

**THE GROWTH EFFECTS OF FINANCIAL LIBERALISATION
PROGRAMME IN EGYPT:
DEVELOPMENTS AND DRAWBACKS**

(Key Words: financial liberalisation, economic growth, Egypt)

DR. Ayman M. Ebrahim
Faculty of Commerce and Business
Administration
Helwan University
Ein Helwan , Cairo
E-mail: ahendy@ksu.edu.sa
hendyayman@hotmail.com

ABSTRACT

The paper begins with a review of theory and recent empirical evidence relating to financial liberalisation and economic development. Among the countries that underwent financial liberalisation programmes in the 1990s, Egypt appears to have performed well. Although the internal and external shock to the economy and the associated drawbacks in the financial liberalisation programme, over the past decade, which brought the experience of financial liberalisation, the Egyptian economic performance improved. Its aggregate growth rate was positive and macroeconomic variables moved in a favourable direction in accordance with the predictions of the financial liberalisation paradigm.

The econometric test specification follows the nonlinear least-squares estimations methodology to test the co-movement of the underlying variables.

INTRODUCTION

The financial liberalisation paradigm encourages nominal interest rate liberalisation, the reduction or abolition of reserve requirements, the elimination of inflationary finance, the removal of other forms of taxation on the financial system and the establishment of capital account liberalisation. Such policies are believed to improve the efficiency of resource allocation. Empirical evidence are supportive of liberalisation, indicating that there is a positive relationship between the degree of development of the financial sector and economic performance in less developing countries (LDCs).¹

Among the countries that underwent financial liberalisation programmes in the 1990s, Egypt appears to have performed well. Over the 1990s, Egypt's economic performance improved, its aggregate growth rate was positive and macroeconomic variables moved in a favourable direction in accordance with the predictions of the financial liberalisation paradigm. Late in 1990s, after El-Luxor massacre and September-the 11th incident, the Egyptian foreign resources fall sharply. Many of financial repression features have arisen again; high inflation rate close to double digits, substantial budget deficit and negative real interest rates. This paper investigates the effects of such drawbacks, in financial liberalisation programme, on sustainability of economic growth.

In this paper, econometric analysis tests the effects of selected financial liberalisation variables on selected economic growth variables of Egypt. The

¹ For comprehensive review of theoretical and empirical rests; See Fry, M., (1995). More recent work; See: Levine, R., (1997, pp. 688-726), Demirguc-Kunt, A., and Levine., (1999), Edwards, S., (2001), Klein, M., (2003), and Edison, J., Luca R., and Slok, T., (2004)

results support the notion that financial liberalisation increases economic growth.

The paper is organised as follows: Part I reviews the theory of financial liberalisation. Part II outlines the Egyptian experiences on financial liberalisation. Part III tests the co-movements of selected financial development variables and economic growth variables in Egypt. Part IV for concluding remarks.

I. The Financial Liberalisation Paradigm.

Financial liberalisation encompasses domestic financial market deregulation and capital account liberalisation. Domestic financial market reform policies include nominal interest rate liberalisation, reduction or abolition of reserve requirements, the elimination of inflationary finance and other ways of taxing the financial system. In addition, financial liberalisation may include revising all policies that distort a financial intermediary's fund allocations such as government's direct credit lines with commercial banks, discriminatory loan rates and the compulsory purchase of government liabilities.²

It is suggested that financial liberalisation would increase both the quantity and the quality of investment. Financial liberalisation raises interest rates. Sectors of the economy with low productivity will find that it is more profitable to reinvest in bank deposits, thus reducing investment in the low productivity

sector. This increases the supply of credit for the more productive sectors. The quality of investment in the economy rises, and hence growth will increase³.

It is also suggested that the impact of the real interest rate on national saving, following the financial liberalisation, is ambiguous, given the possible contraction of income and the substitution effects between current and future consumption. Following on from the liberalisation, "*measured national savings might reflect portfolio shifts rather than true saving effects*", due to the reduction in capital flight and attracting portfolio flows⁴.

The likely impact of portfolio flows on the financial sector has brought renewed emphasis in academic studies on the role of the financial sector in economic growth⁵. Recent studies also demonstrate that government intervention in the financial sector may be necessary to assure stability, in the context of financial development. Financial liberalisation is an integral part of reforming and developing the financial sector in LDCs.

The 1990's financial crises episodes stimulated research on the quality of financial services provided. Countries, which suffered from financial crises, have liberalised and developed the financial system a decade before the crises. Thus, question was about the *quality* of financial services, not about the

² McKinnon, (1973), and Shaw, (1973).

³ Galbis (1977), Mathieson (1980), and Kapur (1986). Recent work on testing the productivity improved following the financial liberalisation in: Rioja, F., and Valen, N., (2004). This paper found strong positive effects of financial liberalisation on productivity in Developed countries. However, in LDCs, the productivity effects come through capital accumulation.

⁴ Fry (1989)

⁵ Greenwood & Jovanovic, (1990), King, R. & Levine, R., (1993, pp. 717-737), Levine, (1997), and Allen, F., & Gale, D., (2000, p. 47, 401)

availability of those services. The legal environment has been seen as a determinant of the quality of financial system. The legal approach emphasises the legal determinants of financial development and in particular, how the legal system protects investors and enforces contracts. The scope of legal environment may be concentrate on the "corporate governance" problem. This can be summarised by the dominant role of government in banking system, which lead to bad monitoring, lax accountability, and lack of equity. All are also features of the financial repression in a new liberalised regime⁶.

