observation	738			

Note: Data for 82 selected developing countries covers periods from 2000-2001 and estimation using R statistical Software.



Table 3: Ordinary least square

	Coefficient	Standard error	t-value	p-value
Initial GDP	0.85	0.16	5.16	3.09e-07 ***
FDI	27.51	10.83	2.54	0.11
LMF	0.13	0.11	1.22	0.22
FDI x LMF	-2.29	1.53	-1.50	0.13
Constant	-0.34	1.06	-0.31	0.74
F-test	12.08			
p-value	1.453e-09****			
Multiple $R^2$	0.05			
Number of Observation	738			

Note: Data for 82 selected developing countries covers periods from 2000-2001 and estimation using R statistical Software.

### 4.3 Estimation Threshold

The next empirical analysis need to be done is to ensure the existence of the threshold effects. According to Hansen (1996, 1999 and 2000), the existence of threshold effect can be examine by using bootstrap approach in estimating the p-value based on 1000 replication for all bootstrap test. To determine number of the threshold, model (7) was estimated by using least square estimation by allowing for zero, one and two thresholds. The test statistics  $F_1$ ,  $F_2$  are presented in Table 4.

$$TFP_{it} = \mu_i + \theta_1 INTGDP_{it-1} + \theta_2 INTGDP_{it-1}^2 + \theta_3 INTGDP_{it-1}^3 + \theta_4 LMF_{it-1} + \theta_5 INTGDP_{it-1} LMF_{it-1} + \beta'_1 FDI_{it-1} I(LMF_{it} \leq \gamma_1) + \beta'_2 FDI_{it-1} I(\gamma_1 > LMF_{it} \leq \gamma_2) + \beta'_3 FDI_{it-1} I(\gamma_2 > LMF_{it}) + e_{it} \quad (7)$$

This model is developed based on model (2) setting, where TFP as dependent variable, INTGDP as an independent variable, FDI is of interest variable and LMF is a threshold variable. There are also additional regressors that included in this model  $INTGDP_{it-1}^2$ ,  $INTGDP_{it-1}^3$  and  $INTGDP_{it-1} LMF_{it-1}$  represent the non-linear term to reduce the possibility of spurious correlations due to omitted variables bias.

Table 4: Test for threshold effects.

	Regulation
<b>Test for single threshold</b>	
$F_1$	20.42
p-value	0.05**
(10%, 5% , 1% critical value)	[15.62, 20.21, 37.62]
<b>Test for double threshold</b>	
$F_2$	15.96
p-value	0.06*
(10%, 5% , 1% critical value)	[17.67, 21.47, 43.22]

Note: Data for 82 selected developing countries covers periods from 2000-2001 and estimation using R statistical Software.

Table 4 shows the estimation result of the F-test, p-value and critical value based bootstrap estimation. Reported result in Table 4 show that, based on  $F_1$  value of 20.42 and  $F_2$  value of 15.96 and both are statistically significant at 5 percent significant level and we can easily rejected the null hypothesis, that there are existence of threshold effect. Therefore there are double threshold effects and we classify the data and model into three regimes that represent in model (8).

$$TFP_{it} = \mu_i + \theta_1 INTGDP_{it-1} + \theta_2 INTGDP_{it-1}^2 + \theta_3 INTGDP_{it-1}^3 + \theta_4 LMFREG_{it-1} + \theta_5 INTGDP_{it-1} LMFREG_{it-1} + \beta_1 FDI_{it-1} I(LMFREG_{it} \leq \gamma_1) + \beta_2 FDI_{it-1} I(\gamma_1 > LMFREG_{it} \leq \gamma_2) + \beta_3 FDI_{it-1} I(\gamma_2 > LMFREG_{it}) + e_{it} \quad (8)$$

The result represent strong evidence of a nonlinear relationship between labor market flexibility and country growth rate as in each instance the null hypothesis of no threshold is rejected. The point estimate of single threshold for minimum wage and double threshold for regulation are reported in Table 5. Labor market flexibility indicates an existence of double threshold with the value of 4.5 and 5.9 and with asymptotic 95% confidence intervals. Result can be represent in three classes of countries that can be indicated by the point estimates with the very low level of labor market flexibility’, ‘very high level of labor market flexibility’ and ‘other’. The ranges of confidence intervals are not too tight which indicate high uncertainty about the nature of this division. More details and information can be learn and seen about the thresholds estimate of labor market flexibility from plots of concentrated ratio function  $LR_1^r(\gamma)$  and  $LR_2^r(\gamma)$  in figures 2 and 3.

