

LIBERALIZING THE MALAYSIAN STOCK MARKET

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Abstract

This paper tries to examine the effect of the volatility that might arise as a result of capital flows according to market opening prior to December 1985 Malaysia case. Therefore, many economists and policy makers concern about the risks associated with the opening and globalizing of the markets. Our findings show that stock return becomes less volatile, implying lower return offered to the investors. On the other hand, we proved that globalization do not reveal any risk to the inflation rate. In contrast, currency return becomes riskier after globalization. Ultimately, we conclude that integrated or liberalized capital flows will affect national policy in stabilizing the domestic economics.

JEL Classifications: C22, G12, G18.

Keywords: *Liberalization, capital market, volatility, Univariate Grach-M.*

INTRODUCTION

A stock market liberalization is a decision by a country's government to allow foreigners to purchase in that country's stock market. Standard models of international asset pricing predict that stock market liberalization may reduce the liberalizing country's cost of capital. This prediction has two important empirical implications for those emerging markets that liberalized their stock market in the late 1980's and early 1990's.

First if stock market liberalization reduces the aggregate cost of equity then holding expected future cash flows constant, we should observe an increase in a country's equity price index when the market learns

that a stock market liberalization is going to occur. The second implication is that an increase in physical investment following a stock market liberalization, because a fall in a country's cost of capital will transform some investment projects that had a negative net present value (NPV) before liberalization into positive NPV endeavors after liberalization.

Unfortunately, we believe that the economy cannot be left alone to unpredictable market forces and requires their guidance for controlled growth. For instance, capital inflows may cause the domestic currency to appreciate in real terms. For export-oriented economies, appreciation of exchange rate may threaten their competitive

position in the global market place. The government also worries that there may not be enough investment opportunities to absorb the sudden influx of money after market opening and the excess capital will fuel inflation. Thus, we try to examine whether market openings will effect the increase in inflation and appreciation in exchange rate.

Thus, first stage, this study tries to examine the empirical question of how liberalization affects a Malaysia's stock market volatility. On the other sides, stock market liberalization attracts a new set of traders who were previously denied access. As Tauchen and Pits (1983) have shown, an increase in the number of traders tends to reduce stock market volatility. So, does liberalization make the Malaysia's stock market more volatile? This empirical work has been done to study the issue of how liberalization affects the distribution of return in Malaysia's stock market.

Second, the capital inflow may result in changes of inflation and currency level. Therefore, if there are not enough investment opportunities to absorb the new inflow of foreign capital, the excess capital will push inflation. Similarly, a strong currency makes the export less competitive thereby hurting the export sector of the economy. Since most developing countries such Malaysia depend extensively on exports, deterioration in the terms of trade due to a strengthening currency may hurt the domestic economy. Thus, we focus our attention to estimate changes in the level and volatility of stock prices, exchange rates, and inflation rates around market opening. Whenever it is, most previous studies suggested a higher risk and return of opening our market to the foreign investors.

Our hypothesis is aimed to prove whether liberalization effects our stock returns and exchange rate return appear to be much more volatile or higher risk and higher return or higher mean. On the other hand,

should the performance of inflation rate show any exposure to the higher risk?

LITERATURE REVIEW

According to neoclassical economics, free markets are the nation's best approach towards economic development. Liberalization and privatization have been widely hailed as important elements in a proper strategy to achieve stronger economic growth (Todaro, 1994, pp.85-86). But is this free market-approach applied to stock markets good for a developing country especially Malaysia? However, this controversial issue in economic development literature concerns of an expanded role for liberalized stock markets as a source of investment funds in developing countries as been proved by Drake (1986) and Singh (1996).

In fact, Mullin, (1993) found the benefits of having an active liberalized stock market included the following: a) it helps fill gaps in the availability of savings for domestic investment requirements; b) it facilitates a amore efficient allocation of investment resources; c) it helps foster discipline among corporate managers; and d) it allows a lesser dependence on debt-financing, hence it also leads to a reduced vulnerability to interest-rate increases.

