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COMPARATIVE ANALYSIS OF MACROECONOMIC PERFORMANCE
AND VOLATILITY BEFORE AND AFTER CAPITAL ACCOUNT
LIBERALIZATION: CASES OF CHILE AND MALAYSIA

The main goal of the paper is to carry out a comparative analysis of experience of Chile and Malaysian economies (in terms of macroeconomic performance and volatility of selected indicators) before and after capital account liberalization. Our findings show that macroeconomic performance, particularly in terms of growth rate of GDP, inflation rate, investment and saving rates, respective ratios of export to import to GDP improved in both countries. While volatility experienced in the postliberalization period declined in case of Chile for all the parameters investigated, in case of Malaysia the results are mixed. One key finding is that in both countries, as theoretically expected, volatility of real private consumption fell sharply in the postliberalization period.

Keywords: Chile; Malaysia; macroeconomics; volatility; liberalization.

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ПОРІВНЯЛЬНИЙ АНАЛІЗ МАКРОЕКОНОМІЧНОЇ
ДІЯЛЬНОСТІ ТА ВОЛАТИЛЬНОСТІ ДО ТА ПІСЛЯ
ЛІБЕРАЛІЗАЦІЇ РАХУНКУ РУХУ КАПІТАЛУ:
НА ПРИКЛАДІ ЧИЛІ ТА МАЛАЙЗІЇ

У статті проведено порівняльний аналіз процесів у економіках Чилі та Малайзії (в контексті макроекономічної діяльності та волатильності певних показників) до та після лібералізації рахунку руху капіталу. Результати показують, що макроекономічна діяльність, зокрема стосовно зростання показників ВВП, рівня інфляції, інвестицій та заощаджень, відношення рівнів експорту та імпорту, покращилася в обох країнах. Важливим фактом є те, що в цих країнах, як і очікувалося в теорії, волатильність реального приватного споживання різко знизилася у період після лібералізації.

Ключові слова: Чилі; Малайзія; макроекономіка; волатильність; лібералізація.

Табл. 4. Літ. 4.

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СРАВНИТЕЛЬНЫЙ АНАЛИЗ МАКРОЭКОНОМИЧЕСКОЙ
ДЕЯТЕЛЬНОСТИ И ВОЛАТИЛЬНОСТИ
ДО И ПОСЛЕ ЛИБЕРАЛИЗАЦИИ СЧЕТА ДВИЖЕНИЯ
КАПИТАЛА: НА ПРИМЕРЕ ЧИЛИ И МАЛАЙЗИИ

В статье проведен сравнительный анализ процессов в экономиках Чили и Малайзии (в контексте макроэкономической деятельности и волатильности определенных показателей) до и после либерализации счета движения капитала. Результаты показывают, что макроэкономическая деятельность, в частности касательно роста показателей ВВП, уровня инфляции, инвестиций и сбережений, отношения уровней

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экспорта и импорта, улучшилась в этих странах. Важным фактом является то, что в обеих странах, как и ожидалось в теории, волатильность реального личного потребления резко снизилась в период после либерализации.

Ключевые слова: Чили; Малайзия; макроэкономика; волатильность; либерализация.

1. Introduction. The ongoing global economic crisis that predominantly originated in the U.S and several European economies in 2007 is continuing to be a source of global concern. One of the main reasons for this is the fact that economic dimension of globalization operating through trade and capital account liberalization policies has increased the rate of integration of goods and financial markets across the globe. And this in turn has increased not only the degree of openness of developing and emerging market economies but also their degree of exposure to global shocks and instability. While trade liberalization was supposed to allow each country to improve particularly its allocative resource efficiency through the process of specialization in the production of those goods in which it has a comparative advantage, capital account liberalization was expected to increase the efficiency of global capital by allowing capital to move to high return countries from low return ones. Particularly for the countries where capital (relative to labor) was in limited supply, liberalizing capital flows was believed to be the key policy shift necessary to increase the rate of investment and output growth. However, the increase in frequency and severity of financial and real crisis in some of emerging economies in the postliberalization periods raised new questions about the true costs and benefits of globalization in general and capital account liberalization in particular. The ongoing Euro zone crisis has shown sudden reversals of capital flows between Western and emerging economies that are likely to be an important source of instability particularly for the countries which have liberalized their capital accounts.

