Online ISSN : 2249-4588
Print ISSN : 0975-5853

Global Journal

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VOLUME 15 ISSUE 2 VERSION 1.0

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Volume 15 Issue 6 was originally issued as C2

Global Journal of Management and Business Research: C
Finance

Global Journal of Management and Business Research: C
Finance

Volume 15 Issue 2 (Ver. 1.0)

Open Association of Research Society

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Global Journal of Management and Business Research: C Finance
Volume 15 Issue 2 Version 1.0 Year 2015
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Tests Del' Efficience Du Marché Financier Marocain

By Chiny Faycal & MIR Ahmed

Abstract- The Moroccan financial market experienced a major modernization wave resulting in an increasing capitalization, a significant "volume & value" of business and a growing number of new IPOs in order to transform the Moroccan economy from a debt economy to a capital market economy and therefore achieve an optimal state of resources allocation. The informational efficiency of the Moroccan financial market has recently become a serious topic that arouses much interest among researchers and practitioners leading to an increasing number of studies in this area. The objective of our paper work is to investigate the weak form efficiency of the Moroccan stock market. We first remind what we mean by "market efficiency" and also the debate on this issue in developed and emerging markets, African markets and Morocco stock market. We then explain in depth the main

Keywords: markets efficiency, casablanca stock market, econometric tests.

GJMBR - C Classification : JELCode : E44



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Tests Del' Efficience Du Marché Financier Marocain

Chiny Faycal [α] & MIR Ahmed [σ]

Résumé- Le marché financier marocain, a connu un mouvement de modernisation important, traduit par une capitalisation en hausse, une valeur et un volume de transactions important et un nombre en nette croissance des nouvelles introductions en bourse, dans le but de faire passer le Maroc d'une économie d'endettement à une économie des marchés financiers et atteindre par conséquent une situation d'allocation optimale des ressources. L'efficience informationnelle du marché financier marocain est devenue aujourd'hui un sujet d'actualité qui suscite beaucoup d'intérêt auprès des chercheures et des professionnels donnants lieux à des publications de plus en plus importantes sur le sujet. Notre article s'inscrit dans ce contexte et a pour objectif d'analyser l'efficience faible du marché boursier marocain. On rappelle dans une partie la notion d'efficience et le débat autour de cette question au niveau des marchés développés, émergents, africain et marocain. On explique ensuite d'une manière détaillée les principaux tests empiriques d'efficience : auto-corrélations, racine unitaire, rapport de variances et test des « runs ». Les séries chronologiques considérées sont constituées des données quotidiennes de 4 indices : Masi (indice de la bourse de Casablanca), BNQ (indice du secteur bancaire), ASSUR (indice du secteur des assurances) et IMMO (indice du secteur de l'immobilier), sur une période allant du 1er Janvier 2002 au 31 Décembre 2013. Les résultats des différents tests rejettent formellement l'hypothèse d'efficience au sens faible de ces marchés. Une analyse de cette inefficience est donnée en conclusion qui met en avant les anomalies et les causes qui biaisent le bon fonctionnement du marché.

Motsclés: efficience des marchés financiers, bourse des valeurs de casablanca, tests économétriques.

Abstract- The Moroccan financial market experienced a major modernization wave resulting in an increasing capitalization, a significant "volume & value" of business and a growing number of new IPOs in order to transform the Moroccan economy from a debt economy to a capital market economy and therefore achieve an optimal state of resources allocation. The informational efficiency of the Moroccan financial market has recently become a serious topic that arouses much interest among researchers and practitioners leading to an increasing number of studies in this area. The objective of our paper work is to investigate the weak form efficiency of the Moroccan stock market. We first remind what we mean by "market efficiency" and also the debate on this issue in developed and emerging markets, African markets and Morocco stock market. We then explain in depth the main empirical tests of market efficiency: autocorrelations, unit root, variance ration and the runs test. The time series considered consist of daily data of four stock indexes: MASI (Moroccan All Shares Index), BNQ (Banking sector index), ASSUR (Insurance sector index) and IMMO (Real Estate sector index) from January 1st 2002 to December 31st 2013. The results of these various tests strongly reject the weak form efficiency hypothesis and an analysis of this inefficiency and its potential sources is given in conclusion that highlights causes that might be the origin to the markets dysfunction anomalies.

Keywords: markets efficiency, casablanca stock market, econometric tests.

I. Introduction

Du concept à la controverse

Les marchés financiers sont fondamentalement associés aux prix des actifs financiers qui constituent les vecteurs de transmission de l'information, censés représenter la « valeur juste » des actifs, permettant aux investisseurs de fonder leur décision d'acquisition ou de cession. L'information utile, concerne les données historiques, les données publiques présentes révélée sur le marché (dividendes, taux d'intérêt, compte de résultat, PER, etc.) et enfin l'information privée des entreprises qui constituent les anticipations futures connues que des investisseurs avertis (projets d'acquisition, ouverture du capital, pertes dissimulées, etc.). Dans le cas idéal où les prix reflètent instantanément l'ensemble de ces trois strates d'informations disponibles, c'est-à-dire les conséquences des événements passés, présents et les anticipations sur les événements futurs, celui-ci est qualifié de marché efficient du point de vue informationnel. Ce caractère d'efficience informationnelle est fondamental dans le fonctionnement des marchés car il les crédibilise et contribue à attirer les investisseurs. C'est la raison pour laquelle toutes les autorités des marchés et places boursières cherchent à créer les conditions réglementaires et organisationnelles pour se rapprocher de cet état d'efficience informationnelle. Cependant, dans la réalité, la transmission de l'information utile par le canal des prix, n'est que partielle et les investisseurs se trouvent souvent dans une situation de déficit informationnel et agissent d'une manière inefficiente. Dans ce cas de marché inefficient, les investisseurs ne disposent pas de la « valeur juste » des actifs et sont constamment à l'affut de toute information pouvant les aider à évaluer les risques et les gains des opportunités

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qui leur sont offertes par le marché. L'étendue de l'information mise à la disposition des acteurs du marché, permet de distinguer trois degrés d'efficience. L'efficience, dite « faible », désigne la situation où toute l'information passée est disponible et où le prix actuel se fonde uniquement sur les prix passés. Dans ce cas, l'analyse technique (chartisme) n'est alors d'aucune utilité pour procurer un rendement supérieur à celui du marché. Il y a ensuite l'efficience « semi-forte », lorsque le prix de l'actif reflète intégralement l'information diffusée publiquement et dans ce cas l'analyse fondamentale (pour sélectionner les actifs sous-évalués) n'apporte pas de valeur ajoutée. Enfin l'efficience «forte», concerne le cas où le prix traduit toute l'information disponible, même privée. Une telle situation enlève tout intérêt aux opérations d'initié.

Eugene Fama, est considéré comme le père de la théorie de l'efficience des marchés depuis sa publication fondatrice « Fama [1965] », dans la quelle il affirme que le prix des actions est imprévisible et suit une marche aléatoire conduisant ainsi à l'efficience du marché. Depuis, plusieurs chercheurs se sont intéressés au sujet : Malkiel [1973], Jensen [1978], French et Roll [1986], Roll [1994], qui ont confirmé l'efficience des marchés des actions, obligations, options, matières premières dans les pays développés (Etats unis, Europe et Australie). Toutes ces études empiriques réalisées sur de nombreux marchés, n'ont pas pu rejeter l'hypothèse de la marche aléatoire des marchés ce qui a fait dire à Fama [1998], que l'hypothèse de l'efficience des marchés a survécu à tous les défis lancés. C'est ainsi qu'au fil des temps, les preuves scientifiques de la marche aléatoire des cours boursiers, se sont accumulées et que l'hypothèse d'efficience faible a progressivement fait son chemin et est devenue un véritable paradigme dans la communauté académique. Pourtant, cette conclusion ne fait pas l'unanimité auprès de la communié scientifique. Un autre courant de chercheurs qui s'appuie sur la finance comportementale, estime que l'hypothèse d'efficience des marchés n'est pas justifiée: Grossman et Stiglitz [1980], Shiller [1989], Lo et MacKinlay [1999]. L'efficience des marchés qui était indiscutable au début, est aujourd'hui un sujet de controverse qui continue entre ceux pour qui cette hypothèse reste largement vérifiée et ceux pour qui les preuves d'inefficience sont suffisantes pour la remettre en cause.

II. Les Tests D'efficience dans les Marchés Émergents et Africains

La question de l'efficience dans les marchés des pays émergents a été étudiée par plusieurs auteurs pour comprendre l'influence de l'environnement économique et politique de ces pays sur l'efficience de leur marché. Plusieurs auteurs, Harvey [1995], Urrutia [1995], Bekaert et Harvey [2002], ont pu montrer que les marchés des pays émergents sont moins efficients que ceux des pays développés. On constate en effet que les rendements des marchés émergents ont des corrélations sérielles plus élevées que celles observées dans les marchés développés en raison de la faible fréquence des transactions, de la lenteur des ajustements et de l'environnement juridique. L'analyse technique dans les marchés émergents, possède encore un pouvoir prédictif qui rapporte des bénéfices.

Cependant, certains auteurs estiment que cette prévisibilité n'est pas trop statistiquement significative. Le résultat qui ressort de ces différentes études est la disparité des résultats selon les pays, les périodes d'analyse (journalières, hebdomadaires, mensuelles ou annuelles), les échantillons et les techniques d'analyse et des tests. Ces disparités, entretiennent le débats et la controverse autour de cette hypothèse d'efficiences de marché qui est encore aujourd'hui l'une des énigmes les plus importante de la théorie économique et financière. Les marchés africains ont fait l'objet de certaines études notamment les travaux Mlambo et Biekpe [2007], qui ont étudié l'hypothèse de l'efficience au sens faible de dix marchés boursiers africains en utilisant les données quotidiennes pour des périodes allant de Janvier 1997 à Mai 2002. Les marchés étudiés étaient celui de l'Egypte, le Kenya, le Zimbabwe, le Maroc, Maurice, la Tunisie, le Ghana, la Namibie, le Botswana et la Côte d'Ivoire. A l'exception de la Namibie, le Kenya et le Zimbabwe, pour tous les autres marchés boursiers (y compris le Maroc), l'hypothèse de la marche aléatoire, et donc de l'efficience, est rejetée. Enowbi et al. [2009], ont aussi examiné la forme faible de l'efficience de quatre marchés boursiers africains à savoir l'Egypte, le Maroc, l'Afrique du Sud et la Tunisie, en utilisant les données quotidiennes du 4 Janvier 2000 au 26 Mars 2009. Les résultats indiquent, qu'à l'exception de la bourse sud-africaine, l'hypothèse d'efficience est rejetée. Al-Khazali et al. [2007], ont étudié le comportement des principaux indices de huit marchés boursiers de la région MENA (le Bahreïn, la Jordanie, le Koweït, le Maroc, Oman, l'Arabie Saoudite, la Tunisie et l'Egypte). Ils ont utilisé les données hebdomadaires allant d'Octobre 1994 à Décembre 2003. Ils ont constaté qu'aucun de ces marchés, ne répond positivement à l'hypothèse de la marche aléatoire. Ils imputent leurs résultats au faible nombre des opérations de négociation et aussi à la jeunesse de ces marchés. Cependant, lorsque les rendements des indices ont été corrigés (biais statistiques), ils ne pouvaient plus rejeter l'hypothèse de l'efficience au sens faible pour aucun de ces marché.

Abdmoulah [2009], a étudié les marchés financiers de 11 pays arabes, l'Arabie Saoudite, le Koweït, la Tunisie, Dubaï, l'Egypte, le Qatar, la Jordanie, Abou Dhabi, le Bahreïn, le Maroc et Oman, en utilisant les données quotidiennes de leurs indices principaux.

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Toutes les bourses arabes étudiés, étaient inefficientes au sens faible et expriment une grande sensibilité aux chocs passés. Omran et Farrar [2006], ont examiné les marchés de l'Egypte, la Jordanie, le Maroc, la Turquie et l'Israël en utilisant les principaux indices boursiers. Ils ont utilisé les données hebdomadaires à partir de Janvier 1996 à Avril 2000. Les résultats, ont rejeté l'hypothèse de la marche aléatoire pour tous les marchés, à l'exception de l'indice du marché boursier d'Israël (TA100), qui semble suivre une marche aléatoire.

III. Le cas du Marché Marocain

Les études plus spécifiques au marché marocain, sont peu nombreuses. Rahaoui [2007], a étudié des séries de données mensuelles et journalières de certaines sociétés cotées sur la bourse de Casablanca (MADEX) sur une période du 1 Janvier 2003 au 31 Décembre 2006 en appliquant un modèle simpliste AR(1). Il conclut à l'efficience du marché financier marocain. Cette conclusion semble hâtive, car elle nécessite d'être étayée par d'autres tests paramétriques et non paramétriques pour appuyer, surtout que l'hypothèse du « modèle inadéquat » de Fama [1991, « Bad model »], peut être soulevée.

Khalid Bakir [2002], en travaillant sur les données quotidiennes de 28 valeurs cotées sur la bourse des valeurs de Casablanca pour une durée allant de Janvier 1996 à Décembre 2000 et en s'appuyant sur un ensemble de tests (les auto-corrélations, le test des runs,…), rejette aussi l'hypothèse de l'efficience au sens faible du marché financier marocain. Plus récemment dans leur travail, El Khattab et Moudine [2014], ont utilisé une modélisation ARIMA(p,d,q), puis les tests des auto-covariances pour tester la forme faible de l'efficience du marché financier marocain. En utilisant les données journalières sur l'indice MASI pour une période allant de 2004 à 2012 et en se basant sur le test de Ljung-Box, ils rejettent l'hypothèse nulle de l'efficience du marché financier marocain au sens faible. Ils ajoutent aussi, que les deux autres formes de l'efficience, semi-forte et forte, sont systématiquement rejetées. Notre étude a pour objectif d'étudier la forme faible de l'efficience de la bourse de Casablanca (BVC), à l'aide de tests sur les données journalières de 4 indices : MASI (Moroccan All Shares Indexe) qui est l'indice général de la bourse marocaine, l'indice du secteur des banques (BNQ), l'indice du secteur des assurances (ASSUR) et l'indice de secteur de l'immobilier (IMMO), et ce pour une période qui s'étale sur 12 ans (du 01/01/2002 au 31/12/2013).

Nous rappellerons dans un premier temps les différents tests utilisés dans la littérature pour étudier l'efficience faible des marchés. Puis nous présenterons les séries chronologiques relatives aux quatre indices, pour enfin commenter les résultats des tests réalisés.

IV. La Méthodologie des Tests D'efficience Faible

a) Les tests directs

Ces tests, sont fondés sur l'idée intuitive qu'il est possible de concevoir des stratégies actives basées sur l'exploitation graphiques des évolutions du cours (chartisme) pouvant battre le marché. Ces stratégies actives, sont donc censées procurer des gains supérieurs à ceux obtenus à l'aide d'une stratégie passive (naïve) consistant à acheter l'ensemble du portefeuille à un instant donné et à le revendre entièrement à la fin de la période du test (by and hold strategy). Fama et Blume [1966], ont réalisé ce type de test sur le marché américain en utilisant une méthode active de filtres, consistant à acheter lorsque le prix augmente de X% ou plus et de le revendre lorsque le cours baisse de plus de X%.

