

Journal of Economic Cooperation & Development

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**Inward FDI Performance in the Muslim
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EDITORIAL NOTE

Five papers make up this issue at hand. The first one, titled *Beta Wins Again: Case of Four Emerging Markets*, by Samer AM Al-Rjoub, Abdullah Al Yousef and Izz Eddien Ananzeh, tries to investigate empirically the cross-sectional behavior of stock returns in four emerging markets; namely, Egypt, Jordan, Morocco and Saudi Arabia. It uses the “between estimator” panel data regression to test whether price-earnings ratio, book-to-market ratio, market capitalization, and beta can predict stock market returns variations. Based on the results, the authors keep the belief that Beta has a significant explanatory power in predicting stock market returns. The second paper, titled *Globalization and the Malaysian Labor Market: An Empirical Investigation* by Selamah Abdullah Yusof, investigates the link between globalization and the Malaysian labor market by applying the autoregressive distributed lag approach. The findings indicate that globalization does not significantly affect the labor variables; in the contrary, inflow of foreign direct investments has been found to act as an “adjusting” variable. Thus, in the case of Malaysia, the focus should be given to upgrading the workers’ skills and productivity, rather than to globalization.

The third paper, *Testing Long Run Relationship between Exports and Imports: Evidence from Pakistan*; has been written, on quarterly data for the period 1972-2006, by Tahir Mukhtar and Sarwat Rasheed. The paper, using Johansen Maximum Likelihood cointegration technique, finds out that there is a long run relationship between exports and imports and the country is not in violation of its international budget constraint. On the other hand, and by using Granger causality tests, it has been found that there exists a bidirectional causality between exports and imports; and suggests that overall macroeconomic policies are effective in bringing exports and imports into a long run steady state equilibrium. The fourth paper, *An Analysis of Islamic Banks’ Exposure to Rate of Return Risk*; by Zairy Zainol and Salina H. Kassim, uses data covering the period from January 1997 to October 2008; applies the cointegration analysis, bi-variate Granger causality test, Impulse Response Function (IRF) and Variance Decomposition (VDC) analysis based on the Vector Auto-regression (VAR) framework and indicates many implications on the risk management practices of the Islamic Banks in Malaysia. The paper also comes out with several suggestions to mitigate the rate of return risk.

The fifth and last paper titled *Inward FDI Performance in the Muslim World: Assessing Business and Political Environments*, by M. Moniruzzaman; presents, while carrying out the assessment, a cross-country analysis of the 57 Muslim majority countries' FDI performance during 1995-2006. It concludes that unfavourable business environment and high level of political instability might be held responsible for the low FDI performance detected in Muslim countries.

Beta Wins Again: Case of four Emerging Markets

Samer AM Al-Rjoub¹, Abdullah Al Yousef and
Izz Eddien N. Ananzeh

We empirically investigate the cross-sectional behavior of stock returns in four emerging markets, namely, Egypt, Jordan, Morocco and Saudi Arabia. We use the “between estimator” panel data regression to test whether price-earning ratio, book-to-market ratio, market capitalization, and beta can predict stock market returns variations. Based on the results we still believe that Beta have a significant explanatory power in predicting stock market returns; the sign is positive. Other fundamentals fail the test.

1. Introduction

Efficient Market Theory (Fama (1970)) predicts that all assets are correctly priced. Late in 1970's less favorable evidence for the CAPM began to appear in the so-called literature of financial anomalies.

We built this study on prior researches work who tried to explain stock returns variations by some fundamental variable supporting the existence of inconsistencies in the Efficient Market Theory.

In this paper we examine the cross-sectional behavior of returns in a number of previously unexplored emerging markets. The sample covers four emerging markets from the *Middle East and North Africa (MENA)* countries.²

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² Emerging markets are characterized by: high average returns, low correlations with developed markets stock returns, returns are more predictable, and volatility is higher (Bekaert, and Harvey 1995).

Price-Earning ratio (P/E), book-to-market ratio (B/M) ratio, Market Capitalization (MCAP), and beta (B) are used as predictors of stock returns. The "between estimator" panel data regression, described in Mairesse (1993), is employed for estimation.

The main result of this paper confirms that beta has a significant explanatory power in all of the four markets and the sign is positive. Other variables; P/E, B/M, and MCAP failed to capture any power in predicting stock returns.

Following a brief literature review in section 2, section 3 discusses data and methodology and describes the model and the examination techniques used. The main results are presented in section 4. Conclusions are drawn in section 5.

2. Literature review

Over the past thirty years hundreds of empirical studies have document predictability of stock returns using a bundle of forecasting variable. In what follows we provide a list of some of the most sited papers in this area of research.

Basu (1977), examine the relationship between investment performance of equity securities and their P/E ratios. Basu results confirm that the lowest price-earnings ratio quintile had the highest average annual rate of return over the examined period.

Banz (1981) , found that small firms earns higher risk adjusted returns than large firms, a term named later as the “size effect”, and became an evident that the capital asset pricing model is miss-specified.

Reinganum (1981), conclude that the simple one-period capital asset pricing model is miss-specified due to factor omissions, which might be related to the firm size and earnings yield. He founds that small-capitalization firms earned higher average return than those of large firms with equivalent beta risk.

Basu (1983), re-examine Reinganum’s (1981) results using different procedure and t time frame, his results confirm that the stocks with high E/P earn on average higher risk-adjusted return than the stocks with low

E/P. His provide evidence that E/P effect is not entirely independent of firm size.

Cook and Rozeff (1984), reexamine the methodologies of Reinganum (1981) and Basu (1983) to see why their results are contradictory³. Cook and Rose report that the firm size does not subsume E/P, nor does E/P. The size and E/P are independent effects, with no interaction between them, as claimed by Basu.

Jaffe, Keim, and Westerfield (1989), on the other hand employ a seemingly Unrelated Regression (*SUR*) model, to test the significance of the Size and E/P effects. They found significant E/P and size effect during the whole period. Their findings report a difference between January and the rest of the year. The coefficient of E/P and size are significant in January, but only E/P coefficient is significant outside of January, a result consistent with Cook and Rozeff (1984), but inconsistent with Banz (1981), Basu (1983), and Reinganum (1981).

Keim (1990), find that the strength of predictability increases as firm size decreases and E/P increases. Chan, Hamao, and Lankonishock (1991), examine the cross-sectional predictability of equity returns in Japan, by using Seemingly Unrelated Regression (*SUR*) model and the methodology of Fama and McBeth (1973). Their main findings confirm that B/M ratio and cash flow yield have the most significant positive impact on expected returns; they also report the size effect with no earning yields effect.

Fama and French (1992), employ the methodology of Fama and McBeth (1973); in which the cross-sectional of stock returns is regressed on a number of variables hypothesized to explain average returns, their main findings confirm that size, and B/M ratio capture the cross-sectional variation in stock returns associated with E/P, leverage, and B/M. Fama and French (1993), found that size and B/M seems to do a good job in explaining the cross-sectional of average stock returns,

³ Reinganum (1981) concludes that the size effect subsume E/P effect and Basu (1983) concludes that E/P subsume the size effect.

Mei (1993) found that the multi-factor model is capable of capturing the size effect and the dividend yield effect, but it is incapable of explaining the B/M effect and E/P ratio effect.

Davis (1994) indicate that the natural log of B/M equity, earning yield, and cash flow yield had significant explanatory power with respect to cross-section of realized stock returns during the test period.

Kothari, Shanken and Solan (1995), main finding confirme that the average returns do indeed reflect substantial compensation for beta risk, and that the beta alone can not account for all the cross-sectional variation in expected returns.

Fama and French (1996), use their three-factor model to explain stock market anomalies. They argued that many of the *CAPM* average return anomalies are related and are captured by the three-factor model in Fama and French (1993).

Kim (1997), confirm that the weak relationship between market beta and average stock returns and the size-related anomalies are due to the failure to correct for error-in-variables (*EIV*) biases. The *EIV* results are conditional on the presumption of the length of beta estimations period. The results are sensitive to the assumption of the extent of beta stationarity.

Loughran (1997), confirms that the size effect has explanatory power only in January, and B/M effect is inconsistent outside the month of January.

Daniel and Titman (1997) concluded that the size and B/M are not risk factor in equilibrium pricing model.

Claessens and Stijn (1998), examine the cross-sectional pattern of returns in nineteen emerging markets using the International Finance Corporation data base. Claessens and Stijn document positive relationship between size and returns contrary to what have been found in most developed countries. They also found that the importance of earnings-to-price effects is limited and Dividend yield plays an important explanatory role only in seven of the sampled countries.

In the same line of research, Aydogan and Kursat (2000) examine the ability of earning price ratio and B/M ratios to predict future stock market returns in nineteen emerging equity markets. Their results indicate that both P/E and B/M ratios have predictive power for future returns, especially over longer time periods; hence they can be used as tools in forming a market timing and asset allocation strategy in emerging equity markets.

Trevino and Robertson (2002) finding indicates that E/P ratios have lower predictive power in short-term horizon returns (holding period less than three years) and suggest that current E/P ratios are useful in estimating long-horizon average returns and the relation between them is negative.

Lewellen (2002) use the same model of Stambaugh (1999), and, Nelson and Kim (1993) in estimating *OLS* regression for *NYSE* equal- and value-weighted returns. They find that dividend yield provide strong evidence of predictability for the whole period from 1946 to 2000, and for various sub-sample. The B/M and E/P ratios is somewhat weaker, in other word, they have limited forecasting power.

Rapach and Wahar (2003) use Monte Carlo simulation to test the increasing statistical power at long horizon in linear framework, the simulation results show that power does not increase at long horizon (in fact it decrease). So that, in linear framework it's difficult to explain stock return predictability.

Lewellen (2004) found that the dividend yield predicts market returns during the period 1946-2000, as well as in various sub samples. B/M and the E/P ratios predict returns during the shorter sample 1963-2000. The evidence remains strong despite the unusual prices run-up in recent years.

Finally, Lyn and Zyowicsch (2004) suggest that the fundamental determinant of returns for developed markets of Eastern Europe is the same as of old emerging markets, as in Fama and French (1988).

As noticed from above, to date the international empirical work concentrated their analytical vision on the more developed markets, especially *U.S* and *U.K* markets, with some evidence from other European markets. In this research we expand the empirical evidence

on the nature of asset returns, by examining the cross-sectional pattern of returns in a number of previously unexplored markets. We examine the effect of a number of risk factors in addition to β on asset returns by employing methodology of “between estimator” panel data regression.

3. Data and Methodology

Data:

Our study cover a group of countries widely classified as emerging markets as defined by the *Standard & Poors (S&P)*, and the *International Finance Corporation (IFC)* of the World Bank. The four markets are from the *Middle East and North Africa (MENA)*; namely; Egypt, Jordan, Morocco, and Saudi Arabia. The data come from *S&P/IFC* emerging markets data base entitled "Annual Fact Book". The number of firms included in each country was adjusted for survivorship and for their time period test reliability.

In order to compute monthly rates of return in a market, we firstly express the prices for indexes or companies in term of dollars, and then we calculate the returns as percentage changes from month $t-1$ to month t . The sample period starts from December, 1997, to July 2002.

Methodology:

Our aim is to examine the short-run relationship between the stock returns R_t and their Beta's, P/E, B/M, and MCAP For four emerging markets from *Middle East and North Africa (MENA)*; (Egypt, Jordan, Saudi Arabia, Morocco) using "between estimator" panel data analysis, the availability of data determine the width of the span period.

In this paper we employ panel data technique of "between estimators" described in Mairesse (1993). Panel data have several advantages over both cross-sectional or time-series data. These advantages are summarized in (Hsiao 2006, pp 3-6); it gives more accurate of model parameters, which usually contain more degree of freedom, less collinearity among variables, more sample variability than cross-sectional data and improve efficiency of econometrics.

The basic framework of the regression model is.

$$y_{it} = X'_{it}\beta + Z'_i\alpha + \varepsilon_{it} \quad (3)$$

Where y_{it} : is dependent variables, X_{it} : independent variables, ε_{it} : is an error terms. There is k-regressor in X_{it} not including a constant term, the heterogeneity or individual effect is $Z'_i\alpha$, where Z_i contains a constant term and a set of individual or group specific variable which may observed or unobserved. If Z_i observed for all individuals, then the entire model cab be treated as an Ordinary Linear Model and fit by Least Square (Greene, 2003, pp 285).

Using observations on $i=1, \dots, n$ stocks for each of $t=1, \dots, T$ months, if pooled the model under investigation can be written as:

$$R_{it} = \gamma_0 + \beta X_{it} + \varepsilon_{it} \quad (4)$$

Where:

γ_0 : Overall intercept

X_{it} : Independent variables like β , P/E , B/M , and $MCAP$

ε_{it} : Error terms

The between (stock) estimator for the coefficients is obtained by Ordinary Least Squares estimator on the (cross-sectional) equation:

$$\bar{R}_i = \gamma_0 + \gamma_1 \bar{X}_i + \bar{\varepsilon}_i \quad (5)$$

Where:

$$\bar{R}_i = \frac{1}{T} \sum_{t=1}^T R_{it} \quad (6)$$

Variables in the equation are defined similarly.

Intuitively, the between regression is performed on the average cross-section and can easily deal with unbalanced panel data. Moreover, the estimator reduces the Error-In-Variable (*EIV*) bias through the averaging process that it's entail (Mairessee (1993)). In this paper, with a relatively small number of firms in the cross-section, the between

estimator of individual stocks is preferable to forming portfolio's and able us to avoid the bias documented by Lo and Mackinlay (1990).⁴

Accordingly, we include four variables in equation (4), namely β , P/E, B/M, MCAP to predict stock returns. The betas estimate is calculated from regressing the monthly stock returns of each company on the monthly stock market index returns for each market and use these estimates in a series of cross-sectional regressions beside P/E, B/M, MCAP.

4. Empirical Results

In order to analyze the returns on a common basis, we choose to work with *U.S* dollar returns, we did some filtering on the data to account for survivorship bias and sample periods. This filtering narrows the number of stocks in our database. The result is 23 stocks for both morocco and Saudi Arabia, 60 stocks for Egypt, and 34 stocks for Jordan.

We report the summary statistics for the four countries in table 1. The three explanatory variables presented in the Table 1 display substantial variation across countries; P/E ratios vary across countries, ranging from 9.75% for Egypt to 17.0% for Saudi Arabia. In general B/M ratios rankings agrees with those of P/E rankings.

Market capitalization (in million dollars) ,which stands for size, shows that Saudi Arabia own the largest market CAP followed by Egypt then Morocco and finally Jordan with sizes 61060 , 23514,11389, and 3980 millions respectively.⁵

Table 2 reports the coefficients estimates from running the between estimator for equation (4). The Beta coefficient for Egypt is statistically significantly positive at 1% level (p-value of the β is 0.000). The p-value for P/E, B/M, and MCAP are 0.348, 0.623, and 0.706, respectively, are insignificant.

⁴ There is some bias in the test results by grouping stocks into portfolios on the basis of observed characteristics; we can avoid this bias when individual stocks are used.

⁵ The market capitalization for Jordan might be larger than this, but because we reduce the sample dramatically market CAP show small number.

The Beta coefficient for Jordan is statistically significantly positive with at 5% level (p-value of the β is 0.018), other explanatory variables show insignificant relationships except for B/M with negative sign and a coefficient of -1.739. P/E and MCAP coefficient are not different from zero. .

In the case of Morocco, the Beta coefficient is statistically significantly positive at 5% level (p-value of the β is 0.022), Again β preserve the monotonicity between risk and return. Other explanatory variables show insignificant relationships except for B/M who seems with negative sign and a coefficient of -4.64. Other variables coefficients are not different from zero.

For Saudi Arabia, only β shows significant positive relationship with a coefficient of 0.889 and p-value of 0.067. All other variables are insignificant.

The main findings presented in Table 2 support the prior findings of CAPM model; the β coefficient for all countries have statistically significant effects on stock returns with p-value (0.000) for Egypt, (0.018) for Jordan, (0.022) for Morocco, and (0.067) for Saudi Arabia.

The positive β coefficients shows that the risk-return positive relationship holds for all the examined countries suggesting that holding stocks with higher betas (or higher volatility relative to the market) is being compensated with higher return .

Summarizing the above result, the CAPM model is still in work, and our findings are consistent with the findings of Kothari, Shanken, and Solan (1995), and Kim (1997).

Among other factors only B/M has statistically significant explanatory power in the two markets; with p-values (0.082) for Jordan and (0.000) for Morocco with negative signs.⁶ This finding is contrary to those of Fama and French (1992), (1993), (1996), Davis (1994), Bryant, and

⁶ Fama and French (1992) and others commonly use the log of B/M. However, this measure will exclude most firms from the distressed sample since they have negative book-to-market ratio. We therefore use B/M.

Eleswarapu (1997), Aydogan and Kursat (2000), and Lyn, and Zyowicsch (2004).

The P/E has statically insignificant explanatory power in the four markets, a result consistent with those of Chan, Hamao, and Lankonishock (1991), and contrary to those of Basu (1977, 1983), Jaffe, Keim, and Westerfield (1989), Keim (1990), Fama and French (1992), Kim (1997), Aydogan, and Kursat (2000), Trevino, and Robertson (2002), Rapach and Wahar (2002,2003), Lyn, and Zyowicsch (2004).

The size variable MCAP has statically insignificant explanatory power in the four markets, this finding is consistent with the findings of Daniel and Titman (1997), and contrary to the findings of Banz (1981), Reinganum (1981), Basu (1983), Keim (1990), Fama and French (1992), Mei (1993), on the other hand, Fama and French (1993), and Claessens, and Stijn (1998).

5. Conclusions

We investigate the cross-sectional pattern of stock returns for four emerging markets, using the “between estimator” panel data regression. We examined empirically the relationship between different variables; β , P/E, B/M, and MCAP and stock returns.

Our main result confirms that beta has a significant explanatory power in predicting stock returns variations in four emerging markets and the sign is positive, confirming the prediction of Sharpe, Lintner, Mossin, and Black *CAPM*.

The CAPM model is still in work and our finding is consistent with finding of Kothari, Shanken, and Solan (1995), and Kim (1997).

In addition, among other factors only *B/M* has statistically significant explanatory power in the two markets, and their sign is negative.

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Table (1) summary statistics

Countries	Number of listed company total	Number of company in the sample	Percentage of the sample of total volume	Mean return	Standard deviation . return	<i>P/E</i>	<i>B/M</i>	<i>Size (MCAP)(million of \$)</i>
Egypt	95	60	0.63	-3.22	7.23	9.75	0.38	23514
Jordan	77	34	0.44	-0.66	6.11	14.6	0.64	3980
Morocco	23	23	1.0	-2.13	9.23	16.5	0.54	11389
Saudi Arabia	24	23	0.96	-0.37	4.68	17.0	0.45	61060

Table (2) coefficient estimates

The table contains the between (stocks) estimator coefficients described in equation (34) $R_{it} = \gamma_0 + \gamma_1 X_{1t} + \dots + \gamma_k X_{kt} + \varepsilon_{it}$ $i=1\dots n$, β is estimated from time series data. All other variable are observed value by one month, estimated coefficient report firstly, t-statistics and p-value in parentheses. * indicate significance at 1%, ** indicate significance at 5%, *** indicate significance at 10%.

country	γ_0	β	P/E	B/M	$MCAP$
Egypt					
t-statistic, p-value	-0.539 -0.379 (0.704)	1.125 4.628 0.000)*	0.082 0.937 (0.348)	-0.294 -0.492 (0.623)	0.319 0.377 (0.706)
Jordan					
t-statistic, p-value	0.473 1.011 (0.312)	0.659 2.366 (0.018)**	-0.507 -0.195 (0.845)	-0.502 -1.739 (0.082)***	0.246 0.212 (0.832)
Morocco					
t-statistic, p-value	2.321 2.739 (0.006)	0.693 2.286 (0.022)**	0.019 1.162 (0.245)	-5.529 -4.640 (0.000)*	-0.130E-04 -0.223 (0.823)
Saudi Arabia					
t-statistic, p-value	0.891 1.235 (0.217)	0.889 1.830 0.067)***	0.967E-03 1.250 (0.211)	-0.780E-03 -1.390 (0.165)	0.249E-05 0.082 (0.934)

Globalization and the Malaysian Labor Market: An Empirical Investigation

Selamah Abdullah Yusof¹

Theories have been put forth on the impact of globalization on wages, employment and productivity levels, of which empirical evidence provide mixed results on its effects. The existing empirical studies have largely been either concentrating on developed economies or on developing countries as a group, and rely mainly on correlation and standard econometric technique of regression. This paper, on the other hand, investigates the link between globalization and the Malaysian labor market by applying the autoregressive distributed lag approach, a relatively new time-series technique to the analysis. The findings indicate that globalization does not significantly affect the labor variables in the long run. In fact, inflow of foreign direct investments is an “adjusting” variable that reacts to changes in productivity and output growth. Thus for Malaysia, the main focus should be on upgrading the skills and productivity of workers, rather than on globalization, to improve its overall economic growth.