The main goal of this paper is to carry out a comparative analysis of macroeconomic performance and volatility experienced by two emerging market economies in the periods pertaining to pre- and postcapital account liberalization episodes. One of these countries is from East Asia (Malaysia), the other one is Chile which is a Latin American country. Chile and Malaysia had liberalized their capital accounts in 1992 and 1988 respectively (Bekaert, Harvey and Laundblad, 2005).

We particularly compute and compare the average performance of each country for preliberalization and postliberalization periods. In addition, we elaborate the possible factors that can be responsible for notable differences between two countries in relation to their performance in the period after capital account liberalization. Our comparative analysis of macroperformance is based on the computation and comparison of average annual values of some of the key fundamental parameters for each period. These parameters include GDP growth rate, inflation rate, domestic investment and saving rates, share of exports in GDP, respective ratios of exports to imports and total external debt to GDP. The second part of our comparative analysis is devoted to the computation of respective volatilities of selected parameters and indicators (of each country) for the preliberalization and postliberalization periods. 3 of these parameters are the level of real consumption, investment rate and monetary growth. Theoretically one would expect the volatility of real consumption to fall following liberalization of capital flows since households will be able to borrow and lend freely at

international financial markets and therefore be able to smooth out their consumption over life-time (intertemporally) more easily. On the other hand, comparison of volatility of monetary growth in the two periods could give important insight about whether or not financial stability (in general) has improved or worsened in the postliberalization period.

The rest of the paper is organized as follows: In section two we summarize the key findings of some of the literature that investigated macroeconomic effects of capital account liberalization. The third and fourth sections are devoted to the presentation and interpretation of our numerical results regarding macroeconomic performance and volatility experienced before and after capital account liberalization in Chile and Malaysia. The last section concludes with a brief summary of results.

2. A Brief Review of Literature. The results of the past empirical work suggest that the theoretical arguments used to justify capital account liberalization as a policy advice seem to be too naive at best. The main argument in defence of liberalization of capital flows was the idea that this policy would lead to an increase in total returns on existing stock of global capital by allowing capital to move to high-return countries. This would benefit not only the owners of capital in capital-abundant countries but also recipient countries which would be able to achieve higher rates of investment with inflows of foreign savings and therefore achieve a higher rate of economic growth and lower rate of unemployment and hopefully higher rates of technological progress. In other words, one would intuitively expect investment rate and economic growth to be positively affected by liberalization of capital flows. In addition, the stability of private consumption (which is usually the most important component of GDP) is expected to improve after liberalization. And this, in return, is likely to have positive impact on overall real stability of macroeconomy.

However, Singh (2003) argued that the increase in the rate of individual economies' integration (which liberalized their trade and capital flows) with global markets led to both increased frequency and severity of financial crisis in these countries which may be one of the factors responsible for the lack of a statistically strong positive relationship between liberalization of capital flows and economic growth. On the other hand, Fischer (2003) argued that no matter how weak relationship is, there exists a positive relationship between capital account liberalization and economic growth. However, as we have started observing more frequently since the onset of global crisis in 2008, surges and drastic reversals in capital flows between developed countries and emerging economies can create new systematic risks and worsen macroeconomic stability. This point was emphasized by Wang (2002), who suggested that worsening macrostability could have adverse effects not only on short-run, but also on long-run macroeconomic performance.