Ils ont essayé plusieurs filtres allant de 0,5% à 20% et sont arrivés à la conclusion que seul le filtre de 0.5% donne une rentabilité supérieure à celle du portefeuille passif (en absence des coûts des transactions). Ce résultat ne relève pas d'inefficience captée par cette technique de filtrage et semble donc en faveur de l'efficience de ce marché. Dumontier [1989], a testé la méthode sur le marché des actions de Paris. Il a comparé la rentabilité d'un portefeuille géré de façon passive avec des portefeuilles gérés de manière active grâce aux moyennes mobiles. Il a obtenu des résultats inférieurs à la stratégie passive ce qui ne contredit pas non plus l'efficience du marché.

b) Test des Auto-corrélations

Ce test traduit une façon intuitive de vérifier la marche aléatoire en testant si les corrélations sérielles $\hat{\rho}_k$ sont nulles.

$$\hat{\rho}_k = \frac{\sum_{t=k+1}^{T}(R_t - \bar{R})(R_{t-k} - \bar{R})}{\sum_{t=1}^{T}(R_t - \bar{R})^2};\ 0 \le k \le T-1,$$

$$\bar{R} = \frac{1}{T}\sum_{t=k+1}^{T}(R_t)$$

Ce qui revient à tester l'hypothèse nulle H_0 : $\rho_1 = \rho_2 = \cdots \rho_k \cdots = \rho_T = 0$, Si les séries sont indépendantes et identiquement distribuées, la distribution asymptotique de $\sqrt{T}\hat{\rho}_k \to N(0,1)$ ce qui permet d'en déduire que la statistique $T\sum_{k=1}^{q}\hat{\rho}_k^2$, tend vers une loi Khi deux à q degré de liberté. Cette statistique, est désignée par la statistique de Box Pierce, connu également sous le nom de test de Portemanteau :

$$BP(q) = T\sum_{k=1}^{q}\hat{\rho}_k^2$$

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Où T est le nombre d'observations de la série et q le nombre de retard. En pratique, si $BP(q) < \chi^2(q)$, alors on accepte l'hypothèse de la marche aléatoire. Il y a aussi la version de la statistique de Ljung-Box :

$$LB(q) = T.(T+2)\sum_{k=1}^{q}\left(\hat{\rho}_k^2/_{T-k}\right)$$

c) Test de la racine unitaire (ou de non stationnarité) pour les processus ARMA (p,q)

Ce test suppose que les séries chronologiques obéissent à un modèle ARMA(p,q). Cependant ce type de modèle nécessite la stationnarité des séries chronologiques, pour garantir la pertinence des prévisions. La stationnarité traduit l'invariance de la loi de distribution des processus. Cela ne veut pas dire que les réalisations soient invariantes mais qu'il s'agisse du même processus qui se répète dans le temps avec, naturellement, des réalisations fluctuantes. La stationnarité, est une propriété fondamentale dans les modèles ARMA car en cas de non stationnarité, les techniques de modélisation par régression peuvent conduire à des de fausses régressions (régressions fallacieuses ou factices) qui n'ont aucun sens économiquement. D'autre part ces modèles sont sensibles aux chocs dus à des événements imprévisibles, les effets de ces chocs sont amortis et absorbés en cas de stationnarité alors qu'ils restent permanents dans le cas contraire. C'est la raison pour laquelle les chercheurs ont développé des techniques de filtrage en vue de stationnariser les séries étudiées.

La stationnarité, telle qu'elle est définies précédemment, est difficile à démontrer pour les données statistiques du marché, car il faut pour cela que tous les moments (une infinité) soient constants (par rapport au temps). Usuellement, on se limite à la stationnarité faible, ou d'ordre 2, qui est définie par la constance des moments d'ordre un et deux. De tels processus, possèdent donc une espérance (moment d'ordre un) et une variance et auto covariances (moments d'ordre deux) indépendantes du temps. Ces processus stationnaires, sont appelés aussi processus intégrés d'ordre 0 et notés I(0) pour signifier qu'ils n'ont besoin d'aucune transformation (filtre) pour les stationnariser. La difficulté réside alors dans le fait qu'il existe différentes sources de non stationnarité et qu'à chaque origine de la non stationnarité, est associée une méthode de stationnarisation. Les deux classes de processus non stationnaires sont les processus TS (Trend stationnary) et les processus DS (Differency stationnary).

i. *Les processus TS*

Pour ces processus, c'est la moyenne (moment d'ordre 1) qui est évolutive, on parle alors de non stationnarité de type déterministe. De tels processus s'écrivent: $X_t = f(t) + \mu_t$, où $f(t)$, est un une fonction polynomiale du temps et μ_t, un processus stationnaire.

Dans ce cas, $X_t - f(t) = I(0)$ c'est-à-dire un processus intégré d'ordre 0. Les cas les plus fréquents en séries économiques et financières, sont ceux pour les quels $f(t)$ est un polynôme d'ordre 1 et $\mu_t = \varepsilon_t$:

$$X_t = a_0 + a_1 t + \varepsilon_t,$$

$$E(X_t) = E(a_0 + a_1 t + \varepsilon_t) = a_0 + a_1 t,$$

$$V(X_t) = E[(X_t - E(X_t)^2] = E[(\mu_t)^2] = \sigma_\mu^2,$$

$$Cov(X_t, X_s) = E\left[(X_t - E(X_t).(X_s - E(X_s))\right] = E[\mu_t.\mu_s] = \sigma_{ts}^2 \; ; \forall\, t \neq s.$$

Le processus TS, traduit l'existence de fluctuations stationnaires représentées par sa variance autour d'une tendance déterministe estimée par les coefficients de l'ordonnée à l'origine et la pente. Si $a_0 = a_1 = 0$, le processus TS sans dérive est stationnaire, le processus est intégré d'ordre 0 et il est désigné par $I(0)$. Si $a_0 \neq 0$ et $a_1 = 0$, le processus est noté $I(0) + C$ (dérive constante). Si $a_0 \neq 0$ et $a_1 \neq 0$, il est noté $I(0) + T$, (dérive linéaire avec le temps). Pour stationnariser un processus TS, il suffit de lui appliquer une transformation qui consiste à lui retirer la composante déterministe. On appelle cela, un filtre TS. Cette composante déterministe est estimée par une régression de type MCO de la série (X_t) sur un polynôme en t. Par exemple, pour stationnariser le processus $X_t = a_0 + a_1 t + \mu_t$, il suffit de déterminer les deux estimateurs $\hat{a}_0$ et $\hat{a}_1$ des deux coefficients, pour obtenir le processus stationnaire $X_t - \hat{a}_0 - \hat{a}_1 t$.

ii. *Les processus DS*

Une série est dite intégrée d'ordre d (notée $X_t \rightsquigarrow I(d)$), s'il est possible de la différencier (d) fois, afin de la stationnariser. De tels processus sont désignés par processus DS(d). Ils sont stationnarisés par l'application d'un filtre de d retards : $(1 - L^d)X_t = X_t - X_{t-d}$. Ils sont donc de la forme $X_t = X_{t-d} + u_t$, avec u_t un processus stationnaire. Les processus DS les plus utilisés, sont ceux d'ordre 1, et parmi eux, la marche aléatoire (au hasard) : $X_t = X_{t-1} + \varepsilon_t$ avec $\varepsilon_t = B.B(0, \sigma_\varepsilon^2)$. Par récurrence, on obtient : $X_t = X_0 + \sum_{i=1}^{t} \varepsilon_i$, $E(X_t) = X_0$ et $Var(X_t) = \sum_{i=1}^{t} \varepsilon_i = \sum_{i=1}^{t} \sigma_\varepsilon^2 = t\,\sigma_\varepsilon^2$. De tels processus, possèdent une moyenne constante mais une variance qui croit dans le temps. Ils ont donc, une non stationnarité stochastique. On les note $I(1)$. Cas de la marche aléatoire avec dérive constante: $X_t = X_{t-1} + a_0 + \varepsilon_t$, $X_t = X_0 + a_0 t + \sum_{i=1}^{t} \varepsilon_i$. Ces processus, en plus de la non constance de la variance, ont une espérance $E(X_t) = X_0 + a_0 t$, qui croit avec le temps. On les note $I(1) + T$, pour marquer que la moyenne dérive en t. Ca de dérive croissante avec le temps : $X_t = X_{t-1} + a_0 + a_1 t + \varepsilon_t$, alors $X_t = X_0 + a_0 t + a_1 t^2 + \sum_{i=1}^{t} \varepsilon_i$. On les note, $I(1) + T^2$ pour marquer que la moyenne dérive en t^2.

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iii. *Test de la racine unitaire (ou de non stationnarité)*

Ce test, permet de déterminer le caractère TS ou DS d'une série et par conséquent le filtre à introduire pour la stationnariser. Il est basé sur la recherche de racine unitaire dans le polynôme caractéristique de la série. En effet, si une série possède au moins une racine unitaire, elle n'est pas stationnaire, tandis qu'une série qui n'a pas de racine unitaire est stationnaire asymptotiquement. Les tests de Dickey-Fuller, de Dickey-Fuller augmenté [1981], de Philips et Perron [1988] et Kwitkowski [KPSS, 1992], sont les standards dans ce type de tests de stationnarité. Le test de Dickey Fuller et sa version augmentée ADF (Augmented Dickey & Fuller), sont les plus célèbres de la littérature. La version primitive de ce test (DF), considère un AR(1) avec dérive : $X_t = \varphi X_{t-1} + a_1 t + a_0 + \varepsilon_t$ avec $\varepsilon_t = iid(0, s^2)$. Si φ=1, alors on a à faire à un processus DS avec dérive : $I(1) + T^2$ qui peut être stationnarisé par retrait de la dérive et l'application d'un filtre DS. Si $|\varphi| < 1$, on a un processus TS avec dérive : $I(0) + T^2$ qui peut être stationnarisé par le retrait de la dérive. D'où les hypothèses nulle H_0 du test (DF): $\varphi = 1$, contre $H_1 : |\varphi| < 1$. En fait, dans la démarche DF, on étudie les variations ΔX_t au lieu de X_t. On retire alors X_{t-1} des deux côtés de la régression et on considère trois modèles selon la dérive : $\Delta X_t = \rho X_{t-1} + \varepsilon_t$, $\Delta X_t = \rho X_{t-1} + a_0 + \varepsilon_t$, $\Delta X_t = \rho X_{t-1} + a_1 t + a_0 + \varepsilon_t$, Avec $\rho = \varphi - 1$. Le test devient alors $H_0 : \rho = 0$, contre $H_1 : \rho < 0$. Il suffit d'estimer la régression (3) par les moindres carrés et tester ensuit $\rho = 0$ an moyen de la statistique de Student. Le test est réalisé à l'aide de la statistique $t_{\hat{\rho}} = \frac{\hat{\rho} - 0}{\sqrt{V(\hat{\rho})}}$.

Cette statistique de Student, est tabulée par Dickey et Fuller et la règle de décision du test est la suivante : Si la valeur empirique de la statistique est supérieure à la valeur critique de la table, alors on accepte l'hypothèse nulle de non stationnarité de type stochastique (DS) et dans ce cas on stationnarise le processus par différenciation (application d'un filtre DS). Si la valeur empirique de la statistique est inférieure à la valeur critique de la table, alors on rejette l'hypothèse nulle de non stationnarité de type stochastique (DS). On a alors une non stationnarité de type TS qui, par retrait de la dérive, conduit à un processus AR(1) stationnaire.

On teste ensuite les coefficients a_0 et a_1 à l'aide la statistique de Fisher. Pour le test amélioré de Dickey-Fuller (ADF test), on considère un modèle ARMA(p,q) de la forme : $X_t = \alpha_1 X_{t-1} + \alpha_2 X_{t-2} + \cdots + \alpha_p X_{t-p} + \beta_1 \varepsilon_{t-1} + \beta_2 \varepsilon_{t-2} + \cdots + \beta_q \varepsilon_{t-q}$,

$$X_t = \sum_{i=1}^{p} \alpha_i X_{t-i} + \sum_{j=1}^{q} \beta_j \varepsilon_{t-j}$$

Le choix optimal des paramètres p et q est capital dans la sélection du modèle. Pour ce faire, deux grandes méthodes sont utilisées: La méthode de Box et Jenkins: identification, estimation et diagnostic (1976), qui se base sur l'analyse des fonctions des auto-corrélations et auto-corrélations partielles. Le calcul des critères de choix : minimiser les critères AIC (Akaike Information Criterion) et BIC (Bayesien Information Criterion). Autrement dit, nous retenons le modèles ARMA(p,q) qui minimise ces critères en utilisant différentes valeurs pour p et q. Une fois les paramètres p et q déterminés, on écrit le terme d'erreur ΔX_t sous l'une des trois formes suivantes :

$$\Delta X_t = \varphi X_{t-1} + \sum_{j=1}^{p} \gamma_j \Delta X_{t-j} + \varepsilon_t, \Delta X_t =$$

$$\varphi X_{t-1} + a_0 + \sum_{j=1}^{p} \gamma_j \Delta X_{t-j} + \varepsilon_t, \Delta X_t =$$

$$\varphi X_{t-1} + a_1 t + a_0 + \sum_{j=1}^{p} \gamma_j \Delta X_{t-j} + \varepsilon_t$$

Et on teste selon la même procédure qu'avant, l'hypothèse $\varphi = 1$.

d) Test du rapport de la variance (variance ratio test)

Une autre approche aussi fréquemment utilisée pour tester si les cours des actifs financiers sont prévisibles, est le test du rapport de la variance (variance ratio test) de Lo et MacKinlay (1988, 1989). Le principe de ce test, est basé sur un résultat caractéristique de la marche aléatoire, qui fait que la variance sur une suite de « q » périodes, est la variance d'une seul période multipliée par « q ». Autrement dit :

$\mathrm{Var}(P_t - P_{t-q}) = q.\mathrm{Var}(P_t - P_{t-1})$. Le ratio de la variance (VR), est alors défini comme suit :

$$VR(q) = \frac{\frac{1}{q}\left(\mathrm{Var}(P_t - P_{t-q})\right)}{\mathrm{Var}(P_t - P_{t-1})} = \frac{\sigma^2_{(q)}}{\sigma^2_{(1)}}$$

Pour un échantillon de taille $\varkappa_{q+1}$ ($\varkappa_{q+1}$ observations), le calcule de $\sigma^2_{(q)}$ et $\sigma^2_{(1)}$, est obtenu en utilisant les formules:

$$\sigma^2_{(q)} = \sum_{i=q}^{\varkappa_q} \left(P_t - P_{t-q} - q\hat{u}\right)^2 \Big/ h.$$

Avec :

$$1.\, h = q(nq + 1 - q)(1 - [q/nq])$$

$$2.\, \hat{U} = 1/nq \left[\sum_{t=1}^{nq} (P_t - P_{t-1})\right] = 1/nq \left(P_{nq} - P_0\right),$$

$$\sigma^2_{(1)} = \frac{\sum_{t=1}^{nq} (P_t - P_{t-1} - \hat{u})^2}{nq - 1}$$

Sous l'hypothèse de l'homoscédasticité ou de l'hétéroscédasticité, deux statistiques, $Z(q)$ et $Z^*(q)$ sont calculées par Lo et MacKinlay [1988], en utilisant les formules suivantes :

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$$Z(q) = \frac{VR(q) - 1}{[\emptyset(q)]^{1/2}} \sim N(0,1)$$

$$Z^*(q) = \frac{VR(q) - 1}{[\emptyset^*(q)]^{1/2}} \sim N(0,1)$$

Où $\emptyset(q)$, est la variance asymptotique au ratio de la variance sous l'hypothèse d'homoscédasticité et $\emptyset^*(q)$, la variance asymptotique au ratio de la variance sous l'hypothèse d'hétéroscédasticité, que nous pouvons définir par :

$$\emptyset(q) = {2(2q-1)(q-1)}/{3n(q)^2}$$

$$\emptyset^*(q) = \sum_{j=1}^{q-1} \left({2(q-j)}/{q}\right)^2 . \delta(j)$$

Avec $\delta(j)$, est l'estimateur de la consistance de l'hétéroscédasticité calculé par :

$$\delta(j) = \frac{\sum_{t=1}^{nq}(P_t - P_{t-1} - \hat{u})^2 . (P_{t-1} - P_{t-j-1} - \hat{u})^2}{\left(\sum_{t=1}^{nq}[P_t - P_{t-1} - \hat{u}]^2\right)^2}$$

e) Les tests de changements de signe (runs test)

Ce test (largement utilisé dans la littérature sur l'efficience (Christine Stachowiak, [2002]), mesure le degré de dépendance existant à travers des séries historiques de rentabilité indépendamment de leur distribution. Il s'appuie uniquement sur les suites de signes (+/-) des variations (positives/négatives) des rentabilités. On le qualifie de non paramétrique pour signifier qu'il ne prend pas en compte les paramètres liés à la forme de la distribution, ni aux amplitudes des réalisations. Son avantage est qu'il évite que l'analyse de régression ne conduise à un coefficient de corrélation fortement modifié, suite à des variations extrêmes. Un « run » positif, est une séquence de fluctuations précédée par une fluctuation nulle ou négative et inversement pour un run négatif. Le nombre total des runs, est la somme du nombre de runs positifs et de runs négatifs. Ces trois nombres caractérisent l'aspect aléatoire de la série. Dans le cas où les changements de cours des actifs seraient positivement corrélés, on devrait observer de longs runs positifs ou négatifs (chaque run contient un nombre important de signes identiques), alors que si les changements de cours sont négativement corrélés, on devrait avoir des runs courts, c'est-à-dire des changements répétés de signe. Si les changements sont indépendants, aucun des deux cas ne devrait être observé. Dans un marché efficient, les séries sont sans corrélations (distribuées au hasard), les signes des changements de cours sont distribués de manière aléatoire, le nombre de runs positifs et le nombre de runs négatifs sont approximativement égaux, et le nombre total de runs suit une distribution normale dont on peut calculer l'espérance et l'écart type :

$$\mu_r = \frac{(2N_+ . N_-)}{N} + 1$$

Et

$$\sigma_r^2 = \frac{2N_+ . N_- (2N_+ . N_- - N)}{N^2(N-1)}$$

Où N est le nombre d'échantillons, N+ le nombre total de + et N− le nombre total de −, alors $N = N_+ + N_-$. Le test statistique est donc basé sur l'appréciation de manière statistique de la différence entre le nombre de runs espérés dans un contexte purement aléatoire μ_r et le nombre de runs R effectivement observés pour l'échantillon. Il suffit ensuite de calculer avec quelle probabilité le nombre R de runs observés tombe dans l'intervalle: $\mu_r - a\sigma_r \leq R \leq \mu_r + a\sigma_r$. Cela revient donc à faire un test d'hypothèse avec a=1,96 pour un test à 5%. Pour simplifier le test, nous utiliserons la statistique $z = (R - \mu_r)/\sigma_r$. Rejeter ou accepter l'hypothèse nulle du comportement aléatoire et indépendant des rendements, repose donc sur la valeur de la statistique z. Si P(z)>5% (P-value), on ne peut donc qu'accepter l'hypothèse nulle, si non on la rejette.

