# THE MOROCCAN MONETARY AND FINANCIAL STRUCTURE REFORMS AND THE NEW ECONOMIC AGENT BEHAVIOUR

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***Abstract***
In this paper, we examine the main measures taken by Morocco within the framework of the reform of monetary and financial structures. Also, we the impact of these measures on the financial wealth structure of householders and companies. So, our aim is to encircle the new behaviour concerning wealth holder's investment. In this contribution, we show that the new behaviour of non-financial agents (NFA) portfolio management is made possible by financial innovations and new products of investment offered by all financial intermediaries. So, the importance will be put, on the one hand, on the financial wealth which can be by NFA and managed under portfolio forms. On the other hand, we try to show the role of monetary assets among all financial assets, through the empirical study which concerns the stability demand for money function over the period 1980-2002 (the quarterly data). This study concerns the narrow monetary aggregate (M1). Obtained results indicate a cointegration relationship between M1 aggregate in real terms, the real GDP, the short-term interest rate and the consumer price index. In spite of new financial instruments, these results conclude favourably to the stability of NFA behavior vis-à-vis M1's demand.

*Keywords:* Monetary and Financial Structures; Reform; Behavior of the NFA; Wealth; Investment; Portfolio Management; Monetary Assets; Financial Assets; NFA.
*JEL Classification*: E41, E42, C22, C51

## 1. Introduction

It is collectively allowed that financial systems are not motionless; they evolve and are transformed in the time under the influence of institutional modifications[1], like as regulatory changes and financial innovations[2]. These ones can occur in terms of services (introduction of liquidity management technologies) or in terms of products (appearance of new financial instruments).

Following the example of several OECD countries, where the process of reorganization of the financial structure was begun in the 1960s, intensified and generalized during the 1970s and 1980s, Morocco undertook, the beginning of the 1980s, a vast process of modernization of its economic system in order to increase its efficiency and to improve its nationally and internationally attractiveness. In this way, Morocco has been worked, under the support of the World Bank and IMF institutions

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[1] These modifications allow to the companies and householders to get themselves new financial instruments of payments and investments.

[2] As developed countries, the financial innovation in Morocco, which developed in the context of financial liberalization, seems to be a sort of retort against the increasing of interest rates practised within the framework of monetary policy. This one was adopted since the implementation of structural adjustment program at the beginning of the 1983s.

to reorganize its monetary and financial system, through large reforms covering the banking sector and capital markets[1]. These reforms, which were influenced by the monetary and financial households' and companies' behaviors, were accompanied by an outfit of new financial products. The properties of these products could notably contribute to change the economic agents' behavior vis-à-vis the money, as shown by developed countries experiences during the 1980s and the 1990s. The aforementioned experiences teach us that when monetary authorities begin to control monetary aggregates in order to fight inflation, the financial innovations makes so difficult to know the monetary aggregates interpretation.

Until the end of the 1980s, the Moroccan economy can be, at once, qualified as administered debt economy which it was financed by banking sector. This one was placed under the government control. Interest rates were, at all, administered and the role of capital markets was marginal. Because the limits of this financing mode to allow and allocate efficiently the resources, a new financing system, centred on the market mechanisms (market-driven system) was set up gradually from the beginning of the 1980s. Our objective in this paper will consist at first to examine main measures taken by Moroccan monetary authorities within the framework of the monetary and financial reforms in order to estimate secondly the impact of these measures on the financial wealth structure of the non-financial economic agents. Our attention will aim finally to analyze the agents' behaviour empirically vis-à-vis the money since the 1980s.

## 2. The reform of monetary and financial structures

Measures were begun by Moroccan monetary authorities, in 1983 carrying on the monetary and financial domains had for a central objective to install a financial institution based on the liberalized structures system. In other words, the question is to make a successful financial transition and assure a passage from the system based both on the monetary control, the administration of interest rates, the quantitative credit rationing and the required reserves policy, to the system based mainly on the Open Market's operations: this shows, in fact, the passage from debt economy to a capital driven-market economy. So, two big phases were characterized the evolution of Moroccan monetary system since 1980:

- The first, which covers the period 1980-1990, was marked by a quantitative and administered policy, like the administration of interest rates, credit regulations and selectivity of credits, regulatory reserves and rediscount policy under the Bank Al-Maghrib Authority. This policy had an objective to incentive the competition between the banking and financial sectors in order to push private companies to choose the formal financial system for its own financing;
- The second, relative to the period between the 1991s and today: it was characterized by a policy which privileges the market mechanisms: the credit deregulation and liberalization of interest rates were being the main taken measures. The financial sector, in Morocco, knew a period of financial liberalization marked by two types of reforms. The first reform, launched in 1991, aimed essentially the banking sector

[1] See the World Bank Confidential Report on Morocco (2000), pp. 6-13.

progression. The second, begun in the mid-1990, was mainly concern the capital markets development.

In this study, we deal with the reform issue, in two points: the first is dedicated to the study of reforms covering the banking sector and the second deal with the examination of measures concerning the capital markets.

*2.1. Reform of the banking sector*

Among the measures touching the banking sector, two main reforms hold our attention: the credit deregulation phenomenon and the liberalization of interest rates.[1]

*The giving up of credit restriction:* The credit deregulation was introduced in January 1st, 1991. The main objective of this measure was "to endow the monetary and financial sector a lot of measures allowing it to contribute to the growth, and to assure to the economic operators financial services which they need with lower market cost".[2] Paradoxically, it is important to note that the levying of credit restriction was not followed by a monetary policy changes; monetary authorities continued to maintain a basic determination of the monetary objective[3] in relationship with GDP, inflation and balance of payments evolutions.[4] Indeed, the main rule of monetary control remains the fixation progress of monetary aggregates. This idea proves that monetary policy in Morocco is monetarist. The policy of monetary control centred on the standards of monetary aggregates growth can nevertheless reach their objectives only if the money demand is stable according to the monetarist creed.

*The liberalization of interest rates:* The liberalization of interest rates in Morocco was established progressively and occurred in two phases: the first phase attempted to liberalize the creditor interest rates (begun in 1985 and finished in 1990) and the second phase attempted to liberalize the debtor interest rates (1990-1992). Debtor rates, however, remained subdued until the end of January, 1996, with an upper limit fixed by monetary authorities. This type of rate is based on the monetary market conditions imposed to avoid the rates fit which the levying credit restriction (occurred in January, 1991) have been provoked. The liberalization of debtor rates was effective only after February, 1996[5].

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[1] It is also necessary to underline a large legislative revision of banking activity which the first part was adopted in the 1993s. The legislative revision was begun with a new banking law, with a progressive abolition of the compulsory conditions of investment (i.e., the Government Securities Floor) and with an intensification of the prudent banking rules by settling comfortably on the international standards control.

[2] It's the declaration of Bank Al-Maghrib governor during the assignment of the Credit and Financial Market Committee, in December 10, 1990 (see, Berrada M.A., 1993, p. 27).