Financial services development and quality of legal system play leading role in determining the level and quality of growth-promoting financial services. Countries with greater degrees of financial development, as measured by aggregate measures of bank development and market development, are strong in terms of economic growth. The legal system influences financial sector development and this in turn influences long-term growth. The policy implication is that policy makers should focus on the fundamentals, namely property rights and the enforcement of those rights. Using constructed new measurements of the quality of financial system, Lane and Milesi-Ferretti found some evidence of the relationship between liberalisation and growth.⁷

Klein demonstrates a positive and significant association of financial liberalisation and stock market development on one hand and economic growth

⁶ The latter refers to the ways in which financiers of a project assure themselves of the best use of resources, ensuring that the projects yield the contracted return on their investments; Szilagyi, P., Batten, J., (2004), p. 49.

⁷ Using an annual measure of portfolio and direct investment assets and liabilities (a percentage of GDP) as a long-run indicator of financial openness, Lane and Milesi-Ferretti (2001).

on the other hand. However, he suggested that the Legal –based system missed in low-income countries may abrupt gaining benefits of liberalisation.⁸

Edison, *et al* survey the literatures on the effects of capital account openness and stock market liberalisation on economic growth. They have concluded that the effects of capital account openness and stock market liberalisation on economic growth for middle-income countries are positive and significant, though not for poorer or richer countries.⁹

One more recent country case, noticed that Iceland's growth performance has considerably improved since the implementation of the financial liberalisation programme-mid-1990s. However, economic growth has been volatile and accompanied by recurrent sizeable economic imbalances.¹⁰

Does the financial structure matter? Financial structure of bank-based versus market-based system has been tested in Australia. The empirical test found two-way relationship between economic growth and banking system. For the stock market, it is one-way relationship from financial market to economic growth.¹¹

Another root of analysis tests the sectoral growth effects of financial liberalisation including capital account liberalisation. It found no effect of financial liberalisation or financial development on the value added of different

⁸ Klein, M., (2003)

⁹ Edison, J., *et al*, (2004)

¹⁰ OECD, (2006)

industries. In addition, it found positive and significant growth effects of liberalised financial sector on establishing new firms. It is suggested that the increased competition following liberalisation may increase opportunities and projects, while prices fall of final goods reduces the value added.¹²

In summary, financial liberalisation contributes to developing the financial system in many ways, most notably by reinforcing the market and by reducing government intervention in the pricing of financial services and the allocation of credit. However, the experience of the 1990s' financial liberalisation appeared to justify the need for governments to adopt prudent regulations to reduce risks associated with financial liberalisation. Nevertheless, there is no wavering in the consensus among economists that financial development, and financial liberalisation, leads to economic growth.

¹¹ Thangavelu, S., and James, A., (2004)

¹² Vlachos, J., and Waldenstrom, D., (2005)

II. Development in the Egyptian Financial Liberalisation Programme

Following the Second Gulf War in 1990, Egypt received substantial financial assistance, debt relief and private capital flows¹³. Easing of the foreign exchange gap - through debt reduction and debt relief- is believed that it might reduce the adjustment difficulties involved in financial liberalisation. The decision was taken to deepen the transition measures which had started in the mid-1970s.

Economic transition in Egypt had started with current account liberalisation without the introduction of adequate reforms for the real or the financial sectors of the economy. Over fifteen years of initial transition, the Egyptian economy was characterised by wide economic fluctuations, best represented by movements in GDP growth. The upward trend in growth collapsed in the mid-1980s due to the fall in foreign receipts (foreign assistance and transfers). This was a consequence of adverse external shocks (an upsurge in world interest rates after the Mexican debt crisis, and the fall in oil prices) and the associated domestic recession. In the late 1980s, Egypt had one of the highest debt ratios in the world, with a debt to GNP ratio in the 100 to 150 percent range. In 1988, this ratio reached a peak of 175 percent. According to this measure, Egypt was

¹³ In 1990, The Gulf countries cancelled US\$ 14 billions of Egyptian external debt. In 1991, the Gulf Organisation for Developing Egypt cancelled US\$ 4 billion. In May 1991, Egypt's negotiations with the Paris Club creditors of Egypt led to the agreement to reduce the Egyptian debt by 50 percent in net present value terms. A total of US\$ 19.6 billion (excluding Egyptian debt to the USA) was involved in the Paris Club agreement. In 1998, a total external debt was US\$ 28 billion, which represented 35 percent of GDP.

more heavily in debt than most other countries, including the leading debtors in Latin America¹⁴.

In addition, During the 1980s, Egypt had one of the highest “financial repression” tax revenues ratios in the world, second only to that of Mexico. To give some idea of the extent of financial repression, the relevant ratio for Colombia was 0.3 percent, 3.3 percent in Pakistan, 0.4 percent in Thailand, and 2.5 percent in Zimbabwe, as compared with 5.7 percent for Egypt¹⁵.

Early in the 1990s, Egypt started a comprehensive financial liberalisation programme, which included both domestic financial sector deregulation and capital account liberalisation. With the implementation of the financial liberalisation programme, many adjustment measures had to be undertaken. The fiscal deficit was reduced from 17 percent of GDP in 1991 to 0.9 percent in 1998. The government was no longer highly dependent on inflation tax revenue as the inflation rate fell from 20.2 percent in 1989 to 3.9 percent in 1998. Moreover, the foreign exchange market was reformed by the elimination of exchange quotas to public sector enterprises, by the establishment of private exchange houses, and by the adoption of a unified foreign exchange market. In October 1991, the exchange rate was unified at LE 3.24 per US\$ 1. By 1994, the exchange rate had reached LE 3.39 per US\$ 1, and continued at that rate until June 2001.¹⁶

¹⁴ World Bank, (1998)

¹⁵ Giovannini, A. and de Melo, M. (1993, pp. 953-63).