V. Statistiques Descriptives des Séries Étudiées

Le tableau1 suivant, présente les statistiques descriptives des rendements des 4 indices étudiés.

Tableau 1: Statistiques Descriptives Des Indices Boursiers En Niveau

	MASI	BNQ	ASSUR	IMMO
Mean	8526.206	7977.112	2478.555	9484.853
Median	9435.610	10054.98	2919.105	9649.045
Maximum	14925.99	14713.45	5277.260	19204.01
Minimum	2786.440	2201.370	570.6900	3746.790
Std. Dev.	3609.364	3957.719	1182.500	3025.436
Skewness	-0.221906	-0.320209	-0.211592	0.149784
Kurtosis	1.633169	1.402149	1.582188	2.925843
Jarque-Bera	257.8053	369.9139	273.2945	11.88921
Probability	0.000000	0.000000	0.000000	0.002620

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Nous pouvons constater que les coefficients de Skewness et de Kurtosis sont différents des coefficients d'une distribution normale qui sont respectivement 0 et 3. Nous pouvons alors rejeter l'hypothèse nulle de normalité des séries en niveau pour les 4 indices. Nous pouvons appuyer ces résultats par les statistiques de Jarque-Bera ainsi que les probabilités y afférentes. Ceci ne nous surprend pas, car toutes les series financières à haute fréquence, sont cratérisées par ce qu'on appelle les « faits stylisés » dont l'hypothèse de normalité fait partie. En inspectant le graphique1 ci-après, nous remarquons que les 3 indices sectoriels, suivent la tendance générale du marché boursier marocain exprimé par l'indice MASI. Nous pouvons alors à ce stade prématuré de notre étude, juger que les résultats des 4 tests seraient probablement très proches.

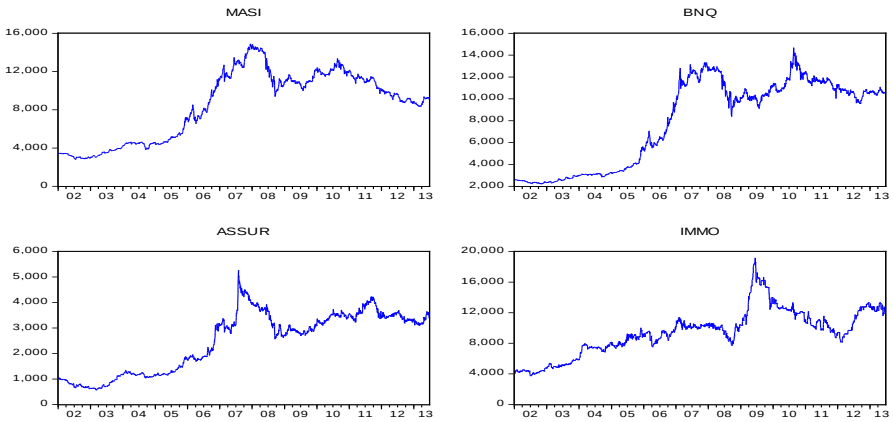


Figure 1 : Représentation des indices boursiers en niveau

Puisque les investisseurs sont plus intéressés dans les rendements des actifs que de leurs évolutions en niveau (brute) et par ce que ces rendements sont à la base de tous les calculs et les tests réalisés par la suite, nous définissons les quatre nouvelles séries suivantes : RMASI (rendement du MASI), RBNQ (Rendement de BNQ), (RASSUR, rendements de l'ASSUR) et RIMMO (Rendements de l'IMMO). Nous rappelons aussi que les rendements sont calculés en utilisant la formule suivante:

$$R_{i,t} = \ln\left(C_{i,t} / C_{i,t-1}\right) = \ln(C_{i,t}) - \ln(C_{i,t-1})$$

Avec, R_(i,t) Le rendement de l'indice (i) à l'instant (t) et C_(i,t) le cours de l'actif (i) à l'instant (t). Les statistiques descriptives des nouvelles séries, sont résumées dans le tableau 2 suivant :

Tableau 2 : Statistiques descriptives des rendements des indices boursiers.

	RMASI	RBNQ	RASSUR	RIMMO
Mean	0.000328	0.000468	0.000393	0.000351
Median	0.000417	0.000444	0.000000	0.000000
Maximum	0.044635	0.052905	0.070967	0.054112
Minimum	-0.050167	-0.057728	-0.059765	-0.107205
Std. Dev.	0.008050	0.010289	0.014250	0.014894
Skewness	-0.358008	-0.187211	-0.014256	-0.380275
Kurtosis	8.050844	7.326665	5.117408	8.065712
Jarque-Bera	3246.457	2352.812	559.4076	3273.425
Probability	0.000000	0.000000	0.000000	0.000000

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Conformément à nos attentes, même les rendements des 4 séries, présentent un coefficient de kurtosis et de skewness différents de ceux d'une distribution normale. La statistique Jarque-Bera et la probabilité y afférente, viennent confirmer le rejet de l'hypothèse nulle de normalité de ces rendements.

VI. Tests de L'efficience du Marché Financier Marocain

Comme nous l'avions énoncé, afin de tester la forme faible de l'efficience du marché financier marocain, nous appliquerons les 4 tests suivants: tout d'abord un modèle ARMA(p,q) qui sera appliquer aux 4 séries, le test des auto-corrélations des rendements, le test du rapport de la variance et finalement le test des runs. Pourtant et avant de passer à la concrétisation des différents tests (surtout le modèle ARMA), nous procéderons tout d'abord par l'identification des paramètres « p » et « q », par la method conventionnelle des critères de choix, AIC (Akaike Information Criterion) et SC (Schwartz Criterion).

a) Test des auto-corrélations

Si un marché financier est qualifié d'efficient au sens faible, nous devrons obtenir des coefficients d'auto-corrélations nulles ou significativement non différents de zéro. Cette constatation n'est pas validée sur le marché marocain puisque l'auto - corrélation d'ordre 1 est supérieure à 30% pour l'indice général du marché marocain MASI (>15% pour l'indice BNQ, >6% pour l'indice ASSUR et >25% pour l'indice IMMO). Cela, signifie que les rendements quotidiens du jour « j », sont prévisibles en utilisant uniquement les rendements quotidiennes du jour précédent « j-1».

Pourtant, se fier seulement à l'inspection du corrélorgamme, n'est pas suffisant pour tirer des jugements en faveur ou contre la significativité des coefficients. Pour cette raison, nous appliquerons le test de Box-Pierce discuté dans le paragraphe (4.2) ci-dessus. Le tableau suivant, résume les résultats de ce test :

Tableau 3 : Résultats du test de BOX-PIERCE

q	Statistique de Box Pierce (q)				$\chi^2_{(q)}$*
	RMASI	RBNQ	RASSUR	RIMMO	
1	275.151573	0.026973	15.971013	33.041925	3.8415
2	284.550165	11.547441	21.773205	33.908058	5.9915
3	1.726272	0.674325	23.094882	36.428535	7.8147
4	1.774224	0.974025	23.121855	37.015947	9.4877
5	0.674325	2.184813	24.443532	37.603359	11.0705
6	2.124873	2.376621	24.950025	46.021932	12.5916
7	0.674325	0.011988	25.096878	57.173769	14.0671
8	0.722277	0.014985	25.459515	65.913021	15.5073
9	0.242757	1.726272	25.462512	68.097834	16.9190
10	3.50649	8.346645	26.544429	74.439486	18.3070

** Table de Chi2 au seuil de 5%.*

Conformément à la règle de décision (IV.B), les rendements des 4 séries sont auto-corrélés, car il existe au moins un pas pour lequel BP(q)>χ^2 (q). Par ailleurs, nous constatons que les coefficients de corrélation sérielles, sont en général positifs et cela, quel que soit l'ordre d'auto-corrélation. La seule interprétation que nous pouvons donner à ce phénomène, est qu'une hausse des rendements, est souvent suivie par une autre hausse, et inversement, ce qui laisse entendre que l'évolution de ces indices, dépond de leur état actuel et passé, chose qui est tout à fait contradictoire avec le principe de base de la forme faible de l'efficience des marchés financiers.

b) Test de racine unitaire (test de stationnarité)

Pour pouvoir identifier le nombre optimal des retards à prendre en considération pour les modèle ARMA(p,q), nous avons pris en considération deux approches: les critères d'informations et l'analyses des corrélogrammes. Les deux critères d'informations AIC et BIC à utiliser sont calculés par les formules suivantes : Critère d'information d'Akaike: $\mathrm{AIC} = \mathrm{e}^{2k/n}\left(\frac{\sum_{i=1}^{n}\hat{u}_i^2}{n}\right) = \mathrm{e}^{2k/n}\left(\frac{SCR}{n}\right)$, où, k est le nombre des variables explicatives et n le nombre total des observations. Cette formule peut aussi être écrite sous la forme: $\ln \mathrm{AIC} = \left(\frac{2k}{n}\right) + \ln\left(\frac{SCR}{n}\right)$. Critère de Schwarz (SC) ou BIC : $\mathrm{SC} = \mathrm{n}^{k/n}\left(\frac{\sum_{i=1}^{n}\hat{u}_i^2}{n}\right) = \mathrm{n}^{k/n}\left(\frac{SCR}{n}\right)$. Qui peut aussi être écrit sous la forme: $\ln SC = \frac{k}{n}\ln(n) + \ln\left(\frac{SCR}{n}\right)$. Pour chacune des 4 variables, nous utilisons un nombre croissant des retards p et q et à chaque fois, nous calculons le « AIC » et le « SC ». Nous nous arrêtons au nombre optimal de p et q qui nous garantissent le minimum de ces deux critères.

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Conformément aux résultats obtenus par Younes El Khattab et Chourouk Moudine, ayant utilisé un modèle ARIMA pour tester l'efficience au sens faible du marché financier marocain, le nombre des retards que nous avons obtenus est le même pour le MASI. En s'appuyant sur la méthode de Box-Jenkins (Annexe), les modèles à prendre en considération seront ARMA(1,2) pour le RMASI, ARMA(2,3) pour le RBNQ, ARMA(1,1) pour le RASSUR et un ARMA(2,1) pour le RIMMO. Pourtant, puisque cette méthode est basée sur l'inspection des corrélogrammes, il se peut y avoir une petite marge d'erreur (le modèle flou).

Pour remédier à ce problème qualifié de « Bad model problem», (FAMA, 1969), nous avons utilisé le critère d'information d'Akaike et Schwartz pour un ensemble de retard (1 à 4 pour p et 1 à 4 pour q). Nous nous sommes alors retrouvés avec 32 modèles pour chaque variable. Les résultats de ces calculs sont exposés dans le l'annexe A2. Conformément à cette approche, nous utiliserons les modèles ARMA(p,q) suivants :

	AIC		BIC	
	p	q	p	q
RMASI	1	1	1	1
RBNQ	1	1	1	1
RASSUR	2	4	2	4
RIMMO	4	2	3	2

Le graphique de la fonction d'auto-corrélation comme celui de la fonction d'auto-corrélation partielle des résidus, ne contiennent pas de pics significativement différents de zéro, sauf pour l'indice du secteur de l'immobilier. Par conséquent, les résidus ε_(i,t) issus des 3 autres modèles (y compris l'indice général du marché marocain), forment un bruit blanc. Nous pouvons donc juger sur la base d'une spécification ARMA, que la marche de 3 parmi 4 rendements d'actifs spécifiés, ne correspond pas à l'hypothèse d'une marche aléatoire.

Ci-après, les résultats du test de Dickey Fuller Augmenté sur les séries des rendements du MASI, BNQ, ASSUR et IMMO, définies précédemment:

Null Hypothesis: **RMASI** has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=22)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-29.54808	**0.0000**
Test critical values:	1% level	-3.435381	
	5% level	-2.863649	
	10% level	-2.567943	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: **RASSUR** has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=22)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-29.45189	**0.0000**
Test critical values:	1% level	-3.435385	
	5% level	-2.863651	
	10% level	-2.567944	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: **RBANK** has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=22)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-31.89287	**0.0000**
Test critical values:	1% level	-3.435381	
	5% level	-2.863649	
	10% level	-2.567943	

*MacKinnon (1996) one-sided p-values.

Null Hypothesis: **RIMMO** has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=22)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-31.63364	**0.0000**
Test critical values:	1% level	-3.435381	
	5% level	-2.863649	
	10% level	-2.567943	

*MacKinnon (1996) one-sided p-values.

En inspectant les différentes « t-statistic », nous pouvons rejeter au seuil de 1%, 5% et 10%, l'hypothèse nulle de l'existence d'une racine unitaire dans les 4 séries des rendements. Autrement dit et conformément aux graphiques des rendements ci-dessus, nous pouvons confirmer que les 4 séries de rendements sont stationnaires. Cette stationnarité des 4 séries des rendements est facilement détectable sur les graphiques des rendements ci-dessous où on remarque des fluctuations autour d'une moyenne et que la variance semble être contenue.

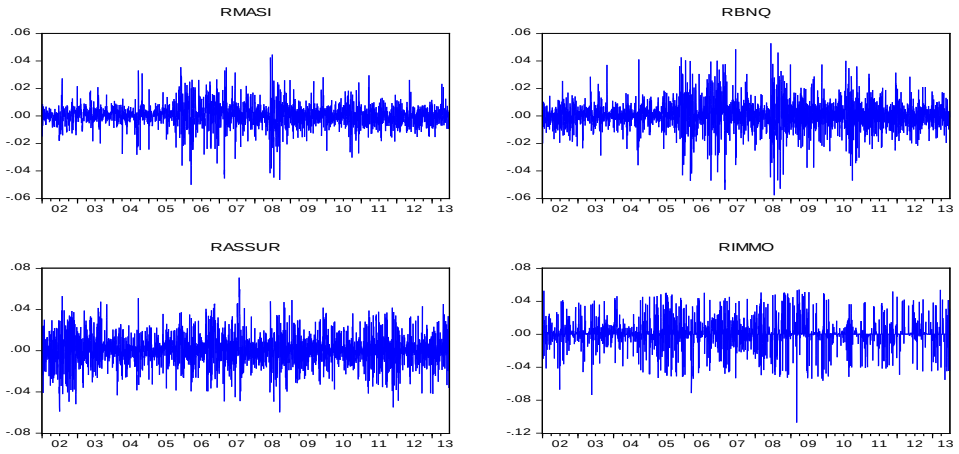


Figure 2 : Représentation des rendements des indices boursiers

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c) Test de rapport de la variance (VR)

Le présent test, emploi à la fois l'hypothèse d'homoscédasticité et d'hétéroscédasticité avec des intervalles (q) de 2, 4, 8, 16 et 32 observations dont les résultats sont résumés dans les tableaux ci-après :

Null Hypothesis: **RMASI is a random walk**
Date: 06/09/14 Time: 17:56
Sample: 01/01/2002 31/12/2013
Included observations: 2994 (after adjustments)

Joint Tests	Value	Df	Probability
Max |z| (at period 1)	18.59992	2994	0.0000
Wald (Chi-Square)	374.3226	6	0.0000

Individual Tests

Period	Var. Ratio	Std. Error	z-Statistic	Probability
2	0.660073	0.018276	-18.59992	0.0000
4	0.382931	0.034191	-18.04785	0.0000
8	0.244917	0.054060	-13.96744	0.0000
16	0.194535	0.080444	-10.01271	0.0000
32	0.169135	0.116575	-7.127314	0.0000
64	0.168185	0.166844	-4.985583	0.0000

Null Hypothesis: **RBNQ is a random walk**
Date: 06/09/14 Time: 17:56
Sample: 01/01/2002 31/12/2013
Included observations: 2994 (after adjustments)

Joint Tests	Value	df	Probability
Max |z| (at period 1)	21.56034	2994	0.0000
Wald (Chi-Square)	476.6040	6	0.0000

Individual Tests

Period	Var. Ratio	Std. Error	z-Statistic	Probability
2	0.605970	0.018276	-21.56034	0.0000
4	0.341824	0.034191	-19.25014	0.0000
8	0.219158	0.054060	-14.44392	0.0000
16	0.151630	0.080444	-10.54606	0.0000
32	0.127436	0.116575	-7.485016	0.0000
64	0.120620	0.166844	-5.270672	0.0000

Null Hypothesis: **RASSUR is a random walk**
Date: 06/09/14 Time: 17:56
Sample: 01/01/2002 31/12/2013
Included observations: 2994 (after adjustments)

Joint Tests	Value	Df	Probability
Max |z| (at period 1)	24.81339	2994	0.0000
Wald (Chi-Square)	615.9437	6	0.0000

Individual Tests

Period	Var. Ratio	Std. Error	z-Statistic	Probability
2	0.546518	0.018276	-24.81339	0.0000
4	0.315602	0.034191	-20.01706	0.0000
8	0.190120	0.054060	-14.98105	0.0000
16	0.133216	0.080444	-10.77497	0.0000
32	0.102522	0.116575	-7.698731	0.0000
64	0.091763	0.166844	-5.443632	0.0000

Null Hypothesis: **RIMMO is a random walk**
Date: 06/09/14 Time: 17:56
Sample: 01/01/2002 31/12/2013
Included observations: 2994 (after adjustments)

Joint Tests	Value	df	Probability
Max |z| (at period 1)	19.93292	2994	0.0000
Wald (Chi-Square)	400.2388	6	0.0000

Individual Tests

Period	Var. Ratio	Std. Error	z-Statistic	Probability
2	0.635712	0.018276	-19.93292	0.0000
4	0.420487	0.034191	-16.94942	0.0000
8	0.314050	0.054060	-12.68862	0.0000
16	0.250265	0.080444	-9.319934	0.0000
32	0.199777	0.116575	-6.864461	0.0000
64	0.169352	0.166844	-4.978592	0.0000

Des preuves empiriques obtenues suite au test du ratio de la variance pour les 4 séries des rendements quotidiens, indiquent que l'hypothèse nulle de la marche aléatoire, est rejetée sous les 2 hypothèses (homoscédasticité et hétéroscédasticité) pour toutes les séries. Pour la séries MASI par exemple, la z-statistique suggère que le ration de la variance, est significativement différent de 1 pour toutes les valeurs de « q » au seuil de 1, 5 et 10%, par conséquent, l'hypothèse nulle est fortement rejetée pour l'indice du marché. De façon similaire, le test pour les 3 autres indices sectoriels, rejette aussi l'hypothèse nulle de la marche aléatoire pour les niveaux de « q » aux mêmes seuils de significativité.