According to, Levy J. D. (1997) has portrayed the relationship between globalization, liberalization, and nationally-rooted capitalisms. He suggests that globalization is driving liberalization, and in the same time, liberalization is erasing national differences. Also, he mentioned the important of international linkages as one of the driver of liberalization. However, in order to offer clear understanding of liberalization, he found that the rhetoric surrounding of liberalization tends to phased in radically dichotomous terms, 'state' versus 'market', 'public' versus 'private' and regulated' versus 'de-regulated' or 'liberalized'. Therefore, we can say that the liberalized economy must be

market, private and deregulated driven so that the economy will be stabilized in the global market.

Based on the study by Levine R. and Zervos S. (1998), they proved that stock markets tend to become larger, more liquid, more volatile and more integrated following the liberalization of restrictions on international portfolio flows. They also indicate the liquid market will have a high turnover ratio but small value traded ratio. In addition, they have provided the evidence that countries with easy access to information about listed firms by domestic and foreign investors, with adequate accounting standards and investors protection laws tend to have better developed stock markets. Finally, they show that their study's result imply that countries with liquid stock market and lower international investment barriers tend to enjoy faster growth rates of real per capita GDP, thus, promoting the economic development.

Furthermore, Bekaert and Harvey (1997) have suggested that volatility decreases in most countries that experience liberalization. There is a sharp drop in volatility in five countries in their sample. Even after controlling for all of the potential influences on the time-series and cross-section of volatility they find that capital market liberalizations significantly decrease volatility in emerging market.

On the other sides, Bekaert and Harvey (1999) also found, that increased in equity flows are associated with a lower cost of capital. Similarly, Henry (2000) finds that liberalizing countries experience an upward revaluation of the domestic stock reflecting a reduction in cost of equity capital. The lower cost of capital is good for economic growth as it encourages new investment.

Consequently, Stiglitz J. E (1997) has provided details arguments on the impact of financial markets liberalization to the economy. He has stressed that the success of a development or stabilization program must

be assessed by its impact on the likelihood of the concerned individuals, not by whether the exchange rate has stabilized. He also shows that the probability of a financial crisis is particularly high in the five years following financial market liberalization. This hypothesis is proved based on the recent crisis in Asia that followed this familiar pattern. Interestingly, he also supported the evidence that capital market liberalization will leads to increase diversification. However, its also enhances instability in financial market since liberalization focused on opening a country to short-term speculative flows, but precisely because of the volatility of such flows, it is hard to base productive long-term investments on these funds.

However, from the study by Kim and Singal (2000) shows that, there is a decrease in volatility of exchange rates after market openings. It implies that capital inflows due to stock market openings are not disruptive to the economy. Instead, the reduction in risk should be a big 'plus'. They also stated that, the reduction in currency risk implies that foreign investors exert a calming influence on volatility. The lower volatility of changes in exchange rates is useful in two ways. First, the volume of trade is likely to increase as a result of less risky investment related to trade. Second, the lower currency risk will encourage foreign investors to invest more at a lower required rate of return.

According to the modeled constructed by Kim and Singal (2000), they concluded that volatility of an inflation rates falls as a result of market opening. It would mean that, lower and more constant rates of inflation reduce the risk related to inflation uncertainty and are characteristic of a positive economic environment.

THE MODEL AND DATA

Specification Model

Model was constructed to define the volatility of stock returns, exchange rates

return and inflation rates. So, each component will show consequences result cause by capital inflows. Because of this, our model was constructed based on financial and macroeconomics component separately to determine the patterns of volatility and mean. It can be seen as below:

$$X_t = a_0 + \sum_{j=1}^{12} D_{jt} + \sum_{i=1}^{12} X_{t-i} + \varepsilon_t \dots (1)$$

in which, X_t are determined as component above. We estimated a 12th-order autoregression for the X_t , including dummy variables D_{jt} to allow for different monthly mean and impact of liberalization, using all data available for the full sample series. We computed and compared component before market opening with the component after market opening. The liberalization dummy variables D_t equals 1 for month of after market opening and 0 otherwise.

$$X_t = a_0 + \sum_{i=1}^{12} X_{t-i} + \lambda_t \dots (2)$$

Subsequently, to evaluate sub-period for each component pre-market opening and post-market opening separately, we estimated each component using a 12th-order autoregression, shown as model 2.

The data are drawn from the Bloomberg that contains a monthly total Kuala Lumpur Composite Index. The second source of data is the International Financial Statistics that contains a monthly exchange rate and inflation rate data. Analysis of this paper examines changes that look place around market opening, so that the dates of market Malaysia prior to December 1985.¹ To evaluate the impact of market liberalization we have chosen a long sample period: a total period of 252 month (96 months before market opening and 156 month more after market opening) for our

analysis. It started from the December 1977 to August 1998.