¹⁶ Before 1990, monetary system in Egypt allowed for four different exchange rates, official rate, parallel market rate, tariff calculation rate and black market rate.

The removal of price distortions and a programme of privatisation have improved Resource allocation. About US\$ 10 billion of annual subsidisation was cancelled during the six years to 1998¹⁷.

In order to enhance the efficiency of the financial sector, measures such as the removal of interest rate and credit-ceilings were put in place. The elimination of the government's direct credit lines with the central bank of Egypt (CBE) and there was reorganisation of the Treasury bill (T.bill) market¹⁸. In addition, the government approved international solvency standards (depending on *Basel Accord*) and improved the supervision of bank-loan portfolios. Despite a dramatic fall in nominal interest rates from 18% to 11% in 1993, real interest rates continued to offer a real return. In addition, the Egyptian government succeeded in building up foreign reserves. These had reached US\$ 20.1 billion end of February 1998¹⁹.

The T.bill issues were mainly used to sterilise capital flows to Egypt²⁰. Thus, it was expected that limited portfolio inflows later would reduce the reliance on T.bill issues. Eventually, the T.bill issue rose to LE 38 billion in 1998, to finance the budget deficit and reduce inflation pressures²¹.

The banking system and the stock exchange are the major channels for the mobilisation of financial resources in Egypt,. The implementation of the

¹⁷ Demirsar, M., (1998).

¹⁸ During the first two years of the financial liberalisation programme, the CBE sold T.bill of LE. 500 million.

¹⁹ Handy, H., (1998), and World Bank, (1998)

²⁰ CBE, (1995/96)

Egyptian capital-market programme began in 1992. With the implementation of the capital-market programme, foreign investors began to enjoy full market-accessibility and were free of restrictions on movements of capital and remittance of profits. While In 1992, foreign transactions had been negligible, it increased to 31.77% of trading value in 1996.

However, Egypt is classified as bank-based rather than market-based financial system²². The importance of the banking sector in Egypt cannot be overstated. The survival of the Egyptian banking system, despite the contagion effects of 1990s financial crises, can be explained by the legacy of strong government intervention in that sector and the dominant position of the public sector financial institutions.

Capital inflows to Egypt have been strong over the 1990s. Bank deposits, time and foreign currency deposits were estimated to be LE 15,978 millions in 1985, compared with LE 120,175 millions in 1995, following financial liberalisation²³. The threat of exchange rate appreciation encouraged the government to sterilise flows and to build a strong foreign-reserve position²⁴. However, pegged exchange rate regime adopted in Egypt over the 1990s, required strong foreign reserves, current account surplus and/or access to international credits, to defend the announced exchange rate.

²¹ In addition to the T.bill issues, the CBE issued LE 84,654 million Treasury Bond in 1998: CBE, (1998/99).

²² In: Demirguc-Kunt and Levine, R.,(1999)

²³ IMF, *IFS*, Various Issues.

²⁴ The World Bank estimated excess reserves in the Egyptian economy at US\$ 11 billion, i.e.16 percent of the GDP in 1996; World Bank, (1998, p. 16)

The first signal of crisis or near crisis came from the appointing of *Morgan Stanley* and *Merrill Lynch* as the lead managers for the first sovereign Eurobond issuing (US\$ 500 millions)²⁵. While the current reserves at that time (February 2001) stand at more than US\$14 billions, it gave signals that: either the government has not enough reserves or will not sacrifice the current reserves position.

According to the *Ponzi* scheme, higher levels of bank and non-bank foreign transaction made the Egyptian pound vulnerable to speculative attacks²⁶. Once the short-term foreign receipts, including tourist's revenue, started to fall, the current foreign payments exceeded the official reserves. Foreign exchange market participants realised that there were not enough foreign reserves if they demand, thus they rushed to demand²⁷.

While early the 1990s, the Egyptian pound suffered real appreciation, late in 1990s, the Egyptian pound has been under pressure of depreciation. The oil prices felled with incidence of Asian crises, also a sudden fall in foreign tourists following El-Luxor massacre. This led to a sharp decline in the current account balance. The dramatic reduction in foreign currency available to banks and companies led to a severe liquidity crisis. It was apparent that it is very difficult for foreign investors to repatriate capital or for local businesses to pay

²⁵ Financial Times, (2001), Feb. 06, London, UK, , p.5

²⁶ Ponzi scheme is defined here as financial practices that include using later deposits or debts to service early deposits or debts.

²⁷ The decline in foreign reserves signalled of the near-crisis. Attempts of investors to anticipate the inevitable collapse, generated a speculative attack on the currency; Krugman, P., (1979, pp. 311-325), Flood, R., and Garber, P., (1984, p. 1-13).

for imports. Such developments forced the CBE to devalue the currency from 3.40 to the US\$ to 3.85 in July 2001, and to go into further devaluation following the black market that flourished again. The fixed peg was abandoned and replaced by a crawling peg regime. The credibility of monetary policies lost where the government, many times, confirmed the black market exchange rate. In August 2001, the announced exchange rate increased to LE 4.15 per US\$ and widened the trading band to 3%²⁸.

The interest rate differential between Egyptian pound deposits and the US\$ was 10% versus 3.7%. These did not help the pound, especially after September-the11th terrorist attacks. Foreign exchange revenue reduced dramatically. The Pound continued to fall until the market has stabilised at LE 5.10 per US\$. The rate has come down from LE 6.00 per US\$, earlier in 2002.

Only in 29 January 2003, Egypt announced a shift from a crawling peg to a market-determined exchange rate, the Egyptian pound promptly depreciated by 16 % to trade at LE 5.40 per US\$.