Afin de détecter si le marché financier marocain respecte les conditions dictées par la forme faible de l'efficience, le test des runs est mis en place et les résultats sont résumés dans le tableau suivant :

d) Test des runs

Tableau 4 : Résultats du test des runs

Indice (rendements)	Nombre des runs observés (R)	Nombre des runs espérés (μ_r)	Ecart type des runs (σ_r)	z-statistic*	P-value
MASI	1226	1454,56	26,55	-8,60	0,00000
BNQ	1426	1472,29	26,87	-1,72	0,04247
ASSUR	1516	1494,06	27,27	0,80	0,78940
IMMO	1112	1345,19	24,55	-9,49	0,00000

** seuil de 5%*

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Puisque les rendements des séries étudiées ne suivent une distribution normale (analyse statistiques des données), le test des runs est alors plus approprié que le test des auto-corrélations, pour étudier leurs dépendances. Plus précisément, les résultats des tests des runs pour appliqués aux 4 séries, montrent que le nombre des runs observés, est inferieur au nombre des runs espérés (au seuil de 5%) pour les séries MASI, BNQ et IMMO, et supérieur pour la série ASSUR. En inspectant les probabilités relatives à la z-statistique de chacune de ces valeurs, nous pouvons alors rejeter l'hypothèse nulle d'indépendance pour l'indice général de la bourse de Casablanca (MASI), le secteur bancaire et le secteur de l'immobilier. Pourtant, nous ne pouvons pas rejeter cette hypothèse pour le secteur des assurances.

VII. Conclusion

L'objectif de ce travail était de tester la forme faible de l'efficience informationnelle du marché financier marocain à travers quatre principaux indices de la bourse de Casablanca (MASI, secteur bancaire, secteur des assurances et le secteur de l'immobilier). Dans le but d'augmenter la pertinence de nos résultats, nous avons diversifié nos tests en considérant 4 tests les plus couramment utilisés dans les études empiriques des marchés financiers: test d'auto-corrélations, test de racine unitaire, test du rapport de la variance et le test des runs.

Tous ces tests rejettent l'hypothèse d'efficience du marché financier marocain et les causes de cette inefficience sont multiples. Il y a en premier lieu la jeunesse du marché marocain, même si des réformes de la place boursière ont vu le jour depuis 1993, de même le niveau de capitalisation qui demeure faible ainsi que le volume des transactions qui reste assez limité. Plusieurs sources d'inefficience (plus complexes), peuvent être soulevées (les mêmes citées par El Khattab et Chourouk, 2014):

a) L'inefficacité des organismes de contrôle

Le manque d'indépendance du Conseil Déontologique des Valeurs Mobilières (CDVM) vis-à-vis de l'exécutif et le champ étroit de ses prérogatives, constituent une poche d'inefficience pour la bourse de Casablanca. Dans ces conditions, l'intervention des autorités de surveillance reste peu efficace. Or, l'efficacité des organismes de contrôle est un élément clé pour le renforcement de la transparence du marché.

b) La diffusion de l'information

Au Maroc, les sociétés de bourse occupent une place importante comme canaux de diffusion de l'information, ces sociétés monopolisent la formulation des recommandations d'achat ou de vente à travers l'émission des notes de recherche ciblant les différentes valeurs de la cote. Cependant, les recommandations formulées ne sont pas tout à fait saines et neutres, dans la mesure où elles peuvent être motivées par des considérations liées à la propre rentabilité commerciale de ces sociétés de bourse. Ainsi, les analystes financiers marocains restent prisonniers des enjeux commerciaux des sociétés de bourse qui les emploient. Cette absence de neutralité dans la diffusion des recommandations biaise l'efficience informationnelle de la place.

c) Les coûts de transaction

Le régime fiscal de la bourse de Casablanca, constitue une contrainte de plus qui perturbe le comportement des investisseurs. Le relèvement de la taxe sur les plus-values de cession d'actions de 10% à 15%, a réduit sensiblement le gain potentiel susceptible d'être réalisé par les particuliers. Dans ces conditions, l'investisseur individuel n'agira sur le marché que dans la mesure où le gain espéré est supérieur au coût de la transaction. Son comportement devient donc tributaire de la variable fiscale, au lieu de dépendre uniquement de l'information diffusée, ce qui nuit à l'efficience de la bourse. De leur part, les institutionnels ont perdu le droit aux abattements appliqués auparavant sur leurs profits de cession de valeurs mobilières. La perte de cet avantage fiscal, réduit la marge de manœuvre des investisseurs institutionnels, et limite l'efficacité de leur rôle dans la stabilisation du marché et l'amélioration de son efficience. Leur comportement risque de devenir spéculatif en visant le court terme (car les placements à long terme ne sont plus fiscalement avantageux pour eux). Le Royaume du Maroc, tout comme les autres pays émergents, ont montré un intérêt croissant pour les marchés boursiers depuis le début des années 1990, ce qui explique les nombreuses réformes entreprises pour améliorer, pourtant, la qualité informationnelle de la bourse de Casablanca, peut être améliorée par la mise en place d'un programme ambitieux axé sur les points suivants :

1. Le lancement, par la société gestionnaire de la place en partenariat avec les sociétés de bourse, d'une vaste campagne de communication dans le but de sensibiliser les investisseurs individuels aux principes fondamentaux de la gestion du portefeuille (adopter une attitude proactive), car l'amélioration de la rationalité des avoirs des investisseurs particuliers, passe par leur sensibilisation à la nécessité d'investir sur le long terme au lieu d'adopter un comportement spéculatif (à court terme), l'importance de la diversification du portefeuille et la nécessité de fonder les décisions d'investissement sur des informations pertinentes, telles que l'activité de l'entreprise, ses projets, son secteur, ses résultats,...
2. Le renforcement des pouvoirs et de l'indépendance du CDVM, ainsi que l'élargissement du champ de ses prérogatives. Notons dans ce sens, l'adoption en 2013, par le parlement, du texte de loi qui consacre l'indépendance du gendarme de la bourse et lui

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confère la qualité d'Autorité Marocaine des Marchés de Capitaux (A.M.M.C).

3. Un niveau raisonnable de coûts de transaction, est une nécessité pour améliorer l'efficience informationnelle de la bourse marocaine. Les pouvoirs publics ont un rôle clé à jouer dans ce cadre, en allégeant la pression fiscale sur les investisseurs boursiers et en évitant de taxer davantage les plus-values de cession des valeurs mobilières (spécialement pour les personnes physiques). Le rôle des sociétés de bourse comme canaux de diffusion de l'information, est aussi un point clé à revoir. La diffusion des recommandations par ces organismes, doit se faire dans le respect des règles déontologiques. Pour cette raison, il est nécessaire de contrôler la crédibilité et la neutralité des informations diffusées par les sociétés de bourse. Signalons dans ce cadre l'édiction en 2008, par le CDVM, d'une circulaire définissant les règles déontologiques minimales devant être appliquées par les analystes financiers produisant des notes de recherche, contenant des évaluations et recommandations sur les titres des émetteurs. Le but étant de professionnaliser davantage le métier d'analyste financier.

Tous les tests et les graphiques dans ce travail, ont été réalisés sous Eviews7

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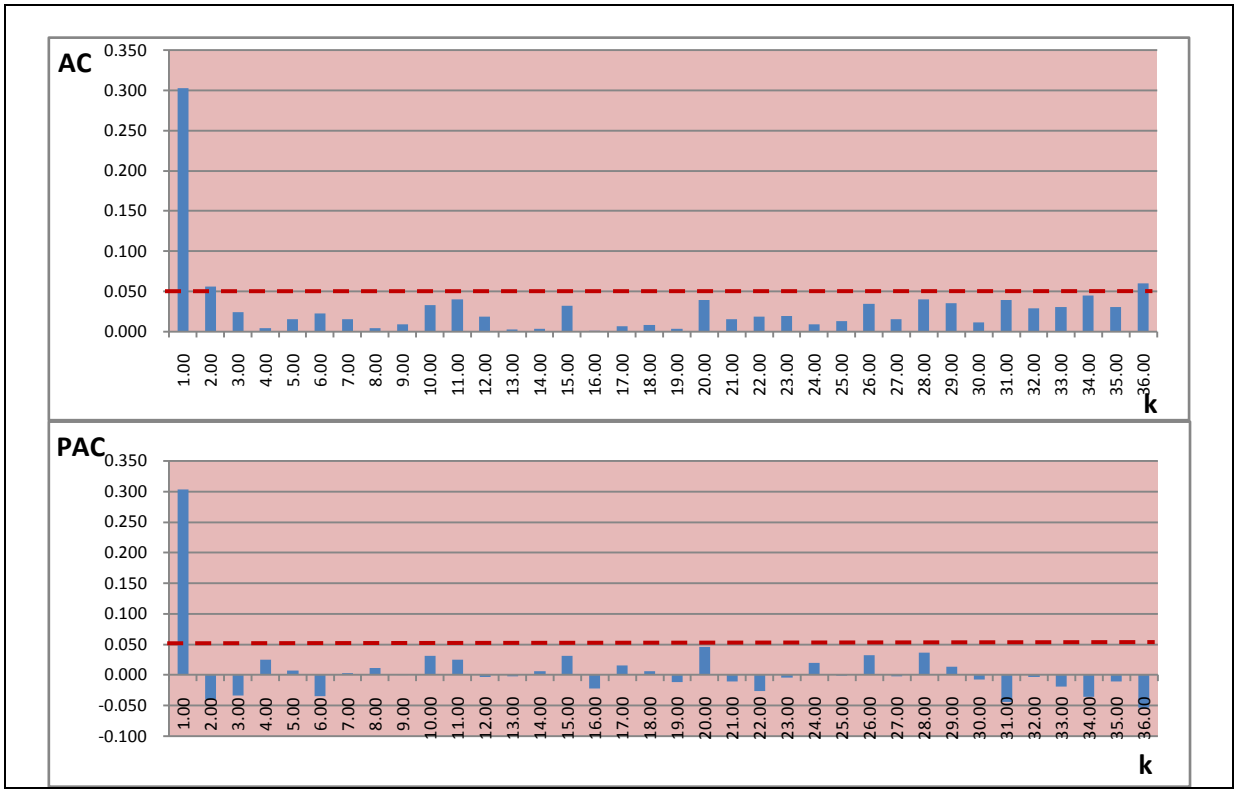
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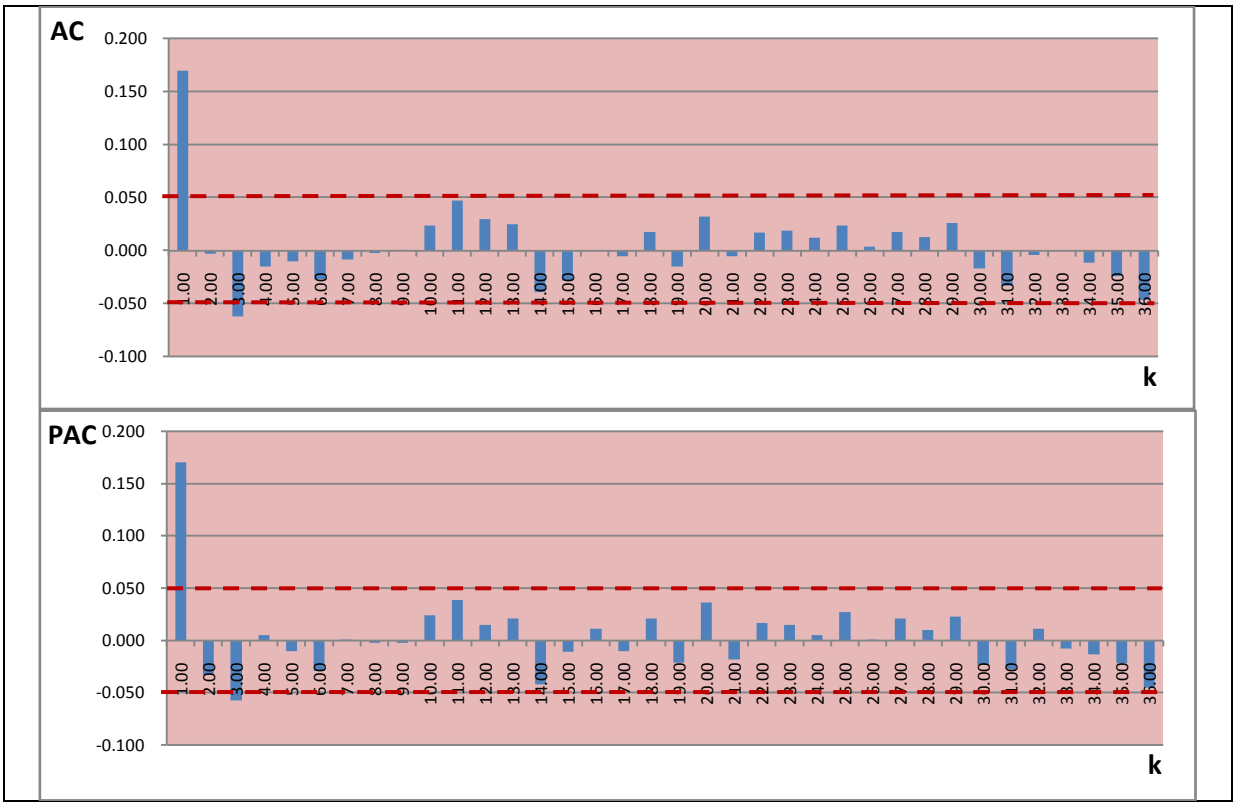
ANNEXE: FAC des rendements des 4 indices.