Stock Returns

The returns for national stock index in the study are computed as logarithmic price relatives:² to assess the effect of market opening on stock return, the mean excess return are computed for a period of 21 years (252 months) around the month of market opening.³ We compare stock returns around market opening for a calendar month prior to opening with a corresponding calendar month post-opening. Because of the anticipation of market opening and pre-opening announcements, one year prior to opening is excluded.

Inflation

Here, we also include the analysis of inflation that proxy by Consumer price indices (CPI). This variable is included since changes in the inflation rate indicate that the host countries were able to effectively manage foreign portfolio inflows without causing prices to rise. Indeed, this evidence reflects the effect that new capital can have on the economy, which means misdirected capital will merely increase demand for the existing aggregate supply resulting in higher prices and inflation. Therefore, if inflation rate is decline, it is implies that foreign capital was instrumental in increasing the supply of goods and services for the consumers rather than finding its way into greater consumption as feared by the policy makers. However, to get an overall picture of the impact of liberalization on inflation, we will examine the volatility on monthly data of CPI for the pre-opening and post-opening on Malaysia case.

² Refer Kasch-Haroutounian and Price

³ We require that country have at least six months of data before market opening and six months of data after market opening for comparison.

¹ Refer to Kim and Singal (2000)

Exchange Rates

Exchange rates are measured as US\$ per unit of local currency. However, for this analysis we will use the exchange rate return.⁴ This analysis is important since currencies will show persistent depreciation or appreciation for the period of pre-opening and post-opening. Consequently, this evidence implies confidence of foreign investors in host country's currency when the markets are liberalized. Each component will be estimated as constructed model 1 and model 2.

Estimation Methodology

In this section, we analyze the impact of market openings on the level of stock returns, inflation rates, and exchange rates return. Changes in volatility of stock returns, inflation rates and currency returns are important in analyzing benefits and risks of free capital flows. If free flow of foreign capital means large changes in portfolio flows that increase the volatility, it will increase the risk of investing capital in the economy. Since high risk leads to higher required return i.e. higher cost of capital, it will result in acceptance of fewer projects dampening economic growth. Thus, an increase in volatility due to portfolio flows can be an unacceptable risk for country and the policy makers. All the variables have been transformed to algorithm in order to perceive stationary.

The component estimates formed will be based on the following steps; the first step is the descriptive analysis is to be done on every series. It shall measure the volatility level through standard deviation value, i.e. the higher the standard valuation level the higher be the volatility variation level of any variable towards productivity level. Be-

sides the skewness test, kurtosis, average test and the Jargue-bera test are estimated.

The second step intends to value volatility and mean measuring risk and return of stock return, exchange rate return and inflation rate in order to prove the impact of liberalization. The GARCH-M test is used to estimates the volatility and mean of these variables.

The GARCH Models

To evaluate the effects of liberalization of Kuala Lumpur's stock market, we use Generalized Autoregrssive Conditional Heteroscedasticity (GARCH) methodology originally developed by Engle (1982) and generalized by Bollerslev (1986). The GARCH family of statistical models is the mist powerful technique for analyzing financial instruments such as stock return, exchange rate return and inflation rate dynamics because it accounts for the systematic changes in the variance of above variables. This study employed MA(1)-GARCH(1,1) as described below.

$$X_t | \Omega_{t-1} - F(\mu_t, v_t) \dots \dots \dots (3)$$

Where :

$$\mu_t = m_0 + e_t + \alpha_1 e_{t-1} \dots \dots \dots (4)$$

$$v_t = a + \sum_{i=1}^q \alpha_i e_t^2 + \sum_{k=1}^q \beta_k v_{t-k} + dD_t \dots \dots \dots (5)$$

and $\alpha_i, \beta_k > 0, i= 1, \dots, q$ and $k = 1, \dots, p$. $F(\mu_t, v_t)$ is the conditional distribution of returns, with conditional mean μ_t , and conditional variance v_t . Ω_{t-1} is the information set available at time t. The conditional mean is modeled as a MA(1) (Scholes and Williams, 1977).