Rodrik (1998) who investigated real and monetary effects of capital account liberalization was unable to detect any kind of evidence that removing capital controls led to higher rates of output growth and investment, and lower inflation. On the other hand, an earlier study by Grilli and Milesi-Ferretti (1995) reported that inflation is lower in more financially open economies. They attributed this result to the policy-disciplining effect of capital account liberalization; a switch to a liberalized capital account regime induces policy makers to adopt less expansionary monetary policies due to the fact that economic agents are now able to hold money balances not only in

terms of domestic currency but also in terms of foreign currency. This possibility of substitution of domestic currency with foreign currencies limits the policy maker's ability to resort to inflation tax (by printing money) so as to finance budget deficits.

Similar results were reported by Gruben and McLeod (2002) who produced evidence (from the analysis of experience of over 100 countries) that lower inflation is linked to capital account liberalization. However, some others argued that when monetary effects of capital inflows are not completely sterilized, inflation rate may rise in postliberalization period (Erturk, 2004; Ciftcioglu, 2006). Another study which could not find any kind of strong evidence (across 117 countries over the period of 1985-1997) relating capital account liberalization to higher growth and investment, and lower inflation, is that of Kraay (1998). On the other hand, some of the studies which reported positive effects of liberalization on investment include Mody and Murshid (2002), Bekaert et al. (2001) and Chari and Henry (2003). However, as Eichengreen and Leblang (2003) argued, even if domestic investment rate is positively affected by liberalization, in case macrostability worsens due to increase in both frequency and severity of financial crisis following liberalization of capital flows, positive growth enhancing effects of higher rate of investment can be more than offset by increased financial and real instability. And theoretical work of Aghion, Bacchetta and Banerjee (2004) suggests that this possibility is particularly likely for the countries which are at intermediate level of financial development and choose to liberalize their capital flows. Ciftcioglu (2006) showed that volatility of real consumption and monetary growth have both increased in postliberalization period in case of Turkey. One of the studies which reported positive effects on economic growth is that of Bekaert, Harvey and Lundblad (2005). However, they pointed out that this growth effect cannot be expected to be homogenous in all liberalizing countries due to heterogeneity of reform comprehensiveness, legal environment, the quality of institutions, investment conditions, and the degree of financial development.

3. Macroeconomic Performance of Chile and Malaysia before and after Capital Account Liberalization. In this section we present (for Chile and Malaysia separately) historical averages of respective annual growth rate of (real) GDP, inflation rate, saving rate (given by gross savings as a percentage of gross national income), investment rate (given by the ratio of gross capital formation to gross national income), the ratio of exports to GDP, and the ratio of total external debt to GDP. The source of our data is World Bank Development Indicators³ and even though the respective preliberalization period for both Chile and Malaysia starts with 1960, certain variables in our data set start later than 1960. In the appendix we give the detailed account of such variables.

3.1. Case of Chile. Historical averages presented in Table 1 suggest that macroeconomic performance of Chile (in general) seemed to improve significantly not only in terms of real output growth but also in terms of financial stability as captured by the dramatic decrease in the average rate of inflation from approximately 72% to 6%. Parallel to this reduction in inflation, both savings and investment rates went up respectively from 14.7% to 23.6% and 18.4% to 23.6%. Since, in general, lower inflation is likely to lower the perceived risks for households (in relation to their financial

³ <http://data.worldbank.org/data-catalog>

savings) and for firms (in relation to their investments in productive assets), at least some part of increase in savings and investment rates must have been due to this reduction in inflation experienced over the postliberalization period. And this increase in investment rate which was made possible largely because of increase in saving rate was probably one of the important sources of increase in GDP growth rate in postliberalization period. It is interesting to see that the improvement in export performance has led to an increase not only in the ratio of exports to imports but probably more importantly to an increase in the share of exports in GDP. Particularly the share of exports in GDP is an important parameter in the sense that it is usually considered as a measure of trade openness of an economy which can have positive impact on economic growth by increasing the degree of competitive pressure of global market on domestic firms and forcing them to increase the rate of innovation and find ways of reducing costs systematically. Therefore the increase in the value of this parameter from 20.3% to 34.1% might represent another source of increase in GDP growth rate in postliberalization period, which might have operated through total factor productivity channel.