There are variations to the meaning of globalization. In many writings, the emphasis is on economic globalization. Bhagwati (2004) explains economic globalization as constituting the integration of national economies into the international economy through trade, direct foreign investment, short-term capital flows, international flows of workers and humanity generally, and flows of technology. Alternatively, it can be defined as the process in which the combined force of different elements leading to an increase in countries dependence on or from more positive point of view of interactions with the rest of the world. It leads to a progressive integration of the world economy through pulling barrier of trade, exchange rate and greater mobility of factors of production

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(Bhandari and Heshmati, 2005). Thus, economic globalization can be seen as a process where a mutual interdependence of producers of goods and providers of services is increasing and where decisions on allocation of production factors are ever more made globally (Schlamberger, 2004). In short, economic globalization constitutes five distinct elements - trade, foreign direct investment (FDI), short-term capital flows, knowledge, and movements of labor. On a wider scope, apart from the economic aspect, globalization also encompasses the social and political dimensions. Political globalization is characterized by a diffusion of government policies, while social globalization is the spread of ideas, information, images and people (Dreher, 2006).

Various theories have been put forth on the effects of globalization on the labor market. The neoclassical theory predicts that national economies will converge in their average productivity levels and average incomes because of increased mobility of capital. However, it differs from the endogenous growth theory which argues that convergence is less likely and divergence more likely because of differential benefits from economic integration and trade, restricted free market relations, and developing countries locked into producing certain commodities (Heshmati, 2003). It is argued that globalization has a positive effect by helping to develop international trade, thus increasing employment and domestic product, opening markets, reduced isolation of less developed parts of the world (Schlamberger, 2004). In addition, FDI is thought to supply poor countries with markets, transfer technology and capital, and provide income growth, employment and poverty reduction. (de Soysa and Neumayer, 2005).

Even so, an application of the Heckscher-Ohlin theorem to human capital may indicate that although on average there are benefits to trade, not all groups benefit (Leslie and Pu, 1996). It predicts that increased trade with countries with an abundance of unskilled labor and the specialization in skill-intensive production in developed countries leads to relative losses for the unskilled parts of the labor force (Neumayer and de Soysa, 2006). Also, along the lines of the Stolper-Samuelson theorem, Eckel (2003) and Ethier (2002) state that an increase in commodity trade with unskilled labor-abundant, low-wage countries leads to an increase in the wage rate of skilled workers and depresses the wage rate of unskilled workers.

Rama (2003) argues that globalization may affect the labor market in two opposite ways. Reforms made by countries to become more competitive by dismantling their trade barriers, abolish their legal monopolies, privatize their stateowned enterprises and reduce over-staffing in their bloated bureaucracies could lead to massive loss of jobs and boost unemployment rates. Besides that, the macroeconomic fluctuations resulting from short-term capital movements could also increase job insecurity. On the other hand, the delocalization of production to developing countries could increase the demand for labor, thus expanding employment opportunities and raising workers' earnings.

There are several empirical studies that examine the impact of globalization on wages. For instance, Rama (2003), using data of seventy countries and applying regression techniques, finds that short-term impact of trade liberalization (measured as ratio foreign trade to GDP) on wages is negative; while the impact of FDI on wages is positive. These results stress the importance of the investment climate. If the opening up of the economy fails to attract foreign capital, wages losses could be sizeable. While the impact of FDI on wages fades over time (not significant after 5 years), the impact of openness to trade becomes significantly positive (negative impact is offset after 3 years). However, using a different measure of openness, as constructed by Sachs and Warner (1995), he finds that the negative impact is offset after 5 years. A similar finding is obtained by Majid (2004) in that there is an initial negative impact of globalization on wages, but they tend to recover within 3 to 4 years of openness. He also finds that FDI is relatively less important than trade for determining wages in developing countries.

In developing countries, both trade and FDI can initially impact negatively on wages. In its analysis in the *Key Indicators of the Labour Market*, ILO (2005) states that studies have found that the impact of globalization on wages: (a) shows a Kuznets-type relationship whereby globalization initially has a negative impact on wages, but this effect dissipates over time and eventually the impact of globalization on wages becomes positive; (b) is biased towards high-skilled occupations and has a lesser impact on the unskilled and the poor; and (c) has narrowed the gender gap, particularly in low-skilled occupations.

With respect to employment, Currie and Harrison (1997) find that in Morocco, employment in the average private sector manufacturing firm was basically unaffected by trade liberalization. In Mexico, the shift in labor demand was modest. Reductions in tariffs lead to lower wages in period when trade unions were not active, despite considerable reduction in employment (Revenga, 1997). On the other hand, there is no strong evidence to support the claim that labor demand has become more elastic as a result of globalization (Chinoy, Krisna and Mitra, 1998; Maloney and Fajnzylber, 2000). Rama (2003) finds that other countries such as Chile, Mauritius, Poland and Sri Lanka experienced a long period of high unemployment rates after the launching of the economic reforms. However, when the initial year of the reforms is modified, it becomes unclear whether globalization actually led to higher unemployment rates. He also finds that trade liberalization is associated with job losses in formerly protected sectors. It is also associated with the replacement of permanent workers, who have a more privileged status, by temporary and casual workers, who enjoy fewer benefits.

Globalization is also assumed to have an impact on productivity, where productivity is expected to grow faster in more open economies (Sachs and Warner, 1995; Sala-i-Martin, 1997). Bonfiglioli (2006) focuses on financial integration and applies GMM dynamic panel technique on annual observations from at most 93 countries over the period 1975-1999. She finds that financial globalization has a positive effect on productivity as measured by total factor productivity. Mann (1997) instead examines the impact of exports and imports on productivity for the manufacturing industries in two countries, the United States and Germany. Using correlation and regression techniques, the results of the study suggest that an increase in foreign demand for U.S. exports increases trend productivity growth, and the opposite occurs for an increase in U.S. imports. For Germany, neither international demand shocks nor exposure to international competition are associated with productivity growth. Dasgupta and Osang (2002) also examine the case of the U.S., focusing on the manufacturing industries during 1961-1991. They find that a significant variation in the observed increase in the skill premium can be attributed to the impact of globalization.

The empirical studies on the effect of globalization on the labor market variables rely mainly on correlation and regression techniques. Many of these studies either concentrate on developed economies or on developing countries as a group. However, the impact of globalization on a country, especially a developing one, may differ from another, due to different economic structure, size and location, which in turn will have significant policy implications for that particular country. Thus this paper, instead, focuses on one developing nation, Malaysia. In addition, the relationship between globalization and labor variables may not necessarily be contemporaneous, and perhaps more importantly, the effect may not be from globalization to labor variables, or even unidirectional. Hence, this study utilizes time-series econometric techniques to analyze the relationship between wages, employment and productivity, and globalization variables. It determines whether such link exists, and if so, the direction of the relationship.

The empirical evidence provided in this study can be used to either provide support or invalidate the theories on globalization. The aim of this study is to contribute to the existing literature on the impact of globalization on the labor market of a developing nation by applying Pesaran, et al (2001) autoregressive distributed lag (ARDL) approach, a relatively new-time series technique to the analysis. This approach avoids the problem of "spurious regression" arising from the non-stationarity of the variables of interest when standard regression techniques are used, and does not require the variables to be integrated of the same order, as in Johansen (1988) technique. The findings will also be useful in providing some observations to Malaysian policy makers in their implementation and evaluation of labor and trade policies.

Method and Data

Firstly, each series/variable is tested for stationarity. The order of integration of the variables is determined using the Dickey and Fuller (1979) ADF, Phillips-Perron (1988) PP and Kwiatkowski et al. (1992) KPSS tests. In addition, the autocorrelation functions are plotted for both levels and first-difference for a visual inspection and confirmation of the order of integration.

To establish the link between globalization and labor market variables, Pesaran et al. (2001) ARDL method is applied. The test for the existence of a long-run relationship is conducted by determining whether the variables are cointegrated using the bounds testing procedure. The F -statistics computed are compared with the critical values for unrestricted intercept and no trend, as reported in Narayan (2005).¹ Once it is established, the "forcing" and "adjusting" variables are identified by examining the significance of the error correction term (ect) in the error correction representation of the ARDL models. The dynamic relationship is analyzed through the associated ARDL error correction models.

The quarterly data 1998:1 to 2006:3 that are used for analysis are obtained from two sources. The *Monthly Statistical Bulletin Malaysia* (Malaysia, various years)

provides data for total salaries and wages paid, and number of paid employees of selected manufacturing industries, and gross domestic product (GDP) contributed by the manufacturing sector.² Data on consumer price index (CPI), GDP deflator, real GDP, unemployment rate, total exports and imports of goods and services, official exchange rates, and outflow and inflow of portfolio and direct investments are obtained from the IMF's *International Financial Statistics* website.³ The salary and wages paid per employee represents the nominal wage. The real wage is computed by deflating it with CPI. The real GDP, total exports and total imports, are converted into US dollars using the official exchange rates. The labor productivity is represented by the ratio of GDP contributed by the manufacturing sector to number of employees and converted into US dollars, and into real terms using the GDP deflator.⁴ Productivity, along with real wage and unemployment rate are the variables of the labor market. The logarithms of wage and productivity are used in the analysis.

For globalization, four individual measures are constructed which focus specifically on economic integration. There are several indices that have been constructed to measure globalization,⁵ or economic integration.⁶ The indices representing overall globalization, although more comprehensive, are not without faults. For measures that are wider in scope, problems arise in mixing a variety of variables some of which are only very indirect indicators and others for which the interpretation is

open to discussion (Andersen and Herbertsson, 2003). The weighting scheme is either completely arbitrary or use some techniques such as factor analysis which are sensitive to changes in the dataset, affected by outliers and suffer from small sample problems. Similar problems are encountered by the index constructed by Andersen and Herbertsson (2003). These indices produce quite different globalization rankings for the countries in the world or in the OECD. Thus, findings of any study may depend highly on which index is being used in the analysis.

On the other hand, examining individual measures of globalization will help to identify which variables play a key role, if any, in affecting the labor market. This is important in formulating the relevant policies for a country. The four globalization measures used in this study are (i) net direct investment which is computed as the difference between inflow and outflow of direct investments; (ii) inflow of direct investment; (iii) total portfolio investment which is the sum of inflow and outflow of portfolio investments; and (iv) total trade which is the sum of total exports and imports; all four as a proportion of GDP.

Empirical Results

The results of the ADF, P-P and KPSS tests on the levels and first-differences of the variables are given in Table 1. All the three tests suggest that unemployment rate, net direct investment and total portfolio investment are integrated of order 0. Both the ADF and P-P statistics support the hypothesis that productivity and total trade are $I(1)$ and FDI inflow and wages are $I(0)$, while the KPSS statistic suggests an integration of order 0 for productivity and total trade, order 2 for wages, and order 1 for FDI inflow. The results of ADF, P-P and KPSS tests also differ for GDP. Based on the ADF and KPSS tests, GDP is $I(0)$, while PP suggests it is integrated of order 1. However, the autocorrelation functions suggest that wage and FDI inflow are $I(0)$ while GDP, total trade and productivity are $I(1)$. The plot of $I(1)$ level series show a gradual decline while the first-difference series return to zero quickly; but for $I(0)$, the level series plot return to zero quickly. Based on the combined results from all the tests and autocorrelation functions, it can be assumed wage and FDI inflow are $I(0)$, and GDP, total trade and productivity are $I(1)$ processes. These findings indicate that the variables

are mixed in their order of integration, thus making ARDL model appropriate for analysis.

Next, an analysis is conducted to determine if wages, unemployment rate and productivity are cointegrated with each of the four globalization variables. This study at the outset assumes no *a priori* direction of relationship, i.e., no assumption is made about the “forcing” or “adjusting” variables. Firstly, the relationship between a labor variable and a globalization variable is examined. Secondly, GDP is included to determine the interrelationship between the three variables since output may be related to the labor and globalization variables. The orders of lags on the first-differenced variables used are 2 and 4, since results may be sensitive to the order of vector autoregression (VAR) as shown in Bahmani-Oskooee and Bohl (2000). A larger value for the lag order cannot be applied since the number of observations is not large enough. Quarterly dummies are included since plots of the series indicate that they are seasonal. The outcome varies somewhat with the choice of lag order.

For the bivariate analyses, wages and unemployment rate are not related to any of the four globalization variables. Productivity, however, is cointegrated with one of the variables, the inflow of FDI at the 10 percent level, with $F(\text{productivity}|\text{FDI inflow})=5.4608$. The error correction model (ECM) indicates that the changes in inflow of FDI adjust to productivity growth, and not vice-versa. When the variable GDP is included in the model, the results still indicate that total trade and net direct investment have no significant effect on the labor variables. On the other hand, the inflow of FDI and total portfolio investment, through their interactions with output, are now related to the labor variables.

Table 2 presents the *F*-statistics obtained for the bounds test of cointegration between labor and globalization variables, and GDP. There is a significant relationship between FDI inflow, productivity and output. The lags for the ARDL specifications are based on Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC), Hannan-Quinn Criterion (HQ), and R-bar Squared criterion. To economize space, only the ECMs based on AIC are presented in Table 3 since other criteria also produce the same or similar results.⁷ All three

variables are not weakly exogenous, as indicated by the significance of the t -tests. Productivity and inflow of FDI overadjust, while output corrects about 22.5 percent in the next quarter for a deviation from the long-run equilibrium level in one quarter. In the short run, both output and productivity growths have lag effects on changes in FDI inflow and productivity. GDP growth, on the other hand, is contemporaneously affected by productivity growth. CUSUM and CUSUMSQ are applied to the residuals of the ECMs to examine the stability of the coefficients. Following Pesaran and Pesaran (1997), the plots of CUSUM and CUSUMSQ statistics stay within the critical bounds of 5 percent significance level for FDI inflow and productivity equations, which suggest that the coefficients in the ECMs are stable. For the output equation, although CUSUM plot stays within the bounds, CUSUMSQ plot does not. This indicates that there may be some structural instability for this model.

The relationship between FDI inflow, wages and output is given in Table 4. Based on the ECMs, GDP is the forcing variable, while inflow of FDI and wages adjust to changes in output. As in the previous case, FDI inflow overadjusts, while the speed of adjustment to equilibrium for wages is moderate (0.437). With respect to the dynamic relationships, GDP growth has a positive lag effect on inflow of FDI, and on wage changes. CUSUM and CUSUMSQ plots indicate no problem of structural instability for all ECMs.

The findings as given in Table 2 also indicate that there exist cointegrations between unemployment rate and output with FDI inflow, and with total portfolio. FDI inflow and unemployment rate adjust to changes in output to maintain a long-run relationship. In fact, both these variables over-adjust, and more so for unemployment rate, as shown in Table 5. In the short term, output growth has a positive lag effect on changes in FDI inflow, while unemployment rate is affected by itself, and the other two variables. The results also indicate that total portfolio is an “adjusting” variable, by accommodating to changes in GDP (see Table 6). In the short run, it is positively affected by unemployment rate. Tests on structural instability on all equations indicate its absence.

Discussion and Conclusion

The findings of this study indicate that globalization does not play any significant role in affecting labor variables in the long term. The inflow of FDI is associated with productivity, wages and unemployment, and total portfolio investment with unemployment, but these are mainly through changes in output. Even that, these globalization variables are not the forcing variables, rather, they adjust to changes in GDP and productivity. Higher productivity levels and economic growth attract a bigger inflow of direct investment into Malaysia, and not vice-versa. Similarly, output growth also influences variations in the total inflow and outflow of portfolio investment. In addition, the analysis suggests that unemployment and productivity levels respond very quickly to changes in output, in fact, they over-accommodate for a shock in GDP. Real wage, on the other hand, adjusts more slowly to output.

These results appear to reject the theories of the effects of globalization on the labor market of a developing country. The neoclassical theory that mobility of capital will increase average productivity levels and average incomes is not supported. There is also no evidence to support other theories on how globalization improves employment and growth. The empirical findings of this paper are consistent with those of Currie and Harrison (1997), Chinoy, Krisna and Mitra (1998), Maloney and Fajnzylber (2000), and Revenga (1997) in that trade liberalization has no significant impact on employment. The results are also in line with the study by Bonfiglioli (2006) on Germany in which productivity is not affected by trade.

Other studies that show the impact of globalization on labor market such as Rama (2003) and Majid (2004) assume at the outset that the direction of relationship is from trade liberalization (or other globalization measures) to wages, and apply simple correlation or regression techniques to produce the necessary results. The assumption on the direction of impact must first be tested to determine if it is supported, and secondly, the variables used must be checked for stationarity to avoid the problem of spurious relationship when standard regression techniques are used.

The lack of relationship between globalization and labor variables does not necessarily imply that globalization has no impact on wages, employment or productivity. This study analyzes the impact of globalization on overall levels of (un)employment, wages and productivity. As discussed by Eckel (2003) and Ethier (2002), trade may increase the wages of the skilled, and depresses the earnings of the unskilled. Thus, overall, these two impacts may cancel each other out. Greater economic integration may increase demand for labor in some sectors or occupations, and a decrease in others. Or, as discussed earlier (Rama, 2003), reforms taken by countries to become competitive by reducing overstaffing in their bureaucracies can be offset by the increase in employment due to the decentralization of production to developing countries. A similar argument can also be applied to labor productivity. Further research may focus on the impact of globalization on specific sectors and different levels of workers, however, this is subject to availability of data.

Notwithstanding this line of reasoning, this study shows that expansions in overall growth can be achieved mainly through increases in productivity, and not directly through globalization. Thus, the focus of policy-makers must therefore be on the upgrading of skills and productivity of workers for them to attain higher earnings and enjoy higher standards of living. This can be done through education and training, and retraining, with proper monitoring and evaluation to ensure that workers are equipped with the knowledge, skills and creativity to match technological advances in production and services. In addition, since unemployment appears to very responsive to changes in output and productivity, there is a need for the policy makers to implement a better social net for the poor to withstand in adverse circumstances.

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Endnotes

- [1] Since the number of observations in this analysis ranges from 26 to 29, the critical values for 30 observations are used since that is the minimum number of observations reported in Narayan (2005).
- [2] The data on wages and salaries, and number of employees for all manufacturing industries are not available. However, the data reported in the *Bulletin* are based on establishments that accounted for most of the production in the various manufacturing industries and represents 77.6% of the value of gross output of the manufacturing sector in 1993. Data on wages and salaries for all workers in Malaysia are also not available.
- [3] <http://imfStatistics.org>
- [4] Productivity is commonly defined as a ratio of a volume measure of output to a volume measure of input. Productivity measures can be classified as single factor measures (ratio of output to a single input, such as labor or capital) or multifactor measures (ratio of output to a bundle of inputs - labor and capital, or labor, capital and intermediate inputs) (OECD, 2001; Spithoven, 2003). However, in many empirical studies, labor productivity is often used since it relates to the single most important factor in production and is intuitively appealing. Equally important, and is often the case, it may be the only way to measure productivity due to lack of data. Many studies measure productivity as GDP or output per worker, either at aggregate or sectoral level, as in Darby and Wren-Lewis (1993), Alexander (1993), Wakeford (2004), Papapetrou (2001), Huh and Trehan (1995), Bahmani-Oskooee and Miteza (2004), Bahmani-Oskooee and Nasir (2004) and Doyle and O'Leary (1999). Other studies such as Khawar (2003) use the ratio of real gross value of output to labor efficiency unit, while some others use several indicators including total factor productivity as in Aiginger (2005) to measure labor productivity. In this paper, due to data limitations, labor productivity is represented by the ratio of manufacturing output to number of employees.