Devaluation triggered inflation in the Egyptian economy and deterred not only the financial liberalisation programme but also the economic reform and structure adjustment programme. Consumer prices rose by 5.2% in October 2003, continuing their steady upward trend. The consumer price index (CPI) increase by another 5% in 2004. this is the highest level since 1997. The 2003 increase was driven by an 8.1% rise in the food, beverages and tobacco

²⁸ Euromoney, (2001).

category, which accounts for more than 50% of the CPI basket. Furniture and equipment, which comprises only 5% of the CPI basket, increased by 9% and miscellaneous items, accounting for 6.4% of the index, increased by 2.6%, but no other item rose by more than 2%.²⁹

However, some independent sources estimated the increases in the price of basic foodstuffs by 40% early in 2004³⁰.

The serious drawbacks in the Egyptian financial liberalisation programme featured in high inflation and high budget deficit, derived to the development of a coherent monetary policy. An new governor of the (CBE) is appointed in December 2003 and an effective framework is established. To counter the sharp rises in inflation prompted by the implementation of floating exchange rate regime, interest rates increased. The largest banks in Egypt; National Bank of Egypt and Banque Misr had issued certificates of deposit with 12%. This is 2 percentage points higher than equivalent market rate³¹. That has prompted other banks to issue instruments offering the same or higher returns. Also to counter the inflation, interest rates on T.bills increased to above 11%, which was 6.8% two months before. REPOS and reverse REPOS introduced and generally the yield curve in Egypt resemble inverted one (long term is smaller than short run interest rates). Finally, the overnight inter-bank rate has introduced. Higher interest rates have supported the Egyptian pound, The wedge between the official exchange rate and the black market rate has diminished late in 2004, and in 2005 the market expectations on exchange rate

²⁹ IDSC, different issues.

³⁰ Financial Times, (2004), Feb. 06,

movements have relaxed. The pound appreciated from LE 6.25 per US\$ late in 2004 to LE 5.75 mid of 2005. In fact, rational of the introduction of the US\$ interbank operation is to increase the supply of foreign currency and to contain perfectly the wedge between the official and the black market rates³². In FY 2005/2006 the official foreign reserves have surpassed the 1996 level with US\$22.4 billions.

Because of strong monetary control, inflation that erupted over 2002, 2003, 2004 started to calm down in FY 2004/2005 with 5.1% against 15.9% in previous FY. Moreover, deposits in banking system in favor of Egyptian pound. These rose by LE 54.4 billions (or by 21.3%) to LE 309.7 billions at end of June 2005. Unfortunately, budget deficit still high represents 8.9% of GDP, which enlarges the public debt to 510.8 billions about 91.3% of GDP at June 2005.³³

High GDP growth rate (5.4% this FY2005/2006 against 4.2% previous FY), may be explained through either debt accumulation, or through the over all macroeconomic developments. The econometric test may help in this respect.

³¹ The two banks accounted for 35% of assets and 42% of deposits.

³² This have introduced in 23/12/2004

³³ CBE, (2004/2005)

III. Testing the Growth Effect of Financial Liberalisation

Empirical tests of the growth effects of financial liberalisation shifted from the traditional tests of the impact of interest rate movements on saving, investment, and economic growth to tests the potential effects of financial liberalisation including capital account liberalisation through its influence on long-run growth and economic development³⁴. These are directly investigating the empirical relationship between interest rates liberalisation and capital account liberalisation on one hand and economic growth variables such as the level of schooling (to proxy human capital), investment, and population growth on the other hand³⁵.

The shorter the time series available on the financial liberalisation (only 10 years) may encourage testing the co-movement of financial liberalisation variables with economic growth and economic development variables. Empirical test in this paper includes three steps procedure. First, it starts with testing *the building blocks* using the correlation coefficient. Secondly, spectacle investigation of the selected macroeconomic variables is applied. Thirdly, the econometric test of the selected variables relationships.

Five financial development variables are tested against five economic growth and development variables. The later are; GCF denotes Gross capital formation

³⁴ A comprehensive survey of the empirical tests of the financial liberalisation paradigm; Hendy, A., (2001)

³⁵ Edwards, S., (2001), Bekaert, H., and Lundblad, C., (2001), Edison, J., and Slok, T., (2002), Wachtel, P., (2003), and Klein, M., (2003).

(constant LCU); FDI denotes Foreign direct investment, net (BoP, current US\$); SEs denotes School enrolment, secondary (% gross); UP denotes Urban population; and IR denotes Illiteracy rate, adult total (% of people ages 15 and above).

The financial development variables are: RIR denotes Real interest rate (%); NDC denotes Net domestic credit (current LCU); NFA denotes Net foreign assets (current LCU); LL denotes Liquid liabilities (M3) as % of GDP; and BA / BR denotes Bank liquid reserves to bank assets ratio.

The data sample covers the period from 1990 to 2000. Data are obtained from the World Development Indicators (2002) and CBE Annual Report (various issues).

First: The Correlation Coefficient Test

On testing the correlation coefficient, the computer run produced the following ratios:

The Correlation Coefficient Test

LL	NFA	NDC	RIR	IR	UP	SEs	FDI	GCF	
								1	GCF
							1	0.063581	FDI
						1	0.285358	0.86106	SEs
					1	0.747031	0.330371	0.840079	UP
				1	-0.99963	-0.73611	-0.32092	-0.83132	IR
			1	-0.78134	0.773578	0.561226	0.191847	0.511748	RIR
		1	0.673301	-0.96892	0.974219	0.822955	0.296871	0.931753	NDC
	1	0.044038	0.531469	-0.28815	0.267041	-0.22287	0.225282	-0.26165	NFA
1	-0.50122	-0.67265	-0.61023	0.777152	-0.765	-0.32231	0.136605	-0.54838	LL
0.75143	-0.46722	-0.56284	-0.63144	0.656495	-0.6447	-0.27357	0.134977	-0.46303	BR/BA

Correlation coefficient is the square root of coefficient of determination R^2 . Since the coefficient of determination varies between 0.0 and 1.0, it follows that the correlation coefficient must vary between +1 and -1. Both the correlation coefficient and the coefficient of determination have nothing to say about causation. However, in regression analysis, the direction of the relationship between variables is made at the outset, thus the causality is assumed rather than inferred from the model.