It is interesting to see that Chile managed to lower its ratio of total external debt to GDP from 62.5% to 42.9% in the postliberalization period. According to debt overhang hypothesis, this could have positive effects on long-run economic growth simply because if this ratio falls it implies that amount of real resources (financial savings of the country) that need to be transferred to foreign creditors as a payment on accumulated stock of external debt (as principle plus interest) will be smaller (as a percentage of GDP). And this can allow an increase in the available amount of domestic savings that can be used for financing domestic investment (Ciftcioglu and Begovic, 2008).

One of the factors responsible for the dramatic increase in the saving rate could be a possible development of financial sectors in the postliberalization period (Kelly and Mavrotas, 2003). On the other hand, dramatic reduction in inflation rate could also be indirectly linked to capital account liberalization which, as stated in the previous section, can have disciplining effects on policy makers in terms of adopting less expansionary policies.

To sum up, one can say that macroeconomic performance of Chile undoubtedly improved in the postliberalization period. But to what extent this improvement is due to liberalization of capital flows is an empirical matter which is beyond the scope of our study.

3.2. Case of Malaysia. In the case of Malaysia, the growth and inflation performance seemed to improve in the postliberalization period; while GDP growth rate (on average) rose from 6.5% to 6.7%, the (average) inflation rate fell from 3.5% to 3%. Furthermore, similar to the case of Chile, saving and investment rates, and respective ratios of exports to imports and GDP all went up. All these improvements (along with lower inflation) could probably have contributed (in different degrees) to the increase in GDP growth rate in the postliberalization period. However, it is interesting to observe that substantial improvements in both savings and investment rates along with trade openness (as captured by dramatic increase in the ratio of exports to GDP) only led to relatively small increase in GDP growth rate.

When one considers the increase in the ratio of external debt stock to GDP from 34.6% to 41.8% in the postliberalization period it seems likely that the increase in

investment rate was made possible partly by external borrowing. If this trend continues, as the debt overhang hypothesis would suggest the potential debt service requirements in the future may exert adverse effects on both domestic and foreign investment by increasing the risk associated with macrostability. Another parameter that could be of some concern is the share of short-term external debt in total external debt which we did not provide directly in Table 1 and 2. For Malaysia, this ratio increased from 4.9% to 8.3% in the postliberalization period. And this in turn could mean increased exposure to risks in stability caused by capital flow reversals.

On the other hand, for Chile the share of short-term debt in total external debt fell to 7.3% in the postliberalization period from 8.3% (the average of preliberalization period). Given this and significant reduction in the ratio of external debt to GDP achieved by Chile in the postliberalization period, one can say that external debt dynamics for Chile went in direction of lower vulnerability to global shocks, whereas for Malaysia the opposite seems to be true.

4. Volatility of selected macroeconomic indicators before and after capital account liberalization. In this section we present volatility measures of selected indicators for pre- and postliberalization periods of Chile and Malaysia. We chose to measure respective volatility of each parameter for each period by its standard deviation of that period. It is important to note that when one is interested in the volatility of parameter level over a period and the standard practice is to compute the standard deviation of natural logarithm (or \ln) version of the relevant data for that variable.

As explained in earlier sections, capital account liberalization is theoretically expected to lower volatility of private consumptions; as households are able to borrow and lend at international financial markets freely, they will be able to smooth their life-time (intertemporal) consumption leading to an improvement in the stability of private consumption expenditures (in real terms). Therefore, one variable that we are particularly interested in is private consumption. Other parameters that we have chosen to investigate are respectively "investment rate", "monetary growth" (measured as the annual percentage change in the sum of money and quasi-money), $(\ln \text{ of })$ "total reserves", "share of short-term external debt in total external debt" and "the rate of current account balance to GDP". The abbreviations that we use for the last two indicators are respectively (S.E.D/T.E.D) and (C.A.B./GDP).

We included the last 4 parameters in addition to "private consumption" and "investment rate" to our volatility analysis simply because any increase in their respective volatility is likely to increase the degree of economy uncertainty as perceived by domestic and foreign economic agents.