The conditional variance is specified as a linear function of past squared errors, past values of volatility and a liberalization dummy variable, D_t . The liberalization dummy variable, D_t equals 1 after December 1985 and 0 otherwise. If the dummy variable is statistically significant, then liberalization

⁴ Refer to Wang K.L, Fawson C, Barret & McDonald J.B (2001)

has had an impact on Malaysia's stock market volatility, the α_1 's can be viewed as "news" coefficient or conditional volatility, with higher value implying that recent news have greater impact on each component changes. The β_1 's reflect the impact of past variances on each variables change, which is known as conditional variance.

ANALYSIS OF EMPIRICAL RESULTS
Descriptive Analysis

First, descriptive analysis is done on stock return (R), inflation rate (π) and exchange rate return (S).

Based on Table 1, the mean result shows that the stock returns decrease soon after opening of market from 1.2638 for the pre-market opening to 0.1713 for the post-opening market. The reduction in returns suggests that stock returns decrease due to greater demand for the domestic securities by foreign investors. To get an overall pic-

ture, the effect of liberalization on inflation. There is a significant increase in inflation rate, which is the value rise from 105.2934 to 118.0711 after market opening. Changes in the inflation rate indicate that the on average Malaysian country unable to effectively manage foreign portfolio inflow without causing prices to rise. This evidence is important since policy makers are concerned with the effect that new capital can have on the economy: misdirected capital will merely increase the demand for the existing aggregate supply resulting in higher prices and inflation.

Similarly, the result shows exchange rate return that is depreciated from 0.0325 pre-market opening to -0.3658 post-market opening. A decrease in the exchange rate return implies depreciation of the local exchange rates compared to foreign currency. There is shown that reduction in exchange rate return after liberalization.

Table 1: Descriptive Analysis

Variables	Mean	Standard Deviation	Skewness	Kurtosis	Jargue-Bera
Pre-opening					
R	1.2638	7.4965	-1.0092	5.2898	36.8832 (0.0000)
S	0.0325	2.0802	-0.0674	12.2414	338.1273 (0.0000)
	105.2934	13.6957	0.0647	1.1899	9.1888 (0.0000)
Post-Opening					
R	0.1713	9.7898	-0.5102	6.5935	88.3783 (0.0000)
S	-0.3658	2.9956	0.8965	27.7732	3907.197 (0.0000)
	118.0711	11.3051	0.2946	1.6742	1.3315 (0.00127)

Note: Value in parenthesis is probability value of Jargue-Bera

Standard deviation test is observed to ensure variation in nation stock return rate. The high standard deviation value shows the existence of high variation in the stock return level. From the analysis, it is found that stock return has increased after market opening. This shows that, occurred high variation for the stock return. Similarly, results show that exchange rate also increased for the post market opening. However, result shows that variation inflation rate decreased after market opening, which is 13.695 pre-market opening to 11.3051 post-market opening.

Besides, the skewness analysis indicates that most variables equally are skewed right and skewed left, which is stock return pre-market opening and post market opening both are skewed left. However, exchange rate and inflation rate both are skewed right pre-market opening. But after market opening, exchange rate turns to skewed left, thus inflation rate remains skewed right. The skewness value for normal distribution is zero. Variables that have negative skewness are skewed left and vice-versa while the positive skewness value is skewed right. Two reasons for skewness are: first, perma-

nent shocks that lead to changes in the equilibrium exchange rate may be asymmetric; rapid improvement in productivity is such an example; and second, speculative attacks against a currency tend to be one-sided. The 1997-August East Asian currency crisis is recent examples of such episodes.

The kurtosis is carried out to observe the peakedness distributions. The result shows that most variables possess a higher peakedness distribution from the normal distribution, excepting inflation rate pre and post-market opening. Most of variables are higher peaked or show values above 3. These would indicate that most variables show same patterns even though after liberalization.

Ultimately, this analysis is made by Jarque-Bera, to test whether the data is well distributed. It has been found that all variables are able to deny the null hypothesis that there exists normal distribution at a meaningful level of 1%, 5% and 10%.

Volatility Test

The estimation test GARCH (1,1) is carried out for the full sample and sub-period pre-market opening and post-market opening shown in Table 2 below.

Table 2: Maximum Likelihood Estimates of the MA(1)-GARCH(1,1) Model Monthly rates of return on the Kuala Lumpur Composite Index, January 1977-September 1998.

