MAK HILL Publications International Business Management

Research Article
doi: 10.59218/makibm.2023.1.13

Capital Account Liberalization and Financial Sector in Egypt

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OPEN ACCESS

Key Words
Capital account, capital account liberalization and financial sector, autoregressive distributed lag model

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Received: 1 April 2023
Accepted: 13 April 2023
Published: 14 April 2023

Citation: Hwaida Maher Zekry, 2023. Title. Int. Bus. Manage., 17: 1-13, doi: 10.59218/makibm.2023.1.13

ABSTRACT
The purpose of this paper is to examine the issues and challenges surrounding the question of capital account liberalization and financial sector in Egypt. Capital account liberalization can bring major benefits to a country. However, experience has shown that capital account liberalization is not without its problems and challenges. Therefore, countries should be prepared to deal with the challenges that liberalization will throw up. We propose to explore these questions by examining the specific experience of Egypt and present a detailed explanation that is related to the topic of capital account liberalization. Capital account liberalization requires a liberalized developed domestic financial sector. A developed financial sector should be able to provide a range of products to protect consumers of these products from risks arising from the increased volatility of interest rates (or exchange rates). As developed financial sector can also help policy- making in a liberalized environment. Thus, before capital account liberalization, government should embark on liberalizing domestic markets; necessary conditions (stable macroeconomic environment) that need to be satisfied in order to ensure the success along the optimal path to capital account liberalization.

INTRODUCTION

The past three decades have been associated with greater openness in globalized financial markets. There has been a decline in the number of restrictions that countries impose on cross-border financial transactions. An index of capital account openness shows an increase, in all income groups, with a particularly significant rise occurring at the beginning of the 1990s.

Financial liberalization (FL) refers to the deregulation of domestic financial markets and the liberalization of the capital account. The effects of (FL) are in debate till nowadays. On one hand, it strengthens financial development and contributes to higher long run growth. On the other hand, it induces excessive risk taking, increases macroeconomic volatility and leads to more frequent crises.

Financial liberalization programs have been adopted by many countries during the past twenty years. Capital account liberalization (CAL) opening the economy to inflows and outflows of capital has been one of the most important economic policies recommended to developing countries for economic growth and efficiency, as it tightens the constraints on governments to avoid bad policies. Others emphasized the disadvantages of capital account openness (such as financial crises and risks concerning macroeconomic stability).

Since the early 1990s, many countries all over the world in different regions have established the measures of CAL to attract capital flows mainly FDI, which is considered to be a major factor to economic development.

The neoclassical economic literature on freeing financial capital movements across borders points out that an economy could benefit from such policies as it offers the opportunity to achieve higher returns on savings, to diversify country specific-risk and to borrow funds at favorable interest rates. According to the neoclassical approach, capital account liberalization is likely to contribute to the development of the domestic financial sector through an improvement of efficiency.

Capital account liberalization has attracted much attention as a policy to promote economic development. While there are many theoretical arguments in favor of it, the actual experience of countries that adopted capital account liberalization has been mixed. The recent financial and economic crisis has questioned the conventional view about capital account liberalization and gave rise to new questions. This study seeks to enhance our understanding of the role of capital account liberalization for the Egyptian economy. As it concentrates on an important economic aspect, namely development of the financial sector in Egypt through the investigation of the determinants of financial deepens.

Also, it's important to implement a series of policies aimed at improving institutional capacity to manage the effects of both the inflow and outflow of capital in the Egyptian economy. In addition, there are two prerequisites of freeing capital movements: Institutional development putting into place an effective regulatory framework to achieve successful external financial reform and private sector being able to transform capital inflows into innovating projects. As the presence of a structured entrepreneurial private sector means providing more opportunities to foreign investors and more deposits to the financial sector of the country.

Capital account liberalization re-emerged as a topic of intense debate among policy makers and economists in the early 1990s, when there was a substantial increase in private capital flows to developing countries. At the time, policy makers in recipient countries became concerned that large capital inflows would lead to inflation, real exchange rate appreciation, or distorted asset prices. The subsequent years, witnessed a sharp and substantial reversal of these capital inflows, against the background of a series of capital account crises in major emerging market economies.

Economic theory suggests that liberalized international capital flows can foster a more efficient allocation of resources, provide opportunities for risk diversification and help promote financial development.

One of the most important policy prescriptions is that capital account liberalization should proceed slowly. As the unregulated and fast liberalization (capital flows) could facilitate the occurrence and spreading of currency crises.

Capital account liberalization is considered as a decision made by the government to move from a closed capital account to an open capital account regime. Capital account liberalization policy refers to different degrees of an allowance of capital to move into and out from the country through foreign direct investment, portfolio and other kinds of investment. In other words, capital account liberalization implies removing barriers to capital inflows, or encouraging domestic investors to invest in foreign assets.

Proponents of capital account liberalization point to 3 benefits:

- Improved opportunities for risk diversification through international risk-sharing arrangements
- A more efficient global allocation of investment
- Greater discipline on domestic policymakers

Although, capital account liberalization is expected to offer economic benefits (allocating resources more efficiently, increasing opportunities to risk diversification and promoting financial development), opponents of capital account liberalization argue that liberalization in countries that lack well-developed financial sectors, good institutions and governance and sound macroeconomic policies may not generate efficiency or welfare benefits but instead will induce speculative short-term capital flows that may exacerbate the adverse effects of negative shocks on economic growth and increase the likelihood of financial crises. Some studies suggest that capital account should only be liberalized after the domestic financial sector had been reformed.

Financial sector development, in particular, is a key determinant of the extent of the growth and stability benefits financial globalization can bring. The more developed a country's financial sector, the greater the growth benefits of capital inflows and the lower the country's vulnerability to crises, through both direct and indirect channels.

Another benefit of greater financial sector development is that it has a positive effect on macroeconomic stability, which, in turn, has implications for the volume and composition of capital flows. In developing countries that lack deep financial sectors, sudden changes in the direction of capital flows tend to induce or exacerbate boom-bust cycles. Furthermore, inadequate or mismanaged domestic financial sector liberalization has resulted in many crises that may be associated with financial integration.

This study focuses on capital account liberalization policy in Egypt. In particular, it describes changes in capital account policy during the period 1980-2018, provides a conceptual frame work to interpret these changes and analyzes what the challenges are for the development of the Egyptian financial sector.