This paper chooses a correlation coefficient ± 0.50 as a benchmark for the relationship between different variables. The association of Net domestic credit and Gross capital formation is stronger than the association of any other financial development variable and Gross capital formation especially real interest rate. This suggests that real interest rate is not significant to influence capital formation relative to other factors that affect private sector investment decisions. Yet, real interest rate behaviour is so paradoxical, suggesting that it is administrative rate rather than market determination one.

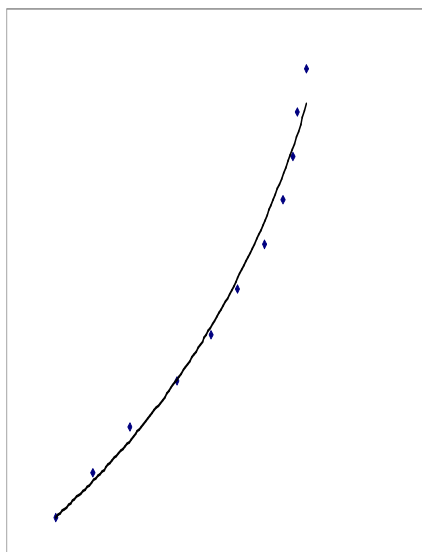
The correlation coefficient table also shows that foreign direct investment is independent of financial development variables. In contrary, School enrolment variable is strongly correlated with real interest rate (0.56) and with net domestic credit (0.82). In addition, the Urban population and Illiteracy rate as important economic development variables are highly correlated with both real interest rate and net domestic credit.

The real interest rate itself is fairly correlated with other financial liberalisation variables: Net domestic credit Net foreign assets; Liquid liabilities (M3); and Bank liquid reserves to bank assets ratio

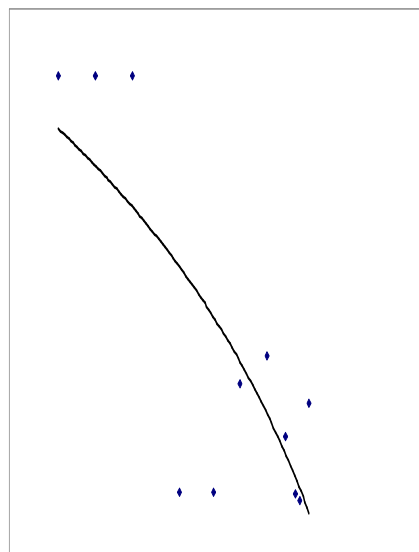
Second: Spectacle Investigation Test:

Spectacle investigation of the association of macroeconomic variables is also indicative in this context. Customary, the dependant variables should be on the horizontal axes.

NDC and IR



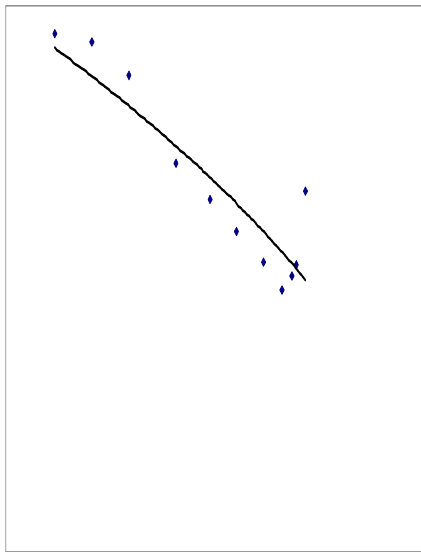
NDC and SEs



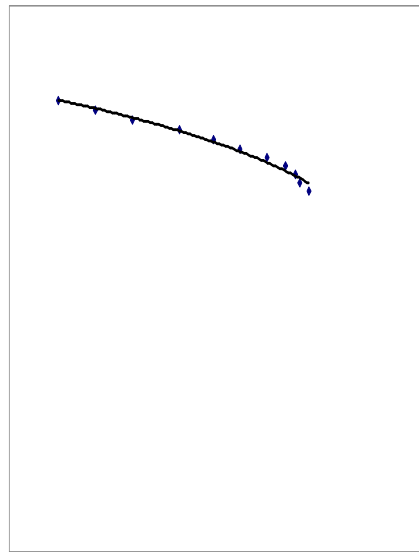
Negative correlation of NDC and IR is apparent, while the association of SEs and NDC is not clear as suggested by the correlation coefficient 0.82. This may suggest that collectively, there is a strong correlation between the two variables

but for individuals observation it is not so. The cross plotting trend is added to ease understanding the co movement.