- [5] These include the Kearney index which attempts to incorporate four components in measuring globalization – economic integration, technology, personal contact, and political engagement (Heshmati, 2003). Economic integration includes trade, FDI, portfolio capital flows, and income payment and receipts, while number of internet users, internet hosts, and secure servers are used to measure technology. On the other hand, personal contact consists of international travel tourism, international telephone traffic, and across borders money transfers; and political engagement is represented by the number of international organizations and UN Security Council missions in which each country participates and the number of foreign embassies that each country hosts. Heshmati (2003) also uses data from Kearney to construct a similar index but using principal component technique to determine the weights, rather than the ad hoc basis utilized by Kearney index. There are other composite measures of globalization, such as that by KOF Swiss Economic Institute (Dreher, 2006) which includes three dimensions of globalization - economic, social and political.
- [6] An index constructed by Andersen and Herbertsson (2003) focus on economic integration of the goods and capital markets and provide an index indicating the relative globalization of OECD countries. They examine two dimensions of globalization, the direct effect, i.e., how countries use the opportunity of integrating into the world economy (trade, foreign investment, etc.) and an indirect effect, i.e., the extent to which the institutional setup in different countries allows for participation in global activities (freedom to trade with foreigners, freedom to use alternative currencies, and freedom to exchange in international capital and financial markets) and apply factor analysis so that the weighting of various variables is based on statistical methods rather than *a priori* judgments.
- [7] The same applies to the ECMs presented in Tables 4-6.

Table 1: Tests for Unit Roots – Augmented Dickey-Fuller Phillips-Perron and Kwiatkowski et al.

Variables	ADF		P-P		KPSS	
	Level	1 st	Level	1 st	Level	1 st
	difference		difference		difference	
Productivity	-3.314 (0.081)	-8.524 (0.000)	-3.382 (0.071)	-9.048 (0.000)	0.084	
Unemployment rate	-4.754 (0.0031)		-5.234 (0.000)		0.086	
Log real wage	-5.817 (0.000)		- 13.561 (0.000)		0.338***	0.193**
Total trade	-2.336 (0.4045)	-6.237 (0.000)	-2.362 (0.392)	-6.266 (0.000)	0.102	
Net foreign direct investment	-6.664 (0.000)		-6.557 (0.000)		0.087	
Inflow of foreign direct investment	-4.586 (0.005)		-4.655 (0.004)		0.137*	0.500
Total portfolio investment	-4.729 (0.004)		-4.734 (0.004)		0.072	
GDP	-3.647 (0.042)		-3.332 (0.078)	-16.711 (0.000)	0.104	

Notes: Numbers in parentheses indicate *p*-values.

*, ** and *** indicate significance at 10, 5 and 1 percent levels, respectively.

Table 2: Bounds test for Cointegration – *F*-statistics

		Lag2	Lag 4			Lag 2	Lag 4
1	Productivity	1.364	1.599	7	Wages	4.373	15.639***
	Total trade	0.504	1.987		FDI inflow	5.034*	40.622***
	GDP	2.178	1.616		GDP	0.659	47.199***
2	Productivity	2.795	0.645	8	Wages	2.453	1.141
	Net FDI	2.074	0.365		Total portfolio	0.849	0.706
	GDP	1.642	0.404		GDP	0.526	1.061
3	Productivity	2.332	0.476	9	Unemployment rate	2.413	2.393
	FDI inflow	6.934**	0.584		Total trade	0.800	0.725
	GDP	1.065	0.491		GDP	0.785	1.337
4	Productivity	9.316***	8.902***	10	Unemployment rate	3.245	1.225
	Total portfolio	3.997	1.284		Net FDI	1.321	0.843
	GDP	3.160	1.201		GDP	0.758	0.909
5	Wages	3.801	0.832	11	Unemployment rate	4.446	0.573
	Total trade	0.571	0.868		FDI inflow	4.498*	2.318
	GDP	4.770*	2.799		GDP	0.358	0.992
6	Wages	2.007	1.973	12	Unemployment rate	2.341	4.666*
	Net FDI	1.597	.0730		Total portfolio	1.138	1.529
	GDP	0.927	1.824		GDP	0.636	2.058

Notes: *, ** and *** indicate significance at 10, 5 and 1 percent levels, respectively.

Table 3: Error Correction Representation for the Relationship between FDI inflow, Productivity and Output

Dependent:	dFDIinflow	Dependent:	dProd	Dependent:	dGDP
dProd	0.178 (.358)	dProd(-1)	1.152 (.020)	dFDIinflow	0.003 (.979)
dProd(-1)	-0.521 (.048)	dProd(-2)	0.954 (.031)	dProd	0.242 (.000)
dProd(-2)	-0.487 (.066)	dProd(-3)	0.566 (.042)	Constant	0.099 (.576)
dGDP	0.082 (.851)	dGDP	1.248 (.009)	dQ2	0.049 (.000)
dGDP(-1)	1.00 (.015)	dGDP(-1)	-1.285 (.071)	dQ3	0.051 (.000)
dGDP(-2)	1.00 (.043)	dGDP(-2)	-2.207 (.001)	dQ4	0.038 (.000)
Constant	1.491 (.020)	dFDIinflow	0.179 (.548)	ect(-1)	-0.225 (.001)
dQ2	0.028 (.371)	dFDIinflow(-1)	-0.773 (.053)		
dQ3	0.025 (.524)	dFDIinflow(-2)	-0.160 (.599)		
dQ4	-0.020 (.293)	dFDIinflow(-3)	0.226 (.305)		
ect(-1)	-1.455 (.000)	Constant	-2.417 (.038)		
		dQ2	-0.038 (.294)		
		dQ3	-0.114 (.011)		
		dQ4	0.012 (.647)		
		ect(-1)	-1.291 (.022)		
$\bar{R}^2$	0.636	$\bar{R}^2$	0.766	$\bar{R}^2$	0.921
F	5.746	F	7.223	F	51.457
DW	1.977	DW	1.811	DW	1.786

Table 4: Error Correction Representation for the Relationship between FDI inflow, Wages and Output

Dependent:	dFDIinflow	Dependent:	dWage	Dependent:	dGDP
dGDP	0.157 (.606)	dGDP	0.157 (.037)	dGDP	0.33 (.232)
dGDP(-1)	0.552 (.112)	dFDIinflow	-0.396 (.120)	dFDIinflow	0.068 (.670)
dGDP(-2)	0.761 (.047)	Constant	1.639 (.087)	dWage	0.130 (.210)
dGDP(-3)	0.385 (.258)	dQ2	0.053 (.040)	Constant	-0.692 (.148)
dWage	-0.181 (.280)	dQ3	0.05 (.051)	dQ2	0.079 (.000)
Constant	-0.178 (.809)	dQ4	0.15 (.000)	dQ3	0.056 (.000)
dQ2	0.063 (.065)	ect(-1)	-0.437 (.032)	dQ4	0.029 (.038)
dQ3	0.070 (.078)			ect(-1)	-0.031 (.465)
dQ4	0.053 (.144)				
ect(-1)	-1.336 (.000)				
$\bar{R}^2$	0.632	$\bar{R}^2$	0.931	$\bar{R}^2$	0.857
F	6.179	F	59.666	F	23.183
DW	2.153	DW	1.587	DW	1.866

Table 5: Error Correction Representation for the Relationship between FDI inflow, Unemployment Rate and Output

Dependent:	dFDIinflow	Dependent:	dURate	Dependent:	dGDP
dGDP	-0.184 (.591)	dGDP	1.714 (.023)	dGDP	0.330 (.249)
dGDP(-1)	0.792 (.044)	dURate(-1)	1.181 (.016)	dURate	-0.003 (.801)
dGDP(-2)	0.733 (.075)	dURate(-2)	0.620 (.076)	dFDIinflow	0.070 (.682)
dURate	-0.016 (.216)	dURate(-3)	0.246 (.242)	dFDIinflow(-1)	0.212 (.114)
dURate(-1)	0.009 (.581)	dFDIinflow	-9.408 (.027)	Constant	-0.303 (.228)
dURate(-2)	0.007 (.590)	dFDIinflow(-1)	15.941 (.028)	dQ2	0.081 (.000)
dURate(-3)	-0.014 (.182)	dFDIinflow(-2)	10.821 (.082)	dQ3	0.058 (.000)
Constant	-0.134 (.693)	dFDIinflow(-3)	6.106 (.105)	dQ4	0.043 (.000)
dQ2	0.064 (.089)	Constant	-7.567 (.186)	ect(-1)	0.029 (.293)
dQ3	0.046 (.236)	dQ2	-0.167 (.329)		
dQ4	-0.003 (.862)	dQ3	-0.422 (.057)		
ect(-1)	-1.279 (.000)	dQ4	-0.398 (.037)		
		ect(-1)	-2.244 (.001)		
$\overline{R}^2$	0.688	$\overline{R}^2$	0.637	$\overline{R}^2$	0.863
F	6.184	F	4.743	F	20.886
DW	2.078	DW	1.700	DW	2.225

Table 6: Error Correction Representation for the Relationship between Total Portfolio Investment, Unemployment Rate and Output

Dependent:	dTotalport	Dependent:	dURate	Dependent:	dGDP
dGDP	-0.175 (.180)	dGDP	6.256 (.327)	dGDP(-1)	0.565 (.083)
dURate	0.027 (.345)	dGDP(-1)	-18.299 (.007)	dGDP(-2)	0.246 (.464)
dURate(-1)	0.081 (.014)	dTotalport	1.907 (.142)	dGDP(-3)	-0.323 (.276)
dTotalport(-1)	0.303 (.350)	dTotalport(-1)	-2.264 (.169)	dURate	0.008 (.437)
dTotalport(-2)	0.529 (.114)	dTotalport(-2)	-3.121 (.059)	dURate(-1)	-0.009 (.596)
dTotalport(-3)	0.635 (.010)	Constant	-11.713 (.087)	dURate(-2)	-0.010 (.474)
Constant	1.660 (.153)	dQ2	-1.503 (.034)	dURate(-3)	-0.021 (.044)
dQ2	0.081 (.007)	dQ3	-0.469 (.289)	dTotalport	-0.045 (.534)
dQ3	0.115 (.001)	dQ4	-0.270 (.392)	dTotalport(-1)	-0.078 (.406)
dQ4	0.102 (.001)	ect(-1)	-1.000 (.)	dTotalport(-2)	0.078 (.339)
ect(-1)	-1.037 (.006)			Constant	-0.280 (.439)
				dQ2	0.098 (.000)
				dQ3	0.084 (.006)
				dQ4	0.028 (.241)
				ect(-1)	0.017 (.670)
$\bar{R}^2$	0.725	$\bar{R}^2$	0.588	$\bar{R}^2$	0.881
F	7.700	F	5.078	F	14.350
DW	1.870	DW	2.125	DW	2.582

Testing Long Run Relationship between Exports and Imports: Evidence from Pakistan

Tahir Mukhtar and Sarwat Rasheed[♦]

Exports and imports together play an integral role in determining the trade balance of a country. In this respect the dynamics of relationship between these variables hold significant importance and attract the researchers for testing the nature of relationship between exports and imports. This study empirically examines the long run relationship between exports and imports for Pakistan using quarterly data for the period 1972-2006. The econometric framework used for analysis is the Johansen Maximum Likelihood cointegration technique, which tests both the existence and the number of cointegration vectors. Results show that there is a long run relationship between exports and imports and the country is not in violation of its international budget constraint. Furthermore, for testing the stability of long run equilibrium relationship and direction of causality, vector error correction model (VECM) technique has been applied. The findings confirm the stability of the long run equilibrium relationship between exports and imports. Under Granger causality tests, it has been found that there exists bidirectional causality between exports and imports. Therefore, it suggests that overall macroeconomic policies are effective in bringing exports and imports into a long run steady state equilibrium. Conclusively, the trade balances are sustainable in the long run for Pakistan.

I. Introduction

Sustainability of external deficits always drew attention of the economists. During the past few years, studies performed on this argument have focused mainly on the long run relationship between exports and imports. Because the existence of a long run relationship

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between exports and imports points out that the foreign deficit is a short term fact and it is sustainable in the long run (Arize, 2002; Choong *et al.*, 2004; Narayan and Narayan, 2005). Thus knowledge of whether exports and imports are cointegrated is essential for the design and evaluation of current and future macroeconomic policies aimed at achieving the external balance. As a stable long run relationship between exports and imports may suggest that a country is not in violation of its international budget constraint, policymakers in many countries have been forced to take renewed interest in the evaluation of the combined effects of all macroeconomic policies, such as exchange rate, fiscal and monetary, on the trade balance. Both the domestic and external environments play an important role in shaping the country's trade with rest of the world and the basic structure of trade consists of exports and imports composition and destinations.

Pakistan's export performance has been impressive in recent years (2002-03 to 2005-06) with exports registering an average growth of 16 percent per annum on the back of strong macroeconomic policies pursued at home and international trading environment remaining hospitable. Pakistan's export performance was dismal in 2006-07 as it witnessed abrupt and sharp deceleration to less than 4 percent. Pakistan's imports grew at an average rate of 29 percent per annum during 2002-03 to 2005-06 on the back of strong economic growth, which triggered a consequential growth in investment. The surge in investment led to a substantial increase in imports. However, import growth slowed to a normal level in the fiscal year 2006-07 but registered a sharp pick up once again in the fiscal year 2007-08 on account of unprecedented rise in oil import bills and some one off elements in the shape of imports of wheat and fertilizer¹. As a result, Pakistan's trade and current account deficits have widened substantially in this year contributing to serious macro economic imbalances.

Pakistan's merchandise trade deficit has been in the range of \$ 2 billion during 2000-2003 but started deteriorating thereafter at the back of surging oil import bill; continued strength in domestic demand, triggering consequential pick up in investment; continuous occurring of one-off imports (sugar, wheat, oil rigs, commercial aircraft etc.) and

¹ Economic Survey of Pakistan, 2007

abrupt and sharp deceleration in export growth, particularly in 2006-07. Merchandised trade deficit jumped from \$ 2 billion in 2002-03 to \$9.5 billion by 2006-07 –significant increase in just four years². The recent deterioration in merchandise trade deficit over the last two years owes mainly to the continued robust domestic demand in the back of strong economic growth and an extraordinary rise in the international oil and food prices causing import bills to surge at new heights. The study has three main objectives. The *first* is to examine whether there exists any relationship between exports and imports for Pakistan. The *second* is to analyze the pattern of causality between exports and imports. The *third* to draw some relevant policy implications in order to improve our external sector performance.

Rest of the study is organized as follows. Section II includes the literature survey of some past studies in order to know the empirical evidence for the nature of relationship between exports and imports. Section III outlines the theoretical model. Sources of data and methodology are described in section IV. Section V presents the discussion on the estimated results. Final section concludes the study with some policy implications.

II.Literature Review

The question, whether there exists a long run relationship between exports and imports, has been investigated for a number of countries. Conflicting results have been found in the literature in this respect. To a large extent, the conflicting results reflect the fact that the studies have used different econometric techniques in their empirical investigation, some of which are not appropriate with small samples. Husted (1992) has empirically analyzed the long run relationship between exports and imports relationship using quarterly data on trade for U.S. He finds a significant slope coefficient, which is in accordance with the theory. It implies that despite short run imbalances, overall there is a tendency in U.S. exports and imports to converge in the long run. Bahmani-Oskooee (1994) has used cointegration technique and tested the long run relationship between Australian exports and imports for the sample period from 1960-1992 and found that they will converge in the long

² Ibid.

run. A study by Fountas and Wu (1999) has examined the quarterly data on exports and imports for U.S economy and depicts conflicting results. By using various econometric tests that include standard Engle-Granger cointegration tests and two tests that allow for test-determined breaks in the cointegrating relationship, they have shown that the hypothesis of no long run relationship between exports and imports cannot be rejected. Irandoust and Ericsson (2004) have analyzed the long run convergence between exports and imports for selected industrial countries using Johansen and Juselius cointegration technique. The findings of the research suggest that except the United Kingdom (UK) all other countries in the sample are in line with their international budget constraint. Narayan and Narayan (2005) using the bounds testing approach to cointegration have found that exports and imports are cointegrated only for 6 out of the 22 least developed countries (LDCs) in their sample. Chaudhary *et al.* (2007) empirically analyse the link between trade policy and economic growth for Bangladesh. The study has employed cointegration and multivariate Granger causality tests to view the short run and long run dynamics among exports growth, imports growth and real output growth over the period 1973 to 2002. The results strongly support a long run relationship among the three variables for Bangladesh. Saribas and Sekmen (2007) have analysed the cointegration and causality among exchange rate, export, and import for Turkey for the period 1998 to 2006. The results show that there is a long run relationship between exports and import and bi-directional causality exists between these two variables.

In case of Pakistan, some of the recent studies that have shown a significant equilibrium relationship between exports and imports include Kemal and Qadir (2005), Naqvi and Kimio (2005) and Bader (2006). However, Tang (2006) has shown that there does not exist any cointegration between exports and imports for 18 out of the 27 selected the Organization of the Islamic Conference (OIC) member countries including Pakistan. This necessitates the re-examining of the nature of relationship between exports and imports for Pakistan using quarterly data as use of sufficient number of observations under cointegration analysis produce more conclusive results. Therefore, the present exercise has been done in line with this view in mind. Furthermore; none of the above studies on Pakistan has analyzed direction of influence between exports and imports. The significance of the study also lies in the fact

that it fills this gap bringing under analysis the issue of causality between exports and imports.

III.Theoretical Model

Husted (1992) has suggested a simple model for the analysis of exports and imports. Following Husted (1992), we consider consumers who live in a small, open economy with no government intervention. The consumers are assumed to maximize their utility function subject to a budget constraint, and they borrow and lend in international markets at a predetermined world interest rate to achieve maximum utility. The consumers' revenues consist of an endowment of outputs and profits distributed from firms. These revenues are used for consumption and saving. Hence, the individual's current period budget constraint is as follows:

$$C_t = Y_t + B_t - I_t - (1 + r_t)B_{t-1} \quad (1)$$

where C_t is current consumption; Y_t is output level; I_t is investment; r_t is the current world interest rate; B_t is the international borrowings; and $(1 + r_t) B_{t-1}$ is the debt of the previous period, this corresponds to the country's external debt. Since equation (1) must hold in every time period, the period-by-period budget constraints can be combined to form the country's intertemporal budget constraint which states that the amount a country borrows (lends) in international markets equals the present value of future trade surpluses (deficits). Husted then makes several assumptions to derive a testable model, which is given by

$$X_t = \gamma_0 + \gamma_1 M_t + v_t \quad (2)$$

where X_t is exports and M_t is imports of goods and services. Equation (2) states that a country satisfies its inter-temporal budget constraint if the estimated coefficient of M_t equals to unity ($\gamma = 1$) and v_t is white noise disturbance term and stationary. If both the conditions are valid, then exports and imports are cointegrated. Besides these two variables, we will include another very important variable that is exchange rate in our estimation model in order to test the long run relationship between exports and imports under multivariate cointegration framework.

IV.Data And Methodology

The study has used quarterly observations for the period 1972 to 2006. The data, seasonally unadjusted and expressed in nominal terms, for imports, exports and nominal exchange rate have been obtained from various issues of *Economic Survey*, Government of Pakistan and IMF's *International Financial Statistics*. The nominal exports and imports are converted into corresponding real variables by deflating them by export and import price indices. Also the exchange rate is made real by multiplying nominal exchange rate with U.S (CPI) deflated by Pakistan's (CPI). The real exports, imports and exchange rate are represented by RX, RM and RER respectively.

IV.1. Unit Root Test

Since macroeconomic time-series data are usually non-stationary (Nelson and Plosser, 1982) and thus conducive to spurious regression, we test for stationarity of a time series at the outset of cointegration analysis. For this purpose, we conduct an augmented Dickey-Fuller (ADF) test, which is based on the t-ratio of the parameter in the following regression.

$$\Delta X_t = \kappa + \phi t + \Theta X_{t-1} + \sum_{i=1}^n \varphi_i \Delta X_{t-i} + \varepsilon_t \quad (3)$$

where X is the variable under consideration, Δ is the first difference operator, t captures any time trend, ε_t is a random error, and n is the maximum lag length. The optimal lag length is identified so as to ensure that the error term is white noise. While κ , ϕ , Θ and φ are the parameters to be estimated. If we cannot reject the null hypothesis $\Theta = 0$, then we conclude that the series under consideration has a unit root and is therefore non-stationary.

It is essential at the onset of cointegration analysis, that we should solve the problem of optimal lag length because multivariate cointegration analysis which we are going to conduct in the study is very sensitive to lag length selection. The two most commonly used lag length selection criteria are the Akaike Information Criterion (AIC) and the Schwartz Bayesian Criterion (SBC). Although there are several different ways to

report the criteria, all will select the same lag length. In our study we will use the following formulas:

$$AIC = T \ln (\text{Sum of squared residuals}) + 2n \quad (4)$$

$$SBC = T \ln (\text{Sum of squared residuals}) + n \ln (T) \quad (5)$$

where

n = number of parameters estimated

T = number of usable observations

Since $\ln (T)$ will be greater than 2, the SBC will always select a more appropriate lag length than will the AIC. Ideally, the AIC and SBC will be as small as possible (note that both can be negative). As the fit of the model improves, the AIC and SBC will approach $-\infty$.

