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THE ROLE OF FINANCIAL DEVELOPMENT ON INCOME INEQUALITY IN MALAYSIA

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This study examines the role of financial development in influencing income inequality in Malaysia over the period of 1980-2000. The empirical results based on ARDL bounds test indicate that financial market development is, at best, very weak and statistically insignificant in reducing income inequality in Malaysia. The evidence is valid for a variety of financial indicators, including the banking sector, the stock market and financial aggregate variables. The evidence also highlights that besides various government's development programs, efforts should also concentrate on improving institutional quality, economic development and maintaining low inflation in its attempt to combat income inequality.

Keywords: Banking Sector, Capital Market, Financial Development, Income Inequality, ARDL Bounds Test
JEL classification: G21, O15

1. INTRODUCTION

Over the last 20 years, Malaysia has enjoyed one of the highest economic growth rates in the developing countries. The average household income has risen dramatically but at the same time Malaysia is paying a cost for its robust economic development - social economic disparity such as income inequality. Income inequality is a source of social instability and armed conflict, which in turn are detrimental to economic development. While Malaysia has always been sensitive to the distribution issue, the 1990s also saw the widening of income inequality among Malaysian households. Figure 1 depicts the measurement of income inequality namely Gini coefficient of Malaysia from 1970-2002. As shown in this figure, the income inequality for Malaysia peaked in 1976 and fell thereafter to 1990. According to Shari (2000), the general development policies implemented under the New Economic Policy (NEP) 1971-1990 have had a

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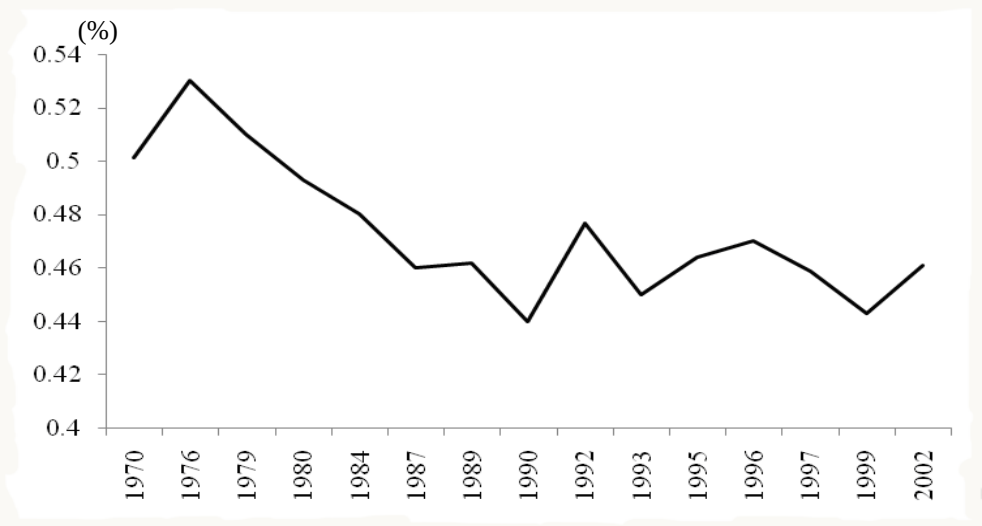
major impact on reducing income inequality in Malaysia from the late 1970s. The affirmative actions undertaken under the NEP were associated with a reduction in the Gini coefficient from 51% percent in 1970, 49% percent in 1980 and to 44% percent in 1990. However, since 1990 there is a trend towards rising income inequality. Shari (2000) points out that the government policy reversal towards liberalization, deregulation and privatization since the late 1980s has contributed to this trend of increasing inequality.