At the end of 1980s, the Egyptian economy was suffering from high inflation and large fiscal and current account deficits. The deterioration of the economic situation and the large donations and debt relief programs linked to Egypt's role in Gulf war set the stage for the launch of an ambitious stabilization programs that started in 1991/1992. The two pillars of the program were fiscal stabilization and a fixed exchange rate. The stabilization program was to be accompanied by structural reforms that included public sector reform, elimination of subsidies, privatization and liberalization of the financial market and trade and investment policies.

Since 1991 Egypt has undertaken economic and financial liberalization under an International Monetary Fund (IMF) led structural adjustment and economic reform program known as ESRAP. This study focuses on financial liberalization under this program, examining the structure of Egypt's banking sector, domestic credit and financial access.

Egypt's financial sector has witnessed liberalization largely under the country's economic reform and structural adjustment program (ERSAP) from 1991 onwards. Financial liberalization under this program was meant to eliminate repressive financial practices, deepen the banking and financial sector and promote economic growth.

In September 2004 the Government of Egypt launched a comprehensive reform program for its financial sector the Financial Sector Reform Program (FSRP). This program was planned to run from 2005 through 2008.

Egypt may be considered as an ideal case study to examine the relationship between financial sector development and capital account liberalization. The Egyptian economy came under the influence of socialism between 1959 and 1972 but has been moving towards capitalism since 1973. These changes have directly affected the structure and the policies of the financial sector in Egypt over the last three decades. The Egyptian financial sector over the period 1960- 90 was heavily repressed in the sense that the government intervened and distorted its market mechanisms. The government set ceilings on deposit and lending nominal interest rates, imposed a relatively high ratio of required reserves, determined the allocation of credit to specific projects and intervened in the portfolio composition of banks. In January 1991, Egypt started an economic reform program with financial liberalization policy.

Problem of the study: This study tried to answer some questions that came along with the analysis of this study include the following:

- Whether and under what conditions capital account policy promotes financial sector development in Egypt
- How strong is the link between capital account liberalization and financial sector development in Egypt

Aim of the study:

- Explain the concept of capital account liberalization
- Identify the interaction between the role of capital account liberalization and financial sector development
- Key policy implications can be drawn from this empirical investigation to reap the benefits of capital account liberalization on the financial sector in Egypt

- Identify the policy implications for decision makers in Egypt to prevent and/or reduce financial vulnerability associated with the wave of capital liberalization

Hypothesis of the study:

- Having a well-developed financial sector considered one of the important conditions to pursue sustaining capital account liberalization for the purpose of maximizing the benefits and minimize the risks of an open capital account
- Financial sector development helps in allocating savings to more productive investments

REVIEW OF LITERATURE

In the mid-1990s, mainstream economists commonly recommended capital account liberalization that is allowing a free flow of funds in and out of a country's economy- as an essential step in the process of economic development. A decade later, it appears that both the costs and benefits of capital account liberalization may have been misunderstood in the earlier debate. The major benefit of capital account liberalization that it would help low-income countries expand investment and thus generate high rates of economic growth.

The debate is refocusing on a different set of benefits, primarily the indirect benefits that accrue to a country's governance and institutions when it opens to cross-border capital flows. It is also looking at some other costs, primarily the real exchange rate overvaluation and loss of competitiveness that can occur when foreign capital inflows, rather than the more traditional risks of sudden stops and capital flow reversals, when foreign and domestic- investors exit out of the country.

Openness to capital flows can expose a country's financial sector to competition, spur improvements in domestic corporate governance as foreign investors demand the same standards locally that they are used to at home and impose discipline on macroeconomic policies and the government more generally. So even if foreign capital is not needed for financing, it may be that financial openness creates "collateral benefits" Kose, Prasad, Rogoff and Wei such as domestic financial sector development, which could enhance growth in total factor productivity[1].

For instance, international financial flows serve as an important catalyst for domestic financial market development, as reflected in both straightforward measures of the size of the banking sector and equity markets as well as broader concepts of financial market development, including supervision and regulation. Financial openness has induced a number of countries to adjust their corporate governance structures in response to foreign competition and demands from international investors.

It is worth noting that a number of contributions also found that freeing capital flows' movements helps developing the overall financial sector. In this regard, De Gregorio was among the first to highlight the importance of international financial integration in promoting domestic financial markets and economic growth, accordingly. Chinn and Ito empirically tested the relationship between capital controls and the development of the stock market activity using cross country regressions for a sample of 105 countries over the period 1970-1997. The results suggest that the link between financial openness and financial development is detectable only in an environment characterized by developed institutions and a legal framework.

Similarly, Chinn and Ito freeing capital accounts is likely to spur equity market development only when a threshold of institutional development is reached.

Klein and Olivei also show that to have a significant increase in financial deepening level in the aftermath of capital account liberalization, developing economies need a constellation of economic, legal and social institutions. Eichengreen, Gullapalli and Panizza have analyzed, the effect of capital account liberalization on industry value added growth after controlling for the presence of financial crises, the development of domestic financial markets and the strength of institutions. Their findings suggest that although financial openness has positive effects on the growth of financially dependent manufacturing firms, this is only in countries that succeeded to avoid the bad effect of financial crises and that also have strong institutions and well-developed financial systems, which are mainly high-income countries. In other words, in economies with weak accounting, rule of law and creditor rights, external financial reforms have not produced the expected beneficial effects.

Shaw emphasizes on financial deepening and financial liberalization, noting that "liberalization and deepening of finance contribute to the stability of growth in output and employment. He argues that financial deepening reduces the velocity of circulation, eases the strain on taxation, reduces dependency on foreign savings and obstructs capital flight. Such depth requires financial liberalization and the elimination of distortions in financial prices. Liberalization in financial markets, which implies higher real interest rates, would stop savers from owning inflation hedges or reduce current consumption as a substitute of financial assets. As a result, financial assets would grow relative to save. The extended financial sector would reduce the real costs to investors by reducing risk by diversifying, lowering information costs to both savers and investors and improving operational efficiency through specialization. It would also encourage the creation of innovative investment projects, as bank credit would be allocated to competing proposals.

Klein and Olivei worked on Capital Account Liberalization, Financial Depth and Economic Growth for 84 countries covering the period 1976-1995 using OLS regression analysis with growth income as the dependent variable and change in financial depth as independent variable. The result of the study showed a positive effect of capital account liberalization in middle income economies but no effect on rich and poor countries.