1. *RMASI*

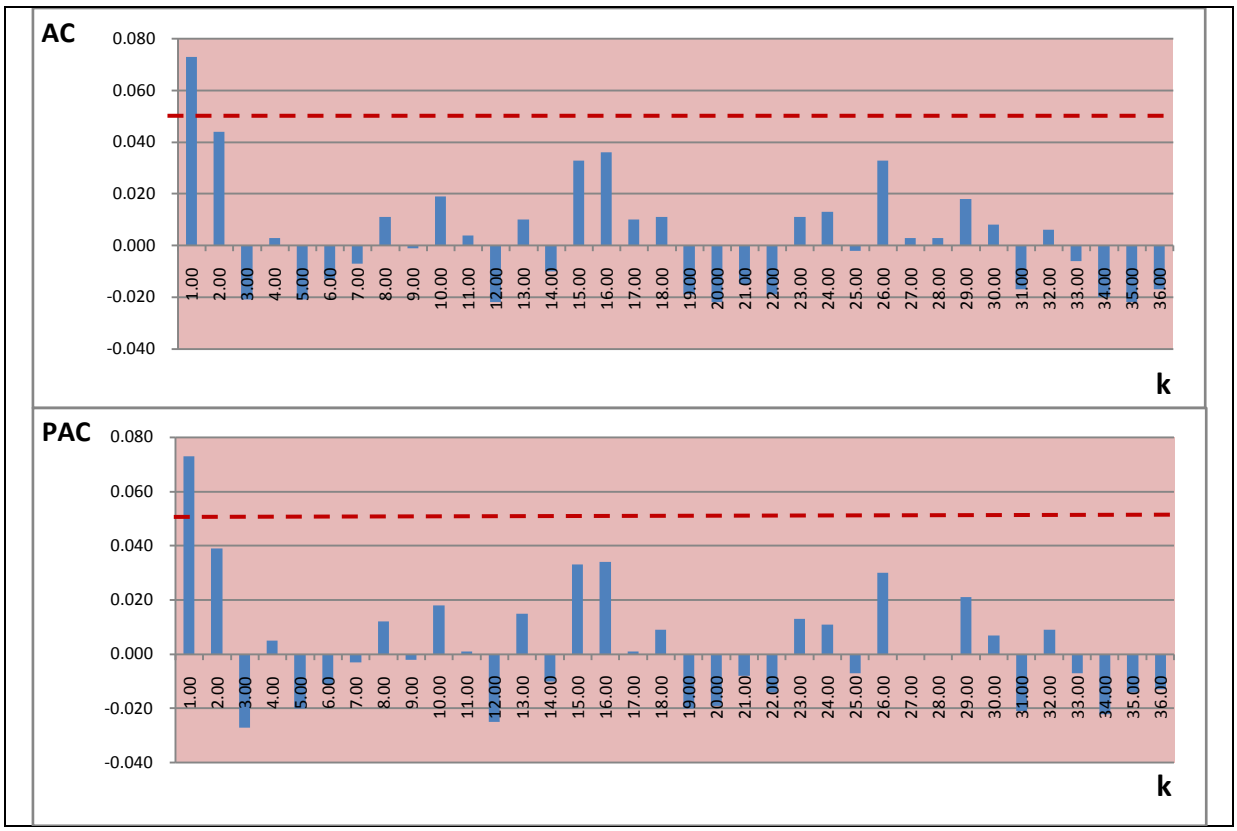


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2. RBNQ



3. RASSUR



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4. *RIMMO*



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Global Journal of Management and Business Research: C Finance
Volume 15 Issue 2 Version 1.0 Year 2015
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

L'apport Des PME Dans Le Développement Du Secteur Privé En Tunisie: *Efficacité Désirée et Problème De Financement*

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Motsclés: *crédits accrochés, assistance technique, restructuration financière.*

GJMBR - C Classification : *JELCode : F65*



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L'apport Des PME Dans Le Développement Du Secteur Privé en Tunisie: *Efficacité Désirée et Problème De Financement*

Béchir Fridhi

Résumé- En Tunisie, les PME représentent plus de 80% du tissu économique. Elles sont considérées comme un segment attrayant pour les banques puisqu'elles leur permettent de maximiser leur liquidité, de diversifier leur portefeuille et de faire face à la compétition et la réduction des parts de marché. Toutefois, les PME rencontrent plusieurs difficultés au niveau de l'octroi des financements auprès des banques. Suite aux dommages qu'a subi le secteur des PME depuis 2011 jusqu'à l'heure actuelle, le niveau des crédits accrochés (prêts non performants/NPL) ou encore créances douteuses s 'est aggravé, presque le 1/3 des PME n'ont pas fait preuve de transparence et à honorer leurs engagements financiers en respectant les termes des contrats des crédits conclus avec les banques (taux de créances douteuses s'élève en Tunisie à 24%, contre 5 % au Maroc). D'autre part, la pression de la concurrence sur le secteur manufacturier à cause de la libéralisation des échanges commerciaux et du commerce extérieur a augmenté. En conséquence de quoi, le Gouvernement tunisien a présenté aux pays développés qui possèdent une longue expérience dans le domaine du financement des PME, plusieurs demandes d'assistance financière sous forme de lignes de crédits ou de fonds destinés au financement des PME.

Afin d 'atteindre les standards internationaux en matière de qualité et de coûts, et d'accroitre la compétitivité des entreprises industrielles, un *Programme de Mise à Niveau* (PMN) a été lancé depuis 1996 aux fins de permettre au système productif tunisien de mieux s'adapter aux exigences du marché mondial fortement concurrentiel, d'encourager le partenariat industriel et de renforcer l'environnement socio-économique de l'entreprise. Plusieurs mesures spécifiques ont été aussi introduites par les autorités tunisiennes pour encourager l'investissement privé dans le secteur des PME, notamment en augmentant le niveau des contributions du FOPRODI *(Fonds de Promotion et de Décentralisation Industrielle)* aux projets d'investissement et la création de plusieurs institutions afin de fournir aux PME une assistance technique et une restructuration financière.

Motsclés: crédits accrochés, assistance technique, restructuration financière.

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List des Abbrevations

Abbrevation List

French Abbreviations	French Title	English Title	English Abbreviations
A.Bank	Amen Bank	Amen Bank	
AFD	Agence Française de Développement	French Agency of Development	
APD	Aide Publique au Développement	Public Aid for Development	
API	Agence de Promotion Industrielle	Industry Promotion Agency	
ATB	Arab Tunisian Bank	Arab Tunisian Bank	ATB
BAD	Banque Africaine de Developpement	African Development Bank	ADB
BAE	Bureau d'assistance aux Entreprises	SME Assistance Bureau	
BCT	Banque Centrale de Tunisie	Central Bank of Tunisia	CBT
BEI	Banque Européenne d'Investissement	Europeen Bank of Investment	EIB
BFPME	Banque de Financement des Petites et Moyennes Entreprises	SME Financing Bank	
BH	Banque de l'Habitat	Bank of Habitat	
BIAT	Banque Internationale Arabe de Tunisie		
BMN	Bureau de Mise à Niveau	Upgrading Bureau	
BNA	Banque Nationale Agricole		
BS	Banque du Sud		
BT	Banque de Tunisie		
BTKD	Banque Tuniso-Kuweitienne de Dé veloppement		
CEPI	Centre d'Etude et de Prospective Industrielle		
COPIL	Comité de Pilotage	Steering Committee	
CSCE	Centre de Soutien à la Création d'Entreprises	Support Center for Enterprise Creation	
DT (DTN)	Dinar Tunisien	Tunisian Dinar	TD (TND)
FODEC	Fonds de développement de la Compé titivité Industrielle	Industrial Competitiveness Development Fund	
FOPRODI	Fonds pour la Promotion de la Dé centralisation Industrielle	Industry Decentralization Promotion Fund	
IAA	Industrie Agro-Alimentaire	Agro Food Industry	
IAT	Intermédiares Agrées Tunisiens	Tunisian Certified Intermediary	
ICC	Industrie du cuir et de la chaussure	Leather and Footwear Industry	
ICH	Industrie de la Chimie	Chemical industry	
ID	Industrie Diverses	Miscellaneous Industries	
IMCCV	Industrie des Matériaux de Construction, de la Céramique et du Verre	Building Material, Ceramics and Glass Industry	
IME	Industries Mécaniques et Electriques	Mechanic and Electric Industries	
ITH	Industrie du Textile et de l'Habillement	Textile and Clothing Industry	
JBIC	Japan Bank for International Cooperation	Japan Bank for International Cooperation	
KfW	Kreditanstalt für Wiederaufbau	Kreditanstalt für Wiederaufbau	KfW
MDECI	Ministère du Développement Economique et de la Coopération internationale	Ministry of Economic Development and International Cooperation	MEDIC
mDT	Mille Dinar Tunisien	Thousand Tunisian Dinars	000' TD
MDT	Million Dinar Tunisien	Million Tunisian Dinar	MTD
MIEPME	Ministère de l'Industrie, de l'Energie et des Petites et Moyennes Entreprises	Ministry of Industry, Energy and SME	
MOF	Ministère des Finances	Ministry of Finance	
MRSTDC	Ministère de la Recherche Scientifique et de la Technologie et du Développement des Compétences	Ministry of Scientific Research, Technology and Competency Development	
MTC	Ministère des Technologies de la Communication	Ministry of Communication and Technologies	
PIB	Produit Intérieur Brut	GDP	
PME	Petites et Moyennes Entreprises	Small and Medium Enterprises	SME
PMI	Programme de Modernisation Industrielle	Industrial Modernisation Program	
PMN	Programme de Mise à Niveau	Upgrading Program	
PNB	Produit National Brut	Gross National Product	
RF	Restructuration Financière	Financial Restructuring	RF
SICAR	Société d'Investissement à Capital Risque	Venture Capital	VC
SOTUGAR	Société Tunisienne de Garantie		
STB	Société Tunisienne de Banques		
TVA	Taxe sur la valeur ajoutée	Value Added Tax	VAT
UBCI	Union Bancaire pour le Commerce et l'Industrie		
UGPMI	Unité de Gestion du Programme de Modernisation Industrielle		
UIB	Union Internationale de Banque		

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I. Introduction

Dans le secteur privé, les petites et moyennes entreprises (PME), y compris les micro - entreprises, ont un rôle particulièrement important. Il est largement admis que les PME constituent « la cheville ouvrière » du secteur privé, quelque soit son niveau de développement, et apportent une contribution non négligeable au développement économique en général et au développement industriel en particulier.

Les PME représentent plus de 90% des entreprises existant dans le monde et leur part dans l'emploi se situe entre 50 et 60%, elles font appel à une main d 'œuvre plus nombreuse et tendent à contribuer à une répartition plus équitable des revenus que les grandes entreprises, elles contribuent dans les PVD à une répartition plus rationnelle des ressources et elles concourent à la mise en place d'un système de production intégré. Comme les PME constituent un segment majeur du secteur privé, et que leurs caractéristiques et possibilités spécifiques les distinguent des grandes entreprises, leur contribution au développement du secteur privé doit tenir une attention majeure.

Malgré un environnement international difficile et les changements climatiques, l'économie Tunisienne s'est très bien comportée au cours de cette décennie. Toutefois, plusieurs défis demeurent à relever, notamment l'emploi, la pression croissante de la concurrence étrangère et l'augmentation importante du prix du pétrole. En outre, en prévision de l'abolition des droits de douane en raison d'un accord de partenariat avec l'Union Européenne, le renforcement de la compétitivité des industries tunisiennes est devenu une question urgente. En outre, le Gouvernement tunisien vise à développer les industries locales et les opportunités d'emploi grâce à la promotion des PME et met en œuvre des mesures destinées à mobiliser les capitaux et les technologies tant à l'étranger qu'à l'intérieur du pays, à développer les ressources humaines et à promouvoir le développement scientifique et technologique. Notamment, le Ministère de l'Industrie, dans le but de renforcer la compétitivité des PME mène des politiques d'appui dans le cadre du Programme de Mise à Niveau (PMN) en vue d'encourager les investissements en équipements et installations afin d'améliorer la qualité des produits pour les PME, de promouvoir une bonne gestion et la restructuration financières desdites entreprises. D'autre part, en 2005, une nouvelle institution bancaire d'Etat dénommée la Banque de Financement des Petites et Moyennes Entreprises (BFPME) qui a commencé principalement à financer les nouvelles PME. En outre, le Ministère de la Recherche Scientifique de la Technologie et de la Communication s'efforce de promouvoir le développement de nouvelles technologies au moyen de la construction dans tout le pays de technopôles appelés « Technoparc », des ressources humaines dans le domaine de l'industrie, et d'aménager l'environnement des zones et parcs industriels destinés aux entreprises. D'autre part, en ce qui concerne la promotion de l'industrie et du commerce extérieur et les mesures d'incitation à l'intention des investisseurs étrangers, l'Agence de Promotion Industrielle (API) et l'Agence de promotion des investissements étrangers (FIPA) mènent chacune des activités dans ces domaines respectifs.

A l'égard de ces activités liées à la promotion de ces PME, les diverses agences et organisations d'aide concernées fournissent divers appuis dans le domaine d'assistance technique ou de l'assistance financière sous forme de fonds, assurés notamment par l'Union Européenne (UE) et les différents pays européens et agences concernées (UE、Agence Française de Développement(AFD), *Kreditanstalt für Wiederaufbau(KfW), Japan Bank for International Coperation (JBIC)...)* qui apportent une assistance tant technique que financière. Toutefois, en plus de cette coopération et assistance, et dans le domaine financier concernant les PME, il existe actuellement des limites et restrictions dans le secteur bancaire privé tunisien en raison entre autres du problème des « crédits accrochés » (prêts non performants ou créances douteuses/NPL)[1]. D'autre part, on constate une situation caractérisée par le développement insuffisant des techniques d'évaluation du financement destiné au développement industriel en raison entre autres d'un manque d'expérience. Pour ces différentes raisons, les ressources financières, et notamment les fonds destinés au financement à moyen et à long terme, sont insuffisants, et les capacités des institutions financières et bancaires en rapport avec l'évaluation des projets de financement, leur mise en œuvre et leur gestion sont insuffisantes. En conséquence de quoi, le Gouvernement tunisien a présenté aux pays développés qui possèdent une longue expérience dans le domaine du financement des PME plusieurs demandes d'assistance financière sous forme de lignes de crédits ou de fonds destinés au financement des PME.

A cet égard, un échantillon de 200 PME nous été présenté par la BFPME et l'API, nous avons choisi 59 PME de divers secteurs d'activités et un entretien avec les plus hauts responsables a été fait dans le but (i) d'étudier de manière concrète les besoins de

[1] Parmi les créances échues restées impayées, celles restées impayées pour plus de 90 jours sont considérées comme des crédits accrochés (prêts non performants./NPL). Les règles appliquées concernant les provisions par classe de risque (délai d'impayé) pour les crédits accrochés sont les suivantes – Banque centrale, Circulaire NO.91/24. Délai d'impayé de 90 à 180 jours, taux de provision de 20% ; délai d'impayé de 180 à 360 jours, taux de provision de 50% ; et délai d'impayé supérieur à 360 jours, taux de provision de 100%.

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financement individuels des PME et les détails relatifs au financement à moyen et à long terme destiné à la création de nouvelles entreprises mis en œuvre par la BFPME au moyen d'une enquête par questionnaire; (ii) d'examiner les entreprises faisant l'objet de projets d'étude de prêts à moyen et long terme *(TSL/Two Step Loan)* et les besoins de financement des PME existantes qui mettent en œuvre le Programme de Mise à Niveau (PMN).

II. Economie Tunisienne et Développement du Secteur Privé

La Tunisie s'efforce de mettre en œuvre des réformes structurelles visant à renforcer la compétitivité industrielle, à augmenter le volume des exportations et à créer des emplois. Elle vise également à promouvoir les investissements dans les secteurs les plus prometteurs, à renforcer les infrastructures et assises technologiques et à encourager une plus grande participation des (PME) au Programme de Mise à Niveau (PMN).

En outre, en mars 2005, la Tunisie a mis en place un programme spécial visant à renforcer la compétitivité internationales des entreprises tunisiennes dans le domaine du textile et de l'habillement grâce à une coopération accrue dans le design des produits finis et la promotion de partenariat avec des entreprises étrangères. D'autre part, en avril 2005 une campagne intitulée « Programme de Modernisation Industrielle (PMI) » a été lancée et qui vise ainsi à promouvoir la création de PME et leur développement.

En ce qui concerne les industries manufacturières et de transformation dans leur ensemble, on a constaté en 2010 un ralentissement de leur croissance. La principale cause en est le ralentissement de la croissance du secteur de l'agro-alimentaire et la décroissance du secteur du textile et de l'habillement.

En 2009, le secteur de l'agro-alimentaire a connu un taux de croissance de 12,4%, mais en 2012, le taux de croissance effectif n'était que de 2,6%. En ce qui concerne les secteurs industriels des matériaux de construction, de la céramique et du verre, le taux de croissance était de 2 % en 2012 (comparé à 6 % l'année précédente) en raison des fermetures successives des briqueteries et du faible taux de croissance de la production industrielle. D'autre part, les industries mécanique et électrique ont enregistré pour une deuxième année consécutive un taux effectif de croissance de 8% grâce à l'augmentation de la demande tant à l'intérieur du pays qu'à l'extérieur.