IV.2. Cointegration Test

The econometric framework used for analysis in the study is the Johansen (1998) and Johansen and Juselius (1990) Maximum-Likelihood cointegration technique, which tests both the existence and the number of cointegration vectors. This multivariate cointegration test can be expressed as:

$$Z_t = K_o + K_1 \Delta Z_{t-1} + K_2 \Delta Z_{t-2} + \dots + K_{p-1} \Delta Z_{t-p} + \Pi Z_{t-p} + \mu_t \quad (6)$$

Where

$$Z_t = (RX, RM, RER)$$

Z_t = a 3×1 vector of variables that are integrated of order one [i.e. $I(1)$]

RX , RM and RER are real exports, real imports and real exchange rate respectively

K = a 3×3 matrix of coefficients

Π = 3×3 matrix of parameters and

μ_t = a vector of normally and independently distributed error term.

The presence of r cointegrating vectors between the elements of Z implies that Π is of the rank r ($0 < r < 3$).

To determine the number of cointegrating vectors, Johansen developed two likelihood ratio tests: Trace test (λ_{trace}) and maximum eigenvalue test (λ_{max}). If there is any divergence of results between these two tests, it is advisable to rely on the evidence based on the λ_{max} test because it is

more reliable in small samples (see Dutta and Ahmed, 1997 and Odhiambo, 2005).

IV.3. Granger Causality

If we exploit the idea that there may exist comovements among real exports, real imports and real exchange rate and possibilities that they will trend together in finding a long run stable equilibrium, by the Granger representation theorem (Engle and Granger 1987), we may posit the following testing relationships, which constitute our vector error-correction model:

$$\Delta RX_t = \alpha_1 + \sum_{i=1}^l \beta_{1i} \Delta RX_{t-1} + \sum_{i=1}^m \gamma_{1i} \Delta RM_{t-1} + \sum_{i=1}^n \delta_{1i} \Delta RER_{t-1} + \sum_{i=1}^r \theta_{1i} ECT_{r,t-1} + \xi_{1t} \quad (7)$$

$$\Delta RM_t = \alpha_2 + \sum_{i=1}^l \beta_{2i} \Delta RX_{t-1} + \sum_{i=1}^m \gamma_{2i} \Delta RM_{t-1} + \sum_{i=1}^n \delta_{2i} \Delta RER_{t-1} + \sum_{i=1}^r \theta_{2i} ECT_{r,t-1} + \xi_{2t} \quad (8)$$

$$\Delta RER_t = \alpha_3 + \sum_{i=1}^l \beta_{3i} \Delta RX_{t-1} + \sum_{i=1}^m \gamma_{3i} \Delta RM_{t-1} + \sum_{i=1}^n \delta_{3i} \Delta RER_{t-1} + \sum_{i=1}^r \theta_{3i} ECT_{r,t-1} + \xi_{3t} \quad (9)$$

where RX , RM , RER have been explained in section IV, Δ is a difference operator, ECT refers to the error-correction term(s) derived from long run cointegrating relationship via the Johansen maximum likelihood procedure, and ξ_{it} 's (for $i = 1, 2, 3$) are serially uncorrelated random error terms with mean zero. In our case, equation 7 will be used to test causation from real imports and real exchange rate to real exports. Equation 8 will be used to test causality running from real exports and real exchange rate to real imports whereas equation 9 will test causality running from real exports and real imports to real exchange rate. A consequence of relationships described by equations 9 to 11 is that either ΔRX_t , ΔRM_t , ΔRER_t or a combination of any them must be caused by ECT_{t-1} which is itself a function of RX_{t-1} , RM_{t-1} , and RER_{t-1} . Through the ECT , the error correction model (ECM) opens up an additional channel for Granger causality to emerge that is completely ignored by the standard Granger and Sims tests. The Granger causality (or endogeneity of the dependent variable) can be exposed either through the statistical significance of (1) the lagged ECT s (θ 's) by a t -test; (2) a joint test applied to the significance of the sum of the lags of each

explanatory variables (β'_s , γ'_s , and δ'_s) in turn, by a joint F or Wald χ^2 test. The nonsignificance of both the t and F or Wald χ^2 tests in the vector error correction model (VECM) indicates econometric exogeneity of the dependent variable. In addition to indicating the direction of causality amongst variables, the VECM approach allows us to distinguish between "short run" and "long run" Granger causality. The F or Wald tests of the "differenced" explanatory variables give us an indication of the "short run" causal effects, whereas the "long run" causal relationship is implied through the significance or otherwise of the t test(s) of the lagged error-correction term(s) that contains the long-term information since it is derived from the long run cointegrating relationship(s). The coefficient of the lagged error-correction term, however, is a short term adjustment coefficient and represents the proportion by which the long run disequilibrium (or imbalance) in the dependent variable is being corrected in each short period (Masih and Masih, 1997).

V. Empirical Results and Interpretation

The first step in cointegration analysis is to test the unit roots in each variable³. To this end we apply Augmented Dickey-Fuller (ADF) stationarity tests on logarithmic form of RX, RM and RER. Table 1 reports the results of the ADF test for the level as well as for the first-difference of the relevant variables. The results show that unit root tests applied to the variables at levels fail to reject the null hypothesis of non-stationarity of all the variables used. It implies that all the variables are non-stationary at levels. The null hypothesis is accepted when the series are first-differenced i.e. all variables are first-differenced stationary. This implies that all the series are integrated of order one [i.e. $I(1)$].

³ Since the cointegration methodology involves finding a stationary linear combination of a set of variables, which are themselves non-stationary, therefore, a precondition for cointegration to be held is that all variables should be non-stationary.

Table 1. Augmented Dickey Fuller (ADF) Unit Root Tests

Variables	Level	First Difference	Mackinnon Critical Values for Rejection of Hypothesis of a Unit Root			Decision	Order of Integration
			1 %	5 %	10 %		
ln(RX)	0.614	-18.977	-2.583	-1.94	-1.62	Nonstationary at level but stationary at first difference	<i>I(1)</i>
ln(RM)	1.154	-18.53908	-2.583	-1.94	-1.62	Nonstationary at level but stationary at first difference	<i>I(1)</i>
ln(RER)	1.0865	-25.16168	-2.583	-1.94	-1.62	Nonstationary at level but stationary at first difference	<i>I(1)</i>

For getting optimal lag length for cointegration analysis, we have used two criteria, namely the Akaike Information Criteria (AIC) and the Schwarz Bayesian Criteria (SBC). SBC has suggested a lag length of 5 as optimal, while AIC has indicated 8 as optimal lag length (Table 2). However, We have selected optimal lag length 5 as suggested by SBC because of following two reasons, firstly, SBC is more accurate than AIC as we have discussed in section IV.1 and secondly, when we use the lag length 8 for our cointegration analysis, we have found no cointegrating vector under both trace and maximum eigen statistics. While at lag length 5 we are getting 1 cointegrating vector under both these statistics.

Table 2.Lag Length Criteria

Lag	AIC	SBC
0	-0.25872	-0.1932
1	-6.1782	-5.91612
2	-6.30666	-5.84803
3	-6.3405	-5.68532
4	-6.90963	-6.05789
5	-7.10757	-6.059280*
6	-7.00447	-5.75962
7	-6.95937	-5.51797
8	-7.147499*	-5.50954

*indicates lag order selected by the criterion

AIC: Akaike information criterion

SBC: Schwarz Bayesian criterion

Cointegration relationship among $\ln RX$, $\ln RM$ and $\ln RER$ has been investigated using the Johansen technique. Table 3 reports our cointegration test results based on Johansen's maximum likelihood method. Both trace statistic (λ_{trace}) and maximal eigenvalue (λ_{max}) statistic indicate that there is at least one cointegrating vector among $\ln RX$, $\ln RM$ and $\ln RER$. We can reject the null hypothesis of no cointegrating vector in favour of one cointegrating vector under both test statistics at 5 percent level of significance. We also cannot reject the null hypothesis of at most one cointegrating vector against the alternative hypothesis of two cointegrating vectors, for both the trace and max-eigen test statistics. Consequently, we can conclude that there is only one cointegrating relationship among $\ln RX$, $\ln RM$ and $\ln RER$. This implies that imports, exports and exchange rate establish a long run relationship in Pakistan. Our finding is consistent with Kemal and Qadir (2005), Naqvi and Kimio (2005) and Bader (2006). Naqvi and Kimio (2005) opine that Pakistan's government has been playing crucial role in stabilizing the trade balances (exports and imports), and that overall macroeconomic policies have been effective in leading exports and imports into a long run steady state equilibrium relationship. All this indicates the adherence of Pakistan to international budget constraint, which shows that Pakistan is not in violation of its international budget constraint because as pointed by Husted (1992) the necessary condition

for an economy to obey its international budget constraint is the existence of cointegration between its exports and imports.

Table 3. Cointegration Test Based on Johansen's Maximum Likelihood Method

Null Hypothesis	Alternative Hypothesis	Critical Values			
		95 %		P-values**	
λ_{trace} rank tests		Eigen values		λ_{trace} rank value	
$H_0 : r = 0$	$H_1 : r = 1$	0.131709	39.2308**	35.19275	0.0174
$H_0 : r = 1$	$H_1 : r = 2$	0.082656	17.43485	20.2618	0.1171
$H_0 : r = 2$	$H_1 : r = 3$	0.0511	5.40464	9.1645	0.242
λ_{max} rank tests		λ_{max} rank value			
$H_0 : r = 0$	$H_1 : r > 0$	0.131709	23.92458**	22.2996	0.0486
$H_0 : r \leq 1$	$H_1 : r > 1$	0.082656	11.56055	15.8921	0.213
$H_0 : r \leq 2$	$H_1 : r > 2$	0.0511	7.028555	9.1645	0.1249

Normalized Cointegrating Coefficients:

$$\ln(RX) = -6.321 + 0.890\ln^*(RM) + 0.477\ln^*(RER)$$

(-3.744)*** (1.873)** (7.101)***

*** denotes rejection of the null hypothesis at the 1 percent significance level.

** denotes rejection of the null hypothesis at the 5 percent significance level.

**MacKinnon-Haug-Michelis (1999) p-values.

Trace test indicates 1 cointegrating equation(s) at 5 percent significance level.

Max-eigenvalue test indicates 1 cointegrating equation(s) at 5% significance level.

The cointegrating equation, which is given at the bottom of the table 3, has been normalized for $\ln RX$ just to get meanings from the coefficients. As all variables are logarithmic, we may interpret coefficients in terms of elasticity. So we may say that 1 percent increase in imports is associated with 0.89 percent increase in Pakistan's exports. The coefficient of exchange rate is also significant, and its value is 0.477 showing that 1percent increase (decrease) will decrease (increase) exports by 0.477 percent. Thus, export elasticity with respect to imports is more elastic as compared to export elasticity with respect to real exchange rate. It points out towards making our economy more open and our imports should be less restricted.

Table 4. Summary Results from VECM

	$\Delta \ln(RX)$	$\Delta \ln(RM)$	$\Delta \ln(RER)$
Constant	0.02671 (1.99724) **	0.018922 (1.99159) **	0.007355 (2.26470) **
$ECT(-1)$	-0.1661 (-2.74285) ***	0.130643 (3.08113) **	-0.04215 (-3.07692) **
R^2	0.706884	0.597216	0.273271
Adjusted R^2	0.6668	0.542135	0.173889
S.E. of Regression	0.127718	0.090735	0.031016
F-Stat	17.63498	10.8424	2.749711

** and *** denotes rejection of the hypothesis at the 5 percent and 1 percent significance level respectively.

Having established that all variables in the model are $I(1)$ and cointegrated, a VECM with one cointegrating relation and five lags in each equation has been estimated. The VECM allows the long run behavior of the endogenous variables to converge to their long run equilibrium relationship while allowing a wide range of short run dynamics. The coefficient of the error-correction term of export variable carries the correct sign and it is statistically significant at 1 percent, with the speed of convergence to equilibrium of 16 percent (see Table 4). Thus in the short run, exports are adjusted by 16 percent of the past

year's deviation from equilibrium. It confirms the stability of the system. As large absolute values of the coefficient on the ECT shows equilibrium agents remove a large percentage of disequilibrium in each period i.e. the speed of adjustment is very rapid. While low absolute values are indicative of a slow speed of adjustment towards equilibrium. It means that speed of adjustment of exports towards equilibrium is slow one. The coefficient of the error correction term of imports has positive sign and it is statistically significant at 5 percent level. It implies that due to any disturbance in the system, divergence from equilibrium will take place and the system will be unstable. The coefficient of the error correction term of exchange rate carries negative sign and it is significant at 5 percent level. It depicts stability of the system and convergence towards equilibrium path in case of any disturbance in the system. However, the restoration to equilibrium path will take a longer time because the value ECT is quite small (0.042). The significant coefficients of the error correction terms for each time series depict that they all cause one another in the long run.

Table 5.VEC Granger Causality Test

Dependent Variable = D(lnRX)			
Excluded	Chi-sq	df	Prob.
D(lnRM)	20.57166	5	0.001
D(lnRER)	15.79635	5	0.0075
Dependent Variable = D(lnRM)			
Excluded	Chi-sq	df	Prob.
D(lnRX)	19.23856	5	0.0017
D(lnRER)	3.646524	5	0.6013
Dependent Variable = D(lnRER)			
Excluded	Chi-sq	df	Prob.
D(lnRX)	6.813396	5	0.2349
D(lnRM)	4.476271	5	0.4831

Finally, in order to analyse short run causal relationships among $\ln RX$, $\ln RM$ and $\ln RER$ for each equation in the VECM, we consider χ^2 (Wald) statistics for the significance of the lagged endogenous variables in that equation. Table 5 reports the results. Real imports and real exchange rate both cause real exports. It validates our findings of the long run relationship among exports, imports and exchange rate. Real imports are being caused by real exports while real exchange rate does not Granger cause real imports. So, there exists a bi-directional Granger causality between exports and imports in Pakistan. This result is consistent with Saribus and Sekmen (2007) who have provided the same evidence for Turkey. It is further suggestive of the need to inquire the nature of relationship between exports and imports in simultaneous equations framework instead of doing it in single equation model for Pakistan. As for as the case of real exchange rate is concerned, both of exports and imports are not Granger causing it. It implies that unidirectional causality is running from real exchange rate to real exports only.

VI. Conclusion and Policy Implications

The long run relationship between exports and imports is of significant importance due to fact that it reflects the sustainability of foreign trade situation of a country. The main objective of the study is to investigate the long run relationship between Pakistan's exports and imports by applying cointegration and vector error correction model techniques. We have used quarterly data for real exports, real imports and real exchange rate for the period 1972 to 2006.

The results of the ADF unit root tests demonstrate that all series are non-stationary at their levels but stationary at their first difference i.e. they are integrated of order one i.e. $I(1)$. Then we move forward by applying the Johansen multivariate cointegration test in order to investigating the long run relationship among exports, imports and exchange rate. The results indicate the existence of one cointegrating vector among these variables. Real imports positively and significantly affect real exports. The value of coefficient of real imports is 0.89, which is close to unity. It shows that trade deficit is sustainable in the long run for Pakistan. Real exchange rate is also significant determinant of real exports and it is positively affecting real exports. The value of coefficient of real

exchange rate is 0.477. As all the three variables used in our study are logarithmic, we can interpret the values of their coefficients as elasticities. Therefore, we may say that exports are relatively more elastic w.r.t. imports than w.r.t. exchange rate.

Furthermore, we have tested the stability of the equilibrium using VECM. The results indicate that the coefficient of the error-correction term of export variable carries the correct sign (negative) and it is statistically significant at 1 percent, with the value 0.16. It shows that in any case of disequilibrium, the system will converge towards equilibrium path. In every period there will be 16 percent convergence for restoring the long run equilibrium position. The coefficients of the error correction term of imports have the positive sign but statistically significant at 5 percent level for exports and depict divergence from the long run equilibrium in the system. Also the coefficients of exchange rate with negative sign and significance at 5 percent depict convergence towards equilibrium, but the period of convergence will take a longer time, as the value is quite small. The significant error correction terms for each time series imply that they Granger cause one another in the long run. However, in the short run both real exports and real imports Granger cause each other while real exchange rate is not being caused by either of them. Furthermore, unidirectional causality is running from real exchange rate to real exports and real exchange rate does not Granger cause real imports. The overall analyses show that both exports and imports are cointegrated. It implies that Pakistan is not in violation of its international budget constraint. Thus the trade balances are sustainable in the long run for Pakistan.

The policy implication of the exercise is straightforward. On the face of burgeoning trade deficit, there is a need to analyse the different policy options to control trade imbalances. In this context, restricting imports through tariff measures might not be desirable as they will also affect exports and furthermore it will be a tough choice given the country's obligation under World Trade Organization (WTO) commitments. Thus any slowdown in trade imbalance could only be achieved through appropriate exchange rate adjustments that should be quite favorable in boosting our export performance.

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An Analysis of Islamic Banks' Exposure to Rate of Return Risk

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The objective of this study is to analyze the dynamic effects of interest rate changes on the rate of return of Islamic banks and the amount of deposits in the conventional and Islamic banks. In analyzing the potential rate of return risk in the Islamic banks and interest rate risk in the conventional banks, for the Islamic banks, the 3-month Islamic deposit rate of return and total Islamic deposit are considered, while for the conventional banks, the 3-month fixed deposit interest rate and total conventional deposits are considered. Using data covering the period from January 1997 to October 2008, the study applies the cointegration analysis, bi-variate Granger causality test, Impulse Response Function (IRF) and Variance Decomposition (VDC) analysis based on the Vector Auto-regression (VAR) framework. The results of the study have important implications on the risk management practices of the Islamic banks in Malaysia. Several suggestions are put forward to mitigate the rate of return risk so as to ensure healthy growth of the Islamic banking institutions.

1. Introduction

In the process of providing financial services, commercial banks assume various kinds of financial risks. The risks can be categorized into six types, namely systematic or market risk, credit risk, counterparty risk, liquidity risk, operational risk and legal risk. Market risk, in particular, involves interest rate and foreign exchange risks. Interest rate risk can be of various forms, which include re-pricing risk, yield curve risk and basis risk. A key source of interest rate risk resulted from a common characteristic of banks in that they borrow short and lend long, leading to the maturity mismatch or re-pricing mismatch.

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Interest rate risk can be defined as the exposure of a bank's financial condition to adverse movements in interest rates. The changes in interest rates can affect bank's earnings by affecting its net interest income and the level of other interest-sensitive income and operating expenses. It also affects the underlying value of the bank's assets, liabilities, and off-balance-sheet instruments because the present value of future cash flows and in some cases, the cash flows themselves change due to interest rates fluctuations. As such, an effective risk management process that maintains interest rate risk within prudent levels is essential for the safety and soundness of the banks.

Similar to the conventional banks, the Islamic banks also face the financial risks but with variations due to specific requirements to comply with the *shari'ah*. With regard to the interest rate risk, the Islamic banks could also be exposed to the same risk, known as the rate of return risk as suggested by the Islamic Financial Services Board (IFSB) (2005). In the context of their overall balance sheet exposures, the Islamic banks are exposed to a "squeeze" resulting from holding fixed-return assets such as *murabahah* that are financed by investment accounts, the holders of which expect a rate of return in line with the benchmark rates. An increase in the benchmark rates may result in investors or fund providers having expectations of a higher rate of return.

However, rate of return risk differs from interest rate risk in that Islamic banks are concerned with the result of their investment activities at the end of the investment-holding period. According to Iqbal and Greuning (2008), the rate of return risk is different from the interest rate risk in two ways. First, since Islamic banks have a mix of mark up-based and equity-based investments, there is higher uncertainty in the rate of return earned on investments compared to conventional banks which operate on interest-based whereby there are fixed-income securities on the assets side. Second, the return on deposits in conventional banks is pre-determined, while the return on deposits in Islamic banks is anticipated but not agreed beforehand.

In a dual banking system where the Islamic banking system operates in parallel with the conventional system such as in Malaysia, there is indeed a substantial link between the Islamic and conventional systems.