Source: Economic Planning Unit, Malaysia

Figure 1. Gini Coefficients of Malaysia

Ragayah (1998) advances tentative explanations for widening inequality in the 1990s, including the presence of foreign workers, the shift to manufacturing employment that resulted in a wider dispersion of wages and salaries, and the differential in the growth rates of agricultural and non-agricultural household incomes. She finds that the second and the third factors tend to explain the rise in inequality in Malaysia better than the first. Subsequently, Ragayah *et al.* (2000) further investigate the hypothesis that the increasing income disparity experienced in the 1990s was the result of the changing pattern of industrialization from labour-insentive to capital and technology-intensive. The changing demand for labour has not been accompanied by the necessary adjustments in the distribution of the labour supply, resulting in shortages of skilled workers. It is argued that, consequently, this imbalance has caused wage rates for skilled workers to rise at a faster rate than those of unskilled workers. In addition, the increasing presence of unskilled foreign workers, including those in the manufacturing sector, also dampened

the potential for wage increases among unskilled workers.

Recently the World Bank research (Beck *et al.* (2004, 2007)) as well as Claessens and Perotti (2007) reveal that financial market development is not only pro-growth, but it is also a powerful driver of poverty reduction. Clarke *et al.* (2006), Bittencourt (2006) and Liang (2006) demonstrate that financial development reduces income inequality. Two influential hypotheses have emerged in the finance-inequality literature, namely the inequality-widening hypothesis of financial development and the inequality-narrowing hypothesis of financial development. The inequality-widening hypothesis, which states that financial development might benefit the rich and well connected, especially when institutional quality in the society is weak. According to this hypothesis, the rich are able to offer collateral and who might be more likely to repay the loan, while excluding the poor (Rajan and Zingales (2003)). The poor, who do not have this, might, therefore, find it difficult to get loans even when financial markets are well developed. Therefore, it might worsen inequality and we would expect to see a positive relation between financial development and income inequality. On the other hand, the inequality-narrowing hypothesis puts forward the idea that when financial sector grows, the poor, who were previously excluded from getting loans, might gain access to it. In this respect, finance might be an equalizer for people with talents, ambition, and persistence. According to Banerjee and Newman (1993), and Galor and Zeira (1993), income inequality will be lower when financial markets are better developed.

The objective of this study is to examine the effect of financial market development on income inequality in Malaysia. Although there are few studies have been conducted to examine the sources of income inequality in Malaysia (Ragayah (1998, 2008), Ragayah *et al.* (2000), Shari (2000)), there is no study to date focusing on the role of financial development in influencing income inequality in Malaysia, and it is exactly here that this study wants to contribute. The relationship between financial development and income inequality is important for policy makers. For instance, policy makers want to know how policies affect income distribution as well as how they affect economic growth. Understanding this relationship will allow policy makers to assess whether financial development will improve inequality and when it might be useful in doing so. If financial development could reduce income inequality, policy makers should focus their attention on the creation and promotion of modern financial institutions in delivering long-run income distribution benefits.

The key finding demonstrates that financial development is insignificant in reducing the income inequality in Malaysia, which holds when controlling for institutions, real income and inflation. The result is robust for three financial development indicators, namely banking sector, stock market and finance aggregate indicators. This finding implies that financial development is not beneficial to the poor, and inequality-narrowing hypothesis is not supported in the case of Malaysia. Real income, institutional quality and inflation, however, are statistically significant determinants of income inequality in the long-run.

This study represents an advance over previous empirical literature in a number of

important respects. First, the sample utilized in this paper consists of quarterly data, covering the period 1980-2000. Second, this study employs the bounds test proposed by Pesaran *et al.* (2001), which has a number of advantages in time series analysis. Finally, a newly assembled data set on income distribution by Galbraith and Kum (2005) based on manufacturing wage data is employed in the analysis, where the data set is highly correlated with the actual Gini coefficient of Malaysia.

A few empirical studies have been conducted to investigate the finance-inequality nexus using various econometric techniques. For example, Li *et al.* (1998) examine the relationship between financial development and income inequality for 40 developed and developing countries from 1947-1994, using pooled Ordinary Least Squares (OLS) estimator, AR(1) error specification and instrumental variable method (IV). They find that better functioning financial markets are strongly associated with lower income inequality. Clarke *et al.* (2006) determine the relationship between finance and income inequality for 83 developed and developing countries between 1960 and 1995. Their results based on panel data demonstrate that inequality is lower in countries with better-developed financial markets, and that inequality decreases as economies develop their financial intermediaries. They reject the hypothesis that financial development benefits only the rich. Beck *et al.* (2004) utilize a broad cross-country sample, find that financial intermediary development reduces income inequality by disproportionately boosting the income of the poor and therefore reduces poverty.