Bien que les industries chimiques aient enregistré en 2010 une croissance de l'ordre de 5% (3% en 2009), les industries du textile, de l'habillement, du cuir et de la chaussure ont enregistré quant à elles de manière inévitable une croissance négative de -2,5% (-0,4% en 2009 et -3,7% en 2008) à cause des conditions défavorables provoquées par l'abolition des accords multilatéraux concernant le textile en janvier 2005.

a) Investissements

La croissance des investissements en terme de volume demeure en-dessous des prévisions du XI^{ème} Plan quinquennal de développement (7 %), avec une moyenne annuelle de 2,8% durant la période 2010 -2014. Le pourcentage peu élevé reflète la tendance irrégulière des investissements (taux négatifs entre 2008 et 2009 par rapport à la situation mondiale, puis des taux positifs depuis 2010, avec un niveau de croissance record pour l'année 2010 de près de 5%). A cause de goulots d 'étranglement, les investissements privés ont représenté 55 % du total des investissements alors que l'objectif visé était de 56,5%. Les investissements directs étrangers se sont élevés à 485 millions de DT en 2010 et représentaient 2,7% du P.I.B. (un niveau assez bas comparé aux niveaux enregistrés pour les autres pays comparables). Les mesures destinées à améliorer l'environnement des affaires doivent être accélérées et renforcées, notamment au regard de la flexibilité, la Tunisie n'ayant pas encore attiré suffisamment d'investissements étrangers malgré un système généreux de mesures d'incitation et d'encouragement et des actions visant à encourager les exportations et l'établissement de sociétés non résidentes *(Offshore).*

b) Compétitivité des exportations

Au regard du commerce extérieur, les exportations ont contribué au P.I.B. pour 25,8% par rapport à un objectif de 47% fixé dans le XI^{ème} Plan de développement. L'écart entre les prévisions et les performances enregistrés est dû en partie à la croissance limitée dans les secteurs des exportations de textiles et du cuir (3% en fait par rapport à une estimation de 7,3%) et une croissance moins forte que prévue concernant le volume des exportations (croissance réelle de 2,2% comparée à une prévision de 7,6%). Par contre, des prix compétitifs largement attribuables à la dépréciation du Dinar Tunisien ont stimulé les exportations.

c) Emploi

On estime que 282.000 emplois ont été créés durant la période 2010 - 2014 (soit en moyenne 70.000 emplois par an) ce qui a permis la réduction du taux de chômage qui est passé de presque 20% en 2011 à 16,8% en 2014. Malgré cela, le taux demeure élevé et constitue pour le Gouvernement une préoccupation majeure qui considère que la réduction du chômage est une priorité clé. Au delà des mesures financières

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d'incitation (le Gouvernement paie une partie du salaire des employés), les politiques de promotion de l'emploi devront prendre en considération les changements structurels affectant les demandeurs d'emploi avec l'arrivée sur le marché du travail de nombreuses femmes et une main d'œuvre de plus en plus instruite.

III. Politique D'appui aux pme et Programme de Mise à Niveau (pmn)

Le Programme de Mise à Niveau (PMN) des PME a été lancé en 1995 par le Ministère de l'Industrie. Il s'agit d'un système de soutien industriel qui apporte aux entreprises trois sortes d'appui décrits ci-dessous afin de promouvoir le développement des entreprises tunisiennes et de leur permettre de faire face à la concurrence sur les marchés libre -échangistes européens et méditerranéens.

- Investissements tangibles en équipements et installations (Investissements Matériels) : un système d'appui (au moyen de subventions et d'aides financières, de prêts bancaires) afin que les entreprises investissent dans les équipements et installations dans le but d'améliorer la qualité de leurs produits finis.
- Investissements intangibles (Investissements Immatériels) : un système d'aide et de subventions destiné à appuyer les entreprises pour les aspects « Soft » de leurs activités (stratégies de renforcement de la compétitivité de l'entreprise, amélioration de la gestion commerciale, développement et exploitation des marchés, restructuration organisationnelle, informatisation des activités etc)
- Restructuration financière (Au regard des investissements en équipements et installations que poursuivent les entreprises concernées dans le but de la mise à niveau de leurs activités) : un système de soutien aux entreprises pour obtenir des prêts bancaires en vue de transformer les crédits à court terme en crédits à moyen et long terme et d'améliorer le bilan.

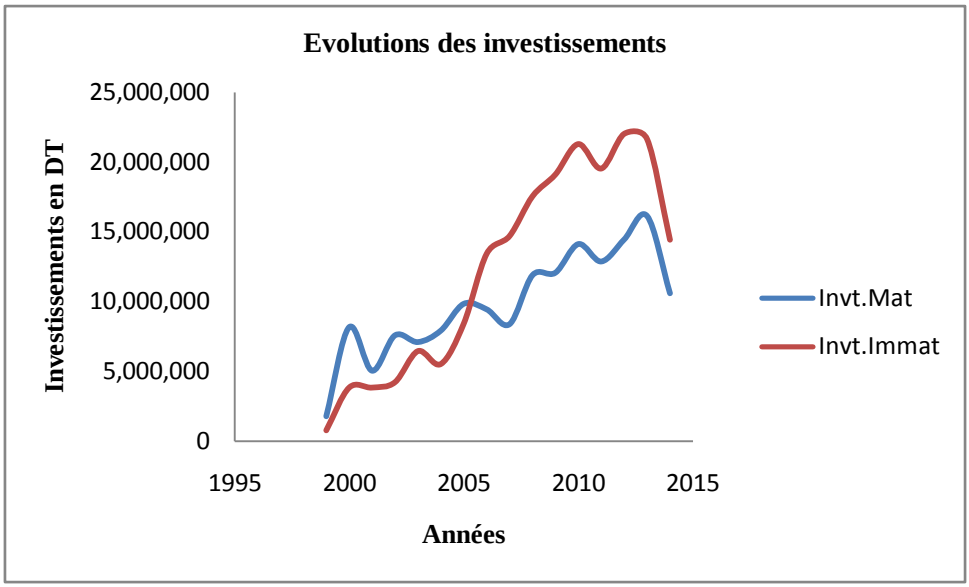


Figure 1 : Evolution des investissements (matériels & immatériels) durant la période (1996-2014)

Sources: Auteur & Bureau du PMN

La caractéristique du PMN est d'assurer un appui pour obtenir le financement des banques et des aides destinés aux investissements en équipements et installations à condition que cela s'effectue dans le cadre d'une restructuration financière. Ce que l'on entend ici par restructuration financière c'est le redéploiement des prêts, à savoir la transformation ou conversion des prêts à court terme destinés aux investissements en équipements et installations qui sont des investissements à long terme en prêts à moyen et à long terme. Grâce à cette conversion, les entreprises pourront faire de manière positive et constructive des investissements en équipements et installations. Il faut être attentif à ce point et bien noter que ceci diffère des crédits de secours ou de sauvetage destinés aux entreprises surendettées. (Voir le graphique conceptuel ci-dessous)

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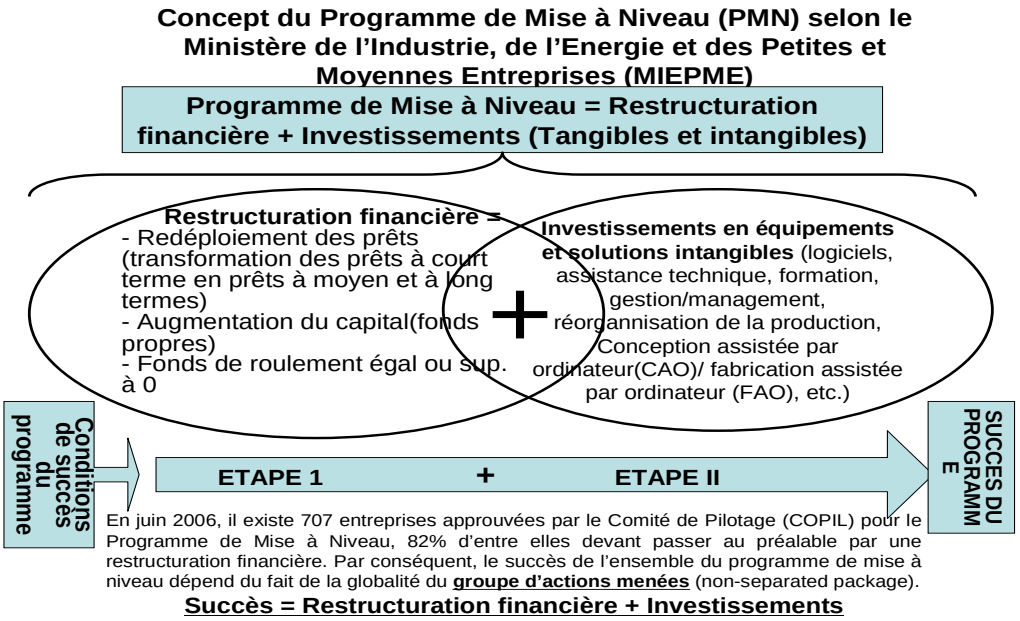


Figure 2 : Mécanisme du Programme de Mise à Niveau (PMN)

Source : Auteur

a) Qualifications pour participer au PMN

Les entreprises concernées doivent posséder une capacité de croissance et une certain compétitivité tant sur le marché intérieur tunisien qu'à l'international sur les marches étrangers. On exige également de ces entreprises qu'elles possèdent un potentiel important de croissance et de développement. Les éléments indiqués ci-dessous constituent les conditions requises pour être qualifié en vue de participer au PMN.

- Elle doit s'agir d'une entreprise (y compris les entreprises financées et contrôlées par des capitaux étrangers).
- Elle doit avoir obtenu des résultats après avoir opéré pendant au moins 2 ans.
- Elle doit posséder un potentiel de croissance et une capacité d 'évoluer et d'opérer sur le marché considéré. Elle ne doit pas se trouver dans une situation financière difficile.
- Elle doit avoir mené par le passé des transactions avec des banques.

Les entreprises qui souhaitent bénéficier de l'application du PMN doivent préparer et présenter les documents indiqués[2] ci-dessous concernant les résultats de l'enquête avant investissements et qu'elle planifie, le plan de réorganisation (restructuration organisationnelle) et le plan financier, et obtenir l'approbation du Comité de Pilotage (COPIL).

Lorsque l'entreprise établit un plan afin de réaliser le plan de mise à niveau, elle procède à une étude portant sur l'ensemble des investissements avec l'aide et l'appui de groupes de consultants, d'ingénieurs, de sociétés de design ou encore d'un centre technique. On exige également de celle-ci qu'elle établit un rapport résumant le plan proposé. Il est nécessaire qu'un plan de financement clair (incluant les crédits/prêts bancaires) figure dans ce plan. En outre, à partir de cette étape, les banques examinent les possibilités d'accorder des prêts et participent au processus pour déterminer la pertinence du plan. L'évaluation du dossier est effectué par le Comité de Pilotage (COPIL) et la décision finale prise au nom du Ministre de l'Industrie, de l'Energie et des Petites et Moyennes Entreprises (MIEPME). (Voir le diagramme des flux/schéma de confirmation). En outre, comme la Banque Centrale de Tunisie (BCT) possède les données relatives aux informations sur le crédit des entreprises (liste noire), sa collaboration est possible durant la phase de vérification et d'instruction des dossiers. D'autre part, en ce qui concerne les entreprises faisant l'objet d'une restructuration financière, on fournit

[2]- Plan d'investissement pour la mise à niveau (Upgrading Plan)
- Plan financier (Financing Plan)
- Accord de la banque qui soutient le plan financier
- Le bilan de l'entreprise concernant les 3 dernières années (vérifié et certifié par un expert-comptable)
- Devis estimatifs justifiant le montant des investissements indispensables

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individuellement à chaque entreprise des conseils *(consulting)* sous forme d'un « coaching » portant sur les comptes financiers.

Table 1 : Organismes concernés et rôles

Intervenants dans le processus	Rôles
BCT	Vérifier les PME mis à l'index
COPIL	Evaluer le programme de mise à niveau et l'éligibilité pour bénéficier des primes
UGPO	Aider les PME dans la préparation du plan de restructuration financière et conseil *(coaching)*
Banque	Evaluer le programme de mise à niveau et l'éligibilité pour bénéficier des prêts
Expert-Comptable	Aider les PME à réaliser leur plan de mise à niveau incluant la restructuration financière de l'entreprise

Source: Auteur

b) *Application du système de primes du Fonds de Développement de Compétitivité Industrielle (FODEC)*

L'application du système de primes du Fonds de Développement de Compétitivité Industrielle est approuvée dans le cadre de l'évaluation des dossiers de candidature des entreprises et du Programme de Mise à Niveau (PMN), et les primes versées aux entreprises retenues pour chaque unité de projet. Par conséquent, il est possible dans certains cas qu'une seule et même entreprise voit plusieurs de ses projets approuvés selon son stade de développement. Les primes concernent les investissements en équipements ou installations et les investissements intangibles (coût des services de conseil en matière de gestion et de management) et le taux de subvention qui est de l'ordre de 20 % à 30%, les primes étant versées après l'achèvement du plan. Ainsi, il est présupposé que l'entreprise bénéficiaire des primes en question possède une capacité de prise en charge financière proportionnée grâce à des fonds propres ou à un financement extérieur. L'application du système de primes du Fonds de Développement de Compétitivité Industrielle (FODEC) concernant les activités des entreprises en rapport avec le PMN dépend de la nature des activités prévues et les résultants obtenus.

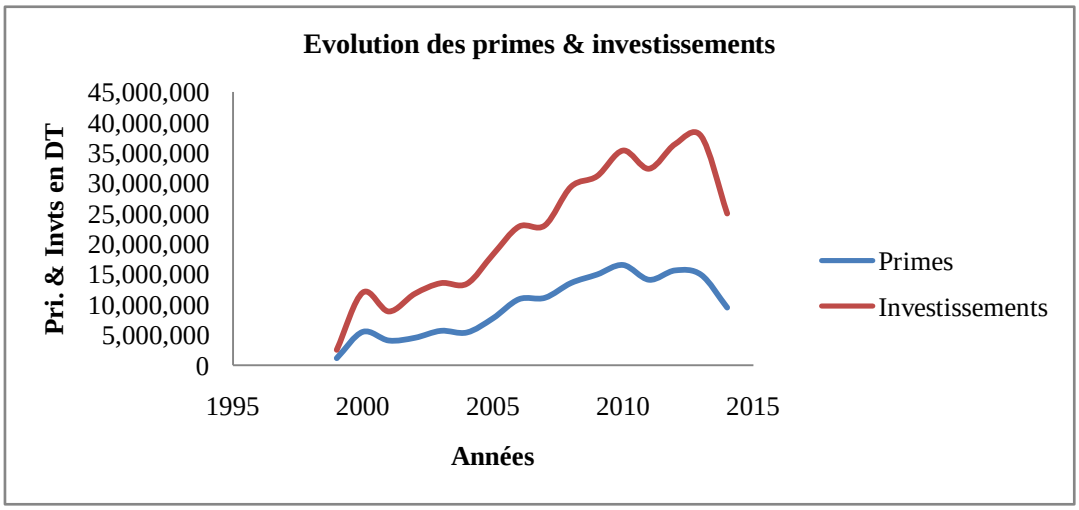


Figure 3 : Evolution des primes accordées en fonction des investissements durant la période (1996-2014)

Source : Auteur & Bureau du PMN

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c) Indicateurs d'évaluation

Lors de l'évaluation du PMN, on utilise les indicateurs mentionnés ci-dessous pour vérifier si la situation financière de l'entreprise est saine ou non.

i. Equilibre entre le montant du plan d 'investissements et (Capital + crédits à moyen et long termes) :

(Working Capital $_0$ + M-LT Loans + capital increase) – planned Investments ≥ 0

(Fonds de roulement $_0$ + Crédits à Moyen/Long Termes + Augmentation de capital) – Investissements Prévus **≥ 0**

ii. Le ratio des fonds propres après les investissements prévus est égal ou supérieur à 30% :

(Equity + capital increase) ≥ 30% (Net Fixed assets + planned Investments)

(Fonds propres + Augmentation de capital) ≥ 30% (Immobilisations Nettes + Investissement Prévus)