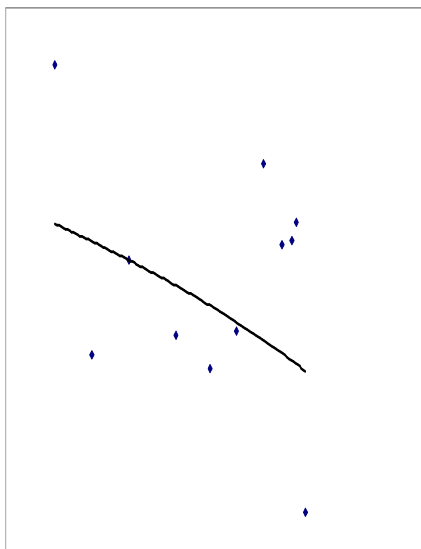
NDC and GCF



NDC and UP

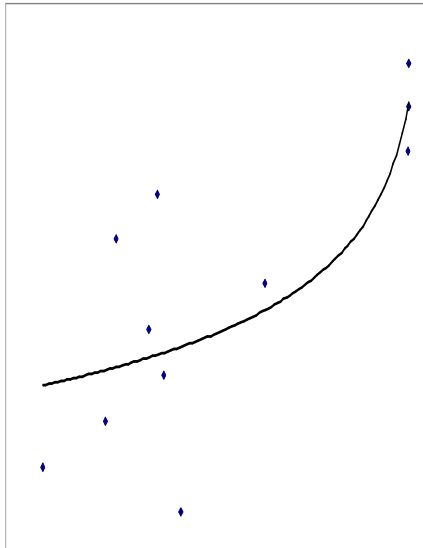


NDC and FDI

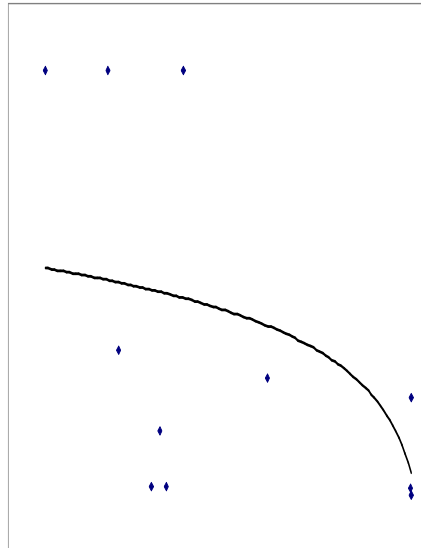


Correlation between NDC and GCF is strong (0.931753) and the cross plotting of the two series in harmony with that. There is no much outlier such a case in the relationship between NDC and FDI. Also the cross plotting of NDC and UP is consistent with correlation coefficient calculated before (0.974219)

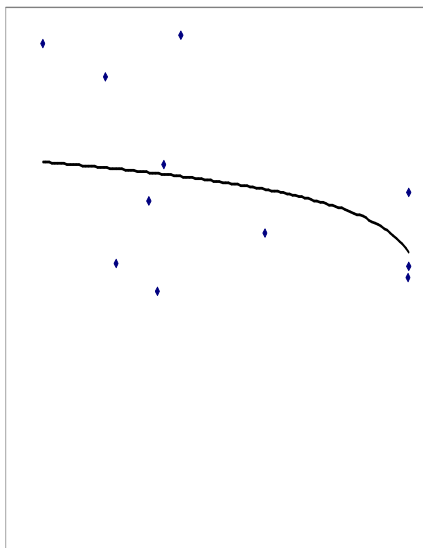
RIR and IR



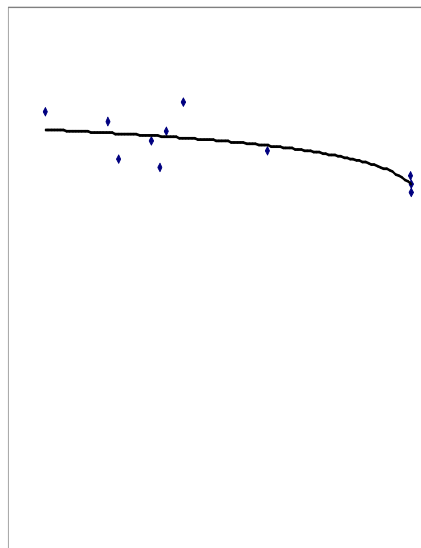
RIR and SEs



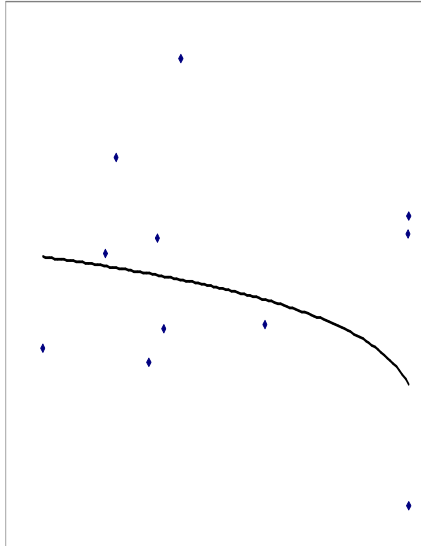
RIR and GCF



RIR and UP



RIR and FDI



Correlation between RIR and the five economic growth variables is generally weak except for UP and IR that equals (0.773578) and (-0.78134) respectively. The cross plotting of the five series express much outliers of the trend.

Third; the Econometric Test:

The econometric test specification follows the nonlinear least-squares estimations methodology to test the co-movement of the underlying variables over the 1990s. Short time series creates much conservation on testing procedure and results. Nonlinearity of the relationships between selected macroeconomic variables as seen above may encourage applying the nonlinear least-squares method (NLS). This is applied by generating a series w , whose values are proportional to the reciprocals of the error standard deviations. Then multiply all the data for each observation by the generated series. The scaled new series is a normally distributed series that has no effect on parameter results. The model is estimated using the following equation:

$$S(\beta) = \sum w^2 (y_t - x_t' \beta)^2 \dots\dots\dots(1)$$

Using matrix notation:

$$b_{NLS} = (X'WX')^{-1} X'W'y \dots\dots\dots(2)$$

Apparently, it is a version of famous weighted least square with minimum variance in the class of linear unbiased estimators (BLUE).