Parameters	Full Sample	Pre-Liberalization	Post-Liberalization
m	-0.4150 (-2.1293)**	-0.7284 (-1.3383)	-0.4439 (-2.246)**
	0.09127 (1.2033)	0.0860 (0.5866)	0.0428 (0.4313)
A	3.2418 (1.4695)	7.0367 (0.9769)	2.8299 (1.1632)
	0.29068 (3.8528)*	0.3600 (1.5879)**	0.2974 (3.0491)*
	0.7069 (12.0737)*	0.5425 (2.6132)*	0.7327 (9.0507)*
D	0.8031 (0.3354)		

Note:- Value in parenthesis is z statistic value

* = significant at critical value 1%

*** = significant at critical value 10%

** = significant at critical value 5%

The results of stock return are presented in Table 2. It shows that the moving average term for full sample is positive, and statistically significant. It also shows that the response function of volatility to shocks decays at a very persistence rate, measured by $\alpha + \beta$ or 0.9025 monthly. A persistence coefficient of 0.9025 implies that the proportion of shocks remains after a year.

Table 2 also reports for the sub-periods, namely: Pre-liberalization and Post-Liberalization. Comparison of the results, reveal several interesting findings. First, the moving average term in the return equation is statistically significant for the both pre-liberalization and post-liberalization period. Second, changes in α and β indicate that the unconditional variance has changed. The unconditional variance, which is given by $\alpha/(1 - \alpha - \beta)$, is 72.1712 pre-liberalization and -94.0166 post-liberalization. These provide further evidence that liberalization has decreased the volatility of stock return,

which means that global capital market becomes more efficiency, perfect and stable.

It is interesting to note that α is 0.3600 pre-liberalization versus 0.2974 post-liberalization. This reduction in conditional volatility α suggests that recent news is being impounded in Kuala Lumpur stock returns more slowly. Furthermore, β is 0.5425 pre-market opening but went up to 0.7327 post-market opening. This indicates that old news have a increased effect on today's stock returns. Together, these results show that the liberalization have changed the dynamics of stock returns. Post liberalization, stock return is less volatile and more efficient in processing information.

In order to explain the persistency of stock return, we find that $(\alpha + \beta)$ is 0.9025 pre-market opening and increased to 1.0301 post-market opening. Result indicates that volatility of stock return on liberalization more persistence. Thus, the mean equation shows that the return in stock statistically significant at critical value 5%.

Table 3: Maximum Likelihood Estimates of the MA(1)-GARCH(1,1) Model Monthly rates of inflation, January 1977-September 1998.

Parameters	Full Sample	Pre-Liberalization	Post-Liberalization
m	-0.1686 (-0.6972)	-0.7927 (-1.2979)	0.2787 (0.5252)
	0.9931 (244.1924)*	0.9939 (197.4492)*	0.9571 (21.7926)*
A	0.0768 (1.1572)*	0.4671 (2.9927)*	7.3998 (0.7913)
	0.2592 (3.3367)*	0.2367 (1.9820)*	0.2563 (0.9591)
	0.7080 (7.1485)*	-0.2924 (-0.8589)	0.5656 (1.7139)**
D	3.3014 (2.6173)*		

Note:- Value in parenthesis is z statistic value

* = significant at critical value 1%

** = significant at critical value 5%

*** = significant at critical value 10%

Table 3 shows the result of variance coefficient ($\alpha + \beta$) estimated according to the inflation rate which indicates a value equal to 0.9672. Though result shows that volatility for the inflation rate is grows at slow rate. However, moving average term are statistically significant at positive rate.

According to dummy liberalization, the results presented are statistically significant at critical value 1%. This indicates that market liberalization has increased the volatility of inflation rate, plausibly brought about by the influx of less investment opportunity in the domestic market, thus its pressure inflation rate.

Unfortunately, results for the pre-liberalization and post-liberalization indicate that moving average terms are statistically significant for the both pre-liberalization and post-liberalization. Then, for the unconditional variance it indicates that 0.4424 pre-liberalization and increased to 41.5486 post-liberalization. These evidences show that liberalization has increased the volatility of inflation rates.