From the country specific experience, Liang (2006) examines the relationship between financial deepening and income inequality, using Chinese provincial data over the period of 1991-2000. The empirical results based on the generalized method of moment (GMM) techniques demonstrate that financial development significantly contributes to the reduction of rural income distribution in China. Bittencourt (2006) investigates the link between financial development and inequality in the case of Brazil in the 1980s and 1990s. The empirical evidence, based on pooled OLS and time series (the IV estimator), shows that more broad access to financial and credit markets had a significant and robust effect in reducing income inequality.

This paper is organized as follows. Section 2 reviews the related literature. Section 3 explains the empirical model, econometric methodology and the data employed in the analysis. Section 4 reports and discusses the econometric results. The final section summarizes and concludes.

2. METHODOLOGY AND THE DATA

2.1 Empirical Model

In order to test the effect of financial development on income inequality, we specify the following log-linear equation for income inequality:

$$\ln G_t = \alpha_0 + \beta_1 \ln FD_t + \beta_2 \ln INS_t + \beta_3 \ln Y_t + \beta_4 INF_t + \varepsilon_t , \quad (1)$$

where G is an indicator of income inequality, FD is financial development, INS is institutional quality, Y is income per capita, and INF is inflation rate, ε is the error term, and the subscript t represents time period.

In this study, we also include one dummy variable to take account of the effect of New Economic Policy[1] (NEP) 1971-1990 on income disparity. Since the data of the study is covering from 1980 to 2000, thus, the dummy variable is defined by

$D8090_t = 1$ during the 44 quarters of 1980-90 and zero elsewhere.

Therefore, Equation (1) is extended to incorporate dummy variable. Thus, the basic income inequality equation is as follows:

$$\ln G_t = \alpha_0 + \beta_0 D8090_t + \beta_1 \ln FD_t + \beta_2 \ln INS_t + \beta_3 \ln Y_t + \beta_4 INF_t + \varepsilon_t . \quad (2)$$

Equation (2) provides a test of the inequality-widening hypothesis and the inequality-narrowing hypothesis of financial development. If β_1 is positive and significant then financial development will widen income inequality. Nevertheless, if β_1 is negative and significant then financial development will narrow the dispersion in income.

Model (2) also includes additional control variables for inequality, namely institutions[2], income per capita and inflation. In theory, it stands to reason that weak institutions such as high corruption and not well defined property rights may be conducive to income inequality, where the poor are not given the protection of an independent judicial system. Hoff and Stiglitz (2004) and Sonin (2003) point out that countries with poor institutions are also likely to have high inequality. If β_2 is negative

[1] Two-pronged strategy of NEP were: (i) to eradicate poverty by raising income levels and employment opportunities for all Malaysians irrespective of race, and (ii) to restructure the society to correct economic imbalances so as to eliminate the identification of race with economic function.

[2] With respect to the link between institutions and income inequalilty, see Chong and Gradstein (2004), Savoia *et al.* (2004), Rogowski and MacRae (2004) and Uchimura (2005).

and statistically significant, this indicates that better institutional quality will reduce income inequality. The economic development, which is proxied by income per capita, might improve the income distribution. On the other hand, the reduction in inflation will lower the income inequality. Thus, the coefficients of β_3 and β_4 are expected to be negative and positive, respectively. Equation (2) is estimated on the entire sample using the Bounds test proposed by Pesaran *et al.* (2001).