Time series are in levels. The rational is that differencing the variables “throws information away” while producing no significant gains³⁶. The computer runs initially with the five financial development variables against the five economic growth variables. Then the model minimised by eliminating insignificant variables;

• **Gross capital formation equation;**

GCF	=	1.92E+10	+ 0.111167 NDC	-0.15147NFA
	<i>t</i>	9.814274	13.41095	-4.304601
	<i>Prob.</i>	0.0000	0.0000	0.0026
Adjusted R-squared	0.950391	F-statistic	96.78746	Durbin-Watson stat
			(0.000002)	1.470929

The regression results shows that net domestic credit and net foreign assets have significant influences on gross capital formation. While the sign is positive for Net domestic credit, it is negative for Net foreign assets. The later

³⁶ Gujarati, D., (1995, p. 485) suggested that since that most economic theory is stated as long-term relationships between variables in levels. Using the differences’ series to overcome the non-stationarity problem” *may be like throwing out the baby with the bath water*”.

compressed the sum of foreign assets held by monetary authorities and deposit money banks, less their foreign liabilities. (Data here are in current local currency). Foreign assets deteriorated sharply with signs of distress in the economy following on from 1997, while capital formations continue to increase over the same period.

- **Urban population equation;**

UP	=	21486300	+ 2.15E-05NDC	+107274.5 RIR
	<i>t</i>	76.83304	10.82408	2.796776
	<i>Prob.</i>	0.0000	0.0000	0.0233
Adjusted R-squared	0.967915	F-statistic	151.8361 (0.000000)	Durbin-Watson stat 1.312351

Net domestic credit and Real interest rate are significant in urban population equation. However, the regression results show some serial correlation. This can be explained through omitted variables on the urban population equation.

- **Illiteracy rate;**

IR	=	53.16911	-3.40E-11NDC	-3.36E-11NFA	-0.022329RIR	+0.034849LL
	<i>t</i>	55.12101	-72.17165	-20.90602	-2.789111	3.368488
	<i>Prob.</i>	0.0000	0.0000	0.0000	0.0316	0.0151
Adjusted R-squared	7305.053	F-statistic	96.78746 (0.000000)	Durbin-Watson stat 2.046619		

Illiteracy rate equation has correct signs with financial development variables except for the liquid liabilities (M3) variable. Liquid liabilities are the sum of currency and deposits in the central bank (M0), plus transferable deposits and

electronic currency (M1), plus time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase agreements (M2), plus travellers checks, foreign currency time deposits, commercial paper, and shares of mutual funds or market funds held by residents. Explaining the deterioration of M3 to GDP ratio is beyond the interest of this paper and it demands further study. It may suggest that calculated GDP in inflated market prices surpassed the growth M3. The later is reduced by the government efforts to control inflation.

- **School enrolment;**

SES	=	74.43434	+1.89E-11 NDC	-7.47E-11NFA	+0.321156 RIR
	<i>t</i>	46.10789	2.050519	-2.189150	1.527964
	<i>Prob.</i>	0.0000	0.0795	0.0648	0.1704
Adjusted R-squared		0.725963	F-statistic	9.830480 (0.006638)	Durbin-Watson stat
					2.284287

Net foreign assets have a negative sign in the School enrolment equation. This because what mentioned above on the deterioration of net foreign assets starting from 1998. Significance of real interest rate is weak in this equation relative to the net domestic credit variable.

- **Foreign direct investment;**

FDI	=	-1.97E+10	+0.009625NDC	+0.029954NFA	+2.15E+08LL
	<i>t</i>	-6.777859	6.785935	6.183459	6.897328
	<i>Prob.</i>	0.0005	0.0005	0.0008	0.0005
Adjusted R-squared		0.846444	F-statistic	14.78072 (0.002912)	Durbin-Watson stat
					1.631845

In the Foreign direct investment equation the Net domestic credit, Net foreign assets and Liquid liabilities (M3) are significant the statistical inferences are adequate except for the Durbin-Watson statistic. Eventually, the foreign direct investment figures fluctuate over the period of analysis.

For all equations; Bank liquid reserves to bank assets ratio is insignificant all over the period of analysis, suggesting the volatility of this ratio during the adjustment period of the Egyptian banking system following on from the financial liberalisation.

Iv. Concluding Remarks

Financial liberalisation and capital inflows early the 1990s, gave much support to the economic reform programme in Egypt and the associated macro economic policies. Positive real interest rate and pegged exchange rate regime provide stability for general price level and boost economic performance of Egyptian economy.

The results of testing the financial liberalisation support the growth effect of financial liberalisation in Egypt. In spite of the drawbacks late in the 1990s the economy sustained economic growth represented by high gross capital formation; the increase in school enrolment; low illiteracy rate; and increase in urban population. Foreign direct investment increased especially after 1995 and continued until the deterioration of the Egyptian pound, waiting for

stability of exchange rate and other macro economic prices; the general price level and interest rate.

However, it should be emphasis that the transmission mechanism of the relationship between the financial liberalisation variables and the economic growth variables is not clear. Further study is suggested to reveal that mechanism and the spillover effects of the financial liberalisation on the selected growth variables.