[3] The monetary aggregate progression is the intermediary objective assigned to the monetary policy.

[4] The banks auto-control joins this logic. The increase of reserve requirements which the commercial banks should be satisfied and the rising of the Bank Al-Maghrib refinancing rates are considered as a railing to persuade the commercial banks to assume collectively their responsibility in the skid case.

[5] See, El M'kaddem A. (2002), p. 107.

*2.2. The capital markets reform*

Simultaneously to the liberalization process of the banking activity, the monetary authorities were decided, since the beginning of 1984s, to develop and to dynamize the capital markets by introducing a several reforms which ended with monetary market emergence and institutional revision of financial market[1]. The main objective of these reforms was to set up a vast capital market which contains several compartments (markets) and allows to all participants to choose for their investment the short and long securities. So, the final objective was to make the market more attractive with efficient mobilization of savings and reach the optimal solution of resources allocation. In which case, two series of measures deserve some particular development: the development of monetary market and the modernization of financial market.

*Development of monetary market:* When the interest rate of monetary market becomes an official market rate, the development of this market was being necessary. And it becomes necessary in order to realize a better financial resource allocation. So, initially reserved to the commercial banks (inter-bank market), the monetary market was opened gradually to other financial institutions (1988), and insurance companies, then to public and private companies (1993), and finally, in 1995, to the physical persons and to the non-resident agents. At the same time, after the commercial papers introduction, in 1986, which by the non-financial companies and, treasury bills which with auction[2] by the same agents, in 1988, the extension of the monetary market continued in 1996 by the creation of a secondary market of treasury bills in order to increase the attraction of issues by auction on the primary market and to develop the liquidity of public sector bonds. In this context, Bank Al-Maghrib was not only targeted to develop the monetary market and to regulate it in connection with the monetary stability objective, but also to drive its monetary policy efficient to realize some economical objectives. The new monetary policy is based on the offer and demand liquidity adjustment which is given by interest rates variations[3]. Indeed, in order to implement and to lead the monetary policy, Bank Al-Maghrib manages its interventions in order to influence the structure of interest rates. It can, so, mop or inject the liquidity in the economy by the Open Market's operations. These operations are realized on the inter-bank market. That is the reason why interest rates applied to the central bank operations are become as the official rates vis-à-vis the other markets. Indeed, the key or official interest rates are determined by the tendered invitation in 7 days which made both by central bank (Bank Al-Maghrib) and pensions on 5 days at the request of commercial banks. These two rates fix the band which the monetary market[4] interest rate should be fluctuate as far as debtor rates are calculated by basing on the last one raised by three points. Parallel to the monetary market extension and the reorganization intervention of the Central Bank on this market in 1995, the operators find there the new financial products (Commercial Papers, Marketable Treasury Bonds, Certificate of Deposit, Warrants, Bonds with Warrants and Bonds with Equity

[1] The Bank Al-Maghrib Report, 2002, No. 94, p. 11.

[2] In fact, the Treasury had access to the financing circuits of monetary market from 1983, by emitting in a permanent way the checks at one month. See, Berrada M.A. (1993), pp. 40-41.

[3] See, Abouch M. (1995), p. 101.

[4] For more details, see the Bank Al-Maghrib's End-of-Term Report (2001), op. cit. pp. 8-10.

Warrants of the Financial Institutions), responding to the agent needs and the best liquidity investments.

*The Financial Market Modernization:* In the framework of promotion and mobilization saving policy, the financial market was renewed and revitalized in 1993. It has been done around the institution of a new stock-exchange structure, through the Casablanca stock exchange[1] modernization and the brokerage firms'[2] institution. Following the case of the advanced financial markets, rules are applying to the management company's compliance verifications of brokerage firms' transactions and to supervision of persons acting on behalf of brokerage firms. The supervision of Casablanca stock exchange activities are by the Ethical Council of securities (CDVM) and the Management Company of Casablanca Stock Exchange.

In order to align on the international financial markets standards and after the creation of Central Depository[3] (Maroclear) in 1997, the Casablanca Stock Exchange adopted the electronic quotation system in 1998. This system, based on the centralization of orders, replaces the former auction system[4]. Following the case of the majority of world markets, which the quotation system based on the order-driven market, two techniques of trading organization are possible: trading securities by call auction and by computerized trading system. Further to the problems linked to the call auction system (lack of order book making, important gap between the date of dissemination of information and the date of its reception and its impact on the opportunity which the market offers, etc.), the system of electronic quotation was voluntarily adopted in the Casablanca stock exchange since June, 1998. This system, based on the centralization of orders, replaces the former auction system of quotation. The financial market was widened in 1999 by the institution of securitization regime of mortgage loans registered in the balance of credit institutions. This regime aimed essentially to mobilize new resources for the financing of the real estate. Always in the concern of market dynamism, the stock exchange was endowed in 2000, with a third market, called the new market. This market is conserved to the young and innovative firms. Considering these financial reforms, and in order to explain the recent behaviour of wealth holders, it is interesting to analyze the financial wealth structure of economic agents.

[1] It is henceforth a corporation, which the name is Management Company. It is constituted under the private law. This company is loaded mainly with the regulation and with the stock market development.

[2] Before the reform, the execution of clientele orders was assured by intermediaries able to go beyond this simple deals execution. However, under the reform, these intermediaries were replaced by broking firms. These last ones, which are fifteen now, have the monopoly of negotiation and assure the portfolios management in the framework of contracts animation, investment and guard shares.

[3] This process aimed to assure the securities conservation registered in the accounts and facilitate their circulation in favor to the affiliated members.

[4] For more information about the Moroccan quotation systems and the main rules of their functioning, see, El Bouhadi A. (2002), pp. 31-41.

## 3. The financial wealth structure of the economic agents

The economic agents have the possibility to distribute their patrimony among the very wide types of assets. In other words, they have the possibility to arbitrate between currency, real and financial assets according to the risk and return considerations; and due to this arbitrage that they define "the real, financial and monetary structure of their patrimony". In the following section, we shall, particularly, emphasize on the importance of financial assets. Indeed, we deal with, in the first paragraph, the current forms of financial assets and, in the second paragraph, the new investment behaviour of the non-financial agents (ANF).

### *3.1. The current forms of financial assets*

The Moroccan economic agents have a very wide range of financial products to place their financial wealth. One attended, in particular, a fast development of investment representing a big level of liquidity and a sure return. So, we can say that the border between monetary assets and financial assets tends to become unstable and vaguer. Our attention, indeed, will be carrying to present two types of assets: those which are not marketable, (i.e., those are refundable in their nominal value by the insuring establishments), and those which are marketable at the capital markets.