2.2. Econometric Techniques

Bounds test

Following the modeling approach developed in Pesaran *et al.* (2001), we start from the maintained assumption that the time series properties of the variables included in the Equation (2) can be well approximately by a log-linear VAR(*p*) model. Let

$$z_t = (G_t, FD_t, INS_t, Y_t, INF_t)' = (G_t, x_t'), \tag{3}$$

where G_t is gini coefficient (in logarithms), FD_t is financial development (in logarithms), INS_t is institutions (in logarithms), Y_t is income per capita (in logarithms), and INF_t is the inflation rate (in levels). The conditional (partial) model can be written as:

$$\Delta G_t = c_0 + c_1 D8090_t + \pi_{GG} G_{t-1} + \pi_{Gx.x} x_{t-1} + \sum_{i=1}^{p-1} \psi_i' \Delta z_{t-i} + \omega' \Delta x_t + u_t, \tag{4}$$

where c_0 is an intercept, and u_t is a stationary error term.

Under the assumption that lagged Gini coefficient, G_{t-1}, does not enter the sub-VAR model for x_t, for Equation (4) the above income inequality equation is identified and estimated consistently by the OLS. Pesaran *et al.* (2001) develop "bounds tests" to test the existence of a long-run relationship between the levels of G_t and x_t ($t = 1, 2, \ldots$). More specifically, the approach consists in testing for the absence of any long-run relationship between G_t and x_t ($t = 1, 2, \ldots$); that is, the exclusion of the lagged level variables G_{t-1} and x_{t-1} in (4). Hence, the null hypotheses are given by:

$$H_0^{\pi_{GG}} : \pi_{GG} = 0, \quad H_0^{\pi_{Gx.x}} : \pi_{Gx.x} = 0',$$

and the alternative hypotheses by:

$$H_1^{\pi_{GG}} : \pi_{GG} \neq 0, \quad H_1^{\pi_{Gx.x}} : \pi_{Gx.x} \neq 0'.$$

Since the asymptotic distributions of the *F*- and *t*-statistics are non-standard under the null hypothesis, irrespective of whether the forcing variables $\{ x_t \}$ are I(0) or I(1), Pesaran *et al.* (2001) present two sets of critical values for these statistics covering various specifications of the deterministic terms; one set assuming that the forcing variables $\{ x_t \}$ are I(0) and the other assuming that $\{ x_t \}$ are I(1). These two sets provide lower and upper 'critical value bounds' covering all possible classifications of $\{ x_t \}$ into I(0), I(1) and mutually cointegrated processes. If the computed Wald or *F*-statistics fall outside the critical value bounds, a conclusive decision results without needing to know the cointegration rank *r* of the $\{ x_t \}$ process. If, however, the Wald or *F*-statistics fall within these bounds, inference would be inconclusive, and knowledge of the cointegration rank *r* of the forcing variables $\{ x_t \}$ is necessary to continue further.

2.3. The Data

This study uses quarterly data covering the period from 1980Q1 to 2000Q4. We end the data in 2000 due to the income inequality data is only available until 2000. We utilize two data sets of financial development, namely:

a. private sector credit (as % of GDP), and
b. stock market capitalization (as % of GDP)

where both variables represent the development of banking sector and stock market, respectively. The sources of the data are from International Financial Statistics (IFS), Monthly Statistically Bulletin, Bank Negara Malaysia and the Bursa Malaysia. The private sector credit is probably the most relevant to measure opportunities for new investors. In addition, many studies that have examined the effect of financial development on growth have employed this indicator as a measure of financial development, showing that growth is faster in countries where private credit is higher (Beck *et al.* 2000 and Levine *et al.* 2000).

Besides using the above two financial development, this study also employs another four financial development measures in the analysis as robustness check of the empirical finding. These four measures are domestic credit (as % of GDP), total share value traded (as % of GDP), finance-size, and finance-activity. The last two measures namely finance-size and finance-activity are based on work by Levine and Zervos (1998), and Levine *et al.* (2000). The finance-activity is a measure of the overall activity of the financial intermediaries and markets. It equals the log of the product of private credit (the value of credits by financial intermediaries to the private sector divided by GDP) and value traded (the value of total shares traded on the stock market exchange divided by GDP). The finance-size is a measure of the overall size of the financial sector and

equals the log of the sum of private credit and market capitalization. Clearly, each of these two financial development indicators captures a different aspect of financial development and has its own strengths and weaknesses.