Table 5: Threshold estimates

	Estimate	95% confidence intervals
<b>Labor Market Flexibility: Regulation</b>		
$\hat{\gamma}_1^r$	4.5	[3.6, 5.1]
$\hat{\gamma}_2^r$	5.9	[5.9, 6.2]

Note: Data for 82 selected developing countries covers periods from 2000-2001 and estimation using R statistical Software.

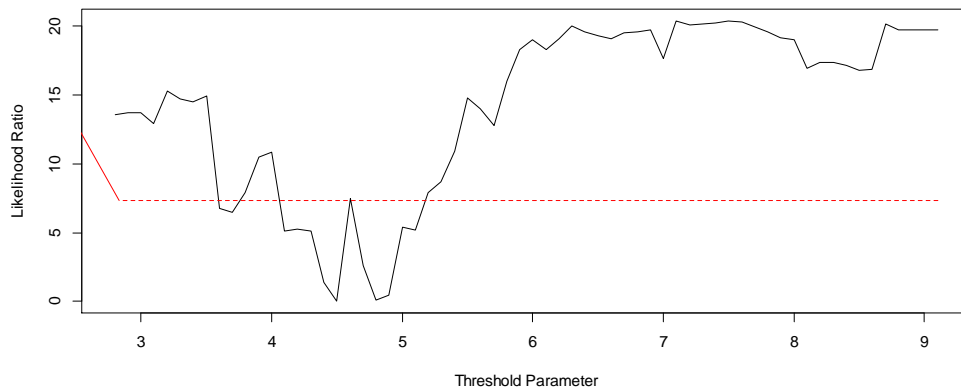


Figure 2: Confidence interval construction in single threshold model of regulation.

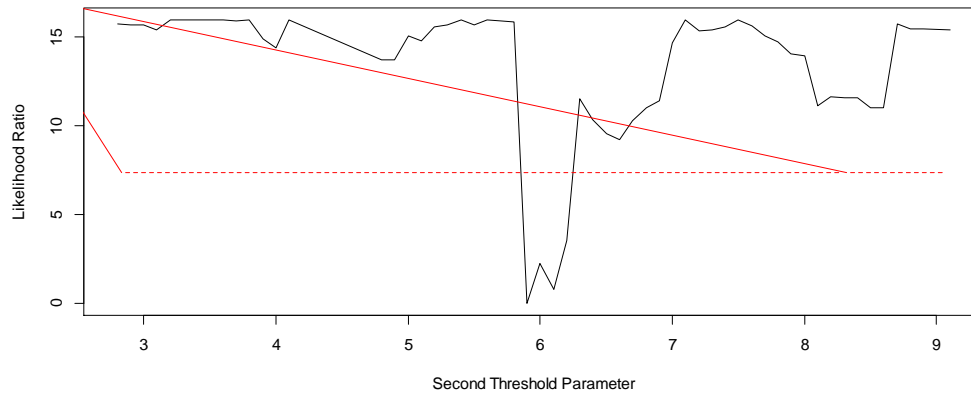


Figure 3: Confidence interval construction in double threshold model of regulation.

Table 6, present the result of a percentage of countries in each year based on estimated threshold. Panel 2 reported the results of the percentage countries for regulation in three regimes based on double threshold estimation. The first regime are range from 21 to 39 percent, the second regime are range from minimum 16 percent and maximum is 28 percent and the third regime are in range 45 to 51 percent. This findings indicate that the third regime of ‘others’ show the high percentage compare to very low level of labor market flexibility’ and ‘very high level of labor market flexibility’. Thus we can conclude that, for the regulation as an indicator for the labor market flexibility, the third regime indicate the high number of countries, follow by the first regime and the lowest number of countries are in the second regimes.

Table 6: Percentage of countries in each regime by year based on estimated threshold

Country class	Year									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
$LMF \leq 4.5$	35	39	29	27	27	24	22	21	23	21
$4.5 > LMF \leq 5.9$	18	16	22	22	22	24	26	28	26	24
$LMF > 5.9$	46	45	49	49	51	51	52	51	51	55

Note: Data for 82 selected developing countries covers periods from 2000-2001 and estimation using R statistical Software.