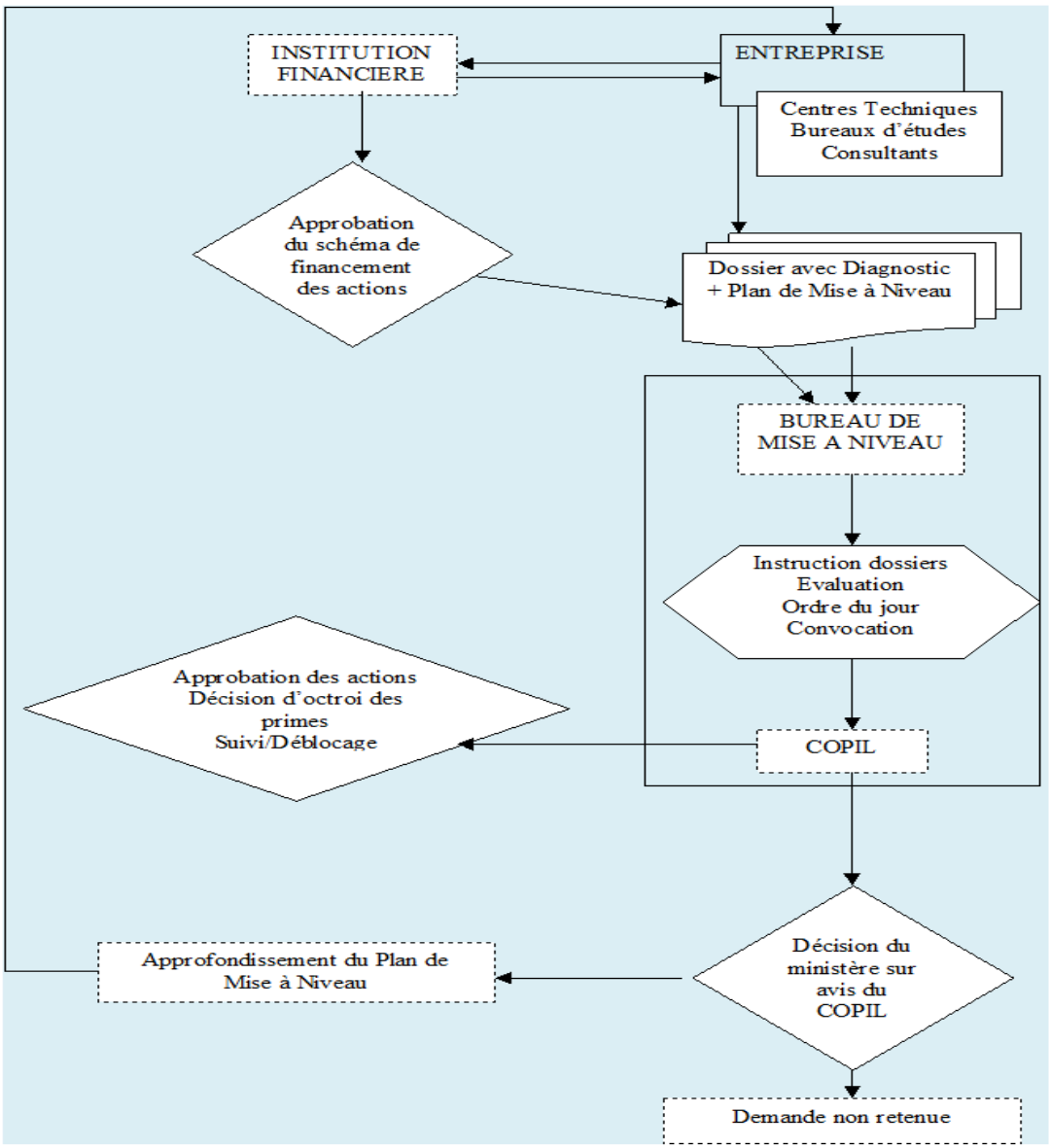


Figure 4 : Schéma de confirmation des dossiers demandant bénéfice du PMN

Source : Auteur

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d) Rôle du Comité de pilotage du programme de mise à niveau (COPIL)

Le COPIL est l'entité chargée du Programme de Mise à Niveau. Il a pour rôle de définir les orientations du Programme de Mise à Niveau, d'examiner les demandes des entreprises industrielles et d'octroyer les primes sur le FODEC dans le cadre de la mise à niveau.

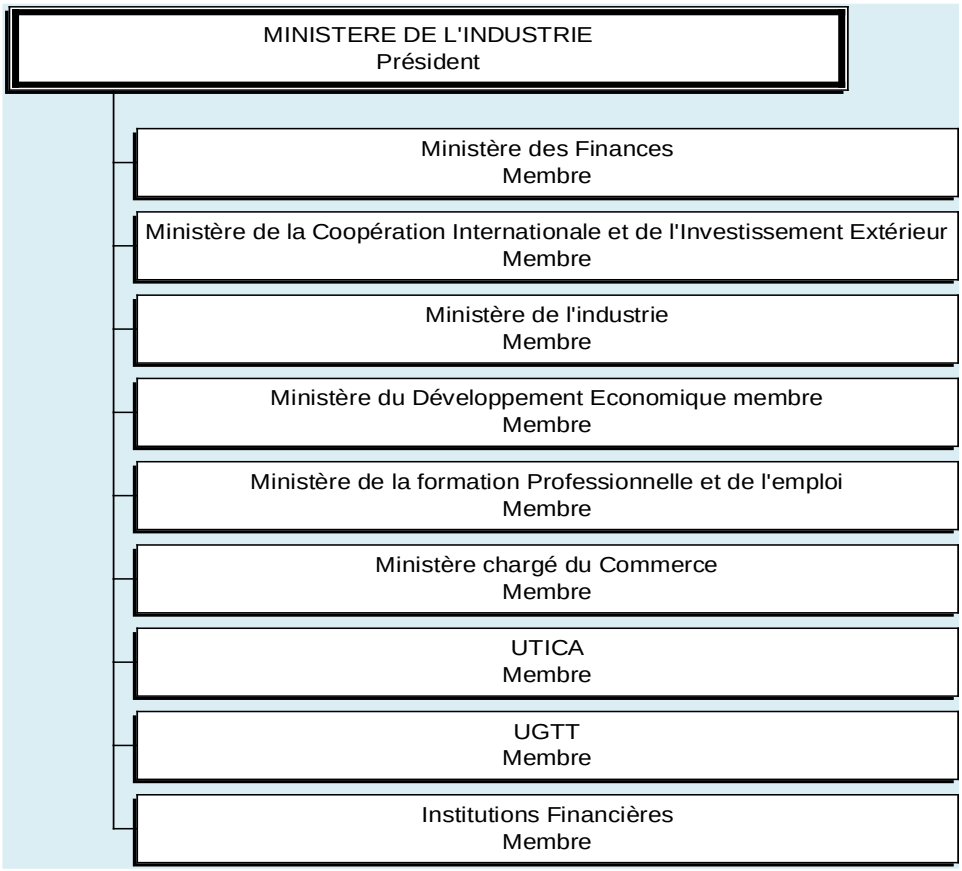


Figure 5 : Schéma de la composition du COPIL

Sources: Auteur & MIEPME

e) Programme d'appui de la restructuration financière

Le Ministère de l'Industrie a établi une Unité de Gestion Par Objectifs (UGPO) afin de promouvoir le financement de la restructuration financière. La banque Centrale de Tunisie (BCT), le Ministère des Finances, la Société Tunisienne de Garantie (SOTUGAR), la Société d'Investissement à Capital Risque (SICAR) ainsi que des banques commerciales participent comme membres à cette Unité de Gestion par Objectifs (UGPO), évaluent les projets de restructuration financière et fournissent entre autres aux PME des conseils (coaching) concernant la comptabilité, etc. Actuellement, des centaines de projets pilote ont d'ores et déjà débuté.

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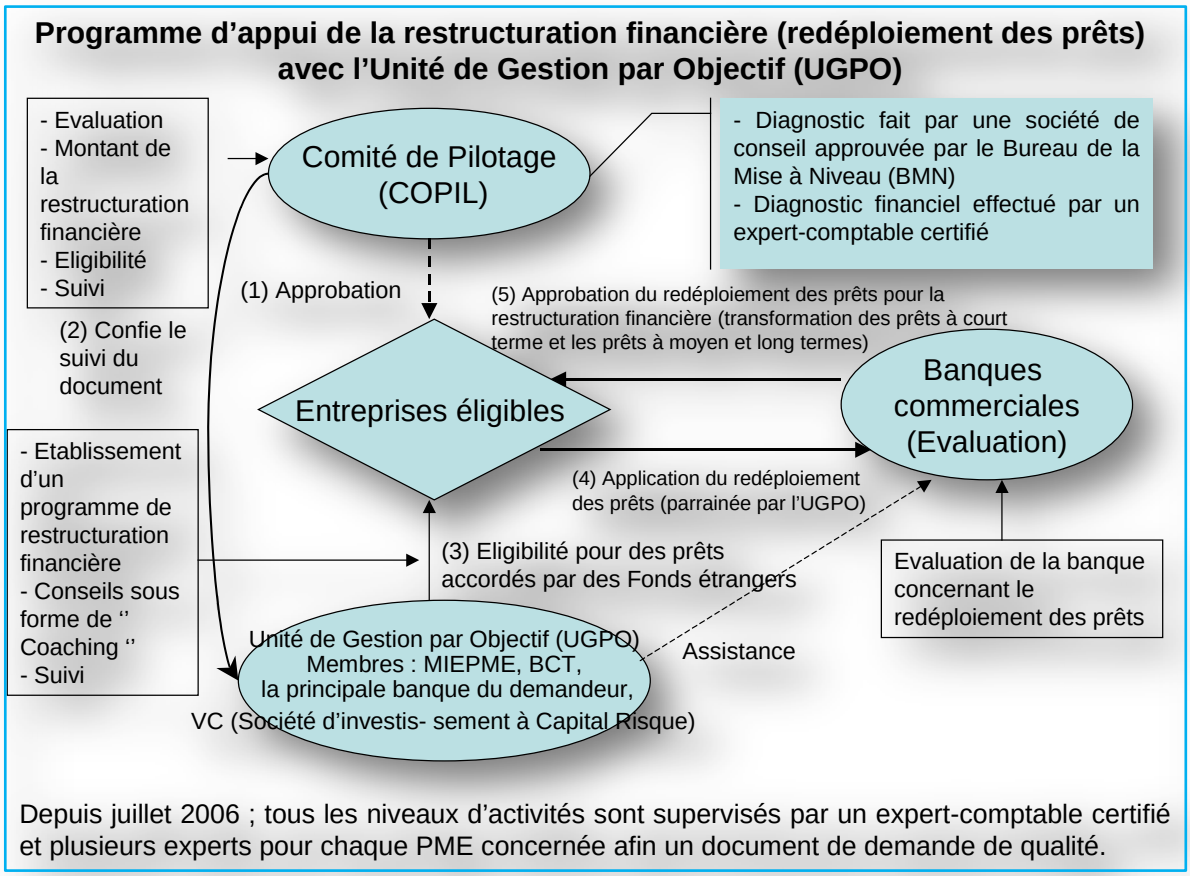


Figure 6 : Programme d'approbation des projets de restructuration financière

Source : Auteur

En tant que coopération financière pour permettre la restructuration financière, seule l'Agence Française de Développement (AFD) fournit depuis 1995 des lignes de crédit en quatre phases jusqu'à présent pour un montant total par ligne de crédit 120 millions d'Euros (30 millions d'Euros/ Phase). A l'heure présente, la situation est difficile, les progrès sont lents à cause de l'instabilité politique en Tunisie après la révolution. L'Agence Française de Développement (AFD) a adopté un mode d'évaluation directe de chaque projet individuel de financement. Dans le cas des lignes de crédit de la première à la quatrième phase, elle avait détaché des experts chargés de procéder à l'évaluation et à l'instruction des dossiers auprès des banques désignées. Toutefois, les demandes sont examinées par le Bureau de l'AFD à Tunis. Le taux d'intérêt des prêts en Euros accordés à l'Etat tunisien par l'AFD est de 3,5% et la prime de conversion en DT est de 1% et comme la commission de chaque banque concernée est de 3%, les prêts sont accordés aux utilisateurs finaux à un taux d'intérêt de 7,5% (la durée est de 7 à 12 ans). En tant que prêts à moyen et long termes, on peut considérer que les conditions sont avantageuses.

f) Systèmes de promotion des PME autres que le PMN

Afin de promouvoir les PME, le Gouvernement tunisien a mis en œuvre plusieurs programmes ainsi que des mesures fiscales et financières complémentaires (Annexe 1) ;

- Fonds spéciaux pour la promotion du développement des PME (FOPRODI[3], FONAPRAM[4], FODEC[5], FOSDA[6], etc.)
- Programmes spéciaux (PMN[7](1996), PMI[8])
- Code d'incitation aux investissements (1993)
- Institutions pour l'assistance financière et technique aux PME en Tunisie (API[9], CEPEX[10], Centres

[3] FOPRODI : Fonds de Promotion et de Décentralisation Industrielle
[4] FONAPRAM : Fonds National de Promotion de l'Artisanat et des Petits Métiers
[5] FODEC : Fonds de Développement de la Compétitivité Industrielle
[6] FOSDA : Fonds Spécial pour le Développement de l'Agriculture
[7] PMN : Programme de Mise à Niveau
[8] PMI : Programme de Modernisation de l'Industrie
[9] API : Agence de Promotion de l'Industrie
[10] CEPEX : Centre de promotion des Exportations

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techniques, Pépinières d'entreprises, BFPME[11], Centres d'affaires)

IV. Identification des Besoins des Entreprises au Moyen de L'enquête par Questionnaire (Sélection des Entreprises Faisant L'objet de L'enquête D'échantillonnage)

La présente enquête d'échantillonnage visant principalement à identifier les besoins des PME tunisiennes en matière de financement et de crédit. On a mené l'enquête auprès des entreprises qui nous ont été présentées par les organismes et agences concernés comme la BFPME, le Ministère de l'Industrie, de l'Energie et des Petites et Moyennes Entreprises (MIEPME), l'Agence de Promotion Industrielle (API), etc.

Les entreprises qui nous ont été présentées, au nombre d'environ 200, étaient actives principalement dans le secteur manufacturier à l'exclusion des secteurs du tourisme, de l'immobilier et du commerce. Cette enquête était centrée sur les entreprises participant au Programme de Mise à Niveau (PMN), les entreprises nouvellement créées[12] et les entreprises développant leurs activités[13]. Des entretiens ont eu lieu avec 59 entreprises sur les 200 entreprises recommandées pour l'enquête.

Table 2 : Conditions de réalisation de l'enquête d'échantillonnage

-Nombre. total des PME dont nous possédions les contacts.	200 entreprises/présentées par les agences et organismes concernés (BFPME, MIEPME, API, …)
-Nombre d'entreprises contactées et suivies d'un entretien après contact	59 entreprises
-Parmi lesquelles celles souhaitant un financement	57 entreprises
-Parmi lesquelles celles souhaitant une assistance technique (T/A)	12 entreprises

Source : Auteur

a) *Description des entreprises faisant l'objet de l'enquête*

i. *Entreprises nouvellement créées*

En ce qui concerne les entreprises nouvellement créées, l'enquête a été centrée sur un total de 12 entreprises présentées par la BFPME. En ce qui concerne les entreprises nouvellement créées en Tunisie, on peut les classer grosso modo en trois catégories: (1) les véritables créations d'entreprises (à partir de rien), (2) les créations d'entreprises par essaimage[14] et (3) les créations de sociétés par des entreprises déjà existantes. Les entretiens qui ont été menés cette fois-ci ont porté en gros moitié-moitié sur la catégorie (1) des véritables créations d'entreprises et (3) des créations de sociétés par des entreprises déjà existante, ceci n'incluant pas la catégorie (2) des créations d'entreprises par essaimage. En ce qui concerne le montant des fonds demandés pour le financement, on a constaté qu'il y avait un certain écart entre le montant maximum demandé de 4.700 mDT et le montant minimal de 175 mDT. En ce qui concerne chaque projet individuel, on a eu l'impression qu'une analyse fondamentale suffisante portant sur le plan relatif aux recettes, les prévisions relatives au flux de liquidités (cash flow), etc. Grâce à une coordination avec les institutions financières concernées, les sociétés de conseil, etc.

ii. *Développement des activités*

Les entreprises du type souhaitant élargir leur domaine d'activités étaient les plus nombreuses avec un total de 30 entreprises. Le modèle typique de ce type d 'entreprises est une PME qui a établi sa base d'activités dans le pays et qui souhaitent acquérir une compétitivité internationale, mettre en place de nouvelles lignes de production, améliorer la qualité de ses produits et accroître la productivité. (Annexe 2)

iii. *Restructuration financière*[15]

Il y avait 17 entreprises qui avaient besoin d'une restructuration financière. Toutefois, bien qu'il s'agisse d 'améliorer la situation financière de l'entreprise, cela ne signifie pas pour autant que les entreprises largement déficitaires ou surendettées ont fait l'objet de l'enquête. Nous avons pris en considération les PME qui, tout en

[11] BFPME : Banque de Financement des Petites et Moyennes Entreprises

[12] Nouvelles créations d'entreprises: Lancement d'une nouvelle entreprise (nouveau projet d'activités). Ceci ne désigne pas seulement les pures créations d'entreprises, mais inclut également l'établissement de nouvelles sociétés accompagnant le développement ou l'extension du domaine d'activités d'entreprises existantes dans les nouvelles créations d'entreprises.

[13] Entreprises développant leurs activités

[14] Créations d'entreprises par essaimage: Créations indépendantes d'entreprises par le personnel de grandes entreprises et créations en Tunisie d'une société par des Tunisiens fixés à l'étranger.

[15] Restructuration financière: Mesures d'amélioration du contenu des finances des entreprises, la méthode principale étant de remplacer la fourniture de fonds à court terme par un financement stable au moyen de prêts à long terme.