Mohamed and Mondher using cross-sectional and generalized method of moments (GMM) dynamic panel estimation techniques to estimate the effect of capital account liberalization on financial deepening 90 developed and developing countries over the period 1975-2009. The included variables were capital account openness and financial liberalization. The main results of the studied are the following: Developing countries financial integration is not found to lead to higher financial development unless a set of prerequisites are already in place.

Michael and Glovanni studied the open capital accounts on financial deepness and economic growth in a cross-section of countries over the period 1986 to 1995. Countries with open capital accounts over some or all of this period had a significantly greater increase in financial depth than countries with continuing capital account restrictions and they also enjoyed greater economic growth. The results, however, are largely driven by the developed countries in the sample.

Structure of the egyptian financial sector: Egypt had a well-developed financial sector since the 1st half of the 20th century. Following the nationalization of the 1960s, the banking system had again expanded significantly with the open-door policy since the mid-seventies. The liberalization policy that began in the 1980s, had important effects on the financial system, especially after the financial reform program of ERSAP.

Banks in Egypt are the dominant financial institutions, as they control most of the financial assets and flows. Figure 1 provides an overview of the Egyptian financial sector. The banking sector is supervised by the central bank of Egypt (CBE) and consists of commercial, investment and specialized banks. The other financial institutions are supervised by the Egyptian financial supervisory authority (EFSA). The non-bank institutions include stock exchange, insurance companies, leasing companies, factoring and mortgage finance.

Policies for Egyptian Financial sector development The following part discusses the current legislative framework for Egyptian financial institutions and market, as well as the reforms undertaken in recent years.

Egypt has a long history of government interventions in the economy that takes different forms, starting from setting ceilings on interest rates, to high reserve requirements and ownership of banks. These interventions distort both banking and non-banking sectors. On the banking side, the existence of heavy barriers to entry, the absence of enough exit mechanism, the existence of prudential regulation problems and the non-disclosure of information. Concerning capital markets, problems resulting with intervention include credibility problems, the expansion of public sector enterprises, the relative low cost of bank loans and non-disclosure of information. Moreover, legal infrastructure is the main obstacle to the exchange of credit information, as the existing banking and data protection laws did not allow lenders to disclose client information to the market.

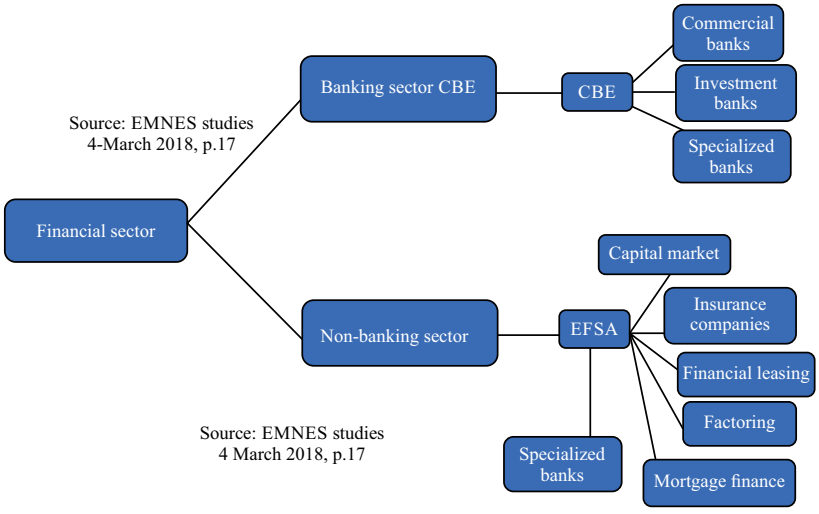

Fig. 1: Egyptian financial system and its composition

Since the conclusion of the stabilization program in 1996, the CBE was concerned with achieving multiple objectives simultaneously, which were conflicting in several instances. These objectives included attaining high economic growth while maintaining low inflation and preserving a stable exchange rate. Between 1996 and 2005, the CBE's operational target was excess reserves of banks and given the strong link between monetary aggregates and inflation, growth in M2 was the intermediate target. the CBE used various quantitative and price instruments at different points in time to achieve its multiple objectives, leading to a lack of consistency in monetary management. These instruments included reserve requirements, government securities, repo and reverse repo operations and the CBE discount rate.

The dominance of the state in the banking sector until recently tended to create rigidities in the interest rate structure. In the mid-1990s, public banks accounted for about two-thirds of the sector assets. In 2006, the Egyptian government privatized the smallest 4 public banks, with an approximate market share of 5%. Together with buyouts by the private sector in almost all private-public joint-venture banks over the past years, only 3 smaller specialized banks and 3 larger public banks remain. The third-largest public bank was expected to be privatized, which would bring the market share of public banks significantly below 50%. In addition, the exchange rate was the main nominal anchor and policies were prepared to maintain its stability vis-à-vis the U.S. dollar, which in turn supported price stability.

Development of the egyptian financial sector: The importance of financial institutions in an economy depends on a country's level of political freedom, the rule of law and property rights protection. Households are more likely to save more and free up resources for investment if banks are efficient, transparent and trustworthy. Financial institutions help pool and allocate risks and returns. Also, financial institutions help eliminate the agency problem by monitoring investors and ensuring that credit is used in productive activities rather than on private consumption.

Development of the financial system is a corner stone of economic development. The stage of development and the depth of the financial sector are key elements that differentiate developing and developed countries. The financial system is essential to an economy because it is responsible for resource allocation.

Well-working financial intermediaries may affect positively economic development through different channels: Reducing inflation and transactions, improving the allocation of resources (through fund pooling, risk diversification, liquidity management, screening and monitoring), increasing saving rates and promoting the development of markets and instruments that enable risk sharing and facilitate economic growth.

Financial development involves improvements in such functions provided by the financial systems as:

- Pooling of savings
- Allocating capital to productive investments
- Monitoring those investments
- Risk diversification
- Exchange of goods and services

In addition, financial development reduces informational asymmetries and financial constraints and promotes risk sharing, it can enhance the ability of financial systems to absorb shocks and reduce the amplification of cycles through the financial accelerator, lowering macroeconomic volatility and inequality.

In the last three decades, the Egyptian economy witnessed three distinct periods: A period of socialism (1959-1972/73), a period of the open door Inftah (1973-1980/81) and the economic reform period (1981-till now). This study will focus on the period 1980 -2018.

During the period under investigation, the economic performance of the Egyptian economy was largely affected by the government interventions. The huge intervention until 1990s resulted in lower saving rates leading to lower investment. Moreover, most of the investment was undertaken by an inefficient public sector.