The regression coefficient estimates, conventional OLS standard errors and white-corrected standard errors are reported in Table 7. We can see, the first independent variable of initial GDP, show mixed result of positive and negative. The first coefficient of  $INTGDP_{it-1}$  is 41.17, where there are positively relationship between initial GDP and economic growth. By following the model developed by Hansen (1999),  $INTGDP_{it-1}^2$  show negative value of -10.10, where when initial GDP is squared, there is negatively relationship with the growth rate and this negative sign are consistence with reported result by Hansen (1999), we take power of three for initial GDP  $INTGDP_{it-1}^3$  of 0.67 and positively related with the growth rate, also consistence with result reported with Hansen (1999). The coefficient values of labor market flexibility indicate negative sign of -1.20 that labor market flexibility are negative relationship with economic growth, this result is consistence with Barro (1998) with the level of flexibility of labor market are negatively relationship with growth rate (i.e: less flexibility of labor market (high regulation) will lowers the growth rate). Turning now to the interaction variable of initial GDP and labor market flexibility indicate the positive value of 0.30 (0.56) with growth rate, where this

coefficient value indicates that when we interact labor market flexibility with the initial GDP, labor market flexibility will play a positive role to country growth rate. This result indicates that with more flexible labor market supported by good condition of GDP will influence growth rate and this result is consistence with Forteza and Rama (2000).

Our interest variable is the threshold effects. Based on Table 5, estimated regulation indicates double threshold effect, so model of regulation that we examine based on three regimes. The first regime indicate ‘very low level of labor market flexibility’ second regime indicates ‘very high level of labor market flexibility’ and third regime indicate ‘other’. Results for threshold estimation of Regulation in Table 7 of ‘very low level of labor market flexibility’ show negative coefficient of -22.77 that we can conclude with low level of labor market flexibility, there is negatively impact in mediating FDI on country growth rate. Result for second regime show 41.10 of ‘very high level of labor market flexibility’ and third regime of ‘other’ indicate the coefficient value of 13.48. We can conclude that, country with very high level of labor market flexibility will encourage the inflows of FDI and at the same time will boost country growth rate. These results explain with high level of labor market flexibility, country will attract more inflows of FDI and at the same time will enhance countries growth rate, however with low level of labor market flexibility did not attract inflows of FDI and will lowers the countries growth rate. Past studies by Cooke and Noble (1998), Cooke (2001), Ferner and Quintanilla (1997), Bentolila and Bertola (1990), Haaland et al (2003) and Dewit et al (2003) also indicate that flexible labor market are significant attractor of FDI.

Table 7: Threshold regression

Regressor	Coefficient estimate	OLS SE	White SE
Dependent variable is Growth rate			
$INTGDP_{it-1}$	41.17	24.3992	24.6597
$INTGDP_{it-1}^2$	-10.10	5.4689	5.4162
$INTGDP_{it-1}^3$	0.67	0.3961	0.3793
$LMF_{it-1}$	-1.20	1.5834	1.5511
$INTGDP_{it-1}LMF_{it-1}$	0.56	0.3549	0.3582
$FDI_{it-1}I(LMF_{it-1} \leq 4.5)$	-22.77	9.8106	12.3442
$FDI_{it-1}I(4.5 < LMF_{it-1} \leq 5.9)$	41.10	7.1527	17.4865
$FDI_{it-1}I(LMF_{it-1} > 5.9)$	13.48	3.7201	6.3268
Threshold estimate	5.9		
Fixed threshold	4.5		
Number Observation	738		
Confidence region	[5.9, 6.2]		
Sum of Squared Errors	7347.184		
LR Test for threshold effect	15.96085		
Trimming Percentage	0.05		

Note: Data for 82 selected developing countries covers periods from 2000-2001 and estimation using R statistical Software.

## 5.0 Conclusion

This study has developed an empirical discussion about the role of labor market flexibility in mediating the impact of FDI on growth by using threshold estimation and balance

panel data. The methods are applied of a panel 82 selected countries with estimation of 11 years for the period 2000-2010. Threshold variable of labor market flexibility show an existence of double thresholds with three regimes applied in the estimation model.

We present the new evidence on the role of labor market flexibility in mediating the impact of FDI on growth, where the major contribution of this dissertation is FDI have a positive effect on economic growth only when labor market flexibility exceed a threshold level at second regimes of 'very high level of labor market flexibility'. Thus, we can conclude that, countries with very high level of labor market flexibility will play an important role in mediating the impact of FDI on economic growth and this result consistence with Haaland et al (2003), Javorcik and Spatareanu (2004), Gunnigle and McGuire (2001) and Storey et al. (2002), that they find country with greater flexibility in the host country's labor market is associated with higher probability of investment taking place as well as with a larger volume of investment flows. The other contribution of this study is labor market flexibility should be one of the determinant of growth rate, not only labor discussed by Solow (1956) and human capital by Barro and Lee (1993).

This finding emphasize the importance role of government and labor market union in forming any labor market regulation because any new rules or modification of this market will affect the level or inflows of FDI also the number of MNC's location and finally will reduce country growth rate. Although more flexible give more benefit compare to the rigid labor market, any changes of labor market policy should not neglected the employment protection.

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