The income inequality is obtained from the University of Texas Inequality Project (UTIP) directed by Galbraith and Kum (2005), which is available annually for a group of developed and developing countries for the period 1963-2000. The UTIP has developed a new household income inequality measure, based on data collected by the United Nations Industrial Development Organization (UNIDO). Manufacturing wage data from UNIDO are used to compute the between groups component of Theil's T statistic for manufacturing wage inequality.[3] According to Galbraith and Kum (2005), this measure of inequality is based on household and expenditure survey, due to its greater availability and because at least in industrialized countries, there seems to be a strong link between increased earning and wage inequality and income inequality. To the extent this holds, the UTIP-UNIDO data set provides a denser data set on inequality to facilitate empirical and causal analyses. The quarterly data of income inequality is obtained by using the interpolation technique suggested by Gandolfo (1981).

Quarterly data on real GDP per capita, based on 2000 constant prices, and inflation rate are gathered from the Monthly Bulletin Statistics, Bank Negara Malaysia (BNM). Institutional quality data is from the International Country Risk Guide (ICRG) - a monthly publication of Political Risk Services (PRS). Following Knack and Keefer (1995), five PRS indicators are employed to measure the overall institutional environment, namely (i) corruption (ii) rule of law (iii) Bureaucratic Quality (iv) Government Repudiation of Contracts and (v) Risk of Expropriation. The first three variables are scaled from 0 to 6, whereas the last two variables are scaled from 0 to 10. Higher values indicate better institutional quality and vice versa. The institutions indicator is obtained by summing the above five indicators, after appropriate re-scaling.

Table1. Correlations

	Gini	PRI	DOC	SMC	TVT	FS	FA	Y	INF	INS
Gini	1.00									
PRI	-0.36	1.00								
DOC	-0.15	0.58	1.00							
SMC	-0.68	0.82	0.35	1.00						
TVT	-0.50	0.27	0.18	0.49	1.00					
FS	-0.51	0.95	0.51	0.89	0.43	1.00				
FA	-0.47	0.86	0.49	0.83	0.70	0.92	1.00			
Y	-0.70	0.82	0.42	0.91	0.52	0.94	0.85	1.00		
INF	0.53	-0.37	-0.19	-0.09	-0.05	-0.31	-0.34	-0.11	1.00	
INS	-0.54	0.13	0.21	0.34	0.14	0.12	0.07	0.26	0.41	1.00

Notes: Gini = Gini coefficient; PRI = private sector credit; DOC = domestic credit; SMC = stock market capitalization; TVT = total share value traded; FS = Finance-Size; FA = Finance-Activity; Y = Real GDP per capita; INF = inflation; INS = institutions.

[3] The UTIP-UNIDO data are available at http://utip.gov.utexas.edu/data.html.

Table 1 reports the correlation results between income inequality and various variables employed in the analysis. The results reveal that financial development indicators, real GDP per capita, and institutions are indeed negatively correlated with income inequality, whereas inflation is positively correlated with income inequality. Besides, the financial development indicators are positively correlated with each other.

3. EMPIRICAL RESULTS

Before conducting the Bounds test, the time series properties of the variables are examined using unit root tests. The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests are employed to determine the order of integration of the variables. The ADF results indicate that all series, except for institutions and inflation are stationary after first differencing, that is, they are at I(1) variables. Such a mixed result is not suggested by the PP test statistics, as both institutions and inflation are stationary at I(1). Nevertheless, both tests yield similar conclusion after first differencing, that is, all series are stationary at I(1).[4]

The optimal lag length of the ARDL model is based on Hendry's general to specific procedure (Hendry and Ericsson (1991)) by dropping sequentially the first difference variables that the absolute t-statistic is less than one (see Pattichis (1999)). The empirical results of the unrestricted error-correction model (UECM) where the finance indicator is proxy by private sector credit and stock market capitalization are reported in Tables 2 and 3, respectively. As shown in these two tables, the dummy variable (D8090) that takes into account of New Economic Policy (NEP) is negative and statistically significant determinant of income inequality. This finding suggests that the NEP indeed have had an effect on narrowing the income distribution in Malaysia, providing support to the case made by Shari's (2000) and Ragayah (2008).