4.1. Case of Chile. The computation results presented in Table 3 clearly show that in the postliberalization period, not only stability of private consumption improved as theoretically expected, but also the respective volatility of each of the remaining real and financial indicators fell as well. For example, volatility of "investment rate" declined by more than 30%. Improvement in financial stability as captured by decrease in respective volatilities of "monetary growth" and "total reserves" (of central bank) are even much more dramatic. Even though a decrease in volatility of (S.E.D / T.E.D) seems to be negligible, the substantial improvement in the stability of (C.A.B / GDP) parallel to those discussed above suggests that the "degree of uncer-

tainty" associated with the overall macroeconomic environment of Chile must have been significantly lower in the period following the liberalization.

4.2. Case of Malaysia. As one can see in Table 4, the volatility of consumption in Malaysia fell sharply in the postliberalization period relative to its value for the preliberalization period. As explained earlier, this observed response of volatility of consumption is consistent with theoretical expectation. However, for Malaysia the only other parameter which stability improved is "total reserves". It is interesting to observe from Table 4 that the remaining four indicators had an increase in their respective volatilities in postliberalization period. What is more striking is the fact that for all 4 indicators the amount of increase in volatility seems to be non-negligible: for example, volatility of "investment rate" went up by approximately 50% which could have adverse effects on the long-run stability of output growth. In addition to worsening stability of "investment rate", the increase in volatility of "monetary growth" by almost 80% has the potential of substantially increasing the degree of macroeconomic uncertainty and therefore raising the risks associated with Malaysian economy in the postliberalization period. And finally the increase in the respective volatilities of (S.E.D./T.E.D) and (C.A.B./GDP) by approximately 100% and 50% respectively are likely to raise the risks perceived by foreign investors in the postliberalization era of Malaysian economy.

These results for Malaysia are in sharp contrast to those of Chile. One possible intuitive explanation of the difference in the experience of the two countries may be related to the difference in the average degree of trade openness attained by these countries in the period following capital account liberalization. The share of exports in GDP for Malaysia reached a very high level of 97.8% which is much higher than the comparable figure of 34.1% for Chile. In other words, Malaysia seems to have continued its export-oriented growth strategy in the postliberalization period allowing its integrating its good markets with global markets to a much higher degree than Chile. Such structural change not only has benefits but also the costs. While benefits usually operate through the increased competitiveness of domestic firms due to pressures of global competition, the costs can be in the form of increased exposure to shocks originating in the global economy. And probably that's why the respective volatilities of "investment rate" and "C.A.B./GDP" have both gone up in the postliberalization period. Furthermore, the increase in domestic investment is at least partly financed by external short-term borrowing (which naturally becomes easier with no restrictions on external borrowing and lending) explains the corresponding increase in the volatility of (S.E.D./T.E.D.) parallel to that of "investment rate".

5. Conclusions. In this study, we selected two emerging market economies, Chile and Malaysia, and carried out a comparative analysis of their macroeconomic performance and volatility they experienced (in terms of selected indicators) before and after capital account liberalization. Our findings show that macroeconomic performance (in terms of growth rate of GDP, inflation rate, savings rate, investment rate and respective ratios of exports to imports and GDP in most cases improved significantly in both countries). And as it was theoretically expected we found that volatility of private consumption in both Chile and Malaysia declined in the postliberalization period. And maybe surprisingly, our numerical computations revealed that for Chile, not only the stability of consumption, but also that of investment rate,