*The none marketable liquid assets:* This first category of assets includes claims or debts at sight or in the short term issued by financial or credit institutions and the government (Trésor). These debts possess two big forms: savings account and term deposits and non-marketable treasury bills. Among saving accounts and deposit accounts, we distinguish savings book and all sort of deposit accounts. The saving book is paid with official interest rates. It is formed by the deposit accounts administered by banks and those which constituted by the National Saving Banks. However, the deposit accounts are stopped in the banks and Treasury (Trésor) until a fixed term, but their holders have the possibility to obtain withdrawal capital before maturity date but with interest paid reduction. The non-marketable treasury bills issued by commercial banks and Treasury (Trésor) make possible its repayment, with a fixed scale, before the due date, at the request of their subscribers. There are also a short term notes issued by the banking system.

*The marketable liquid assets:* This second category of assets includes securities with short-term and medium-term marketable in financial markets. These assets can be held by all economic agents, both financial and not-financial units. One distinguishes from it two categories: undertaking for collective investment in transferable securities (OPCVM[1]) and the titres de créance négociables. (TCN). The undertaking for collective investment in transferable securities (OPCVM) is a portfolio managed in favour to the savers. The main peculiarity of the OPCVM managers is to buy compulsorily the securities every time which the investors wish to possess the parts of these OPCVM.[2] There are two OPCVM's types: unit trust or open ended investment

[1] Organisme de Placement Collectif en Valeurs mobilières.
[2] See Tazi K. (1997), p. 184.

company (SICAV[1]) and mutual investment fund (FCP[2]). As it was clarified by Plihon (2000)[3], these funds present three advantages: first of all, the portfolio is managed collectively by professional specialists. Secondly, they give an important portfolio diversification which assures the distribution of risks and the repayment (refunding) of securities on the basis of their net asset value[4]. Thirdly, this portfolio insures a high level of the liquidity on the market. Despite advantages which they present, portfolios managed by the OPCVM[5] achieved a total outstanding which reached 5 billions dirhams in the 2001s. The expansion of the collective saving management covers a divergent evolution according to the OPCVM's categories. Indeed, the part of the portfolio administered and diversified by the OPCVM stocks[6], and held by the economic agents, has known a considerable regression, passing from 90,6 % in the 1996s to 33,9 % in the 2001s, whereas the proportion of the OPCVM bounds and monetary grew and passed from 9,4 % to 66,1 %.[7] This divergent evolution can be mainly attributed to two factors:

- The obstinacy of downward trend of stock-exchange prices[8] which echoed on indexes value measuring the financial results of these mutual funds (OPCVM) ;
- The agents' preference for the financial instruments with weak risk, less capital loss and bringing back a sure return. This preference characterizes the undertaking for collective investment in transferable securities based on the bound portfolio.

On the other hand, the marketable debt[9] can be regrouped in the four categories:

- Certificates of deposit, which the first issues were made during the 1996s, are issued by banks. The duration of these certificates can take the interval going from 10 days to 7 years. It represent deposit accounts which the early refund is not possible, safe the case where the Bank Al-Maghrib's exceptional license is granted (i.e., in the special case where the major financial difficulties are occurred). This exceptional case is given under the agreement concluded between Bank Al-Maghrib and commercial banks;
- The marketable Treasury Bonds, which existed since the 1989s, are issued in the monetary market by Treasury, by auction. The terms of these bonds are 13, 26 and 52 weeks for the short-term bonds, 2 and 5 years for the medium-term bonds and 10, 15 and 20 years (since September, the 2000s) for the long-term bonds. Whatever their investment duration, these bonds should be have an amount, fixed by statutory way. This amount was gradually lowered from five million dirhams to hundred thousand dirhams. This current amount is operated since May, the 2001s.[10] These bonds are

[1] Société d'Investissement à Capital Variable.
[2] Fond Commun de Placement.
[3] See, Plihon D. (2000), p. 32.
[4] Mean value of purchase and sale on one hand of OPCVM, equals on the whole of the asset divided the number of portfolio parts.
[5] The activity of the OPCVM began in 1996. From 5 to 1995, these funds are crossed. At 2001, their number 154.
[6] Less or more risky.
[7] The Bank Al-Maghrib Annual Reports.
[8] This explains that the supply in the market at the beginning of 1998 is limited.
[9] The marketable shares allow their trading on the secondary market which is opened to the economic agents, residents or not residents.
[10] For more details, see Bank Al-Maghrib's Quarterly Bulletin (2001), No. 89, pp. 12 and 16.

marketable by mutual agreement under the name of establishments allowed to present their submissions in the market;
- The bonds of financial institutions and companies, which the first issues were made during 1996, are issued by financing companies under the maturity date which going from 2 and 7 years. Issuing companies have to respect a maximum prudent relationship between the outstanding of issued bonds and their uses like as a credit amounts, fixed at 40 % by the ministerial order of October 9, the 1995s.[1]
- The commercial papers (billets de trésorerie) created in December, the 1986s, issued by companies which have temporary needs of capital.[2] The maturities of these commercial papers are included between 10 days and one year. The issuers of these commercial papers should be having a stockholders' equity with an amount equal, at least, to 5 million dirhams and having, at least, three guaranteed balance sheets.

*3.2. The NFA new behaviour investment*

As developed countries case, the Moroccan ANF new behaviour concerning the portfolio management is made possible due to the financial innovations and new financial products offered by all financial intermediaries. However, this new behaviour can be encircled only through the study of their financial wealth evolution. But, before dealing with this point, it is important to remind the reform of monetary statistics begun by Moroccan Monetary Authorities in 1997.

*The monetary aggregates redefining:* Monetary aggregates define the statistical indicators made by the monetary authorities and supposed to apprehend the spending capacity of the economic agents. These aggregates give to monetary authorities the indispensable instruments in order to implement and to conduct the monetary policy. The aggregates definition assumes a certain standard nomenclature and classifies the various financial assets owned by the NFA. Indeed, it is clear to note that financial markets development and liberalization process led to ease the differences between the monetary assets and the new financial assets.

The processes of financial innovation and deregulation begun effectively at the beginning of 1990's and the banking sector revision in 1993. These new facts brought Moroccan Monetary Authorities to be adopted a new standard nomenclature in order to reorganize the monetary market structure and to redefine the contents of monetary statistics. According to the former nomenclature, the monetary aggregates can be classified in two big constituents: the strict money form (M1) and the near-money (quasi-money). So, M2 aggregate (called also near-money) regroups, besides the strict money (M1), all term deposits, savings book (comptes sur carnet) and bonds with fixed term. On the other hand, according to the new aggregates naming, M2 aggregate contains henceforth only M1 (i.e. the narrow money) and the investments at sight and no transferable by checks (which regroups all the savings book accounts). In addition, the forward investments (the all term deposits), are classified in the new aggregate M3 under the frozen or escrow accounts, the bonds with fixed term and the marketable certificates of deposit (certificats de dépôt). The dssociation between savings book (comptes sur carnet) and term deposit accounts (les comptes à terme) is evident.

[1] See Bank Al-Maghrib's Quarterly Bulletin (2001), No. 89, p. 16.
[2] For more information, see Berrada M.A. (1993), pp. 48-49 and pp. 152-154.