Changes in α and β also indicates that has been a change in the volatility of inflation rates. However, from the result conditional volatility α is 0.2367 pre-market opening and 0.2563 post-market opening. However, α value post-market opening never shows significant. These, indicates that only pre-market opening presenting volatile vice-versa post-market opening are not.

However, according to the result conditional variance ($\alpha + \beta$) presenting -0.0557 pre-market opening to 0.8933 post-market opening but post-market opening never show any significant. Thus, we conclude inflation rate on liberalization were characterized by a stable and predictable inflation rate.

Ultimately, liberalization has decreased the risks for the inflation rates. Indicating of lower inflation, which is decreased the risk related to inflation uncertainty and are characteristic of a positive economic environment.

Table 4: Maximum Likelihood Estimates of the MA(1)-GARCH(1,1) Model Monthly exchange rate return, January 1977-September 1998.

Parameters	Full Sample	Pre-Liberalization	Post-Liberalization
m	0.0776 (0.3101)	-3.5238 (19.3837)*	-0.1962 (-0.4205)
	0.0572 (0.4744)	-0.1823 (-0.6455)	0.1641 (0.8024)
A	2.0189 (5.7571)*	-0.7572 (-1.0598)*	0.8024 (5.4924)*
	0.5091 (5.3594)*	0.1506 (6.8449)*	0.4705 (5.3161)*
	0.1953 (1.7987)**	1.1748 (6.5819)*	0.4047 (5.1722)*
D	-0.9225 (-3.7743)*		

Note:- Value in parenthesis is z statistic value

* = significant at critical value 1%

** = significant at critical value 5%

*** = significant at critical value 10%

Table 4 shows the results of exchange rates return. The moving average term shows positive statistically significant for the full sample. The response function of volatility to shocks at 0.7044 value. This coefficient value implies that proportion of shocks less persistence after a month.

For the sub-period result indicates α value shows increased in conditional volatility, which is 0.1506 pre-market opening to 0.4705 post-market opening. The increased in currency risk implies that foreign investors exert a worrying influence on volatility. The higher volatility of changes in exchange rates return is affects in two ways. First, the volume of trade is likely to decrease as a result of high risk related to trade. Second, the higher currency risk will discourage foreign investors to invest more at a lower required rate of return.

However, the $(\alpha + \beta)$ exchange rate returns results shows significantly in Malaysian case that is 1.3254 pre-market opening to 0.8752 post-market opening. Which indicates no persistency in the volatility on both sub-period.

CONCLUSION

This paper analyzed the impact of stock market liberalization on the stock return, inflation rate and exchange rate return volatility. The GARCH methodology is used to investigate the distribution of monthly for above variables consist at the range of pre-market opening and post-market opening. Policy makers believed that benefits from foreign capital at a lower cost are offset by macroeconomic instability stemming from upward pressure on inflation and exchange rates through the increased volatility due to large and volatile movements in portfolio flows. Thus, our empirical investigation revealed that the distribution of stock return has changed with the onset of liberalization. Our study proved that globalizing stock market has significantly increases the stock

prices without a concurrent increase in stock return volatility. The increase in stock prices is consistent with the lower expected returns and lower cost of capital.

Moreover, results suggested that no volatility exist on inflation rate after the stock market liberalization. This situation mean less inflation-related risk leading towards less inflationary capital inflows which directed more towards enhancing production of goods and services rather than enhancing consumption.

However, the exchange rates return result proved that depreciation in local currency (RM) showed by the increases in volatility of exchange rates return. Thus, our local currency is more exposed to risk, which is, higher risk associated with international trade and international borrowing and lending.

We also concluded that liberalization in stock market increased the capital inflows, which means liberalization concurrent increased in the allocation of resources. Thus, it would exposed our currency and stock prices to an unpredictable fluctuation. It depends whether how the government authorities manage the financial and macroeconomic variables in order to stabilize the economic performance while the policy makers try to ensure financial and macroeconomic domestic variables remain sustain. However, Asian crisis 1997 had affected the performance of domestic and external economic of Asian countries. Therefore, policies have been implemented in order to sustain the domestic economic overall.

Some government i.e Malaysia, has implemented the capital control, in order to stabilize economic performance. It seems like they try to put "sand in the gear", in other words, capital integrated seems to be controlled by government to stabilize the domestic performance for example, by the adjustment of our exchange rate regime from floating exchange rate to fixed-but adjustable regime.

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