Market inefficiencies were promoted through the 1980s by different restrictions. The financial sector suffered from segmentation, mandatory and subsidized credit allocation with negative real interest rates. The promotion of large scale public enterprises with the limits on export promotion weakened the private sector further. In 1982-3, the government implemented several policies to slow down the rate of growth of domestic credit and money supply. These policies included restrictions on lending by significantly raising the reserves ratio. The major burden of the credit ceiling was placed on the private sector, although credit growth to the public sector was reduced as well.

Banks in Egypt are the dominant financial institutions. They control most of the financial flows and possess most of the financial assets in Egypt. Egypt's banking sector evolved as the economy went through different revolutions and reforms. The changes affected bank ownership and operations. The Egyptian economy went through different periods of economic management. They include the period of British occupation, before the early 1950s, a period of

socialism from 1959 to 1972/73, a period known as the open door Inftah from 1973 to 1980/81 and the economic reform period from 1981 to today.

Reforms in the Egyptian financial sector focused first, on enhancing the attractiveness of the domestic currency assets through interest and credit liberalization. The second phase focused on increasing private involvement in commercial banking and securities to improve the competitiveness of the financial sector. These reforms led to the expansion of the financial asset intermediation.

The economic reform program adopted in 1990-91 included major banking reforms. Financial sector changes included the elimination of coercive measures, that led to liberalization of lending and deposit rates; the removal of ceilings on bank-lending to the private sector that resulted in a rise in lending to the private sector from an annual average 28% of GDP during 1975-91 to 42% of GDP during 1991-2002, a focus on developing indirect monetary instruments (such as the auctioning of treasury bills) and the enhancement of the attractiveness of holding domestic currency. In addition, the regulatory framework improved in terms of foreign exposure, capital adequacy, asset classification, auditing, banking liquidity and credit concentration. Moreover, the Egyptian government undertook a privatization program in the banking industry with the purpose of enhancing competition and reducing market concentration.

Capital market development is considered an important part of financial development, it also plays a major role in economic growth. Egypt's capital markets were revitalized following the 1991 national economic reform program, that resulted in a surge in market activities and increased demand for modern market policies, regulations and institutional support. The reforms were followed by the establishment of the Egypt capital markets development project (CMD) in the late 1990s. It aims to improve efficiency, transparency and stability, strengthen the institutional capabilities of both public and private capital market institutions and improve the regulatory environment. Overall, financial development has continued to improve in Egypt. The political and economic turmoil Egypt faced in recent years affected the overall economy and the performance of the financial sector.

Egyptian experience with financial reforms: The decade of the 1980s was one of external shocks -in the form of declining in oil prices, high interest rates and general economic decline in the world economy. For example, in 1981, Egypt's weighted average export price for crude petroleum decreased from $34 a barrel to $12 in May 1986. The Egyptian economy did not respond adequately to these shocks. The consequence was massive fiscal and current account deficits, which also paved the way for the accumulation of external debt. Between 1980/81 and 1990/91, the country's external debt increased from $22.1 billion to $31.1 billion. At the same time, budget deficit averaged 18% of GDP annually. The rate of inflation had risen to more than 20% and unemployment had risen to about 10% by 1990.

In response to this crisis, the Government of Egypt decided to work decisively. An agreement was concluded with the international monetary fund (IMF) in May 1991 and an economic reform and structural adjustment program (ERSAP) with the World Bank 1991/92. ERSAP was initiated in 1991 to rectify the imbalances between the demand and supply sides of the economy. The main symptoms of these imbalances are the chronic deficits in the balance of payments and the government budget and high inflation. The goals of ERSAP were: (a) Stabilization of the economy in order to restore macroeconomic balance and reduce inflation, (b) Structural adjustment to stimulate medium and long term growth and (c) Modification of social policies to minimize transitory effects of economic reform on the poor.

Financial reforms have been going on in Egypt since 1981 but more intensely since 1991, the period 1981-1991 was characterized by an attempt to create more financial intermediation. The critical underpinning of Egypt's efforts to liberalize financial markets beginning in 1991 is the major fiscal reform which has characterized the stabilization program.

Even so, during this period the state-owned banks that carried out some 80% of the financial activities dominated the financial sector in Egypt. The government set ceilings on deposit and lending nominal rates, imposed a relatively high ratio of required reserves, determined the allocation of credit to specific projects and intervened in the portfolio composition of banks. In 1991, however, Egypt proceeded on a comprehensive financial reform as well as structural adjustment programs.

An overall assessment of the Egyptian financial sector reform program: It would appear that cautious approach pursued by the Egyptian authorities, along with the enhancing of the institutional strength of the economy, could explain the experience (Table 1).

The financial sector, prior to 2004, was dominated by state-ownership and an absence of competition. The banking sector, the major financial intermediary, constituting over 95% of the financial system's assets, suffered from heavy government intervention, weak creditor rights. This resulted in relatively low and unproductive credit, negligible innovation and a large stock of non-performing loans (NPLs). A relatively small insurance, mutual fund and contractual savings

Table 1: Main achievements of financial sector reform program

Phase I (2004-2008)	Phase II (2009-2011)
Supporting of bank mergers to improve the banks' efficiency considerations and financial solvency resulting in decreasing the number of banks in Egypt	Implementing Basel II in Egyptian banks in 2012/2013 to improve the risk management process
Increasing the number of branches from 1,795-2,530 during the period (2004-2010)	Preparing a specialized team in the supervision and control sector to monitor the bank's commitment to Basel II
Setting of public commercial banks' financial restructuring process	Expanding the scope of government payment automation projects
Setting up of a plan to deal with non-performing debts	
Repayment of total non-performing debts of the public sector in 2010	

https://www.cbe.org.eg/en/BankingSupervision/Pages/ReformPhase2.aspx

sector, underdeveloped bond and almost non-existent mortgage markets, small trading in equities, weak corporate governance and poor financial infrastructure, characterized the nonbank sector in Egypt. The limited size of these non-bank intermediaries contributed to the absence of long-term savings and the overall limited access to finance. The financial institutional infrastructure and the legal and regulatory framework were inefficient.

During the last decade, Egypt implemented a comprehensive Financial Sector Reform Program (FSRP), launched in September 2004. The main objective of the FSRP was to enhance the soundness of the financial sector and foster the emergence of an efficient, private-led financial system that serves Egypt's development and growth objectives. The reform program included the NPL restructuring and privatization of banks with state participation, a new banking law and other regulatory reforms, the liberalization of the foreign exchange and money markets and ongoing efforts to strengthen the supervision of banks. This program contained important steps to help overcome the previous shortcomings in the banking sector and fulfill the prerequisites for inflation targeting.