Indeed, between these two accounts types, there exist big differences. So, the savings book accounts has always a lot of advantages insofar the agent can remove his capital under its initial value and give him the gain in accordance with investment duration. On the other hand, for a fixed term deposit (deposit term accounts), the agent who wishes to remove his capital should wait the final term of his deposits; otherwise, he can not receive any payment. Then, under the liquidity criterion, the deposit accounts are classified in an aggregate which is less liquid comparatively with the savings book accounts. In fact, the Moroccan Monetary Authorities tried to endow themselves reliable indicators which take into account the new economic agents' behavior. These indicators are supposed to maintain a stable relation with the nominal income. This relation, which shows us the degree of money demand stability, is considered as a main preoccupation expressed by all Monetary Authorities in the world. In the rest of this paper, we try to verify this relation which deals with the Moroccan case.

Table 1: Financial assets structure of NFA

| | | | | (in millions of dirhams) | |
|---|---|---|---|---|---|
| | Bills outstanding at the end of the year | | | Changes | |
| | 2001 | 2002 | 2003 | 2002 | 2003 |
| A. Liquid assets | 211 259 | 231 243 | 255 507 | +19 984 | +24 264 |
| - Notes and coin | 66 025 | 69 556 | 74 893 | + 3 531 | + 5 337 |
| - Sight deposits | 145 234 | 161 687 | 180 614 | +16 453 | +18 927 |
| . Banking system | 130 626 | 144 977* | 162 932 | + 14 351 | +17 955 |
| . Treasury and Postal cheque centre | 8 285 | 8 358 | 8 599 | + 73 | + 241 |
| . Other sight deposits (1) | 6 323 | 8 352 | 9 083 | + 2 029 | + 731 |
| B. Short-term assets | 132 407 | 128 998 | 138 525 | - 3 409 | + 9 527 |
| - Savings accounts | 39 582 | 43 097 | 47 841 | + 3 515 | + 4 744 |
| . Banking system. | 33 006 | 35 785 | 39 645 | + 2 779 | + 3 860 |
| . National Savings Fund | 6 576 | 7 312 | 8 196 | + 736 | + 884 |
| - Time deposits | 82 814 | 82 153 | 86 623 | -661 | + 4 470 |
| . Fixed-term and bills with the banking system | 82 585 | 82 085* | 86 623 | -500 | + 4 538 |
| . Short-term negotiable instruments of indebtedness | 229 | 68 | - | -161 | -68 |
| - Short-term Treasury bills | 10 011 | 3 748 | 4 061 | - 6 263 | + 313 |
| . Six-month bills issued to the public | 9 407 | 2 554* | 3 052 | - 6 853 | + 498 |
| . Bills acquired by tender (non-financial agents) | 604 | 1 194 | 1 009 | + 590 | -185 |
| C. Medium-term assets | 4 991 | 6 540 | 4 630 | + 1 549 | - 1 910 |

| | | | | | |
|---|---|---|---|---|---|
| - Medium-term Treasury bills | 3 984 | 5 389 | 3 694 | + 1 405 | - 1 695 |
| . Three and five-year bills | 3 115 | 2 479 | 730 | -636 | - 1 749 |
| . Bills acquired by tender | 519 | 2 573 | 2 635 | + 2 054 | + 62 |
| . Other medium-term bonds | 350 | 337 | 329 | -13 | -8 |
| - Medium-term negotiable instruments of indebtedness | 1 007 | 1 151 | 936 | + 144 | -215 |
| D. Securities of UCITS | 19 049 | 30 943 | 28 175 | + 11 894 | - 2 768 |
| - Bond UCITS | 17 111 | 29 696 | 26 423 | + 12 585 | - 3 273 |
| - Share UCITS | 895 | 563 | 718 | -332 | + 155 |
| - Diversified UCITS | 1043 | 684 | 1 034 | -359 | + 350 |
| E. Institutional savings | 96 414 | 103 320 | 116 764 | + 6 906 | + 13 444 |
| - Funds of pension and provident institutions | 48 982 | 50 082* | 57 936 | + 1 100 | + 7 854 |
| Of which:<br>.CNRA and RCAR (2)<br>.national Social Security Fund (CNSS) | (21 250)<br>(14 017) | (21385)<br>(14674)* | (26 606)<br>(15 108)** | (+ 135)<br>(+657) | (+5221)<br>(+434) |
| - Actuarial reserves of insurance companies | 47 432 | 53 238 | 58 828 | + 5 806 | + 5 590 |
| Sub-total | 464 120 | 501 044 | 543 601 | +36 924 | +42 557 |
| | | | | | |
| F. Company shares (3) | | | | +15 194 | +9 068 |
| - New issues of securities. | | | | +15 194 | +9 068 |
| - Shares of privatised companies | | | | - | - |
| Total | | | | +52 118 | +51 625 |
| G. Adjustment (4). | | | | + 434 | + 1 235 |
| Total of net investment flows | | | | +52 552 | +52 860 |

(1) Mainly non institutional sight deposits with the Deposit and Management Fund (CDG).
(2) National Retirement and Insurance Fund (CNRA) and Collective Fund for Retirement Allowances (RCAR). (3) As data relating to shares held by non-financial agents are not available, only the new issues of corporate securities, either on the primary market or at the time of the operations of privatisation are taken into account. (4) This item makes it possible to take into account the changes in the composition of the net assets of UCITS, by excluding share transactions carried out on the secondary market. (*) Revised; (**) Estimated. Source: Bank Al-Maghrib.

Based on the statistics presented in table 1, we notice that the monetary and financial patrimony structure of the NFA has been modified profoundly in the past decade. Crossing from 212,396 in 1992 to 464,120 billion dirhams in 2001, to 501,044 billion dirhams in 2002 and to 543,601 in 2003, the size of the monetary and financial NFA patrimony has more than doubled. However, the composition of this patrimony did not undergo big alterations[1]. Except the shares, recently emitted by the different financial agents which the NFA had big preference, the part of the liquid assets and the long saving knew few alterations. The NFA preference has directed, in general, to the weak risk instruments, such as the assets in saving accounts, deposits in forward accounts and especially shares emitted with the bond OPCVM[2]. The subscription to Government bonds has also been increased. This favorable increasing is attributable exclusively to the investments resumption which concern, especially, the bonds at six months issued in the opened counter[3].

Nevertheless, the changes of financial wealth structure reveal us new economic agents' behavior in front of risk and liquidity portfolio management. It allows us to notice that the agents' liquidity can not be defined only by the cash balances holding. There are also a lot of financial assets with reliable return and easily convertible into means of payment. So, the "liquidity constraint" conception can not be associated to the non-paid monetary balances (i.e., cash balances); she depends, in fact, on the financial wealth held by agents and on their capacity to access to the credit. So, in order to explain these arguments and show the money role in the assets portfolio component, we try to study the financial liberalization impact on the NFA behavior which concerns the money demand.