The robustness of these two models has been confirmed by several diagnostic tests, such as Breusch-Godfrey serial correlation LM test, Jacque-Bera normality test and Ramsey RESET specification test. All the tests revealed that the model has desired econometric properties, namely the residuals are serially uncorrelated, normally distributed and has a correct functional form. In addition to these diagnostic analyses, a CUSUM test is utilised to discern the stability of the parameters estimated. From Figure 2, all estimated parameters are stable over time that is both the CUSUM test statistics are fall within the 5% critical line. Therefore, the estimated results reported in Tables 2 and 3 are valid and reliable.

[4] The unit root results are not reported but are available upon request.

Table 2. Unrestricted Error Correction Model of the Income Inequality Equation
Model 1. Financial Indicator: Private Sector Credit (PRI)
(Dependent variable: $\Delta Gini_t$, estimated period: 1980Q1-2000Q4)

Variable	Coefficient	Std. Error	*t*-Statistic
C	0.4016	0.1593	2.5210***
Gini(-1)	-0.2335	0.0527	-4.4293***
PRI(-1)	-0.1083	0.1420	-0.7621
INS(-1)	-0.1061	0.0469	-2.2628**
Y(-1)	-0.3110	0.0945	-3.2910***
INF(-1)	0.3054	0.1350	2.2622**
Δ(Gini(-1))	0.2447	0.1092	2.2405**
Δ(Gini(-2))	-0.0968	0.1170	-0.8275
Δ(Gini(-3))	0.3648	0.1184	3.0799***
Δ(PRI)	-0.0602	0.0306	-1.9643*
Δ(PRI(-1))	-0.0116	0.0291	-0.4015
Δ(PRI(-2))	-0.0726	0.0499	-1.4549
Δ(INS)	-0.0356	0.0718	-0.4958
Δ(INS(-1))	0.0183	0.0814	0.2256
Δ(INS(-2))	-0.0297	0.0708	-0.4196
Δ(Y)	0.1878	0.1792	1.0478
Δ(Y(-1))	-0.2705	0.1710	-1.5810
Δ(INF)	0.0164	0.0100	1.6381
Δ(INF(-1))	0.0670	0.0203	3.2861***
Δ(INF(-2))	0.0438	0.0155	2.8162***
Δ(INF(-3))	0.0241	0.0108	2.2211**
D8090	-0.0324	0.0135	-2.4001**
R-squared	0.8847	*F*-statistic	22.62
Adjusted R-squared	0.8743	Prob(*F*-statistic)	0.0000
Diagnostic Checking			
AR(2) = 2.45 (0.13)		AR(4) = 2.68 (0.11)	
JB = 0.60 (0.75)		RESET = 1.40 (0.25)	

Notes: *, **, and *** indicate significant at 10%, 5%, and 1% levels, respectively. AR(*i*) denotes LM-type Breusch-Godfrey Serial Correlation LM test. JB and RESET stand for Jarque-Bera normality test and Ramsey regression specification error test, respectively. Figures in the parentheses are *p*-values.

Table 4 provides the values of the *F*-statistics for testing the existence of a long-run income inequality equation. The *F*-statistics in this table are compared with the critical value bounds provided in Table CI.iii. The computed *F*-statistics (Wald test) are 5.36 and 5.15, which are greater than the upper critical bound value of 5.06. Therefore, we concluded that there exists a steady state long-run relationship amongst income inequality, financial development, institutions, real GDP per capita and inflation.