Before this reform, the financial sector of Egypt suffered from public sector dominance where public banks did not adhere to international standards, financed state owned enterprises and accumulated non-performing loans. Moreover, private banks operated in a non-competitive environment that resulted in inefficient banking practices, a lack of suitable instruments and limited access to financial services. Non-banking institutions did not have a suitable regulatory environment.

Overall, the reform program produced positive results. For the first time in recent history, the banking sector became majority owned by the private sector and open to competition. The banking sector was consolidated and the number of banks was reduced from 57 to 39 banks. State-owned banks were subject to financial, operational and institutional restructuring leaving a stronger and more competitive sector. The central bank of Egypt (CBE) also worked on strengthening the corporate governance of the banking system and designing a Basel II framework customized to the Egyptian banking system. On the nonbank front, reforms entailed the restructuring of the insurance sector, including reducing public ownership, overhauling the legal and regulatory framework, establishing a new mortgage finance system and deepening and strengthening the capital markets. At the same time, the financial institutional infrastructure was improved significantly, evident in the creation of the first private credit bureau and the establishment of a safe, secure payments system, the reforms did not lead to improvements in financial intermediation and was accused of catering to large, well-established firms. Small and medium enterprise (SMEs) did not fully reap the benefits of these reforms.

MATERIALS AND METHODS

Data source and description: This study examines the dynamic effects of capital account liberalization on the development of the Egyptian financial sector during the period (1980-2018) consisting of yearly observations for each variable. The data is selected based on the literature review also the lack of consistent data on capital account liberalization for assessing the development of the Egyptian financial sector affects the selection of different variables. The data were collected from the World Development Indicators (WDI) and the international monetary fund (IMF). For more details on the measurement, data source and abbreviation (Table 2).

Model specification: For empirical investigation, the study uses those models as follow:

$$M2_t = \delta_{01}+\delta_1 INF_t+\delta_2 TR_t+\delta_3 CAL_{2t}+\varepsilon_{1t} \quad (1)$$

$$IR_t = \delta_{02}+\delta_1 INF_t+\delta_2 TR_t+\delta_3 CAL_{2t}+\varepsilon_{2t} \quad (2)$$

$$CPY_t = \delta_{03}+\delta_1 INF_t+\delta_2 TR_t+\delta_3 CAL_{2t}+\varepsilon_{3t} \quad (3)$$

$$MC_t = \delta_{04}+\delta_1 INF_t+\delta_2 TR_t+\delta_3 CAL_{2t}+\varepsilon_{4t} \quad (4)$$

Based on those equations, there are four dependent variables namely, Ratio of credit allocated to the private sector, Interest rate spread, Ratio of the Broad money to GDP and Ratio of market capitalization to GDP. INF refers to the inflation rate, TR stands for trade openness and CAL presents the capital account liberalization, are the intercepts and indicate the error terms of the four models, then represent the

Table 2: Descriptions of the variables

Variables	Symbols	Measurements	Data sources
Dependent variables			
Ratio of credit allocated to the private sector to GDP	CPY	GDP (%)	WBI
Interest rate spread	IR	Lending rate minus deposit rate (%)	WBI
Ratio of the Broad money to GDP	M2	GDP (%)	WBI
Ratio of stock market capitalization to GDP	MC	GDP (%)	WBI
Independent variables			
Inflation rate	INF	Consumer price index	WBI
Trade openness	TR	(Sum of exports and imports) GDP (%)	WBI
Capital account liberalization	CAL	De facto measure known as KAOPEN, this index includes four variables: Exchange rates, restrictions on current account transactions, capital account transactions and requirements to surrender export proceeds	IMF

coefficients with respect to relevant independent variables inflation rate, trade openness and the capital account liberalization.

Estimation strategy: The empirical analysis in this study utilizes yearly time series data due to its numerous advantages. This includes the ability to visually represent the data and gain more accurate insights into the trends and patterns observed over time. Time series analysis helps identify long-term patterns, assess trends, detect changes and make future value estimates, which is particularly useful in economic forecasting. Furthermore, it facilitates the identification and modeling of seasonal and cyclic patterns, as well as the detection and analysis of anomalies or outliers within the data, enabling the identification of unexpected deviations and irregularities.

To initiate the analysis, descriptive statistics and a correlation matrix were conducted to understand the series. Subsequently, unit root tests were performed to investigate the stationarity of the variables under study. Two widely recognized unit root tests, the Augmented Dickey and Fuller[2] and Phillips and Perron[3], were employed. The null hypothesis for these tests assumes that the variable has a unit root, while the alternative hypothesis suggests that it doesn't have a unit root.

Next, prior to estimating the model, an essential step involved conducting the ARDL bound co-integration test developed by Pesaran *et al*.[4]. The advantage of the ARDL approach is its ability to handle the uncertainty of whether the series in the model are purely I(0), purely I(1), or mutually co-integrated.

Furthermore, various diagnostic tests were employed to assess the model. These included the serial correlation LM test to verify the absence of serial correlation, the Breusch and Pagan[5] test to examine the presence of heteroscedasticity and the Jarque and Bera[6] test to assess the normal distribution of the error term. Additionally, for stability analysis, Brown *et al*.[7] recommended the use of cumulative sum of recursive residuals (CUSUM) and cumulative sum of square of recursive residuals (CUSUMSQ) plots. If these plots remain within the critical bounds of a 5% level of significance, the null hypothesis of coefficient stability in the regression model is upheld and cannot be rejected.

Unit root test (test for stationarity): The unit root test is used to examine the order of integration of the variables under study. It is acknowledged in the literature that the methods for locating the unit root are difficult. Therefore, the Augmented Dickey and Fuller[2] test is in use. To apply the ARDL methodology, we first perform the unit root test to establish whether they are stationary or not. Augmented Dicky and Fuller[2] and Phillips and Perron[3] which are considered as the most famous tests, which are the most common and highly efficient to determine the extent of the series' stationarity or not. This test is conducted with the following regression model estimation:

$$\Delta Y_t = \alpha + bt + \delta Y_{t-1} + \sum_{i-1}^{k} \Delta \delta_i Y_{t-1} + \zeta_t \quad (5)$$

Where, ΔY_t is the change between the value of Y at the time t and t-1, k is the number of lags in the model, is the constant and b is the coefficient of the trend. Consequently, stationarity is tested whether or not it is as follows: It is assumed that if the value of p-value is less than the value of (0.05) it is statistically significant and accordingly it rejects the null hypothesis that the unit root exists, meaning that the time series is stationary and if it is higher than the critical value It is not possible to reject the null hypothesis, that is, the non-stationary time series and then we test the first difference and if it is not stationary, we repeat the test for the difference of a higher degree and so on.