Changes in the conventional interest rates put pressure on the Islamic deposit rates as interest rate differentials could lead to easy arbitrage opportunity. Consequently, the Islamic banks are exposed to the interest rate movements similar to their conventional counterparts since the rate of return in the Islamic bank is sensitive to the changes in the interest rate.

A consequence of the rate of return risk in the Islamic banks is the displaced commercial risk (DCR) which involves the transfer of risk associated with deposits to equity holders. DCR implies that the bank may operate in full compliance with the *shari'ah* requirements, may not be able to pay competitive rates of return as compared to its peers and other competitors. Depositors will have the incentive to seek withdrawal and to prevent the withdrawal, the banks will need to apportion part of their share of profits to the depositors.

Islamic banks may be under market pressure to pay a return that exceeds the rate that has been earned on assets financed by investors or fund providers when the return on assets is under-performing as compared with competitors' rates. Islamic banks may decide to waive their rights to part or entire *mudharib* share of profits in order to satisfy and retain their fund providers and dissuade them from withdrawing their funds. In short, DCR derives from competitive pressures on Islamic banks to attract and retain investors or fund providers. An example for the practice of this approach is the International Islamic Bank for Investment and Development in Egypt which distributed all of its profit to the investment account holders and nothing to its shareholders from the middle to late 1980s.

The practice of forgoing part or all of the shareholders' profits may adversely affect the bank's capital which in turn may lead to another risk, namely the insolvency risk. To avoid this risk, Islamic banks could undertake the income smoothing method whereby the banks create reserves out of profits attributable to the account holder, particularly the profit-sharing investment account to smooth the return to the shareholders without affecting their profit allocation. In practice, the bank may include a clause in the contract which provides the right to the bank to set aside a certain percentage of the profit, that attributable to the accountholders, as a reserve.

One such reserve, as drawn up by AAOIFI standard is Profit Equalization Reserve (PER) which is created by setting aside amounts out of the bank's profit before allocation and calculation of the *mudharib* holder. Another reserve is Investment Risk Reserve (IRR) by setting aside amounts out of the profit attributable to the profit-sharing investment holders, which the bank as *mudharib* is typically authorized to do in the investment or *mudharabah* contract. Furthermore, the portion of PER that is attributable to the profit-sharing investment account and all of the IRR then will be invested in assets that give return to the profit-sharing investment account.

In view of the important issue of the rate of return risk, this study aims to provide empirical evidence on the exposure of the Islamic banks to the rate of return risk and suggest effective ways to mitigate the risk. Focusing on the Malaysian case, this study aims to analyze the effect of interest rate changes to the rate of return in Islamic banks and the effect of the deposit rate changes on the deposits of the conventional banks and the Islamic banks.

The rest of the study is organized as follows: the next section presents the overview of interest rate risk in the banking industry and rate of return risk in the Islamic banks. Section 2 reviews the literature to understand the inevitable role of bank in the risk business and highlights the typical risk factors and characteristics inherent in the banking operation in general. Subsequently, the discussion focuses on the rate of return risk and exposure of the Islamic banks to rate of return risk. Section 3 discusses the research methodology which includes the methods adopted, nature of the data and model specification. Section 4 presents the empirical findings and discusses the results. Finally, Section 5 concludes.

2. Literature Review

Interest rate risk is a major issue that needs serious attention by banks. The Basel Committee on Banking Supervision (2004) describes that changes in the interest rates can have adverse effects on both bank's earnings and its economic value. Bacha (2004) states that a constant rise in the interest rate may lead to several problems to the bank such as increasing in cost of fund since the bank would have to pay higher rate

in order to attract new deposits and maintain the existing ones. Variation in market interest rates could also affect the economic value of a bank's assets, liabilities and off-balance-sheet positions due to a mismatch in rate-sensitive assets and rate-sensitive liabilities. For this reasons, banks should be aware of the reduced earnings or outright losses that could threaten the financial stability of an institution by undermining its capital adequacy and reducing market confidence.

For the Islamic banks, a study conducted by Khan and Ahmed (2001) finds that the rate of return risk is the most critical risk faced by the Islamic banks compared to other risks such as the operational risk and liquidity risk. According to How et. al (2005), interest rate risk management or rate of return risk management should be a concern to the Islamic banks, particularly in a dual banking context such as in Malaysia. This is due to the misconception that the Islamic banks, which are not using interest rate in their dealings, are not exposed to interest rate risk or rate of return risk. The study documents that banks that offer Islamic financing are exposed to a higher rate of return risk than banks that do not offer the Islamic financing. This is due to the differences in the interest rate sensitivity of assets and liabilities in the Islamic banks. Unlike conventional bank that have more flexibility on the asset side, the Islamic bank have the fixed rate assets that not sensitive to the changes in market interest rate while the liabilities are sensitive to interest rate changes. Therefore the Islamic banks cannot react swiftly to changing interest rate and this lead to a higher exposure to rate of return risk.

The rate of return risk stems from uncertainty in the returns earned by Islamic banks on their assets. This uncertainty can cause a divergence from the expectations that investment account holders have on the liabilities side. The larger the divergence, the bigger is the rate of return risk. In this matter, Rosly (1999) argues that the Islamic banks in Malaysia have less flexibility on the asset side than conventional banks since most of the Islamic financing in Malaysia takes the form of *murabahah* and *bay' bithaman ajil* (BBA) which is insensitive to the market interest rates. Since all the Islamic liabilities are interest-sensitive, he argues that the fund gaps of the Islamic banks will always be negative. Consequently, the Islamic banks are at disadvantage in the face of changing interest rates. This is supported by his findings that

profit margins decline in Bank Islam Malaysia Berhad in the periods of rising interest rates when the interest margins of conventional banks increase.

Several studies suggest that the Islamic banks operating in a dual banking system are more vulnerable to the rate of return risk. Bacha (2004) documents that when the interest rates rise, Islamic banks have to raise deposit rate and failing to do so will expose them to the liquidity problem. Similarly, Kaleem and Md Isa (2003) find that Islamic banks in Malaysia take into account the conventional interest rates before adjusting their deposit returns. In addition, How et. al (2005) investigate if Islamic financing is related to bank risks namely credit, interest-rate and liquidity risk. The study finds that commercial banks in Malaysia that offer Islamic financing facilities have significantly lower credit and liquidity risks but significantly higher interest rate risk than banks that do not offer such facilities. Kasri and Kassim (2009) examine the dynamic interactions among determinants of the Islamic banking growth in Indonesia namely real *mudharabah* investment deposit, real rate of interest, real rate of return, Islamic banks' branch and real income. Based on Vector Auto-regression (VAR) methodology, this study finds that the conventional interest rate is one of the major determinants of saving in the Islamic banks in Indonesia. Furthermore, the study documents that the Islamic banks are exposed to various types of risks namely rate of return risk, DCR, benchmark risk and *shari'ah* compliance risk.

As mentioned, a consequence of the rate of return risk is the DCR. According to Greuning and Iqbal (2007), the AAOIFI has identified the DCR as the risk when an Islamic bank is underperform during a period and is unable to generate adequate profits to pay its investors-depositors a rate of return higher than what should be payable under the actual terms of the investment contract. Archer and Abdel Karim (2006) argue that DCR is potentially an efficient and value-creating means of sharing risks between two classes of investor with different risk diversification capabilities and preferences. As a solution, Islamic banks set up reserves with the intention of minimizing any need to forgo management fees. Thus, according to Greuning and Iqbal (2007), the attempt to mitigate the DCR has led to the development of two standard practices in the banking industry namely the Profit Equalization Reserve (PER) and

Investment Risk Reserve (IRR). In examining the provisioning behavior of PER, Ismail and Shahimi (2006) find that the provisioning decisions should be based on the entire future profile of expected losses and PER decisions should not be independent of the way in which financings are priced.

3. Methodology

3.1 Empirical Framework

This study describes the dynamic interactions among a set of variables using vector time series analysis. In order to analyze the relationship between the Islamic banks' rate of return, conventional banks' interest rate, Islamic banks' total deposits and conventional banks' total deposits in Malaysia, a VAR model is utilized.

The validity of the VAR analysis depends on the stationarity of the time series. This implies that the time series should have no trends or fixed seasonal patterns and economic time series have to be transformed before these properties hold. This study utilizes two unit root tests on the individual stochastic structure, that are the Augmented Dickey-Fuller (ADF) test and Phillip-Perron (PP) test which have been frequently used for time series data.

In this study, the lag is determined based on Schwarz Criterion (SC) which is commonly used for the VAR model. Once the stationarity condition has been determined, the study then conducts a cointegration test using a multivariate test developed by Johansen (1988) and Johansen and Juselius (1990). The cointegration test is based on the maximum likelihood estimation of the VAR model. In order to examine the causality and the direction of influence of one variable to another variable, this study adopts the bi-variate Granger causality test based on Granger (1969). Next, this study conducts Impulse Response Function (IRF) to ascertain how each variable responds over time to a shock in itself and in other variable by using the innovation technique. The IRF essentially maps out the dynamic response path of a variable to a change in one of the variable's innovations. Finally, the Variance Decomposition (VDC) is adopted to indicate the degree of exogeneity between variables outside of the sampling period. The VDC shows the

percentage of forecast error variance for each variable that may be attributed to its own shocks and to fluctuations in the other variables in the system.

3.2 Data and Model Specification

In Malaysia, where the Islamic banks operate hand in hand with the conventional banks, the two systems may interact given that they operate in a common macroeconomic environment (Bacha, 2004). If the rate of return in the Islamic banks and interest rate in the conventional banks are related, an increase in interest rate may induce the Islamic banks to increase their deposit return in order to avoid the problem of depositors switching their deposits to the conventional banks or withdrawing their funds. In addition, no restriction is imposed on the depositors in the dual banking system in Malaysia who wishes to move their funds from one system to another could also expose the bank to the problem of DCR.

In term of the deposit rate, Chong and Liu (2008) suggest that the rate of return on the Islamic investment is closely pegged to the conventional banks' interest rate. Additionally, Kaleem and Md Isa (2003) and Bacha (2004) find the evidence of a significant relationship between Islamic banks' rate of return and conventional banks' interest rate and prove that the changes in conventional banks' interest rate Granger cause changes in Islamic banks' rate of return.

In term of the total deposits, Bacha (2004) finds that there is a strong correlation between the total deposits of the Islamic banks and conventional banks. The Granger causality test shows a uni-directional causality from the conventional banks' total deposits to the Islamic banks' total deposits. Islamic banks' total deposits were also found to have a relationship with Islamic banks' rate of return and conventional banks' interest rate. Haron and Shanmugam (1995) for instance, find a strong negative relationship between interest rate and Islamic banks' total deposits. In another study, Haron and Ahmad (2000) and Kasri and Kassim (2009) show a negative relationship between the interest rate and Islamic banks' total deposits. These findings lead to a conclusion that the DCR is observed among the depositors of Islamic banks. Moreover, these studies find that Islamic banks' total deposits and

Islamic banks' rate of return are positively related which indicates a rate of return risk in the Islamic banks whereby the depositors are attracted to a high rate of return and may switch or withdraw their deposits when the rate of return decreases.

In order to analyze the potential rate of return risk for the Islamic banks, this study analyzes the relationship between the rate of return of the Islamic banks and interest rate of the conventional banks. Thus, the two key variables of the Islamic banks being examined in this study are the rate of return and total deposits since the interest rate changes would possibly give a direct impact on them. If interest rate risk resulting from the change of interest rate exists in the conventional banks, it follows that if the costs of funds for the Islamic banks are equally changing, then they must face rate of return risk.

Based on the above, this study estimates a four-variable VAR model using Islamic banks' rate of return (IBROR), conventional banks' interest rate (CBINT), Islamic banks' total deposits (LNIBTD) and conventional banks' total deposits (LNCBTD) as the main variables in the system. Specifically, this study focuses on the following systems:

$$\begin{aligned} \text{IBROR} &= \{\text{IBROR}, \text{CBINT}, \text{LNIBTD}, \text{LNCBTD}\} \\ \text{CBINT} &= \{\text{IBROR}, \text{CBINT}, \text{LNIBTD}, \text{LNCBTD}\} \\ \text{LNIBTD} &= \{\text{IBROR}, \text{CBINT}, \text{LNIBTD}, \text{LNCBTD}\} \\ \text{LNCBTD} &= \{\text{IBROR}, \text{CBINT}, \text{LNIBTD}, \text{LNCBTD}\} \end{aligned}$$

where IBROR is the Islamic banks' rate of return proxied by 3-month return on investment account of the Islamic banks, CBINT is the conventional banks' interest rate proxied by 3-month rates on fixed deposits of the conventional banks, and LNIBTD and LNCBTD are total deposits of the Islamic and conventional banks, respectively.

The data for this study are taken from the various issues of Bank Negara Malaysia's *Monthly Statistical Bulletin*. The study uses monthly data covering the period from January 1997 to October 2008. The total deposits data are aggregated across all accounts including demand deposits, investment deposits and savings deposits.

4. Results and Discussions

4.1 Pearson Correlation

The overall results suggest that the correlations between all the variables are statistically significant. The significance and high magnitude of the Pearson correlation coefficient shows the close association and possible co-movement between the variables under consideration.

The Pearson correlation provides a very interesting result. First, the relationship between Islamic banks' rate of return and conventional banks' interest rate is shown to be very strong and positive. With a correlation coefficient of 0.95, this seems to suggest that one deposit rate is benchmarked against the other deposit rate. Second, the relationship between Islamic banks' rate of return and Islamic banks' total deposits is shown to be negative and significant. This is quite puzzling since one could expect as the return on deposit increase, the deposit will increase accordingly. Third, the relationship between Islamic banks' rate of return and conventional banks' total deposits is also negative and significant. This is a logical relationship which suggests that as Islamic rate of return increase, conventional banks' total deposits would decrease, *vice versa*. Fourth, the relationship between Islamic banks' total deposits and conventional banks' interest rate is shown to be significantly negative. This suggests that Islamic banks' total deposits decrease when return on conventional deposits is higher, *vice versa*. In order to rule out the possibility of spurious correlations, next, this study conducts several standard econometric tests to determine unit root, cointegration and Granger causality.

Table 1: Results of the Pearson Correlation Coefficient

	IBROR	LNIBTD	CBINT	LNCBTD
IBROR	1.000000			
LNIBTD	-0.876843*	1.000000		
CBINT	0.952188*	-0.848047*	1.000000	
LNCBTD	-0.683497*	0.928959*	-0.643963*	1.000000

Note : * denotes significance level at 5%.

4.2 Unit Root Test

Table 2 presents the results of the stationarity test at level and first difference. From the results, it is found that the null hypotheses of non-stationary for all the time series failed to be rejected at level. However, the null hypotheses are rejected for all the time series at first difference. The results clearly indicate that all variables are stationary at I(1).

Table 2: Results of Unit Root Tests

Variables	ADF Test		PP Test	
	At Level	First Difference	At Level	First Difference
IBROR ^a	-1.53707	-4.025714*	-1.631849	-9.192220*
CBINT ^a	-1.587980	-4.046401*	-1.704210	-9.028974*
LNIBTD ^b	-1.269480	-3.532226**	-1.388691	-9.173869*
LNCBTD ^b	-1.662459	-3.443719***	-2.086609	-11.89537*

Notes : *, ** and *** denote significant at 1% , 5% and 10% significance level, respectively.

^a with intercept.

^b with intercept and linear trend.

4.3 Cointegration Test

For all models, Schwarz Criterion test confirmed that a one-period lag is suggested as the optimal lag length. Based on the results from the maximum eigenvalue and trace statistics as reported in Table 3, the null hypothesis of no cointegration vector hypothesis ($r = 0$) is rejected at 5 percent significance level. In other words, at least one cointegration vector exists for series of variables in the system. The existence of the cointegrating vector suggests that the variables in the system have a long-run equilibrium.

Table 3: Results of the Johansen Cointegration Test^a

Null Hypothesis	Test Statistics		Critical Values (5%)	
	Trace	Maximum-Eigenvalue	Trace	Maximum-Eigenvalue
$r = 0$	84.77631*	59.91827*	63.87610	32.11832
$r \leq 1$	24.85803	12.85417	42.91525	25.82321
$r \leq 2$	12.00386	7.088297	25.87211	19.38704
$r \leq 3$	4.915563	4.915563	12.51798	12.51798

Notes: The test statistics are compared to the critical values from MacKinnon-Haug-Michelis (1999)

^a with trend assumption; linear deterministic trend.

4.4 Granger Causality Test

The results of the Granger causality test show two significant causal relationships. First, there is a bi-directional causal relationship between Islamic banks' rate of return and conventional banks' interest rate. This result is supportive of our earlier findings based on the Pearson correlation. Second, there is a significant uni-directional relationship between Islamic banks' rate of return and Islamic banks' total deposits suggesting that the level of Islamic banks' total deposits significantly affected by their rate of return. This result leads to a conclusion that the depositors' behavior is driven by profit motive.

Table 4: Results of the Granger Causality Test

Null Hypothesis:	F-Statistic	p-value
CBINT does not Granger Cause IBROR	131.967*	7.E-22
IBROR does not Granger Cause CBINT	4.43995**	0.0369
LNIBTD does not Granger Cause IBROR	1.32567	0.2516
IBROR does not Granger Cause LNIBTD	5.10435**	0.0254
LNCBTD does not Granger Cause IBROR	0.02646	0.8710
IBROR does not Granger Cause LNCBTD	0.46015	0.4987
LNIBTD does not Granger Cause CBINT	0.08970	0.7650
CBINT does not Granger Cause LNIBTD	0.91641	0.3401
LNCBTD does not Granger Cause CBINT	0.02145	0.8838
CBINT does not Granger Cause LNCBTD	0.29037	0.5909
LNCBTD does not Granger Cause LNIBTD	2.19613	0.1406
LNIBTD does not Granger Cause LNCBTD	0.68484	0.4094

Note: *, ** and *** denote significant at 1% , 5% and 10% significance level, respectively.

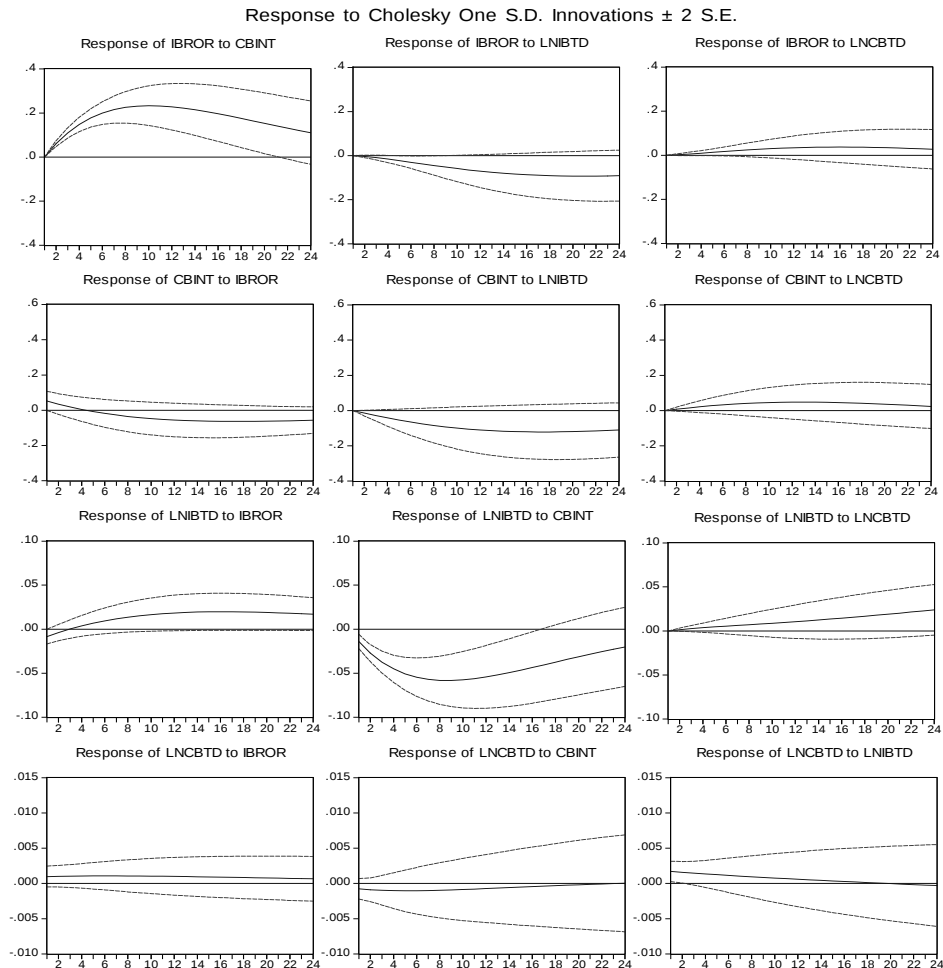
4.5 Impulse Response Function (IRF)

As shown in Figure 1, the Islamic rate of return responds positively and immediately to innovations in the conventional banks' interest rate lasting for approximately 22 months. This result confirms the co-movement between the two rates and consistent with the Granger causality results. The result has an important implication that the significant relationship and particularly the impact of interest rate on Islamic deposit rates indicate the exposure of Islamic banks to rate of return risk.