[1] In spite of importance of financial innovations, the ANF almost guarded the same behaviour. Among reasons that explain this phenomenon, we can quote the weakness of available saving which is restricted by the weakness of economic growth, the limitation of risk-taking and the decreasing of interest rates. In addition to these economic reasons, we can cite other socio-cultural and psychological factors.

[2] In order to highlight aforesaid reasons, it is advisable to note that a *saving* inquiry which is realized by the Managing Company of Casablanca Stock Exchange with a sample of 1527 savers. This inquiry revealed a "*big gap between financial innovations and the degree of assimilation of these ones by the population*". The main conclusion that the inquiry revealed us is the savers ignorance vis-à-vis the existing of financial products and their advantages (70 % of them answered by "do not know"). According to this inquiry, the frozen accounts and the savings books are considered as the most appreciated products by the savers, in spite of their least return. Furthermore, the savers prefer, on the second position, the savings accounts (which are proposed by banks) and, only on the last position, the shares which exist on the Moroccan stock exchange market. Besides, this inquiry revealed the weak of dissemination of financial culture in the Moroccan economy. Hence, there exist large unexploited possibilities to drain individual saving towards different offered opportunities of investments. As such, the inquiry report recommends the "*reinforcement of formation and information as vectors to broadcast the financial culture*".

[3] See, the Bank Al-Maghrib's Annual Report, 2001, p. 117.

## 4. The financial liberalization impact on the NFA behavior concerning the demand for money

In this section, we try to verify the proposition which precise that financial liberalization can direct saving to the new financial products in expense of the liquid assets. In the other words, it is advisable to know if the Moroccan NFA behaviour underwent profound structural changes in connection with financial environment alterations, during the last years.

We note that the used series in this study are quarterly. They are defined in the following way:

$M1$: Money supply in the narrow sense. It is equal to the sum of fiat currency and bank money. The quarterly series defined in billions dirhams.

$CPI$ : Consumer Price Index. The series are defined in quarterly series (i.e., quarterly average).

$GDP$: The Gross Domestic Product. The statistics are defined in quarterly series corrected by seasonal variations (i.e., seasonally adjusted time series) and expressed in billions dirhams.

$IRIB$ : The interest rate of the inter-bank market. Quarterly series are defined in percentage (i.e., monthly average).

Our study covers a period going from the first quarter of 1980 to the third quarter of 2002. All the original series are transformed into natural logarithms except for the interest rate. The letter *R* means the real data use. Used symbols are the following ones:

$$LMR1 = Log(M1/CPI);\quad LRGDP = Log(GDP/CPI);$$
$$LCPI = Log(CPI_t / CPI_{t-1})$$

### *4.1. The properties of integration and cointegration variables*

This subsection reviews, in first, the unit root tests for the selected variables using augmented Dickey-Fuller (1981) tests. Then, the variables cointegration which composes the money demand equation is tested by the Johansen's (1988, 1991) maximum likelihood procedure, with the aim of establishing a long run relationship.

*Integration variables:* The application of Augmented Dickey and Fuller (ADF, 1981) test shows us the used series characteristic: is it the stationary or not stationary series? In the table 2, we present the ADF test results which show us the stationarity process.

Table 2: The ADF test results

| | Series in level | | | Series in first difference | | |
|---|---|---|---|---|---|---|
| Series | Models | Lags | ADF statistics | Models | Lags | ADF statistics |
| LMR1 | 3 | 0 | -2,69 | 2 | 8 | -3,04 |
| LRGDP | 3 | 1 | -2,30 | 2 | 4 | -5,76 |
| IRIB | 1 | 6 | -0,90 | 1 | 7 | -4,05 |
| LCPI | 1 | 8 | -1,79 | 1 | 7 | -5,03 |

Notes: The column 1 redraws the used series. Columns 2 and 5 present three models proposed by Dickey and Fuller: model 1 is a model without constant and tendency; model 2 is a model with constant and without deterministic tendency; model 3 is a model with constant and a deterministic tendency. Columns 3 and 6 indicate the retained number of lags. ADF statistic is value calculated by the Dickey-Fuller t-statistic procedure which is compared with critical values: – 1.95 for the model 1, 2.86 for the model 2 and – 3.41 for the model 3 (at the 5 percent of significance).

We notice according to the obtained results that t-statistics (ADF statistics) calculated by series in level is widely superior to critical values. This conclusion allows us to accept the null hypothesis of unit root test. Therefore, examined series are nonstationary. It is the reason which pushes us to differentiate it. So, we found that all the used series are integrated of order 1, $I(1)$, because it is necessary to differentiate it once to make it stationary. We note that the integration order of series occupies a crucial role in the money demand estimation. By the way, the presence or absence of the unit root conditions the type of modelling to be implemented.

*Cointegration variables:* This paragraph analyses the cointegration among the variables discussed previously by using the method developed by Johansen (1988, 1991) and Johansen and Juselius (1990). This method serves to estimate the existence of cointegration relationship between M1's demand and their explanatory variables.

Table 3: The cointegration tests of Johansen (1)
The studied variables are: LMR1; LRGDP; IRIB; LCPI

| Eigenvalues | $l_{trace}$ (2) | Hypothesis (3) | Critical values | |
|---|---|---|---|---|
| | | | 5 % | 1 % |
| 0.32 | 61.11 ** | r = 0 | 39.89 | 45.58 |
| 0.17 | 27.09* | r ≤ 1 | 24.31 | 29.75 |
| 0.10 | 10.17 | r ≤ 2 | 12.31 | 16.31 |
| 0.005 | 0.64 | r ≤ 3 | 3.84 | 6.51 |

Notes: 1/ the test of hypothesis (trace eigenvalue test) were made according to the specification with absence of linear deterministic trend in data and without constant in the relation of cointegration. The model includes two lags for every variable. 2/ the rank *r* give the number of cointegrating vectors. 3/ ** and * indicate the thresholds of statistical significance at the level of 1 % and 5 % respectively.

Table 3 reports the cointegration results of the Johansen procedure. Generally, the trace eigenvalues test rejects the null hypothesis of noncointegration vector at the statistical threshold of 5 percent (27.09 > 24.31). On the other hand, we accept the null

hypothesis: the trace eigenvalues statistics (10.17 and 0.64) are lower than critical values at the threshold of 1% and 5%. So, we accept the hypothesis of cointegration relationship between demand for money (dependent variable) and its determiners (independent variables). This relation is interpreted as a long-run relationship.

*4.2. The demand for money estimation*

This subsection tries to estimate M1's demand with two different ways: the long-run method and the short-run method.

*The demand for money long-run relationship:* The functional structure of demand for money specification on the long term which we have retained is given by the following function:

$$LMR1_t = a_1 LRGDP_t + a_2 IRIB_t + a_3 LCPI_t + e_t \qquad (1)$$

This specification corresponds to a conventional equation in which the M1's demand depends on the scale variable, interest rate and inflation rate. So, we can estimate the parameters of demand for money M1 on the long-term by using the Johansen maximum likelihood procedure. Table 4 shows us the estimation results.