ARDL approach: The co-integration test using ARDL is done through the "Bound-Test" method developed by Pesaran *et al*.[4] which combined both auto-regression models and distributed lag models. In this model we find that the time series is a function? its autoregressive values and the current values of the explanatory variables and lags by one period or more.

We also find that using the ARDL cointegration model has several advantages over the traditional tests used:

- It can be applied regardless of whether the variables under study are integral of rank zero I (0) or integral of rank one integer I (1) or integral of different degrees, i.e., it can be applied when the order of integration is unknown or not uniform for all variables? The subject of the study but it must also be mentioned that it cannot be applied if there is one of the study variables integral from the second order I (2)
- It can be applied in the event that the sample under study is small in size and this does not affect the quality and efficiency of the results, unlike most other tests that require a large number of observations
- Its use helps to estimate the relationship in the long and short term together at the same time in one equation instead of two separate ones

The basic form of an ARDL regression model of order (p,q) can be expressed as follow:

$$\Delta Y_t = \mu + \delta_i Y_{t-i} + \delta_2 X_{t-i} + \sum_{i=1}^{p-1} \alpha_i \Delta Y_{t-i} + \sum_{i=1}^{q-1} \varnothing_i \Delta X_{t-i} + \varepsilon \quad (6)$$

The model is classified as autoregressive since the variable Y_t is explained by its own lagged values. Additionally, it incorporates a distributed lag component, represented by successive lags of the explanatory variable x. The estimated ARDL (p,q) model depends on the Bound co-integration test.

ARDL bound test for co-integration: It is a test that works to verify the existence of the long-term relationship or not, by using the (Wald Test) F test, which tests the hypothesis of non-cointegration between the variables against the existence of co-integration to reveal the equilibrium relationship between the variables in the long term. The common integration between the variables is tested through the following assumptions:

- **Null hypothesis:** Lack of co-integration
- **Alternative hypothesis:** the existence of co-integration

We find here the acceptance of the null hypothesis from its rejection depends on several things, which is the comparison of the value of F computed with the tabular values within the critical limits by Pesaran *et al*.[4], where the table consists of two limits: The value of the lower critical bound which assumes that the variables are complementary of degree I (0) and the value of the upper critical bound which assumes that the variables are complementary of degree I (1). If the calculated value of F is greater than UCB, then in this case the null hypothesis is rejected and the alternative hypothesis is accepted, meaning that there is a co-integration and then the long-term equation must be estimated. On the contrary, if the computed F is less than the LCB, then the null hypothesis is accepted, meaning that there is no co-integration, that is, there is no relationship in the long term. If the calculated value of F falls between UCB and LCB, then the result is inconclusive.

Diagnostics check: After estimating a model, it is crucial to conduct diagnostic tests to ensure the quality, validity and absence of standard problems in the analysis. This step aims to address issues such as inconsistent variance, serial correlation in the error term and departure from the assumption of normal distribution.

To verify the absence of these problems, several tests will be performed. First, the Breusch-Godfrey Serial Correlation test will be conducted to assess the presence of serial correlation in the error term. This test compares the computed F-value with the critical value at a significance level of 5%. The null hypothesis states no serial correlation, while the alternative hypothesis suggests the presence of serial correlation. If the computed F-value is greater than 5%, the null hypothesis is accepted, indicating no serial correlation. Second, the Heteroskedasticity Test (Breusch-Pagan-Godfrey) will be employed to examine the stability of variance in the error term. This test compares the computed F-value with the critical value at a significance level of 5%. The null hypothesis assumes no lack of variance stability (homoscedasticity), while the alternative hypothesis suggests heteroscedasticity. If the computed F-value exceeds the critical value, the null hypothesis is accepted, indicating no variance instability.

Third, the Normality Test (Jarque-Bera) will be utilized to assess the suitability of the error term's distribution to the normal distribution. The probability value of the test is compared to the significance level of 5%. The null hypothesis assumes adherence to the normal distribution, while the alternative hypothesis suggests a departure from normal distribution. If the probability value is greater than 5%, the null hypothesis is accepted, indicating no issue with the normal distribution assumption.

Fourth, the structural stability tests involve testing for any structural changes and stability in the parameters of the short and long-term equations. Two tests are commonly used: The cumulative sum of recursive residual (CUSUM) test and the cumulative sum of square recursive residual (CUSUMSQ) test. If the plots of both CUSUM and CUSUMSQ fall within the critical limits at a significance level of 5%, it indicates that the coefficients remain stable over time.

Conversely, if the plots deviate outside or intersect with the critical limits, it suggests instability in the coefficients.

RESULTS AND DISCUSSION:

Estimation and results: First, the analysis begins by summarizing the descriptive statistics of CPY, IR, M2, MC, CAL, INF and TR in Table 3 and the correlation matrix between the variables in Table 4. The results indicate that the dependent variable with the high mean values (83.60256) is M2. Looking at the minimum and maximum values of the dependent and the independent variables, the CAL has the lowest value among the variables with -1.923948 while the MC has the largest value with 267995.0. By looking to the standard deviation, it is clear that all the variables have a lowest value except the MC. The lowest values of the standard deviations across the variables under study indicate the robustness and stability of the model and eliminate the problem of inconsistency and variability in the data results. Table 4 shows the correlation coefficients between the variables under study, they reveal that all the variables have different correlation direction and values with one another.

First, Table 5 represents the results of the unit root tests for all the variables in the study, which illustrates that the variables are stationary at level and after taking the first difference so some of them are integrated at order zero and order one, which suggests the possibility of using the ARDL estimation technique.

Table 6 reports the result of the ARDL bounds test for checking the presence of co-integration between the variables of the study. The maximum lag of (5) was used in each model as represented by the Akaike Information Criterion (AIC) and the Schwartz's Bayesian Criterion (SBC). The critical values are given under the number of variables, k = 3. All the F-statistic of the four models are greater than the corresponding lower I (0) and upper I (1) critical values, which makes the model significant at 1 percent level, thus, confirms the presence of the long run association among the variables.