More importantly, the IRF results show that Islamic banks' total deposits respond significantly to the conventional banks' interest rate, but not the Islamic rate of return suggesting the important influence that the conventional banks' interest rate has on the Islamic banks' total deposits. This finding suggests two important implications; first, since the changes in Islamic banks' total deposits depend on the level of conventional banks' interest rate, this could mean that there is a deposit-

flight from the Islamic banks to the conventional banks when the conventional banks' interest rate increases. This is an evidence of DCR. Second, the important relationship between conventional banks' interest rate and Islamic banks' total deposits suggests that the customers of Islamic banks are sensitive to the reward received on their deposits and their saving behavior is driven by profit motive (Haron and Ahmad, 2000 and Haron and Wan Azmi, 2008). This also implies a rate of return risk whereby a higher rate of return would increase the level of Islamic deposits, and *vice versa* (Kasri and Kassim, 2009).

Figure 1: Results of the Impulse Response Function



4.6 Variance Decomposition Analysis (VDC)

The ordering of the variables for VDC in this study is based on the Cholesky decomposition method which suggests the following order of the variables: IBROR, CBINT, LNIBTD, and LNCBTD. Results of the VDC method are presented in Table 5. Similar to IRF, the results are reported for a 24-month horizon.

According to Table 5, in the case of Islamic banks' rate of return, 84.9 percent of the variations are contributed by other variables. Among all the variations, conventional banks' interest rates are the most significant variable, explaining about 56.7 percent of the Islamic banks' rate of return forecast error variance. This result is consistent with that of Granger causality tests. On the other hand, only 13.2 percent of the variations of conventional interest rate are explained by variations of Islamic banks' rate of return, while 23.1 percent are explained by conventional banks' total deposits. Interestingly, about 62.6 percent of the variations in Islamic banks' total deposits are explained by the conventional banks' interest rate. This finding suggests that conventional banks' interest rate is an important factor in affecting changes in total deposits in Islamic banks. Thus, any changes in interest rate will affect the total deposit in Islamic banks and Islamic bank will be affected by the rate of return risk.

Table 5: Results of Variance Decompositions Analysis

Variance Decomposition of	Period	Innovations in			
		IBROR	CBINT	LNIBTD	LNCBTD
IBROR	1	100	0	0	0
	4	51.748	47.708	0.319	0.224
	8	32.214	64.930	0.240	2.616
	12	23.785	66.325	0.141	9.749
	24	15.122	56.705	1.300	26.877
CBINT	1	5.321	94.680	0	0
	4	11.300	87.021	0.380	1.300
	8	17.442	73.660	0.538	8.360
	12	15.763	69.797	0.472	13.968
	24	13.178	62.257	1.431	23.134
LNIBTD	1	4.667	9.658	85.676	0
	4	5.696	52.807	41.327	0.170
	8	3.931	66.163	28.525	1.382
	12	2.474	70.543	22.679	4.305
	24	7.682	62.616	24.225	5.477
LNCBTD	1	0.866	1.497	5.438	92.200
	4	2.511	0.808	7.103	89.578
	8	5.862	1.136	3.861	89.140
	12	5.741	2.192	3.507	88.560
	24	11.518	1.710	4.953	81.820

5. Conclusions

In a dual banking system such as in Malaysia, the Islamic banking system operates in parallel with its conventional counterparts. Customers are free to choose either system and also given the right to switch between them. In this regard, there is a tendency for the customers to take advantage of any arbitrage opportunity due to the rate differentials and fund flows. As a consequence, though the Islamic banks are operating on interest-free basis, the economic environment in

a dual banking system may expose them to the problem of rate of return risk. Thus, the aim of this study is to analyze the potential of interest rate risk for Islamic banks as they may be affected by the interest rate movements in the conventional system.

In efforts to achieve its objectives, this study relies on several empirical tests. First, the Pearson correlation analysis was conducted and the results show a significant relationship between all the variables being considered. The study shows that both Islamic banks' rate of return and conventional banks' interest rate are cointegrated and have a long-run equilibrium. This finding is further supported by the Granger causality test which indicates a bi-directional causality between the Islamic banks' rate of return and conventional banks' interest rate. The results from the IRF and VDC are supportive of the earlier results and provide more detailed findings. In particular, the IRF shows that the Islamic banks' rate of return and deposits respond significantly to changes in the conventional interest rates. This is again, evidence that the Islamic banks are exposed to the rate of return risk. When the interest rate rises, Islamic banks have to follow the market trend by raising the deposit rate accordingly, or otherwise the Islamic banks will face the liquidity problem.

At the same time, this study indicates the profit motive among the Islamic bank depositors as reflected by the significant impact of the Islamic banks' rate of return on Islamic banks' total deposits. The implication of this finding is that the Islamic banks might be exposed to the rate of return risk. Ironically, the depositors will increase their deposits only when the rate of return is increase. Otherwise, when the rate of return decreases, they will definitely decrease their total deposits in Islamic banks and they could switch their funds to the conventional banks. This also implies the problem DCR in the Islamic banking system.

Furthermore, the study also finds a possibility of DCR as shown by the significant negative relationship between Islamic banks' total deposits and conventional banks' interest rate. This particular finding shows that when the conventional banks interest rate increases, the Islamic bank depositors will transfer their funds from the Islamic banks to the conventional banks. The implication of the DCR or the practice of

forgoing part or all of the shareholders' profits may adversely affect the bank's own capital which can lead the banks to insolvency risk in extreme cases.

In accepting such major findings of this study, the policymakers should be aware that the Islamic banks are vulnerable to the rate of return risk. As suggested by Bacha (2004), to protect Islamic banks from the risks that caused by the interest rate movements, reducing the maturity on loans on the asset side is the only way can Islamic bank do but this methods is dangerous since it can harms the Islamic banks structure in general. Thus, two alternatives are recommended for the Islamic banks. Firstly, the Islamic banks should move away from fixed rate instruments like *murabahah* and BBA into profit and loss sharing contracts like *musyarakah* and *mudharabah*. The advantage of the profit and loss sharing contracts is that the financing will be detached from the rate movements since they are directly independent on profit or loss from the financed business. Secondly, a risk-sharing agreement between Islamic banks and their customers should take into account that the customer of long maturity loans agrees to partially compensate the banks if the average rate of return exceeds the predetermined level. In return, the banks agree to reduce the mark-up on outstanding balance if the rate is below the predetermined level.

This study however, has its own limitation whereby it is conducted within a limited time period and variables. Further extension of this research should consider a wider scope of deposits by conducting the same approach on different type of deposits available in Islamic banks and specific financial institutions categorized under Islamic financial institutions. The study will then identify the risk exposures across different type of deposits and different characteristics of Islamic financial institutions. In addition, identification of the rate of return risk can be done by analyzing the individual bank using the bank level data in order to compare the performance of the banks particularly in rate of return risk management.

Further extension of the study could consider the determinants of rate of return of the Islamic banks. Since most of the study focused on the determinants of the Islamic banks' deposits, the determinants of the rate of return should also be given an equal attention by researchers. In order to enrich the study on risk management in Islamic banks, the

determinants of rate of return can provide evidence on the risk exposure in the Islamic banks and thus can provide the appropriate solution to mitigate such risks. This can help to provide an alternative to the risk management tools which believed are still lacking as argued by Iqbal (1999).

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APPENDIX

ARTICLE	OBJECTIVES	DATA/METHODOLOGY	FINDING/CONCLUSION
Bacha (2004)	To analyze the extent of potential interest rate risk for Islamic banks in Malaysia by investigating the linkages between 3 month interest rate and 3 month rate of return and also the linkages between the total deposits of the two banking systems	The study uses Malaysia's monthly data from January 1994 to July 2003. In this study, the methods employed are Pearson correlation, Ordinary Least Square (OLS) regression analysis and Granger Causality Test.	The results show that the changes in conventional banks interest rates and total deposits Granger cause changes in Islamic banks rate of return and total deposits respectively. The results imply that the Islamic banks operating within a dual banking system may also be subject to interest rate risk. When the interest rate rise, Islamic bank have to raise the deposit rate to avoid liquidity problem.

ARTICLE	OBJECTIVES	DATA/METHODOLOGY	FINDING/CONCLUSION
How, Abdul Karim and Verhoeven (2005)	To examine the exposure of Malaysian banks that offer Islamic financing to credit risk, interest rate risk and liquidity risk.	Using the sample of 23 banks in Malaysia from year 1988 to 1996, the study employs the parametric t-test, non-parametric Mann-Whitney test and OLS regression.	The results show that the commercial banks in Malaysia that offer Islamic financing facilities have significantly lower credit and liquidity risks but significantly higher interest rate risk than banks that do not offer such facilities. Therefore, the Malaysian Islamic banks should give attention to the interest rate risk (rate of return risk) management.
Rosly (1999)	To provide an empirical proof on the declining performance of Islamic banking during a period of rising interest rate	Using the sample of six banks in Malaysia (namely BIMB, Maybank, Bank Bumiputra, Public Bank, Oriental Bank and Pacific Bank) from year 1996 to 1997, the study compares the profit margin in the Islamic banks and interest margin in the conventional banks.	The study finds that the profit margins of BIMB decline during the period of rising interest rate, while the interest margins of conventional banks show a rising trend. Thus this study suggests that the Islamic banks should diversify into equity financing such as <i>mudharabah</i> and <i>musyarakah</i> to avoid the decline in income due to the interest rate volatility.

ARTICLE	OBJECTIVES	DATA/METHODOLOGY	FINDING/CONCLUSION
Kaleem and Md Isa (2003)	To examine the extent of substitutability between Islamic and conventional banking depository returns by comparing the Islamic and conventional term deposits returns (TDRs).	The data used are the TDRs offered by the commercial banks, finance companies and merchant banks from January 1994 to December 2002. The method used is the Granger Causality test.	The results show that conventional TDRs Granger cause Islamic TDRs. The overall results conclude that the interest rate affects the Islamic rate of return.
Ismail and Shahimi (2006)	To examine the provisioning behavior of Profit Equalization Reserve (PER) and to identify the underlying determinants of PER in Malaysian Islamic banks	This paper analyzes on a sample of 15 commercial banks that offer Islamic banking products and services from 2002 to 2004. The methods employed are the panel least squares for OLS and GLS (Generalized Least Square).	The results show that the provisioning decisions should be based on the entire future profile of expected losses and the PER decisions should be dependent on the way in which financings are priced.
Chong and Liu (2008)	To examine the relationship between the investment rates offered by the Islamic banks and the deposit rates offered by the conventional banks	The data used are the monthly series of Islamic and conventional rates based on the average rates across all financial institutions from April 1995 to April 2004. The methods used are the bi-variate Granger Causality test, Unit Root test (ADF and PP), Cointegration test (Johansen procedure) and Engle-Granger ECM.	The results show that the changes in conventional deposit rates cause changes in Islamic investment rates, not <i>vice versa</i> . The overall results show that the return on the Islamic banks deposit accounts are effectively pegged to the return on conventional banks deposit accounts.

Inward FDI Performance in the Muslim World: Assessing Business and Political Environments

M. Moniruzzaman¹

This article aims to make a survey of business and political environments for inward Foreign Direct Investment performance of the Muslim countries. It offers a cross-country analysis of the 57 Muslim majority countries' FDI performance during 1995-2006. The research finds that the business environment in the Muslim countries is not favourable for smooth transactions, and secondly, there exists a high level of political instability throughout the Muslim world. Unfavourable business environment and a high level of political instability might be held responsible for low FDI performance in the Muslim countries.

1. Introduction

In today's globalised economy foreign direct investment (FDI) is one of the most important factors that primarily contributes to the productivity of a nation's economy. Even developed economies in the world substantially depend on inward FDI for their continuous growth and maintenance of economic performance. The lion share of the world's inward FDI finds its destination in the so-called triad-economy namely the United States, European Union and Japan. The developing countries as well rely heavily on inward FDI for increased productivity and economic development. Without inward FDI, national economic

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development is very difficult to achieve. Liberalisation of trade under the World Trade Organization (WTO) is making the global FDI flows even more significant.

There are certain conditions that facilitate FDI inflows, and not all the countries in the world can create and ensure an inviting environment for that. This is a competitive arena. Therefore, countries that can best create a welcoming environment attract greater and competitive inflows. Recent reports on world investment indicate that the Muslim countries in particular in the developing world are among the most unpopular destinations for FDI. According to a 2001 report, Sweden, a country with nine million people, received \$12.7 billion in FDI while the entire Muslim world consisting of 57 countries with a population of 1.27 billion received only \$13.6 billion. This is about only 2 percent of the total \$735 billion in world FDI in the same year (CCEIA, 2003). Such a poor performance of the Muslim world in attracting FDI naturally begs an analysis of the reasons behind it.

This study makes a cross-country analysis of domestic business and political environment of the Muslim world economies in attracting FDI inflows. It demonstrates that the business environment in the Muslim world is not very friendly, and political instability in the Muslim world is a continuous problem that undermines investors' trust. The study argues that comparatively low performance of the Muslim world economies in attracting FDI might be directly related to its weak business environment and high level of political instability.

2. Literature Review

Studies on Muslim world economies as a special category are comparatively few. However, a number of recent studies have taken increasing interest in analysing the role, importance and performance of FDI in economic growth in the Muslim world. Dabour (2000) made a cross-country analysis of FDI performance of the Muslim countries, and found that the performance of the Muslim economies was unsatisfactory during the 1980s and 1990s. The study, however, failed to elaborate the reasons behind the poor performance. A SUSTRIC (2005) study has made an indirect assessment of FDI performance by looking at the level of integration of the Muslim world economies into the world economy. The study found that even if the countries have extensively adopted

trade and financial liberalization, yet in terms of foreign trade, financial integration, production, trade structure and markets they still are in the process of opening up. Other studies have taken sector specific approach such as socio-economic developmental level (Ozgur *et al.*, 2004), human resource development (Bayraktar, 2004), trade and labour standard (Konac, 2001), and private sector investment (Bayraktar, 2003) to assess the Muslim world economies which indirectly talks about the performance in FDI. All these studies have indicated underperformance of the Muslim world economies in the concerned sectors which indirectly explains relationship with FDI performance.

Another set of study tends to be country, region specific in addressing the FDI issue directly. Tsen (2005) dealt with FDI in manufacturing industry of Malaysia and found that relatively higher level of human resources, market logistics and infrastructure played important roles in attracting FDI. Khyeda (2007) looked at regulatory restrictions and FDI in Egypt, Saudi Arabia and Turkey and found that despite regulatory ease, structural impediments are still paramount. Compared to studies based on market factors, FDI performance based on political factors is explored even less. One recent study by Suliman and Andre (2009) on 29 Sub-Saharan countries has indicated that FDI inflows respond positively to the literacy rate and to improvements in political rights and civil liberties; war events, by contrast, exert strong negative effects on FDI. This is an important study which relates war with FDI performance, but it deals neither exclusively with the Muslim countries, nor with non-war political instability factors.

While these studies have made important contribution in analyzing particular factors, these can offer only a partial answer to the question-why FDI performance is low in the Muslim world. The existing literature suffers from a number of deficiencies. First, most of the literature does not make a cross-country analysis of all the Muslim countries in this regard, which renders a comparative understanding of the Muslim economies impossible. Second, most of the studies use sector specific analysis which leaves out the possible impacts of other important factors unexplored. Third, apparently no study has been done on the impacts of political environment of the countries to make a comprehensive assessment of poor FDI performance. Therefore, this study is important in a way that it integrates both economic and political environments of the countries under study to offer a comprehensive

analysis of the factors which may have direct influence on FDI performance.

3. Methodology

3.1 The Data

The data for this study come from annual reports published by the established international institutions. The data are of three types which are FDI, business environment and political environment in the Muslim world. The Muslim world here refers to all 57 countries that are members to the Organization of Islamic Conference (OIC). Economic data on FDI inflows are sourced from the *World Development Indicators 07* of the World Bank, *World Investment Report 2000 to 2007* by the United Nations Conference on Trade and Development (UNCTAD), *Annul Reports* by the Islamic Development Bank (IDB), and *World Economic Factbook 2007* by Euromonitor International. Data on business environment in each of the Muslim countries is based on the World Bank and the International Finance Corporation's report *Doingbusiness in 2006*. And finally, the political environment of the Muslim countries is analysed based on data from the Political Instability Task Force (PITF) of the Centre for Global Policy at George Mason University.

3.2 Data Analysis

The data are treated using cross-country analysis method. Each type of data is categorized into a number of variables which are then examined across the number of cases. The measurement of FDI performance is approached by using the UNCTAD barometer of *traditional* and *new or welcoming* factors. A total of ten, three traditional and seven welcoming factors are considered as main variables to assess the business environment in the Muslim world. The political environment of the Muslim counties under study is assessed by using five main variables which are ethnic violence, genocide, civil mass unrest, political violence, and adverse regime change. Finally, cross-tabulation of all data is done using descriptive statistics.

4. Results and Discussions

4.1 World FDI Inflows

After the year 2000, global FDI inflows recorded continuous downfall until recently. According to the UNCTAD, FDI inflows in 2006 recorded \$1,306 billion, compared to \$1,411 billion in 2000. Out of the total, \$857 billion went to developed countries and \$379 billion went to developing countries. The USA, UK and France topped the list in receiving the highest share. A region-wise breakdown of the total inward flows to developing countries downsizes the share further. *Africa* recorded \$36 billion which is more than double of 15 billion in 2003. The share of greater *Asia-Pacific* region was \$260 billion, of which \$200 billion went to South, East and South-East Asian countries where China recorded \$69, Hong Kong attracted \$43, Singapore \$24 and India \$ 17 billion. The 14 economies of Arab and west Asian regions recorded \$60 billion in total. The *Latin America and Caribbean* region received \$84 billion where Brazil and Mexico remained the leading recipients with each securing about \$19 billion. Similarly, *Central Asia and Eastern Europe* attracted higher FDI amounting to \$69 billion, an impressive increase of 68%. The top five economies namely Russian Federation, Romania, Kazakhstan, Ukraine and Bulgaria of the regions attracted 82% of that total inflow (WIR 2006, 2007, 2008).

4.2 Muslim World FDI inflows

FDI in the Muslim countries is comparatively very low when taken as a group as well as the number of countries and their population size into consideration. Table 1 shows that FDI in 2006 was 117.4 billion which is the highest in a single year during 1995-2006, and was higher than 1995-2000 combined total of 108.5 billion. A trend is clear that since 2002 FDI in the Muslim world has been on the rise every year. However, the Muslim world's global percentage share compared with the total developing economies was quite marginal (9 against 29 per cent).

4.3 Muslim World FDI Inflows Performance Ranking

A country's performance in attracting FDI depends on various factors, and these factors are measured in different ways. The UNCTAD has

developed indices of inward FDI performance and potential. The *Inward FDI Performance Index* measures host countries' performance in receiving inward FDI. The index helps in ranking the countries according to the amount of FDI they attract compared to the size of their economies. It further calculates the ratio of a country's share in global FDI inflows to its share in global GDP. According to the index, a value greater than one indicates a country's higher ability to attract FDI inflows, while a value below one indicates negative ability in doing so. Table 2 shows the world ranking of the Muslim economies measured by *Inward FDI Performance Index* of the UNCTAD.

Similarly, in order to measure a country's potential to attract FDI, the UNCTAD has developed a second set of indices called *Inward FDI Potential Index* consisting of 12 structural variables. Combining the two indices namely the *Inward FDI Performance* and *Inward FDI Potential* an FDI matrix is produced. This matrix puts countries in one of the following four quadrants:

- Front-runners: countries with high FDI potential and performance
- Above potential: countries with low FDI potential but strong FDI performance
- Below potential: countries with high FDI potential but low FDI performance
- Under-performers: countries with both low FDI potential and performance

According to the 2007 index, the top 39 front runner countries included only 9 Muslim countries. There were 15 Muslim countries among the 34 global totals that were ranked as „above potential.’ Eight Muslim countries were included in a total of 34 countries which were grouped in „below potential’ category; and finally, 15 Muslim countries were among the 35 global totals which were ranked as „under-performers’ (see Table 3). However, the Muslim countries’ performance and potential recorded higher than the previous years.