Table 4: The signs results of coefficients

| LMR1 | LRGDP | IRIB | LCPI |
|---|---|---|---|
| 1.000000 | 1,22<br>(0,038) | -0,035<br>(0,016) | -0,22<br>(0,082) |

Note: The figures in brackets denote the standard errors.

The results indicate that the adjustment quality is satisfactory. The standard errors values are situated between 0.016 and 0.082. The variables coefficients are statistically significant and have exactly expected signs. The elasticity-income of demand for money is equal to 1.22. This elasticity, which is slightly higher than 1, seems to be reasonable and normal according to the recent evolutions induced by the financial liberalization. This result reflects, therefore, the increasing monetization of Moroccan economy. The interest rate coefficient is negative (-0.035). As the inflation rate, it makes appear a high long-run elasticity in absolute value[1]. This conclusion is absurd given the moderation of level and variability of the observed inflation rate during the period 1980-2002.

*The demand for money short-run model:* The short-run model provides the information concerning the adjustment manner which is taking place among the various variables to restore the equilibrium at the long-run level in response to the short-term disturbances in demand for money. Mainly, it is an ECM which contains an error-correction (EC) term to ensure that the long-run relationship is satisfied. In other words, we assume that the difference between the demand for money and the money

[1] However, Hoffman and Tahiri (1994) assumed that the inflation rate is non significant in Morocco over the period 1959-1988 (quarterly data).

supply is corrected on the long period by the EC term. The EC is calculated from the cointegrating vector[1].

The ECM specification is estimated by the following autoregressive equation:

$$\Delta LMR1_t = a_0 + \sum_{i=1}^{i=n} a_{1i}\Delta LMR1_{t-i} + \sum_{j=0}^{j=m}\left[a_{2j}\Delta LRGDP_{t-j} + a_{3j}\Delta IRIB_{t-j} + a_{4j}\Delta LCPI_{t-j}\right] + \mathrm{a}EC_{t-1} + \mathrm{f}\,DUM_t + \mu_t \qquad (2)$$

Where $a_0$ is the estimated constant, $a$ represents coefficient of the EC term, DUM are the dummy variables, $\mu$ represents the model residual term, $n = 1,2$ and $m = 0,1$ or $2$ quarters.

Given all variables are integrated of order $0, I(0)$, the above model can be estimated by the OLS method. The results of the ECM estimation, obtained after some restrictions, introduced on the general model (unrestricted model)[2], are reported in the table below[3]:

Table 5: Results of short-run model

| Variables | Coefficients | Standard Errors | Student's t |
|---|---|---|---|
| EC_1 | -0.050483 | 0.008018 | -6.295844 |
| DLMR1_1 | -0.212865 | 0.099746 | -2.134067 |
| DLRGDP | 0.129167 | 0.078681 | 1.641657 |
| DLRGDP_1 | 0.139212 | 0.078364 | 1.776479 |
| DLCPI | -0.013129 | 0.001641 | -8.001514 |
| DLCPI_1 | -0.014718 | 0.002089 | -7.046903 |
| DUM83_1 | -0.020982 | 0.014064 | -1.751930 |
| DUM88_1 | 0.097220 | 0.020611 | 4.716849 |
| DUM88_2 | -0.066277 | 0.022381 | -2.961297 |
| $R^2$ = 0.64 | | SCR = 0.028 | DW = 2.14 |
| J-B Test of Normality: 1.22 [5.99] | | | White-LM 2(2)= 13.33 |
| ARCH-LM: 2(4) = 3.4 [9.84] | | Ljung – Box: Q = 17.86[24.99] | |
| Breush – Godfrey – LM: 2(2) = 1.18 [5.99] | | | |

[1] See, Bordes and Strauss-Kahn (1989), op. cit., p. 162.

[2] The unrestricted model is reduced to a parsimonious one by using the general-to-specific techniques, which consist to eliminate the lags length to be not significant. Two dummies variables were also introduced: DUM83 represents the impact of the Structural Adjustment Policy that was implemented in 1983 and DUM88 which shows us both the M1 growth change in this year and the creation of a real monetary market. Moreover, the exam of the residual of unrestricted model which show us a clearing of the interval of confidence in the period 1988:1, incited us to retain the dummy variables.

[3] D replaces Δ in the equation 2 and the lags t-1 and t-2 are presented by _1 and _2 respectively.

The EC term is negative. It validates the significance of cointegration relationship. A significant EC term conveys us two types of information: first, the agents have corrected, in the current period a proportion of previous disequilibrium in the money balances (see, Rose, 1985). Second, the negative sign specifically implies that the fall in the excess for money, in the last period, will result in the higher level of the transaction money held by the agents in the current period (see Sriram, 1999).

The estimated parameters over the period 1980-2002 are, significantly, different from zero. The short-term elasticities prove exactly the anticipated sign. Indeed, the elasticity of income is significantly positive, it is established to 0.1. Whatever it has the expected sign, the short-term semi-elasticity of inflation rate is very weak (i.e., close to zero). However, the inflation rate affects marginally the behavior of the short-term of demand for money function. Besides, we note that the interest rate does not affect the behavior of M1's demand. The results indicate, besides, that the lagged dependent variable is significant. The speed of monetary balances adjustment is at the 5% of significance. It means that, in the case of unpredictable shock on real balances, the disequilibrium between actual and desired monetary balances noticed in the $t-1$ period is absorbed in the $t$ period but only in the proportion which is indicated above. As consequence of this result is the monetary balances, effectively held by the economic agents, are adjusted, with delay, with desired balances. This mis-adjustment is caused by the high transaction and adjustment costs. These costs are explained, in general, by markets imperfection and money supply rigidity.

The coefficient of determination $R^2$ is 64%. Given that, we eliminated a certain no-significant exogenous variables which their effect is negative on the coefficient of determination value; we can judge then our results as being satisfactory. The residual sum of squares (RSS) is lower than 5%. The Durbin-Watson statistic (DW) is superior to two. These results show us the absence of residual serial correlation. Under the assumption which proves the mean adjustment period of cash in hands is long and the DW statistic is valid just for one order lag, the studied model should be treated with a large evaluation concerning its residuals. Indeed, an econometric model is reliable and specified well, if it satisfy a certain number of statistical tests, like normality tests, serial autocorrelation tests and heteroscedasticity tests.

The results of these various tests are described in the table 5. On the whole, obtained results do not reveal any problem of normality, or serial autocorrelation, either of residual heteroscedasticity. So, we notice that the residual of model is a white noise; it is normal and homoscedastic. In order to highlight these convincing results, it is necessary to verify if the coefficients which estimated by the model remain stable in the time. So, the goal of these following developments is to test empirically the stability of demand for money.