Table 3. Unrestricted Error Correction Model of the Income Inequality Equation
Model 2. Financial Indicator: Stock Market Capitalization (SMC)
(Dependent variable: $\Delta Gini_t$, estimated period: 1980Q1-2000Q4)

Variable	Coefficient	Std. Error	*t*-Statistic
C	0.4280	0.1497	2.8597***
Gini(-1)	-0.2455	0.0529	-4.6401***
SMC(-1)	-0.0111	0.0069	-1.6098
INS(-1)	-0.1036	0.0468	-2.2089**
Y(-1)	-0.3250	0.0950	-3.4213***
INF(-1)	0.3160	0.1362	2.3201**
Δ(Gini(-1))	0.2452	0.1098	2.2331**
Δ(Gini(-2))	-0.0974	0.1176	-0.8282
Δ(Gini(-3))	0.3650	0.1188	3.0723***
Δ(SMC)	-0.0074	0.0147	-0.5042
Δ(SMC(-1))	-0.0099	0.0157	-0.6299
Δ(SMC(-2))	-0.0206	0.0162	-1.2741
Δ(INS)	0.0218	0.0172	1.2670
Δ(INS(-1))	-0.0109	0.0115	-0.9500
Δ(INS(-2))	-0.0008	0.0007	-1.0725
Δ(Y)	0.1890	0.1799	1.0505
Δ(Y(-1))	-0.2724	0.1754	-1.5531
Δ(INF)	0.0168	0.0105	1.6001
Δ(INF(-1))	0.0678	0.0201	3.3731***
Δ(INF(-2))	0.0445	0.0159	2.7987***
Δ(INF(-3))	0.0248	0.0112	2.2143**
D8090	-0.0351	0.0147	-2.3877**
R-squared	0.8625	*F*-statistic	25.87
Adjusted R-squared	0.8547	Prob(*F*-statistic)	0.0000
Diagnostic Checking			
AR(2) = 3.98 (0.42)		AR(4) = 2.79 (0.13)	
JB = 3.79 (0.15)		RESET = 1.60 (0.29)	

Notes: *, **, and *** indicate significant at 10%, 5%, and 1% levels, respectively. AR(i) denotes LM-type Breusch-Godfrey Serial Correlation LM test. JB and RESET stand for Jarque-Bera normality test and Ramsey regression specification error test, respectively. Figures in the parentheses are *p*-values.

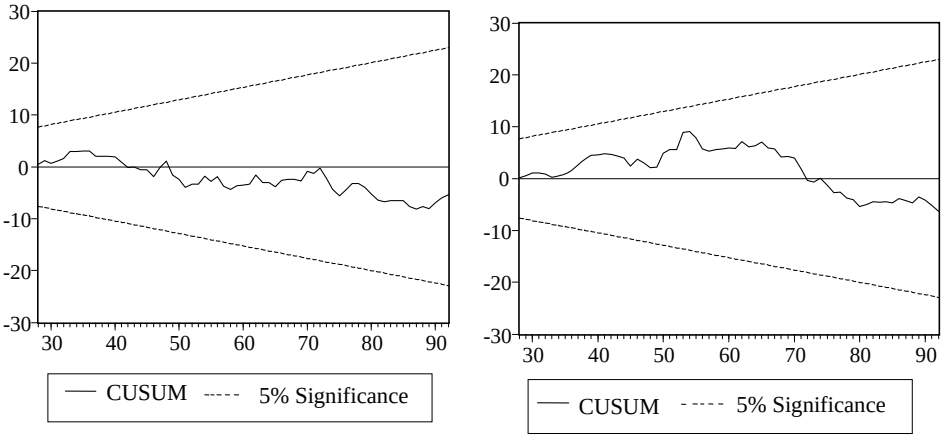
The long-run elasticities of income inequality with respect to financial development, institutions, real income and inflation are reported in Table 5. The empirical results indicate that financial development indicator is not statistically significant determinant of income inequality, irrespective of banking sector or stock market development indicator. The institutions and real GDP per capita variables, however, are negatively correlated with income inequality and statistically significant; while inflation is

positively significant determinant of income inequality as well. Among these determinants, it seems that real GDP per capita has greatest impact on income distribution, followed by inflation and institutions based on the long-run elasticities.