The matrix above shows that during 1993-2002 the Muslim economies have closely maintained the number of front-runners (4-6) though the trend is downwards. The number of „below potential’ countries is on the rise but only slightly (9-10). The number of countries with „above

potential' has decreased by one-third (from 15-10), while the number of 'under-performers' has increased by one-third (from 15 to 22). Compared to 2002, the Muslim world has performed better in 2005 in all the categories. The number of front runner countries has increased by more than double (from 4 to 9); the number of 'above potential' countries has increased by one-third (from 10 to 15); the numbers of countries with 'below potential' and with 'underperformance' have decreased from 10 to 8, and from 22 to 15, respectively.

So, an overall picture that emerges from the above matrix is that the FDI performances as well as potential of the Muslim economies during 2003-2005 did not improve from 1993-1995 level. The question that naturally arises is why the Muslim world economies' performance is so grim? What are the factors that are responsible for the stagnant trend in FDI performance in the Muslim world economies? Answers to these questions can be found in examining the favourable factors that the UNCTAD considers important for inward FDI performance.

4.4 Favourable factors for inward FDI performance:

There are many factors that attract FDI for an economy. Over the decades, the nature of these factors has evolved and changed owing to the changing nature of international finance and investment. FDI itself became a global competitive financial and investment market. Therefore in such a global competitive environment the factors that attract FDI tend to remain competitively changing. Taking this into consideration, the factors that contribute best to inward FDI performance are classified into two: *traditional factors* and *new factors*.

4.4.1 Traditional factors

The *first* important factor that traditionally accounted for high FDI attraction is availability of natural resources and raw materials. The vast reserve of natural resources in many countries attracted FDI during the early decades of the twentieth century when public as well as big private companies in the West invested heavily in extractive economies around the world such as petroleum and mining.

The *second* traditional factor is cheap labour cost. This factor emerged after the 1970s following the high economic growth and high labour cost in the USA, Western Europe and Japan. Multinational companies of

these countries started to relocate their production bases in Asian, African and South American countries to exploit the cheap labour cost in these economies. A clear example of this trend is massive FDI inflows and relocation of global Trans-national Corporations (TNCs) in areas like Southeast Asia, and in countries like China and India recently.

The **third** traditional factor is the large domestic market. FDI inflows find their destination in economies where local demand for the product is huge due to heavy absorption capacity because of advanced industrialization, and a huge consumer market because of high per capita income and purchasing power. An example of this factor is the heavy concentration of FDI inflows among the triad economies namely the USA, the European Union and Japan. During 1998-2000 the Triad economies accounted for three-quarters of total global FDI inflows, and 85 per cent of outflows. During the same period its inward FDI stocks and outward FDI stocks remained 59 per cent and 78 per cent, respectively. The developed countries' share even surged further in 2004 when they accounted for over 90 per cent of total outward FDI. This is obviously due to the fact that the triad economy is home to most of the nearly 65,000 TNCs and about 850,000 subsidiaries worldwide.

4.4.2 New or welcoming factors

Over the past three decades the significance of the traditional factors in inward FDI performance has waned due to more strategically and technically important factors which are called *new factors* or *welcoming environment* that favour FDI inflows. There are a number of factors that are included in welcoming environment. Some important factors include policy liberalization, rapid technical progress, low transaction cost, image building, new managerial and organizational techniques, and political stability (Singh, 1995; Moran, 2006; Chen, 2000).

First, policy liberalization is the key to attract FDI today. Policy liberalization includes among others, ease of entry and exit (starting and closing a business), appropriate standard of treatment and dispute settlement, reduction of tariff barriers, and transparent regulatory framework. The transparent regulatory framework is highly associated with good support (Shatz and Venables, 2000; Yang *et al.*, 2000).

Second, rapid technical progress or change is inevitable for attracting FDI inflows. New transport, faster delivery service, latest communication and information technology allow firms to spread and operate international investment and business more efficiently and smoothly. Investors usually come with latest technologies for operation, so the host countries must have the ability to provide the complementary human capital, infrastructure, supplies and institutions to operate technologies efficiently and flexibly (Billington, 1999; Cheng and Kwan, 2000; Noorbakhsh *et al.*, 2001).

Third, low transaction cost is a factor of paramount importance for FDI inflows. Transaction cost can include a wide range of costs such as interest rate, fund transfer, royalties and fees, tariffs, permission and registration, and bribery. Low transaction cost in these fields invites higher FDI inflows (Cheng and Kwan, 2000).

Fourth, image building and good support ensure market predictability and stability, non-discriminatory standard treatment, competitive business environment and friendly political support. A country with a reputable image of investment friendly welcoming environment consisting of all the factors is able to attract higher FDI inflows (Ewig-Ghee, 2001).

Fifth, new managerial and organizational techniques put emphasis on careful targeting of core competent sectors in which a country desires to attract FDI (Zhang and Markusen, 1999).

Finally, political stability of a country is a major factor that helps in predictability of business environment on a long term basis. Political stability guarantees stable FDI regimes, low risk and steady return for investment (Noorbakhsh *et al.*, 2001).

4.5 Assessing the Factors for Poor FDI Inflows in the Muslim Economies:

In order to explain why the Muslim world's performance in FDI inflows is poor, this section will evaluate the traditional and new factors discussed above in the Muslim world economies.

4.5.1 Traditional Factors

1. Natural Resources: petroleum and gas

In terms of natural resources the Muslim world is arguably very rich. Ten among the 57 Muslim countries have the largest petroleum reserve in the world. Seventeen of the Muslim countries have proven reserve of between 1.35 to 563 billion barrels. Algeria, Bahrain, Bangladesh, Brunei, Egypt, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Malaysia, Nigeria, Qatar, Saudi Arabia, UAE have the highest level of petroleum reserve (see Table 4). At present Saudi Arabia is the largest oil producing country in the world and the Muslim world holds two-third of world petroleum reserve. In terms of natural gas, the Muslim world has high proven reserve as well. Saudi Arabia, UAE and Nigeria have the fourth, fifth and ninth largest global reserve, respectively (see Table 5). Many of the Sub-Saharan Muslim countries such as Sierra Leone have huge mineral resources like gold and diamond. Again all sub-Saharan Muslim countries along with Bangladesh, Indonesia and Malaysia have some of the highest global concentrations of natural rainforest, tin and rubber. So, in terms of natural primary commodities the Muslim world is considerably rich, and in some cases richer than many highly industrial countries.

However, raw natural resources are no longer a highly attractive factor now in FDI. Countries completely devoid of natural resources such as Hong Kong, Singapore and Taiwan receive the lion share of FDI in Asia. Therefore, low FDI inflow in the Muslim countries despite having high reserve of raw natural resources is not something unexpected. However, it is to be noted that all the large petroleum companies invest heavily in the Muslim world's petroleum industry.

2. Cheap labour cost

Traditionally it is understood that FDI favours a destination where the labour cost is comparatively cheaper. This is so because the companies always want to make profit by cutting production cost. Labour market in the Muslim world is also one of the cheapest in the world. An estimated 545.1 million out of a total 1.2 billion population comprises the labour force of the Muslim world. Compared to that the high income countries have 492.8 million labour force which makes the Muslim world labour market cheaper because of the over-supply of labour.

However, cheap labour cost is no longer a strong factor for high FDI inflow. The labour cost in the Triad and highly developed economies in the North is among the highest in the world, yet these economies continue to remain the most popular destinations for FDI. Similarly, newly industrialized economies in Asia such as Hong Kong, Singapore, South Korea and Taiwan also maintain a very high level of labour cost compared to the Muslim world, yet these economies attract the lion share of FDI in Asia. This is because labour is no longer valued in terms of cost alone, but it is valued more in terms of real productivity, skill and innovativeness. This fact indicates that as cheap labour cost does not necessarily attract FDI anymore, high labour cost does not necessarily deter it either. So the Muslim world's low share in FDI despite cheap labour cost is not something exceptional.

3. Large domestic market

In terms of population size the Muslim world's share is huge. However, distribution of the estimated 1.2 billion population among the Muslim countries is highly uneven as well. Only about ten of the 57 countries host over 70 per cent of the total population. However, large population size does not necessarily indicate large economic market for FDI. The ten most densely populated countries in the Muslim world are among the least developed group of countries. This means that these countries are industrially backward, underdeveloped and thus their per capita income is very low. Total Gross National Income (GNI) of the Muslim countries in 2005 was US\$2,352.2 billion, compared to US\$34,523.8 billion for the High Income Countries. Accordingly, the average per capita GNI for the 57 Muslim countries was US\$1,670 compared to US\$35,131 for the OECD countries (IDB 2007). According to another estimate, "an average person in a developed country earned 11.5 times more than a person in a developing country in 1990, the income gap increased to 21.5 times in 2003. In the case of OIC countries the gap grew from 14 to 23 times during the same period" (SESRTCIC, 2005). Low per capita income indicates low purchasing power which means less consumption. Therefore, though the Muslim world has a huge population size, its domestic consumer market is considerably small.

In contrast, the developed countries of the North and the Asian Tigers have huge domestic markets. Due to high income, the purchasing power of the people as well as the rate of consumption in these countries is also

very high. This certainly indicates the business profitability of the foreign investment in these countries.

4.6 New Factors or Welcoming Environment

New factors or welcoming environment is indeed the deciding factor today for greater FDI inflow. The Muslim world's conditions of new factors are far below compared to that of the OECD countries. Table 6 shows average indicators on various factors relating to welcoming environment.

The welcoming environment can be assessed from two perspectives. First, business environment where foreign investors look at a number of factors that make investment or doing business with a particular country smooth and easier. Therefore, the new factors mentioned earlier can be assessed through a number of business environment indicators. Among these indicators are easiness in starting a business, dealing with licences, registering properties, laws of protecting investors, payment of taxes, trading across nations and enforcement of legal contracts in settling disputes. These are the yardsticks related to policy liberalisation, transaction cost, new managerial techniques and image building environment of a destination economy. The easier and smoother the environment is in a country in these indicators the higher the FDI in that country. The Muslim world on an average performs lower in these indicators compared to developed countries.

The second perspective of the welcoming environment is political environment of the host or destination country. Usually, political stability together with high business environment attracts high FDI. Similarly, political instability may deter high FDI regardless of high or low business environment.

4.7 Assessing the Business Environment in the Muslim World

Here the Muslim world countries' performance on business environment or indicators will be based on the report published by *Doingbusiness in 2006* (see Table 6).

1. Starting a business

One of the most important indicators to assess the business environment of an economy is to see how easily and smoothly a new business can be started. In starting a new business, whereas the OECD countries take on an average 6.2 numbers of procedures and 16.6 days to complete, the Muslim world countries take 9.82 procedures and 53.23 days to complete. In this regard, Chad requires the highest number of procedures amounting to 19 and Afghanistan requires the lowest 3. In terms of number of days Surinam, Mozambique, Palestine, Indonesia and Mauritania take longest amounting to 694, 153, 106, 97 and 82 days, respectively. Only Afghanistan, Turkey and Tunisia require fewest days 8, 9 and 11, respectively.

2. Dealing with licences

Licensing is required in doing business overseas. To issue a business license to a foreign company, the OECD countries take an average of 14 procedures to be completed in 149.5 days. The Muslim countries require 18.8 procedures to meet and take 230.15 days to complete. Sierra Leone requires highest number of procedures 48, followed by Burkina Faso and Kazakhstan 32 each. Maldives and Uzbekistan require lowest number of procedures- 9, while Pakistan takes 12 followed by Bangladesh and Yemen 13 each. In terms of number of days, Iran scores highest amounting to 668 days followed by Ivory Coast 569, Nigeria 465, Cameroon 444 and Benin 333 days. Tunisia requires the lowest number of days 79, followed by Yemen 107, UAE and KSA 125 and Maldives 131 days.

3. Registering property

In registering properties of the companies, there are big differences between the OECD and the Muslim world countries. The OECD countries require 4.7 procedures and take 31.8 days to complete the registration process. The Muslim world countries maintain corresponding scores of 6.31 and 71.31 in these regards. Nigeria, Algeria and Uzbekistan require highest number of procedures amounting to 16, 15 and 12, respectively; while only Oman requires 2 procedures, the lowest among the Muslim countries. In terms of number of days, Bangladesh scores highest requiring 425 days followed by Afghanistan 252, Sierra Leone 235, Togo 212, Surinam 193, Egypt 192 and Malaysia 144, while Saudi Arabia, Kyrgyz Republic, UAE, Turkey, Sudan and Iraq take shortest time ranging between 4-9 days.

4. Protecting investors

Offering attractive protective incentives is also a crucial factor in FDI inflow. Protection incentive refers to legal support in time of difficulties. The OECD countries score 6.3 on disclosure index and 6.0 on investor protection index signifying the higher the score the greater the protection incentives. The Muslim countries maintain 5.43 and 4.43 on the two indexes, respectively. Only Malaysia and Bangladesh offer the highest protection incentives scoring 8.7 and 6.7, respectively. In this regard, Malaysia, Bangladesh, Kuwait (6.3) and Pakistan (6.3) outperform the OECD average, and Kyrgyz Republic maintains equal status with the OECD countries.

5. Paying tax

Tax payment to the host country by foreign investors is a matter of competition and negotiation. Usually countries which charge fewer or lower tax attract higher FDI from global multinational companies. Therefore, to attract higher FDI, many countries initially offer even tax holidays for big companies. However, countries normally impose various types of tax on investment as well as profits. So, the countries that offer competitive tax incentives such as number of taxes to be paid, rate of tax on profit and payment facility are among the top concerns of the investors. The OECD countries charge on an average 15.3 different taxes, impose 47.8 percent tax on profit. In the OECD countries, companies need to spend 202.9 hours on an average to pay the taxes.

In the case of Muslim countries, the average number of taxes is as high as 38.10. Uzbekistan is the only country that imposes highest number of taxes amounting to 130, followed by Kyrgyz Republic 89, Benin 72, Sudan 66, Chad 65 and Algeria 61. Six Muslim countries impose number of taxes ranging from 50 to 60, and twenty-four countries impose 15-50 different taxes. Maldives and Afghanistan charges 1 and 2 different taxes, respectively. Five other countries charge taxes up to 15.

In comparison to the OECD countries, companies in the Muslim countries spend on an average an impressive 323.36 hours to pay tax. Cameroon scores the highest registering 1300 hours followed by Nigeria 1120, Azerbaijan 1000, and Senegal and Mauritania each 696 hours. In twenty-five countries, the companies spend between 200-500 hours on paying tax. UAE takes lowest amount of time from companies

amounting to 12 hours, followed by Iraq 48, Oman 52 and Saudi Arabia 75 hours.

Percentage of tax rate on profit is lower (46.61) in the Muslim countries compared to that of the OECD countries (47.8). Sierra Leone imposes the highest percentage (277.0) followed by Mauritania 104.3. Sixteen countries impose a percentage that range from 47 to 100, while twenty six countries impose lower than 47 percent. Maldives, Iraq and Uzbekistan impose lowest percentage registering 5.5, 5.6 and 10, respectively.

6. Trading across borders

In a globalised economy, faster movement of goods from production facilities to consumer markets, or from production bases to assembly line factories is very important. The easier or the less bureaucratic the process is the faster the movement is. The easiness of faster cross-border trade is measured, among others, by the number of documents and signatures required for export and import. For export, the OECD countries require 4.8 different documents and 4 signatures, and for import they require 5.9 documents and 5 signatures.

Compared to the OECD countries, the Muslim countries require 8.56 documents and 16.02 signatures on an average for export. For export, Uzbekistan requires 44 different documents, the highest among the Muslim countries, while Jordan, Saudi Arabia and Tunisia each require only 5 documents. Kazakhstan and Tajikistan each require 14, followed by Uganda 13, Sudan 12 and 33 countries require 6-10 documents. In terms of signature, Iraq requires 70 and Afghanistan 66, the two countries that require highest number of signatures in the Muslim world. Indonesia and UAE each require only 3 signatures, the fewest in number, for export.

Against OECD countries' requirements of 5.9 documents and 5 signatures, the Muslim countries on an average require 11.95 documents and 24.73 signatures for import. Three countries namely Iraq, Ivory Coast and Niger each require 19 documents, while five other countries each require 18 documents for import, and twenty-eight countries each requires 10-17 documents for import. While only nine countries require up to 10 documents, among which UAE requires the lowest number (6). In terms of signatures for import, the Muslim countries maintain a high

number. Iraq requires 75 signatures for import followed by Nigeria 71, Mali 60, Afghanistan 57, Azerbaijan 55, and Niger 52. Seventeen countries require between 20-50 signatures, and twenty other countries require between 5-20 signatures. Only UAE and Maldives require fewest numbers of signatures, 3 and 4, respectively. Four countries are equal to the OECD countries or better.

7. Enforcing contracts

The ease or difficulty of enforcing commercial contracts is determined by following the evolution of a payment dispute and tracking the time and number of procedures involved from the moment a plaintiff files the lawsuit until actual payment. The shorter the time and procedures required the better the enforcing contract environment. The OECD countries require an average 22.2 procedures and 351.2 days to settle the dispute. In contrast, the Muslim countries require an average 41.02 procedures and an impressive 524.31 days to settle the dispute. Uzbekistan requires staggeringly 195 procedures, followed by Iraq 65, Cameroon and Sierra Leon each 58. Only Uganda requires the fewest numbers of procedures (15). This means majority of the Muslim state requires between 15- 58 procedures.

In terms of days, Afghanistan takes 1624, followed by Bangladesh 1442, Surinam 1290 and Egypt 1010 days. Thirty-two countries take 350 days and above, and nine countries take fewer days than the OECD countries. Kyrgyz Republic takes the fewest (140) followed by Kazakhstan 183 days.

4.8 Assessing the Political Environment in the Muslim World

In addition to a friendly business environment, political environment is also considered to be an important factor that influences the level of FDI inflow. Political environment is defined as stability or instability of the overall political system, practices and interactions in a country. Earlier studies have shown a strong positive correlation between high political instability and low FDI inflow (Campos *et al.*, 1999). The political environment factor is particularly relevant for the Muslim world in relation to FDI, as political instability is a dominant phenomenon in many parts of the Muslim world.

Whether or not political instability in the Muslim world has directly affected its FDI is a matter of extensive investigation, but there is strong evidence that instability in general has a negative impact on FDI. Richard has found that instability of the political regime and civil protest are significantly related to long-run economic growth and that a hundred percent increase of these dimensions is associated with a lower real per capita growth rate of two percent and one percent, respectively (Jong-A-Ping, 2006).

Earlier studies have used a number of indicators to measure political instability. For instance, Campos *et al.* (1999) have used seven indicators which are: (1) military coups, (2) constitutional changes, (3) revolutions, (4) cabinet changes, (5) government crises, (6) riots, and (7) political assassinations. Probably the most comprehensive and extensive use of indicators in a similar study is done by Richard who has employed 26 widely used indicators analysing 98 countries. This study has found four dimensions of political instability which are: (1) mass civil protest, (2) politically motivated aggression, (3) instability *within* the political regime, and (4) instability *of* the political regime. Similar indicators such as the number of *coups d'état* or proxies such as the number of political assassinations and political revolutions are also used to measure political instability are used by different other studies (Londregan and Poole, 1990; Barro, 1991). All these studies suggest that a high frequency of incidents in these indicators indicates a high level of instability.

The Muslim world appears to be particularly vulnerable to high political instability, especially after the end of the Cold War and the 9/11 incident in the USA. The Western world has branded the Muslim world as a particular category where it is waging a vigorous two-prong campaign. The first one is a political campaign to liberalise and democratise the political system and pushing the Islamic political ideologues to the corner. The second one is a military campaign to fight against the so-called Muslim terrorists. Both this political and military campaigns have created a strong resistance against the West which in many of the Muslim countries culminated in persistent political violence and instability. The Muslim countries' domestic political instability has increased sharply after the 9/11 incident. In fact, most of the post-9/11 global political instability is concentrated in the Muslim world related directly or indirectly to the Western campaign for liberal democracy and

war against terrorism. Examples may include continuous instability in Afghanistan, Iraq, Sudan, Pakistan, Lebanon, Bangladesh and Indonesia, and occasional instability in all the Muslim countries. According to the *Global Report on Conflict, Governance and State Fragility 2007*, there are nineteen countries in civil war of various degrees at present, of which eleven are Muslim countries, namely Afghanistan, Chad, Iraq, Palestine, Nigeria, Pakistan, Somalia, Sudan, Turkey, Uganda, and Yemen (Marshall and Goldstone. 2007). In addition, Lebanon has experienced cross-border instability in 2006 and civil war in 2008. The Report has identified four countries as “high incidence states” of which two are Muslim countries: Afghanistan and Pakistan. The so-called “war on terror” is apparently concentrated in the Muslim world, especially in the Middle East and South Asia.