*4.3. The stability tests:* In order to estimate stability of demand for money (narrow monetary aggregate M1), we shall lead two types of tests: the Chow's test of structural stability (1960) and the CUSUM test (Brown, Durbin, and Evans, 1975).[1]

*The Chow's test of structural stability*. The check of the structural variations hypothesis of narrow monetary aggregate demand M1 was made by application of traditional Chow test. This test, which consists to compare the residual variances of all sub-periods, allows us to estimate the stability coefficients of model on two (or some) sub-periods. The main objective of this test is to response to the following question: a difference between the residual sum of squares (RSS) over the total period and the residual sum of squares calculated from two adjusted sub-periods (RSS1 + RSS2)[2] ?

Under the application of Ordinary Least Squares method, we can obtain the residual sum of squares of the estimated model. The joint testing of hypotheses can be presented as following:

H0, stability: RSS = RSS1 + RSS2

H1, instability: RSS RSS1 + RSS2

Considering these estimations, we can proceed to implement Fisher test (*F* statistic). Formally, by setting the weakest sum of squares at the denominator (which is RSS1 + RSS2 in the simple case, with only a single breakpoint)[3], the empirical Fisher is equal to:

$$F^{*} = \frac{(RSS'RSS - RSS_1'RSS_1 - RSS_2'RSS_2)/k}{(RSS_1'RSS_1 + RSS_2'RSS_2)/(n-2k)} \rightarrow F_{k;n-2k}^{0,05}$$

where $RSS'RSS$ is the residual sum of squares of all observations (i.e., restrictive model), $RSS_i'RSS_i$ is the residual sum of squares of sub-period $i$ (i.e., no-restrictive model), $k$ indicate the number of exogenous variables and $n$ the number of observations of the total period.

Indeed, the $F^{*}$ statistic, which can be directly obtained from the TSP-EVIEWS software, allows us to verify the null hypothesis of stability H0 against the alternative hypothesis of structural changes H1. We reject H0 if the empirical $F^{*}$ statistic is superior to the theoretical $F$ statistic which is tabulated at $k$ and $n-2k$ degrees of freedom.

[1] This test is based on the cumulative sum of the recursive residuals. The test finds parameter instability if the cumulative sum goes outside the area between the two critical lines.

[2] See, Bourbonnais (2000), pp. 66-70.

[3] The test of Chow's structural stability can be generalized in order to take into account several breakpoints, especially in the case where there are more than two sub-periods. For more information about this generalization, see Johnston J. (1985), pp. 262-67.

The Chow's test application requires, besides, the preliminary knowledge of potential breakpoints. These breakpoints are identified, in a classic way, by the economic events which verify the existence of structural variations over the long period. Indeed, during the period 1980-2002, and according to certain economic events which are occurred, we were chosen a single breakpoint. This breakpoint corresponds to the date of credit restriction giving up in January, 1991. So, the existing of this breakpoint led us to divide the total period into two samples or periods: the 1980-1990 and the 1991-2002. The separation of periods seems so instructive insofar as the first sub-period is characterized by large monetary control centred notably on the interest rates administration and credit restriction. And the second sub-period can be described as a financial deregulation period which the financing of economy will be more and more made through the capital market. The estimation results of the model over the two sub-periods, which appeared in the table 6, show us that the coefficients of the variable are rather different over two sub-periods. Some of these coefficients are statistically not significant, especially those estimated over the second sub-period. Indeed, these results come up against the instability of parameters estimated on these two time intervals. By comparing the residual sum of squares over the total period (RSS) with those of two sub-periods, the instability of coefficients is confirmed and can't be rejected.

Table 6: Stability of parameters according to the Chow's test

*The model*[1] :

$$DLMR1_t - (a_6 D83_{t-1} + a_7 D88_{t-1} + a_8 D88_{t-2}) = a_1 EC_{t-1} + a_1 DLMR1_{t-1} + a_2 DLRGDP_t + a_3 DLRGDP_{t-1} + a_4 DLCPI_t + a_5 DLCPI_{t-1}$$

| The periods | Estimated coefficients | | | | | | $R^2$ | RSS in % | DW | F* |
|---|---|---|---|---|---|---|---|---|---|---|
| | $\alpha_1$ | $a_1$ | $a_2$ | $a_3$ | $a_4$ | $a_5$ | | | | |
| 1980.1-2002.3 | -0,051 (-6,60) | -0,20 (-2,41) | 0,11 (1,56) | 0,15 (2,14) | -0,01 (-8,64) | -0,01 (-7,56) | 0,54 | 2,8 | 2,10 | --- |
| 1980.1-1990.4 | -0,045 (-3,68) | -0,18 (-1,65) | 0,23 (1,89) | 0,25 (1,96) | -0,01 (-4,28) | -0,01 (-4,08) | 0,55 | 1,48 | 2,01 | 0,54 |
| 1991.1-2002.3 | -0,054 (-4,95) | -0,25 (-1,67) | 0,04 (0,41) | 0,10 (1,09) | -0,01 (-6,63) | -0,01 (-5,92) | 0,57 | 1,29 | 2,06 | |

Note: *The numbers in brackets are the Student's t.*

However, the results of empirical Fisher $F^*$ which concern the Chow's test, we observe that calculated $F^*$ statistic is lower than the theoretical $F$ statistic tabulated in $k$ and $n-2k$ degrees of freedom in the realized adjustment.

*The CUSUM tests*

The CUSUM tests (*CUSUM* and *CUSUM SQ*) which based on the technique of recursive regressions[1] allow us, trough the graph, the appearance of a possible

[1] We transferred all dummy variables in the left member of the studied model in order to facilitate estimation model.

instability affecting a linear relationship during the time. The procedure consists to calculate the recursive residual sum by increasing gradually the number of observations (i.e., by succeeded regressions). The objective is to determine by a test if the calculated breakpoints are significant in a reliable threshold fixed at two distances (± two standard-deviations) or not significant. It means, in the first, to observe, by the graph, if the statistic time series evolves inside fixed interval. In the opposite case, residual variations are not considered the same and their variation results from structural changes. Before presenting the results of *CUSUM* and *CUSUM SQ* tests, it is advisable to try to verify if the model variables constancy concerning the money demand coefficients is assured, during the time, by recursive regression method. Indeed, the simple exam of graphics evolution of coefficients model allows us to observe if the variables coefficients evolve inside a reliable interval with two standard-deviations. The overall results concerning this test and recursive residual test and those concerning the *CUSUM* and *CUSUM SQ* tests are given respectively by G.1, G.2, G.3 and G.4 graphs. We observe, according to the graph G.1 that the variables coefficients evolve inside a cone which represents a reliable interval at 95%. As a consequence, we reject the structural change hypothesis of parameters about realized adjustment. For the evolution of recursive residual, the graph G.2 does not indicate significant change in the residual behavior; the recursive residual remains in his interval. Involving *CUSUM* test, the results do not indicate a structural change of parameters: *CUSUM* and *CUSUM SQ* statistics remains in its reliable interval. Indeed, the curves don't exceed the cone. In correspondence with the stability coefficients test above, these results conclude to the stability of M1's demand for money over the considered period.