Table 4. Bounds Test for Cointegration Test
(FD = Financial Development)

Null Hypothesis: No Cointegration		
	Computed *F*-statistic	
Model 1: FD = Private Sector Credit	5.36	
Model 2: FD = Stock Market Capitalization	5.15	
	Critical Value	
	Lower	Upper
1% significance level	3.74	5.06
5% significance level	2.86	4.01
10% significance level	2.45	3.52
Decision: Reject null hypothesis at 1% significance level		

Note: The critical values are taken from Pesaran *et al.* (2001), Table CI(iii) Case III: Unrestricted intercept and no trend.



(a) Model 1. Private Sector Credit (b) Model 2. Stock Market Capitalization

Figure 2. CUSUM Test Results

Table 5. Long-run Elasticities of Income Inequality in Malaysia

Variables	*Model 1* FD = Private Sector Credit (PRI)	*Model 2* FD = Stock Market Capitalization (SMC)
Long-run Estimated Coefficient		
Financial Development (FD)	-0.4638	-0.0452
Institutions (INS)	-0.4543**	-0.4219**
Real GDP Per Capita (Y)	-1.3319***	-1.3238***
Inflation (INF)	1.3079**	1.2871**
D8090	-0.1387**	-0.1429**

Note: ** and *** denote significant at 5% and 1% significance levels, respectively.

Robustness Check Using Other Financial Development Measures

In order to check the robustness of the role of finance in influencing income distribution, we also employed other financial development indicator, namely domestic credit, total share value traded, finance-size and finance-activity. We repeat the similar estimation, and the empirical results in Table 6 indicate that financial development is not statistically significant determinant of income inequality in Malaysia in long-run.[5]

Table 6. Long-run Elasticities Using Other Measure of Financial Development

Financial Development (FD)	Long Run Elasticities
Model 3: FD = Domestic Credit	-0.3473
Model 4: FD = Total Share Value Traded	-0.3753
Model 5: FD = Finance-Size	-0.2017
Model 6: FD = Finance-Activity	-0.2133*

Note: * denotes significant at 10% significance level.

4. CONCLUSION

This study examines the effects of financial market development on income inequality in Malaysia during 1980 to 2000. Although financial market development has been gaining popularity in recent year especially to promote economic growth, there has been no available econometric evidence to trace the link between finance and income distribution in Malaysia. As financial and economic integration become a reality for an increasing number of developing countries, it is vital to understand how the role of

[5] The full estimation results, however, are not reported but are available upon request.

financial development affects income distribution.

The empirical results based on Bounds test proposed by Pesaran *et al*. (2001) demonstrate that financial development is, at best, very weak and statistically insignificant determinant of income inequality. The evidence remains valid for a variety of financial development indicators, including two indicators of banking system development, two indicators of stock market development, as well as two finance aggregate variables. This finding suggests that financial intermediaries should improve their efficiency in terms of allocating financial resources to finance household's productive activities, and hence contribute towards improving income inequality. The development of an efficient financial development thus should be at the center of a propoor development strategy.

On the other hand, the institutional quality is statistically significant in reducing income distribution in Malaysia, providing support to the case made by Chong and Gradstein (2004) and Hoff and Stiglitz (2004). The empirical findings also suggest that among the conventional determinants of income inequality, real GDP per capita is the most robust one, while as suspected by several authors in the past. We also find that inflation is a robust and statistically significant determinant of income inequality. These findings suggest that improving economic development and maintaining low inflation rate is vital in reducing income inequality in Malaysia.

In terms of policy implications, this study suggests besides various government development programs, efforts should also concentrate on improving quality of institutions and economic development, maintaining low inflation are crucial in its attempt to combat income inequality. Several aspects of improving institutions, such as enhancing the rule of law, cracking down on corruption and improving bureaucratic quality play a key role in the functioning of financial systems[6], and seem, therefore, to hold the key for delivering long-run income distribution benefits in Malaysia.

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