In studying political instability in the Muslim world, Gurr *et al.* (2005) have used five particular indicators. These indicators are: (1) regime type, (2) bordering states with any type of armed conflict, (3) infant mortality, (4) minority rule, and (5) leaders’ years in office. Assessing these indicators, the study found that political instability in the Muslim world over the last half-a-century has remained very high. It found that the percentage of counties experienced increase in political instability rose sharply during the 1990s; and the number of new episodes of instability also correspondingly increased during the early years of the 1960s, 1970s, 1980s and 1990s (see Graph 1).

Probably the most comprehensive resource to assess political instability in the Muslim world is the database prepared by the Political Instability Task Force (PITF 2007). The PITF has conducted a survey on *Internal Wars and Failures of Governance, 1955-2006* using five variables: (1) ethnic wars, (2) revolutionary wars, (3) genocides, (4) politicides (politically motivated killing), and (5) adverse regime change. The survey found 54 cases of political instability in Muslim countries between 1955 and 2003 during which the late 1960s and early 1990s were found to be peak periods. The average number of new episodes per year in the Muslim world was 1.78 in 1990-98 which is much higher than previous decades. A total of 14 new episodes of political instability occurred in Muslim countries in the 1990s, nine in sub-Saharan Africa and four in former communist states. Such finding of the PITF is supported by another study which suggests that the Muslim factor was closely linked to instability in Africa: 70 percent of predominantly

Muslim countries in Africa south of the Sahara experienced instability in the years after state formation whereas only one-third of non-Muslim African countries did (Gurr *et al.*, 2005). Though in the late 1990s, instability in Muslim countries declined significantly, it increased rapidly after 9/11 incident in 2001, and by 2003, 16 percent of Muslim countries were experiencing political instability. Table 7 indicates the state of instability measured by high casualty terrorist bombing in the Muslim countries. During 1995 to 2007, a total of estimated 505 cases of terrorist bombings resulting in at least 15 deaths per incident occurred in 14 out of total 57 Muslim states. Most of these incidents occurred in the Middle Eastern, North African and South Asian Muslim states.

As to the indicators used in the PITF survey, *adverse regime change*—characterized by military coups, revolution, and collapses of state authority—was found to be the most common cause of political instability in Muslim countries, occurring 46 times since 1955. Table 8 indicates that during 1995 to 2006, there were 67 incidents of military coups in 25 out of total 57 Muslim states. These coups were largely concentrated in the Sub-Saharan and West African Muslim states. *Revolutionary and ethnic wars*, occurring 35 times, have caused significant instability, during that same period. The Task Force identified fifteen of the 36 incidents of *genocide or politicide* that occurred in predominantly Muslim countries. According to the survey, Muslim countries experienced one instability in every four years between 1955 and 2003, which is higher than non-Muslim countries for which one in seven years was recorded. The survey found that Muslim countries have experienced more political instability than non-Muslim countries in the last fifty years.

According to another source, there were 41 instances of political violence and instability during 1990-2007 in the Muslim world in connection to various causes such as political groups, ethnic tension, and inter-state conflicts. Out of 41 instances, 14 were ongoing in the year 2008 which included Afghanistan, Iraq, Pakistan, Turkey, Lebanon, Sudan and Chad. However, the PITF does not record instability due to opposition politics which disrupts normal economic activities, transportation stoppage and public order. Such type of instability may not involve civilian deaths sometimes. However, they cause severe political instability. For instance, in Bangladesh the opposition parties often call for *hartal* (transportation strike, and total stoppage of all

public activities) to protest against government policy. Such *hartals* may take place locally or nationwide ranging from half-a-day to even for weeks consecutively. According to some conservative estimates, some 611 incidents of *hartals* were called by the opposition parties in Bangladesh during 1995-2002, and an estimated equal number of *hartals* might have taken place during 2003-2006 (Moniruzzaman, 2009). This tactic of opposition politics is also practiced in Pakistan as well. These types of political activities create serious political instability which directly undermines foreign investment. So, if this factor is included in the instability indicators, then it is more likely that the level of political instability in the Muslim world would become higher.

It is clear from the above description that political instability in the Muslim world is a persistent phenomenon, and its level and magnitude are also highest in the world. Whether there is a direct correlation between such high political instability and low FDI in the Muslim world is to be verified through further research. However, as earlier studies generally suggest a positive correlation between the two, it can be assumed that high political instability has significant negative impact on FDI in the Muslim countries. The only Muslim country, after UAE, that has maintained steady and high FDI inflows over a decade is Malaysia where political stability, moderate level of industrial development and technological progress, and a very favorable business environment are found to be the most contributing factors.

5. Conclusions

In the contemporary global economy, FDI finds its destinations in the economies where competitive business environment is offered. The traditional factors of natural resources and cheap labour cost do not matter much as determinants of FDI. The highly industrialised countries in the North do not possess abundant wealth compared to the Muslim world, and the labour costs in these countries are among the highest in the world. Similarly, the newly industrialized countries in Asia such as Singapore, Hong Kong, South Korea and Taiwan are devoid of natural resources and maintain a very high level of labour cost. Yet these countries are among the most popular destinations of FDI. In terms of domestic market and consumer size, these countries rank among the top in the world. So this factor appears to be positively related to high FDI inflow.

The Muslim world possesses abundance of natural resources and raw materials, and offers cheap labour cost. But the domestic market size is small as the people's purchasing power is low. This potentially detracts FDI in the Muslim world. However, the biggest problem lies not in these traditional factors of FDI determinants but in the "new factors" or welcoming environment which characterizes the quality of business environment. Several indicators related to business environment suggest that the Muslim world economies are mostly not business friendly. Lack of regulatory changes, bureaucratic stagnation and high cost of operation are among the major weaknesses of the Muslim economies.

In addition to economic factors, the political factor is also largely responsible for low FDI inflow in the Muslim world. Most of the Muslim countries are politically unstable, and many of them are categorized as high risk countries. Furthermore, political instability in these countries is not temporary; rather it tends to persist for decades. Therefore, political instability makes the weak business environment prone to further risk.

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Appendices:**Table 1: FDI inflows to the Muslim World**
(US\$ Billions)

Regions	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Muslim World	18.2	24.6	25.1	15.5	13.5	11.6	17.7	24	33.9	45.4	69.1	117.4
% of world	5.4	6.3	5.1	2.2	1.2	0.8	2.1	3.9	6.1	6.4	7.5	9.0
Developing Economies	121.3	157	205.4	205.8	248.7	275.8	232.9	176.4	179.0	283.0	314.3	379.0
% of world	35.6	40	42	28.9	22.6	19.6	28	28.6	31.7	32.0	33.2	29.0

Sources: *Annual Report 2007* (IDB); *World Investment Report 2006, 2007* (UNCTAD).

Table 2: Ranking of the Muslim Countries by inward FDI Performance Index, 2004-06

Economy	World Rank	Index value	Economy	World Rank	Index value
Albania	60	1.737	Malaysia	62	1.693
Azerbaijan	12	5.436	Mali	71	1.447
Bahrain	11	5.494	Morocco	55	2.003
Bangladesh	121	0.428	Mozambique	84	1.171
Benin	109	0.627	Niger	127	0.338
Brunei	51	2.090	Nigeria	66	1.594
Burkina Faso	132	0.209	Oman	88	1.051
Cameroon	101	0.769	Pakistan	89	1.045
Côte d'Ivoire	99	0.777	Qatar	68	1.505
Egypt	33	2.765	Saudi Arabia	63	1.630
Gabon	67	1.542	Senegal	128	0.329
Gambia	13	5.371	Sierra Leone	54	2.046
Guinea	75	1.393	Sudan	19	4.163
Guyana	20	3.936	Suriname	3	9.454
Indonesia	95	0.908	Syria	98	0.784
Iran	133	0.117	Tajikistan	16	4.548
Jordan	8	6.357	Togo	76	1.375
Kazakhstan	26	3.181	Tunisia	41	2.480
Kuwait	136	0.078	Turkey	73	1.413
Kyrgyzstan	43	2.461	Uganda	77	1.370
Lebanon	14	5.362	UAE	24	3.316
Libya	81	1.246	Uzbekistan	118	0.499
			Yemen	140	- 0.520

Source: Adopted from UNCTAD, *World Investment Report 2007*, Geneva: The UN.

Table 3: Matrix of Inward FDI Performance and Potential of the Muslim Economies

	High FDI Performance	Low FDI performance
2003- 2005		
High FDI potential	Front Runners ((9) Azerbaijan, Bahrain, Brunei Darussalam, Jordan, Kazakhstan, Malaysia, Qatar, United Arab Emirates.	Below potential (8) Algeria, Islamic Republic of Iran, Kuwait, Libya ,Oman, Saudi Arabia, Tunisia, Turkey.
Low FDI potential	Above potential (15) Albania, Egypt, Gabon, Gambia, Guyana, Kyrgyzstan, Lebanon, Mali, Morocco, Mozambique, Sierra Leone, Sudan, Suriname, Tajikistan, Uganda.	Underperformers (15) Bangladesh, Benin, Burkina Faso, Cameroon, Côte d'Ivoire, Guinea, Indonesia, Niger, Nigeria, Pakistan, Senegal, Syria, Togo, Uzbekistan, Yemen.
2000-2002		
High FDI potential	Front Runners (4) Brunei, Malaysia, Jordan, Guyana.	Below Potential (10) Bahrain, Egypt, Iran, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, United Arab Emirates.
Low FDI potential	Above Potential (10) Albania, Azerbaijan, Gambia, Kazakhstan, Mali, Morocco, Mozambique, Sudan, Tunisia, Togo.	Under-Performers (22) Algeria, Bangladesh, Benin, Burkina Faso, Cameroon, Cote de Ivorie, Gabon, Guinea, Indonesia, Kyrgyzstan, Malawi, Niger, Nigeria, Pakistan, Senegal, Sierra Leone, Suriname, Syria, Tajikistan, Turkey, Uzbekistan, Yemen.
1993-1995		
High FDI potential	Front Runners (6) Bahrain, Brunei, Guyana, Indonesia, Malaysia, Qatar.	Below Potential (9) Iran, Jordan, Kuwait, Libya, Oman, Saudi Arabia, Surinam, UAE, Uzbekistan.
Low FDI potential	Above Potential (15) Albania, Azerbaijan, Cote de Ivorie, Egypt, Gambia, Kazakhstan, Kyrgyzstan, Mali, Morocco, Mozambique, Nigeria, Tajikistan, Tunisia, Yemen, Zambia.	Under-Performers (15) Algeria, Bangladesh, Benin, Burkina Faso, Cameroon, Gabon, Guinea, Malawi, Niger, Pakistan, Senegal, Sierra Leone, Syria, Togo, Turkey.

Source: Adapted from UNCTAD, *World Investment Report 2004, 2006 and 2007*.

Table 4: Oil Reserve in the Muslim Countries

Billions of barrels										
1-10	11-50	51-100	101-150	151-200	201-250	251-300	301-563			
Countries (n)	6	5	2	2	0	1	1	1	1	1

Millions of Barrels										
1-10	11-50	51-100	101-150	151-200	201-250	251-300	301-900			
Countries (n)	6	3	1	3	1	0	1	5	5	5

Source: compiled from *Euromonitor International 2007*. London: Euromonitor International Inc.

Table 5: Gas Reserve in the Muslim Countries

Trillion Cubic Feet										
1-10	11-50	51-100	101-150	151-200	201-250	251-300	301- 945			
Countries (n)	3	3	4	0	0	3	0	2	2	2

Billions of Cubic Feet										
1-10	11-50	51-100	101-150	151-200	201-250	251-300	301-945			
Countries (n)	9	3	1	1	2	0	0	0	0	0

Source: compiled from *Euromonitor International 2007*. London: Euromonitor International Inc.

Table 6: Business Environment in the Muslim World

Variables	OECD*		Muslim World**	
	Average	Average	Max	Min
Starting a business Procedures (n) Days (n)	6.2 16.6	9.82 53.23	19 Chad 694 Surinam	3 Afghanistan 8 Afghanistan
Dealing with License Procedures Days	14 149.5	18.8 230.15	48 Sierra Leone 668 Iran	9 Maldives 79 Tunisia
Registering property Procedures Days	4.7 31.8	6.31 71.31	16 Nigeria 425 Bangladesh	2 Oman 4 UAE
Protecting investors Disclosure index*** Protection index***	6.3 6.0	5.43 4.43	10 Malaysia 8.7 Malaysia	0.0 7 countries 0.7 Afghanistan
Paying tax Number of tax Hours spent Rate (% of profit)	15.3 202.9 47.8	38.10 323.36 46.61	130 Uzbekistan 1300 Cameroon 227 Sierra Leone	1 Maldives 12 UAE 5.5 Maldives

Table 6: Business Environment in the Muslim World (Contd)

Variables	OECD*			Muslim World**		
	Average	Average	Max	Max	Min	Min
Trading across border						
Documents req for export	4.8	8.56	44 Uzbekistan	5 Tunisia		
Signatures req for export	4	16.02	70 Iraq	3Indonesia, UAE		
Documents req for import	5.9	11.95	19 Iraq, Niger,	6 UAE Cote d'Ivoire		
Signatures req for import	5	24.73	75 Iraq	3 UAE		
Enforcing contract						
Procedures	22.2	41.02	195 Uzbekistan	15 Uganda		
Days	351.2	524.31	1624 Afghanistan	140 Kyrgyz		

Source: Compiled by the author from *Doingbusiness in 2006*, Washington D.C.: The World Bank and International Finance Corporation.

* OECD (Organization for Economic Cooperation and Development) consists of 30 countries: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, South Korea, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States.

** Based on data from 46 countries. No data were available for 11 countries: Bahrain, Brunei, Comoros, Djibouti, Gabon, Gambia, Guinea Bissau, Libya, Qatar, Somalia and Turkmenistan.

*** On a 0-10 scale, the higher the score, the better the protection level.

Table 7: High Casualty Terrorist Bombing (death 15+), Sept 1995 - Sept 2007

Year	Incident (n)	Death (n)	Countries (n)	Countries
1995	2	62	1	PAK
1996	2	36	2	SAU, TUR
1997	3	111	2	ALG, EGY
1998	7	211	3	ALG, PAK, TUR
1999	1	16	1	UZB
2000	3	49	2	INS, PAK
2001	2	37	2	BNG, PAK
2002	12	347	6	TUR, PAK, ALG, AFG, BNG, INS
2003	29	556	6	SAU, MOR, IRQ, PAK, TUR, AFG
2004	55	1409	5	IRQ, PAK, SAU, BNG, EGY
2005	115	2452	8	IRQ, LEB, PAK, SOM, INS, AFG, EGY, JOR
2006	130	2696	4	IRQ, AFG, PAK, EGY
2007	144	4185	4	AFG, IRQ, PAK, ALG
Total:	505	12140	14 (of 57)	

Keys: AFG-Afghanistan, ALG-Algeria, BNG-Bangladesh, EGY-Egypt, INS-Indonesia, IRQ-Iraq, JOR- Jordan, LEB- Lebanon, MOR-Morocco, PAK- Pakistan, SAU- Saudi Arabia, SOM-Somalia, TUR-Turkey, UZB-Uzbekistan.

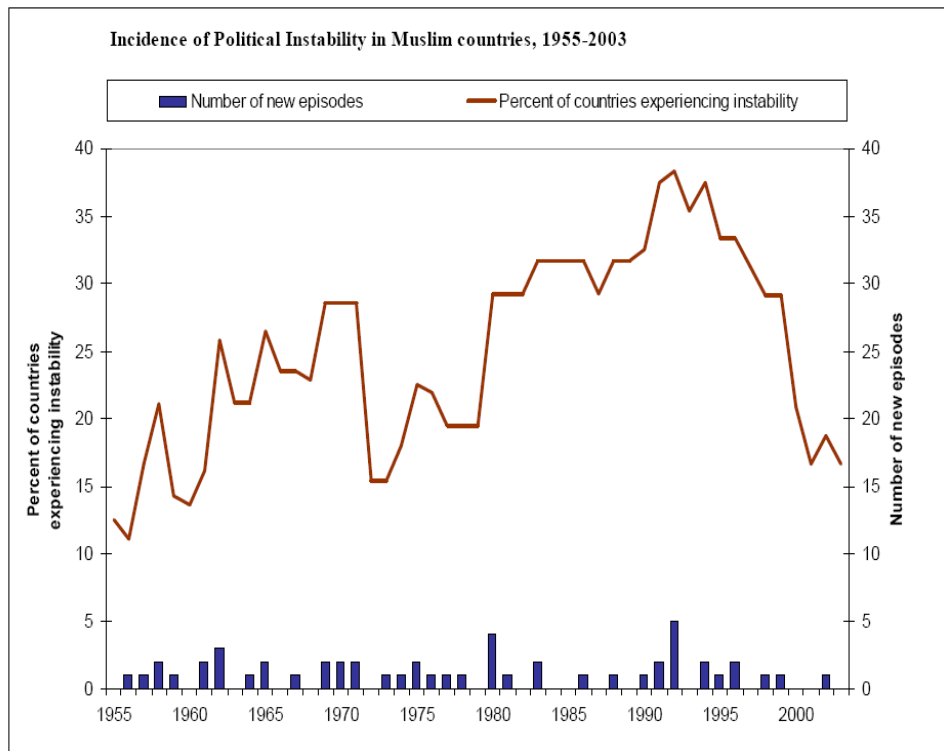
Source: Compiled by the author from database on High Casualty Terrorist Bombing, available at Center for Systemic Peace (Integrated Network for Societal Conflict Research, INSCR), <http://www.systemicpeace.org/inscr/HCTBSep07.pdf>, accessed on June 14, 2008.

Table 8: Regime Instability (military coups) 1995-2006

Year	Incident (n)	Countries (n)	Countries
1995	14	11	AZE, BEN, COM, GAM, IRQ, IVO, MAU, NIG, PAK, QAT, SIE
1996	10	9	AZE, BNG, GUI, IRQ, MLI, NIR, QAT, SIE, SUD
1997	4	4	AZE, GUI, NIG, SIE
1998	4	4	AZE, ALB, GNB, NIR
1999	5	5	COM, GNB, IVO, NIR, PAK
2000	5	5	AZE, COM, DJI, GNB, IRQ
2001	2	2	GNB, IVO
2002	3	3	AFG, TKM, IVO
2003	5	5	BFO, GNB, GUI, KYR, MAU
2004	5	3	MAU, NIG, SUD
2005	5	5	AZE, GNB, MAU, OMA, TOG
2006	5	4	CHA, GAM, GUI, MAU
Total	67	25 (of 57)	

Keys: ALB- Albania, AZE (Azerbaijan), BEN- Benin, BFO- Burkina Faso, BNG- Bangladesh, CHA- Chad, COM- Comoros, DJI- Djibouti, GAM- Gambia, GUI- Guinea, GNB- Guinea-Bissau, IRQ- Iraq, IVO- Ivory Coast, KYR- Kyrgyzstan, MAU- Mauritania, MLI- Mali, NIG- Nigeria, NIR- Niger, OMA- Oman, PAK- Pakistan, QAT- Qatar, SIE- Sierra Leone, SUD- Sudan, TKM- Turkmenistan, TOG- Togo.

Source: Compiled by the author from database on Coup d'Etat, available at Center for Systemic Peace (Integrated Network for Societal Conflict Research, INSCR), <http://www.systemicpeace.org/inscr/CSPCoupsCodebook2006.pdf>, accessed on June 14, 2008.

Graph 1: Political Instability in the Muslim World, 1955-2003

Source: Gurr et al. *Forecasting Instability: Are Ethnic Wars and Muslim Countries Different?* Paper presented at the 2005 Annual Meeting of the American Political Science Association, September 1-4, available at <http://globalpolicy.gmu.edu/pitf/pitfp5.htm>, last accessed on July 14, 2008.