## 5. Conclusion

In conclusion, we can now formulate the argument that the monetary and financial reforms made by Moroccan Monetary Authorities haven't any significant impact on the NFA saving behavior. Obtained results don't appear any significant signs which prove us a structural instability of M1 aggregate. In spite of certain estimated coefficients of exogenous variables which show us unstable evolution over the second sub-period 1991-2002, the stability of money demand function M1 can be not rejected over all reserved period. So, these results show us clearly that the objectives fixed by Monetary Authorities were not realized.

[1] The recursive regression is established by the procedure which consists to estimate a succession of regressions by increasing gradually the number of observations: we estimate in the first the model with $k+1$ first observations (the model is a model with 1 degrees of freedom) and we repeat the estimation until $n$ ($n$ are an available total number of observations). In other words, the technique of recursive regressions consists to estimate regressions on a given time interval, which is gradually lengthened by one period.

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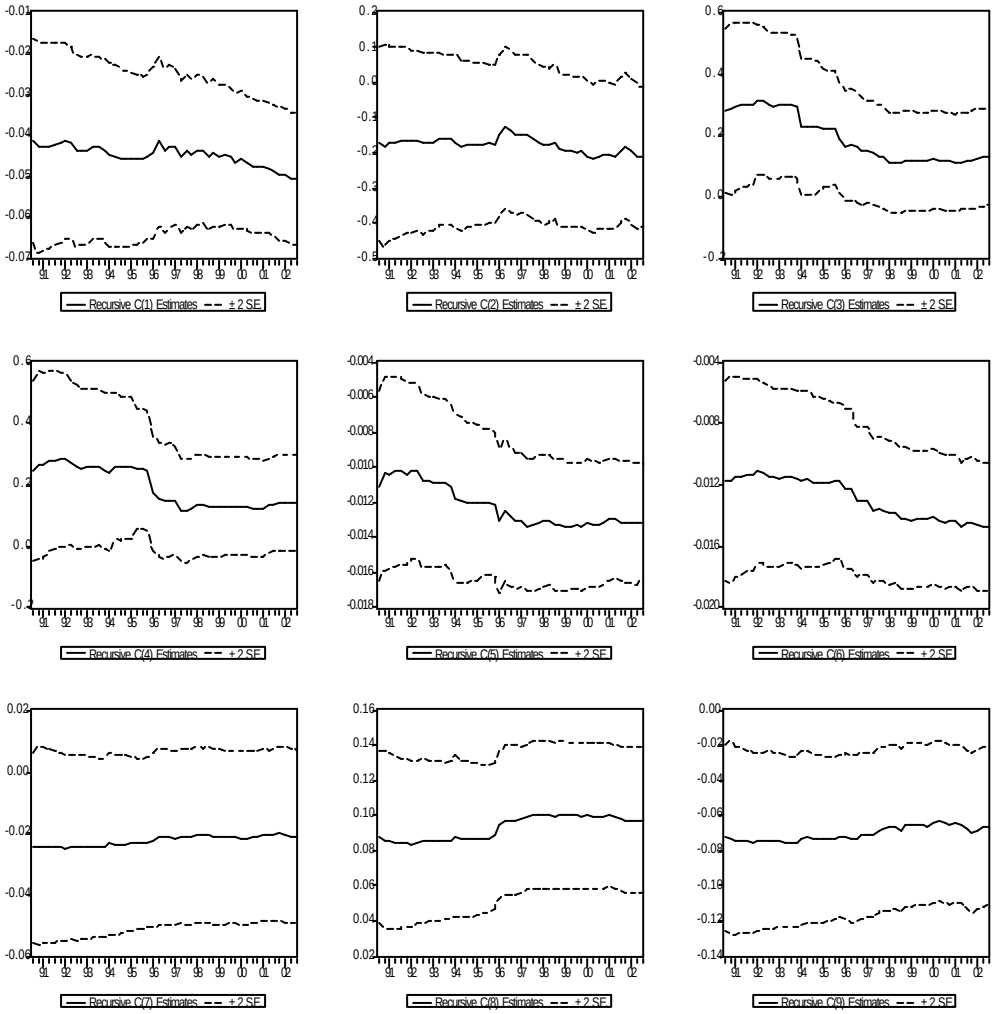
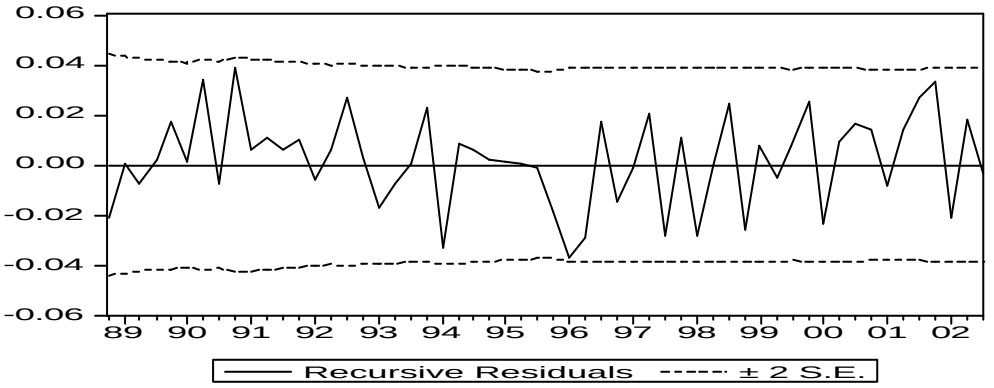
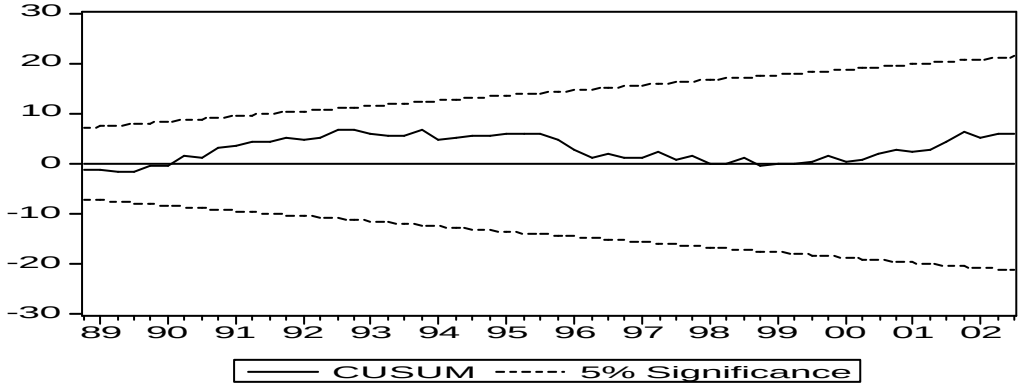
G1. Test of parameter constancy



G2. Recursive residual




G3. CUSUM test




G4. *CUSUM SQ* test