References

- Allen, F., & Gale, D., (2000), *Comparing Financial Systems*, Cambridge, MIT Press, London, England, p. 47, 401.
- Beck, T., & Levine, R., (2000), "External Dependence and Industry Growth Does Financial Structure Matter?", February, (online): <http://www.worldbank.org/research/projects/finliber.htm>
- Bekaert, H., and Lundblad, C., (2001), "Does Financial Liberalization Spur Growth?" NBER Working Paper No. 8245 (Cambridge, Massachusetts: National Bureau of Economic Research).
- Central Bank of Egypt, "Annual Report", Different Issues.
- Demirguc-Kunt, A., and Levine., (1999), "A New Database on Financial Development and Structure", June, (Online) <http://www.worldbank.org/research/projects/finstructure/database.htm>
- Demirsar, M., (1998), "The New Egypt", *Institutional Investor*, July, Vol. 32, No.7, p. 2(1).
- Edison, J., Luca R., and Slok, T., (2004), "Capital Account Liberalisation and Economic Performance: Survey and Synthesis. *IMF Staff Papers*, July, Vol. 220, No. 37.
- Edwards, S., (2001), "Capital Mobility and Economic Performance: Are Emerging Economies Different?" *NBER Working Paper*, No. 8076 (Cambridge, Massachusetts: National Bureau of Economic Research).
- Euromoney,(2001), "Institutional Investor, Sep., No. 389, London, p. 220
- Financial Times, (2001), Feb. 06, London, UK, , p.5
- Financial Times, (2004), Feb. 06, London, UK, , p.7
- Flood, R., & Garber, P., (1984), "Collapsing Exchange Rate Regimes: Some Linear Examples", *Journal of International Economics*, Vol. 17.

- Fry, M., (1989), "Financial Development: Theories and Recent Experience", *Oxford Review of Economic Policy*, Vol. 5, No.4.
- Fry, M., (1995), *Money, Interest and Banking in Economic Development*, Second edition, Johns Hopkins, Baltimore and London.
- Galbis, V. (1977), "Financial Inter-mediation and Economic Growth in Less-Developed Countries: A Theoretical Approach", *Journal of Development Studies*, Vol.13, No.2.
- Gibson, H. & Tsakalotos, E., (1994), "The Scope and Limits of Financial Liberalisation in Developing Countries; A Critical Survey", *Journal of Development Studies*, April.
- Giovannini: A, & de Melo, M., (1993), "Government Revenue from Financial Repression", *American Economic Review*, Vol. 84, No. 4.
- Greenwood, J., & Jovanovic, B., (1990), "Financial Development, Growth and Distribution of Income", *Journal of Political Economy*, Vol. 98, No. 5
- Gujarati, D., (1995), *Basic Econometrics*, McGraw-Hill, Inc., Third Edition, New York.
- Handy, H., (1998) "Beyond Stabilisation, toward a dynamic Market Economy", *IMF Occasional Paper*, No. 163, May.
- Hendy, A., (2001), "*The Impact of Financial Liberalisation on Portfolio Shifts: The 1990s Experience with Particular Reference to the Egyptian Economy*", PhD thesis, Unpublished, Salford University, UK.
- IDSC, Monthly Economic Bulletin, different issues.
- IMF, *IFS*, Various Issues.
- Kapur, B., (1986), *Studies in Inflationary Dynamics: Financial Repression and Financial Liberalisation in Less Developing Countries*, Singapore University Press, Kent Ridge, Singapore.

- King, R., and Levine, R., (1993), "Finance and Growth: Schumpeter Might Be Right," *Quarterly Journal of Economics*, August, Vol. 108, No. 3.
- Klein, M., (2003), "Capital Account Openness and the Varieties of Growth Experience," *NBER Working Paper* No. 9500 (Cambridge, Massachusetts: National Bureau of Economic Research).
- Krugman, P., (1979), "A Model of Balance-of-Payments Crises", *Journal Of Money, Credit and Banking*, Vol. 11.
- Rioja, F., and Valen, N., (2004), "Finance and the Sources of Growth at Various Stages of Economic Development", *Economic Inquiry*, Jan. Vol.42, No.1
- Shaw, E., (1973), *Financial Deepening in Economic Development*, Oxford University Press, New Your.
- Szilagyi, P., Batten, J., (2004), "Corporate Governance and Financial System Development: Asia-Pacific in Comparative Perspective", *the Journal of Corporate Citizenship*, Spring, Vol. 13,
- Thangavelu, S., and James, A., (2004),"Financial Development and Economic Growth in Australia: An Empirical Analysis", *Empirical Economics*, Vol.29, Pp 247-260
- Lane, P., and Milesi-Ferretti, M.,(2001), "The External Wealth of Nations: Measures of Foreign Assets and Liabilities for Industrial and Developing Nations," *Journal of International Economics*, Vol. 55, No. 2.
- Levine, R., (1997), "Financial Development and Economic Growth: Views and Agenda," *Journal of Economic Literature*, Vol. 35, No. 2, June, pp. 688-726.
- Levine, R., (2000), *Bank-Based or Market-Based Financial Systems: Which is Better?*, Finance Department, Carlson School of Management, University of Minnesota, January.
- Mathieson, D., (1980), "Financial Reform and Stabilisation Policy in A Developing Economy", *Journal of Development Economics*,

Sep.,Vol.7, No.3.

McKinnon, R., (1973), *Money and Capital in Economic Development*,
Brookings Institution, Washington DC, USA

OECD Economic Surveys , " Iceland, 2006", (2006), *OECD Publications and
Information Centre*, Vol. 19, p.20.

Vlachos, J., and Waldenstrom, D., (2005), "International Financial
Liberalisation And Industry Growth", *International Journal of
Finance and Economics*, Vol. 10, Pp. 263-284..

World Bank, (1998), *Egypt in the Global Economy: Strategic Choices for
Savings, Investments, and long-term Growth*, World Bank Middle East
and North Africa Economic Studies, World Bank, Washington DC.

Wachtel, P., (2003), "How much we really Know about growth and Finance",
Economic Review, Federal Reserve Bank of Atlanta, 1sh quarter,
Vol.88, No. 1