monetary growth, total reserves (of central bank), a share of short-term external debt in total stock of external debt and the ratio of current account balance to GDP improved in the postliberalization period. Paradoxically, for Malaysia, in the postliberalization period with an exception of total reserves, the respective volatilities of the same indicators all went up. This, in turn, could be taken as an indication that while the overall macroeconomic stability (both in real and financial sense) probably improved in Chile, it seems plausible that opposite might be true for Malaysia. We suggested that a relatively higher degree of trade openness of Malaysia could be a factor in this difference between two countries; as Malaysia became a relatively more open economy in terms of share of its exports in GDP, its exposure to international business cycles and global shocks must have also increased to a relatively higher level than that of Chile. This in turn may suggest that capital account liberalization by itself, may not ensure better or worse macrostability. That may depend not only on the choices of domestic policy-makers but also the degree of trade-openness as well as the global stability. In other words, if an economy like Malaysia is relatively more open in terms of both trade and capital flows, its macroeconomic performance and stability will be more likely to improve when macroeconomic performance and stability of its global and regional partners improve. On the other hand, an economy like Chile which is relatively less open in terms of good markets, even if its capital flows are liberalized, it is likely to experience relatively superior macroperformance and less instability when the global markets are adversely affected by real and monetary shocks.

Appendix

As we indicated in the text, some of our data set for certain variables start later than 1960 which we took as the beginning of the precapital account liberalization period. The list of such variables for each country and their corresponding time periods are given below. In addition for several variables the last year of the data (for the postcapital account liberalization period) is 2007 instead of 2008.

(1) Chile

(a) Preliberalization average for "growth rate of GDP", "inflation rate", "savings rate", "exports/imports" and "external debt/GDP" are respectively for the periods 1961-1991, 1961-1991, 1975-1991, 1975-1991 and 1970-1991.

(b) "Monetary growth", "short-term external debt" (S.E.D), "total external debt" (T.E.D), "Current Account Balance" data for preliberalization period are respectively for 1962-1991, 1970-1991 and 1975-1991.

(2) Malaysia

(a) Preliberalization averages for "growth rate of GDP", "inflation rate", "savings rate", "investment rate", "exports/imports", "external debt/GDP" are respectively for the periods 1961-1987, 1961-1987, 1961-1987, 1974-1987 and 1970-1987.

(b) Postliberalization period for "consumption", "monetary growth", and "S.E.D/T.E.D" is 1988-2007.

(c) Preliberalization periods for "monetary growth", "S.E.D/T.E.D" and "C.A.B/GDP" are respectively 1961-1987, 1970-1987 and 1974-1987.

Table 1. Selected Macroeconomic Indicators for Chile

Indicator	Average of Preliberalization (1960-1991)	Average of Postliberalization (1992-2008)
Growth Rate of GDP	3.9%	5.3%
Inflation Rate	72.4%	6.1%
Savings Rate	14.7%	23.8%
Investment Rate	18.4%	23.6%
Exports/Imports	101.2%	111%
Exports/GDP	20.3%	34.1%
External Debt/GDP	62.5%	42.9%

Table 2. Selected Macroeconomic Indicators for Malaysia

Indicator	Average of Preliberalization (1960-1987)	Average of Postliberalization (1988-2008)
Growth Rate of GDP	6.5%	6.7%
Inflation Rate	3.2%	3%
Savings Rate	24.5%	36%
Investment Rate	22.4%	30%
Exports/Imports	106.2%	112.2%
Exports/GDP	46.5%	97.8%
External Debt/GDP	34.6%	41.8%

Table 3. Volatility of Selected Indicators of Chile

Indicator	Std. Deviation for Preliberalization (1960-1991)	Std. Deviation for Postliberalization (1992-2008)
Consumption	0.289	0.246
Investment Rate	0.039	0.027
Monetary Growth	1.663	0.073
Total Reserves	1.560	0.201
S.E.D / T.E.D	0.035	0.034
C.A.B / GDP	0.041	0.030

Table 4. Volatility of Selected Indicators of Malaysia

Indicator	Std. Deviation for Preliberalization (1960-1991)	Std. Deviation for Postliberalization (1992-2008)
Consumption	0.485	0.350
Investment Rate	0.054	0.083
Monetary Growth	0.110	0.192
Total Reserves	1.119	0.747
S.E.D / T.E.D	0.030	0.064
C.A.B / GDP	0.064	0.094

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