Table 3: Descriptive statistics of the variables

Variables	Observation	Mean	Standard deviation	Minimum	Maximum
CPY	39	34.274870	11.398890	13.930000	54.900000
IR	39	5.191410	1.157375	3.650000	8.320000
M2/GDP	39	83.602560	7.764612	66.400000	98.100000
MC/GDP	39	21.623240	23.437170	3.743925	88.733180
CAL	39	-0.127518	1.733468	-1.923948	2.321955
INF	39	12.033850	6.457876	2.260000	29.500000
TR	39	50.150770	11.268220	30.240000	74.450000

Table 4: Correlation matrix

	CPY	IR	M2	MC	INF	TR	CAL
CPY	1						
IR	-0.217	1					
M2/GDP	0.401	0.515	1				
MC/GDP	0.663	0.123	0.400	1			
INF	-0.654	0.392	0.100	0.401	1		
TR	-0.155	-0.418	-0.181	-0.224	-0.219	1	
CAL	-0.848	0.155	0.239	0.837	0.593	-0.471	1

Table 5: Results of unit ROOT test

		Level (0)		First difference (1)	
Variables	Test	Constant	Constant and trend	Constant	Constant and trend
CPY	ADF	-1.901240	-0.716723	-5.008123***	-5.039121***
IR	ADF	-4.101837***	-4.035284**	-3.625241**	-2.233261
M2/GDP	ADF	-3.542873**	-3.512504	-5.908265***	-2.688890
MC/GDP	ADF	-2.404284	-2.609566	-2.931622*	-2.950267
INF	ADF	-3.241146**	-3.160677	-9.494322***	-9.379143***
TR	ADF	-4.231933***	-4.410123***	-4.707317***	-4.762525
CAL	ADF	-1.268113	-0.882092	-5.181800***	-5.231242**

***, **,*Denotes 1, 5 and 10% significant level

Table 6 Results of bounds test for co-integration:

Model (1)		Model (2)		Model (3)		Model (4)	
F-Statistics	9.07***	F-Statistics	10.4***	F-Statistics	4.67***	F-Statistics	7.09***
Maximum lag	5	Maximum lag	5	Maximum lag	5	Maximum lag	5
Lag order	(5,5,5,5)	Lag order	(1,0,6,6)	Lag Order	(1,0,6,6)	Lag order	(5,5,5,5)
K	3	K	3	K	3	K	3
Critical value	I(0) I(1)	Critical value	I(0) I(1)	Critical value	I(0) I(1)	Critical value	I(0) I(1)
1%	2.37 3.2	1%	2.37 3.2	1%	2.37 3.2	1%	2.37 3.2
2%	2.79 3.67	2%	2.79 3.67	2%	2.79 3.67	2%	2.79 3.67
5%	3.15 4.08	5%	3.15 4.08	5%	3.15 4.08	5%	3.15 4.08
10%	3.65 4.66	10%	3.65 4.66	10%	3.65 4.66	10%	3.65 4.66

1: The critical values are based on Narayan, case III: Unrestricted intercept and no trend, 2: k is a number of variables, 3: ***,**,* denotes 1, 5 and 10% significant level and 4: k = 3 for the four models.

Table 7: Short run estimation restricted error correction model

Model 1		Model 2		Model 3		Model 4	
Variables	Coefficient	Variables	Coefficient	Variables	Coefficient	Variables	Coefficient
ΔM2(-1)	0.152894	IR(-1)	0.320867	CPY(-1)	0.397555**	MC (-1)	0.91072***
ΔM2(-2)	-0.500710	IR(-2)	0.571641**	TR	0.017139	MC (-2)	-0.275965
ΔM2(-3)	1.818655***	IR(-3)	0.259766*	INF	-0.149221	MC(-3)	-0.056196
ΔM2(-4)	1.65933***	TR	0.032509	INF(-1)	-0.36517**	MC(-4)	0.6409***
ΔM2(-5)	0.247898	TR(-1)	0.025392	INF(-2)	-0.26995**	MC(-5)	0.56930***
ΔTR	0.567349**	TR(-2)	0.004558	INF(-3)	-0.173747	TR	0.311117
ΔTR(-1)	0.74822***	TR(-3)	-0.013044	INF(-4)	-0.200034	TR(-1)	-0.004653
ΔTR(-2)	0.516139***	TR(-4)	-0.004259	INF(-5)	-0.3730***	TR(-2)	0.304911
ΔTR(-3)	-0.040251	TR(-5)	0.05861***	INF(-6)	-0.167191	INF	-0.067340
ΔTR(-4)	0.442454**	INF	0.021552	CAL	0.649422	INF(-1)	0.076705
ΔTR(-5)	0.543624**	INF(-1)	0.023929	CAL(-1)	-0.515613	INF(-2)	0.163249
ΔINF	-0.203793	INF(-2)	0.014914	CAL(-2)	0.705187	INF(-3)	-0.066782
ΔINF(-1)	0.306060	INF(-3)	0.029744	CAL(-3)	-1.215900	INF(-4)	-0.47400**
ΔINF(-2)	-0.55861***	CAL	0.412692**	CAL(-4)	0.578127	INF(-5)	-0.55422**
ΔINF(-3)	0.226646	CAL(-1)	0.192354	CAL(-5)	-0.051593	CAL	3.16258**
ΔINF(-4)	-1.27421***	CAL(-2)	0.158778	CAL(-6)	-2.4241***		
ΔINF(-5)	-0.433784*	CAL(-3)	-0.219092				
ΔCAL	6.97580***	CAL(-4)	-0.048052				
ΔCAL(-1)	3.248706*	CAL(-5)	0.208891				
ΔCAL(-2)	-1.144848	CAL(-3)	0.013927	CAL(-4)	-0.191236	CAL(-5)	-1.091626
C	93.6836***	C	5.164678***	C	40.0247***	C	-6.933025
R-Sq	0.97	R-Sq	0.96	R-Sq	0.98	R-Sq	0.97
Adj.R-Sq	0.90	Adj.R-Sq	0.91	Adj.R-Sq	0.97	Adj.R-Sq	0.95

***,** and *Denotes 1, 5 and 10% significant level

Table 8: Long-run estimation

Variables	Model (1)	Model (2)	Model (3)	Model (4)
ECT	-0.901324*	-0.991009***	-0.602445***	-0.493068
TR	0.206086**	0.013582*	0.028449	1.239942***
INF	-2.060066**	-0.090957***	-2.819180***	-1.870733*
CAL	6.528703*	0.120901*	3.775521***	6.414100*
C	99.60008	5.211537***	66.43721***	-14.06099

***,** and *Denotes 1, 5 and 10% significant level

Table 9: Diagnostic Check

Models	LM serial corrlation test	Jarque-bera test	Breusch pagan godfrey test
1	1.135576	1.321676	0.362116
	(0.4462)	(0.5164)	(0.9787)
2	0.733293	1.030031	1.426375
	(0.6166)	(0.5974)	(0.2518)
3	3.711786	10.65061	1.545479
	(0.3311)	(0.4008)	(0.1966)
4	1.748189	2.298322	0.435872
	(0.1930)	(0.3169)	(0.9449)

Table 7 represents the results of the short-run estimation. For the four models, it is clear that all the variables have a significant positive impact on the different dependent variables at different lags, except the INF which have a significant negative impact on all of them. While, the results of models 3 and 4 also show that the TR has an insignificant impact on both CPY and MC. In addition, the R-squared values show that almost 97, 96, 98 and 97% of the independent variables are able to explain the variation of the four different dependent variables, respectively.

Table 8 presents the results of the long-run estimation. The outcomes show that all the independent variables have a significant positive impact at different level of significance, except the INF which has a negative impact on the four dependent variables. For the CAL, the result is similar to Trabelsi and Cherif, who found that in order for capital account liberalization to be successful in developing nations, the institutional environment and private sector must be developed as prerequisites. Next, the outcomes of inflation are confirmed with the study of Batayneh *et al*.[8] who show that there is a statistically significant long and short-run negative effect of inflation on financial sector development. While, the TR also has no impact on the CPY. These results come in line with the findings of Rajan and Zingales[1] who illustrate that those findings can be acceptable especially in developing economies where trade openness is unlikely to deliver financial sector development unless financial openness is achieved.

The negative and significant value of the error correction term confirmed the estimations of long run elasticity (ECT).

The results from Table 9 validate that all the models don't suffer from any diagnostic problem and this indicates that the long-term estimation of this model is reliable. The models represent no heteroscedasticity effects and no evidence of serial correlation in the residual terms. Also, the Jarque-Bera normality test suggests that the residual terms are normally distributed and this model is correctly specified. Furthermore, the results of the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of square of recursive residuals (CUSUMSQ) based on Fig. 2(a-d) showing that all the models are stable.

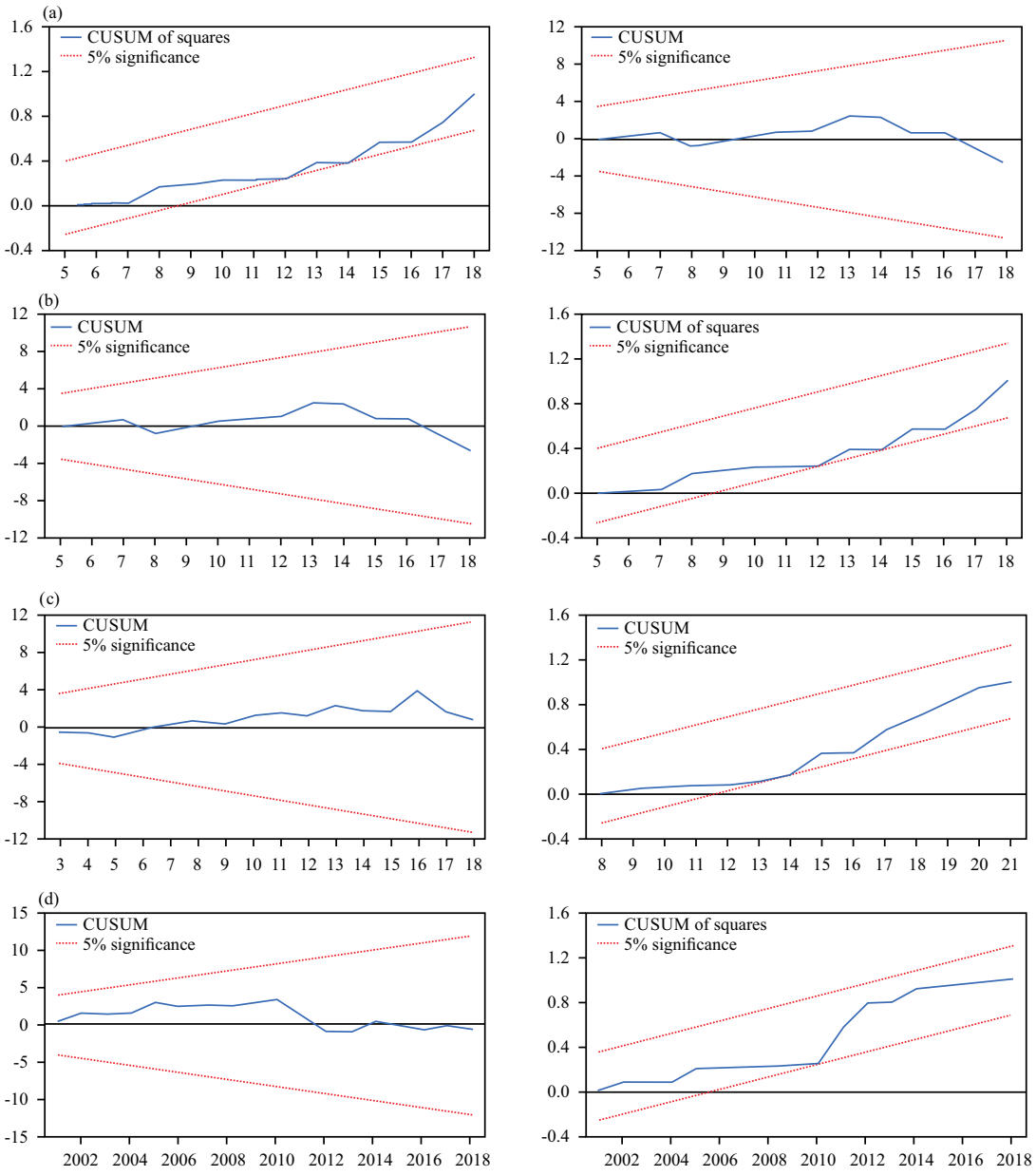

Fig. 2(a-d): Model 1, (b) Model 2, (c) Model 3 and (d) Model 4

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