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se développant avec sérieux et de manière saine du point de vue de leur gestion, ont un ratio de capitaux propres peu élevé et rencontrent des difficultés pour obtenir des fonds supplémentaires. Pour les entreprises se trouvant dans cette situation, le point essentiel est de viser à améliorer l'organisation financière de l'entreprise en utilisant comme levier la fourniture de prêts à moyen et à long termes.

iv. *Entreprises n'ayant pas de demande de financement à présenter*

Parmi les entreprises avec lesquelles nous avons eu des entretiens, deux entreprises nous ont répondu qu'elles n'avaient pas de nouvelle demande de financement à faire dans l'immédiat. L'une d'entre elles était une entreprise de transformation de produits alimentaires pour laquelle une décision concernant la fourniture de fonds (y compris des subventions) avait d'ores et déjà été prise dans le cadre du projet de soutien « Programme de Mise à Niveau (PMN) » mené par l'Etat. L'autre société est une entreprise de fabrication de vêtements pour enfants associée avec une grande marque étrangère qu'elle approvisionne et qui ne nécessite pas d'un financement extérieur pour ces investissements en équipements et installations.

v. *Divers services de conseil incluant une assistance technique (T/A)*

Parmi les entreprises susmentionnées, il y avait 12 entreprises qui ont des besoins d'une assistance technique et d 'autres conseils (services de consulting) dans le domaine entre autres de la gestion et du management de l'entreprise. De tels besoins en étaient clairement mis en évidence lors de tous les entretiens que nous avons eus avec les dirigeants de ces entreprises (y compris les entreprises bénéficiant déjà de services de conseil). Notamment, dans le secteur de l'industrie du textile, on a mentionné les besoins de conseil dans le domaine de la gestion en rapport avec les diverses mesures et stratégies à mettre en œuvre pour résister à la concurrence des entreprises chinoises et asiatiques en général qui utilisent comme arme commerciale le bas prix de leurs produits.

b) Résultats obtenus par le PMN

D'après le rapport concernant les résultats depuis sa mise en place en 1995 et jusqu'à une date très récente (fin Juillet 2014), le nombre total de projets approuvés ayant bénéficié d'une aide dans le cadre du PMN est de 4.816. Si on ajoute les 847 dossiers de projet en cours d'évaluation on obtient au total 5.687 projets (projets en cours d 'évaluation ou déjà approuvés). En outre, les résultats de l'application du système de primes du Fonds de Développement de Compétitivité Industrielle (FODEC) s'élèvent à 1105,7 MDT, ceci correspondant à environ 14% du montant des investissements. Toutefois, si on examine l'objet des dépenses, on constate que 64% des primes sont destinées aux investissements en équipements et 36 % des primes à des investissements intangibles (coût du diagnostic de l'entreprise, etc.)

Table 3 : Etat des projets depuis juillet 2014

Total des projets approuvés par le COPIL	4.816
Total des investissements approuvés (en MDT)	8.079,1
Projets en cours d'évaluation	847
Projets refusés	24
Total des projets (Approuvés + En cours d'évaluation)	5.687
Prime Diagnostic (en MDT)	391
Total des primes/subventions (en MDT)	1.105,7
Investissements en équipements (prime matériel) (en MDT)	740,8
Investissements intangibles (prime immatériel) (en MDT)	325,9

Source : Bureau du PMN (2014)

D'autre part, si on examine les résultats relatifs aux projets approuvés dans le cadre du PMN selon les secteurs considérés, on constate que les investissements sont répartis équitablement selon les différents secteurs concernés. En ce qui concerne la situation actuelle des secteurs industriels, l'importance du secteur du textile et de l'habillement représente 37% de l'ensemble mais que l'application du PMN se limite à 20%. Ceci indique au regard des tendances futures des investissements que le potentiel futur du secteur du textile et de l'habillement plafonne. D'autre part, l'importance industrielle du secteur des matériaux de construction, de la céramique et du verre représente actuellement 5% de l'ensemble. Toutefois, au regard des investissements approuvés dans le cadre du PMN, la part de ce secteur est de 20 %.

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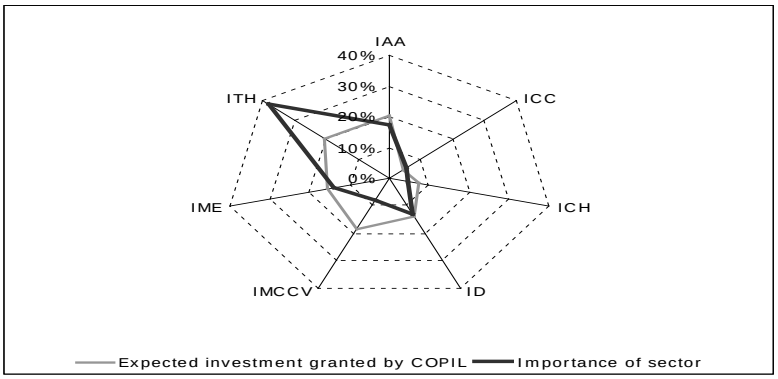


Figure 7 : Comparaison portant sur l'importance actuelle des secteurs industriels et le montant des investissements approuvés dans le cadre du PMN (Juillet 2014)

Source : Auteur

Remarque : IAA: Industrie Agro-alimentaire, IMCCV: Industries des Matériaux de Construction, de la Céramique et du Verre, IME: Industries Mécaniques et Electriques, ICH: Industrie de la Chimie , ITH: Industrie du Textile et de l'Habillement, ID: Industries diverses (à l'exclusion de l'industrie des services)

En ce qui concerne les entreprises qui ont été acceptées pour participer au Programme de Mise à Niveau (PMN), on a reconnu qu'elles possédaient un potentiel de croissance et avaient établi un plan d 'investissements prometteur. Toutefois, au regard de la situation financière présente, on constate que le pourcentage d'entreprises liées par des prêts à court terme est élevé. Par conséquent, pour obtenir le financement des banques conformément au PMN, le Bureau du PMN, (à condition que l'entreprise procède à la conversion des prêts à court terme en fonds fournis par un crédit à moyen et long termes), recommande l'application des primes fournis par le FODEC et des prêts fournis par des banques commerciales. En désigne ce type de cas sous l'appellation de programme de restructuration financière.

A l'arrière-plan de la nécessité d 'un tel dispositif se profile l'insuffisance d'un système de prêts à moyen et long termes destinés aux PME. On a pu constater également dans la présente enquête par échantillonnage que le montant des prêts à court terme était de 2 à 6 fois supérieur au montant des prêts à moyen et long termes selon ce qui nous a été rapporté. Dans la réalité, il est inévitable pour de nombreuses entreprises qui ont des besoins en prêts à moyen et long termes pour couvrir leurs investissements en équipements et installations, etc. d'avoir recours à des prêts à court terme.

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c) Classification selon le secteur et le contenu des activités, nombre de cas et montant

	Entreprises créées		Elargissement du domaine d'activités		Restructuration financière		TOTAL	
	Nombre d'entreprises	Montant	Nombre d'entreprises	Montant	Nombre d'entreprises	Montant	Nombre d'entreprises	Mon tant
1. Textile	1	0,180	13	9,670	6	1,423	20	11,273
2. Produits alimentaires	3	3,250	5	3,303	1	2,000	9	8,553
3. Ind. Mécanique et électrique	1	0,340	2	0,900	2	1.350	6	2,590
4 .Ind. du cuir			3	1,485			3	1,485
5.Mat.de construction			1	1,500	3	1,650	4	3,150
6.Produits chimiques			1	0,154	2	0,639	3	0,793
7. Services	6	1,818	2	0,501	1	0,118	9	2,437
8. Autres	1	0,400	3	3,090	2	0,220	6	3,710
TOTAL	**12**	**5,988**	**30**	**20,603**	**17**	**7,400**	**59**	**33,991**

Figure 8 : Classification des entreprises visitées selon le secteur et le contenu des activités, et montant du financement souhaité (Nb. de cas. /en milliards de DT)

Source : Auteur

Sur le graphique ci-dessous, on a indiqué dans quelle mesure la composition des secteurs des entreprises échantillons sont reflétés sur la constitution de l'ensemble des industries. Le signe API indiqué sur le graphique désigne les statistiques de l'Agence de Promotion Industrielle (API), et le terme de « *Sample* » (Echantillon) désigne les groupes d'entreprises utilisés comme échantillons lors de cette enquête. Le secteur dont la part (%) est la plus importante est celui des industries du textile et de l'habillement (ITH)

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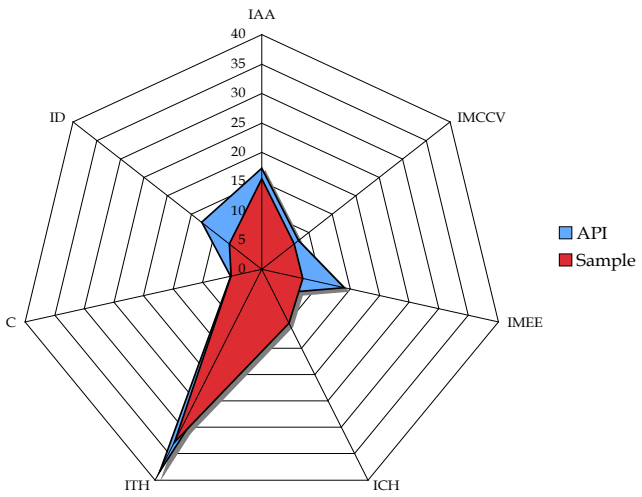


Figure 9 : Distribution des entreprises selon les échantillons et les secteurs

Source : Auteur

IAA : Industrie Agro-alimentaire, IMCCV : Industries des Matériaux de Construction, de la céramique et du Verre, IMEE : Industries mécaniques, électriques et électroniques, ICH : Industrie de la Chimie, ITH : Industrie du Textile et de l'Habillement, ID : Industries diverses (à l'exclusion de l'industrie des services)

d) Résultats des entretiens menés lors des visites

- Si on fait une comparaison selon les secteurs considérés, on constate que le secteur du « textile et de l'habillement » est le plus important tant pour le nombre d'entreprises (20) que pour le montant 11.273 MDT. Quant à une comparaison selon la catégorie ; on constate que l'élargissement du domaine d 'activités de l'entreprise est prépondérant avec 30 entreprises et un montant de 20.603 MDT.

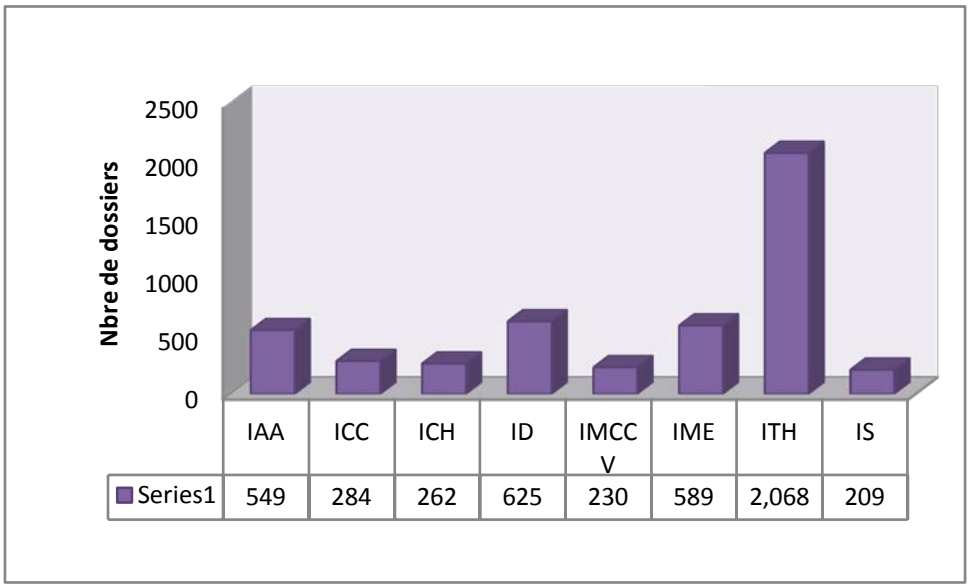


Figure 10 : Dossiers Approuvés par secteurs

Source : Auteur & Bureau du PMN

- En ce qui concerne la fourniture d'un financement sous forme de prêts à moyen et à long termes par les institutions financières centrées sur les banques de dépôt (Deposit Banks) à l'heure actuelle, on a constaté des cas où l'on ne parient pas à un arrangement à cause du problème de l'évaluation du cautionnement et des garanties ainsi que d'autres conditions requises pour accorder le financement, etc. On a constaté que des commentaires faits à plusieurs reprises par les PME disaient à peu près la même chose, que l'obtention des prêts étaient généralement difficiles. Dans un tel contexte, on a constaté une très grande attente des entreprises à l'égard des crédits à deux étapes (TSL) destinés aux PME.

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- Les 57 entreprises souhaitant un financement sous forme de crédits à moyen et à long termes se sont montrées dans leur totalité intéressées par la fourniture de crédits à deux étapes (TSL) destinés aux PME. Toutefois, en ce qui concerne les conditions
  relatives aux taux d'intérêt, de nombreuses entreprises ont souligné qu'il était indispensable qu'ils soient au moins situés à un niveau inférieur (position avantageuse) à ceux pratiqués par les institutions financières locales en Tunisie.
- On a pu également confirmer auprès des PME visitées qu'il existait une demande exprimée par celles-ci non seulement de soutien financier sous forme de financement mais également d'une aide pour les aspects « soft » (assistance technique sous forme
  de conseils et de guidance, stratégie de gestion et commerciale, etc.)
- Le déficit de transparence incite les banques à faire preuve de davantage de sévérité lors de l'octroi des crédits.

e) Montant à fournir souhaité par les PME pour assurer le financement

i. *Estimation du montant total de la demande de financement*

Le montant moyen du financement souhaité par entreprise est 33,991 MDT ÷ 59 entreprises est environ 600 mDT. Selon cette formule, on a pu démontrer au moyen d'un calcul simple que le montant moyen du financement souhaité par entreprise était de 600.000 DT (600 mDT ou 0,6 MDT). Dans l'hypothèse où le montant moyen du financement demandé est de 600 mDT par entreprise et que 4816 PME présentent des demandes de financement, on peut estimer que le montant total du financement sera, en appliquant la formule suivante : 0,6 MDT × 4816 entreprises =2889,6 MDT. Le montant moyen par entreprise dans le cadre du Programme de Mise à Niveau (PMN) est selon le calcul suivant d'environ 1,7 MDT (Montant total certifié pour le projet : 8079,1 MDT/nombre de dossiers certifié : 4816. Si on considère en moyenne un financement de 600 mD assuré par les institutions financières, 40% du coût du projet pourra être fourni par les institutions financières. Toutefois, Ceci est plus ou moins conforme au sentiment que nous avons eu lors des entretiens avec chaque PME concernée. Autrement dit, si on considère que plus de 40 à 50% du coût du projet sera assuré par des fonds propres (y compris un financement assuré par un capital-risque) et que les subventions et aides accordées par l'Etat dans le cadre du Programme de Mise à Niveau (PMN) représenteront 10 à 20%, les 30 à 50% restants seront couverts par des crédits fournis par les institutions financières.

ii. *Réponse des banques commerciales à la demande de financement*

En ce qui concerne le montant total estimé de la demande de financement de 2889,6 MDT, on peut considérer que cela est réalisable sur les 3 ou 4 années à venir. Toutefois, selon les résultats de la présente enquête, le solde de crédit des six (06) principales banques commerciales s'élève à 19.493 MDT pour l'exercice 2014. Ainsi, même si ont tient compte en hypothèse d'une augmentation de 2% par année fiscale (1.365 MDT pour 3,5 années), on peut estimer qu'il est possible pour celles-ci de répondre de manière positive.

a. A propos de l'objet du financement

- Dans le cas des entreprises participant au PMN, le comité de pilotage COPIL doit reconnaître que la PME est appropriée pour être l'objet du projet, et dans le cas des entreprises nouvellement créées et de l'élargissement du champ des activités des PME existantes, cette tâche revient à la BFPME. Les objectifs du projet ainsi que l'utilisation des fonds débloqués doivent être conformes à la politique de développement industriel de la Tunisie (PMN, promotion du renforcement de la compétitivité internationale et de la création d 'emplois, etc.)
- Il est nécessaire de considérer et d'analyser le contenu du projet lui-même sous divers angles (flux de liquidité et marge d'autofinancement (cash flow), risques de crédit, rentabilité, etc.). Notamment, les prévisions concernant l'envergure et le chiffre d'affaires du marché ciblé, le coût du projet, etc. constituent autant de points à contrôler et à vérifier.
- En ce qui concerne les secteurs industriels concernés, l'industrie agro-alimentaire, les industries mécaniques et électriques, les secteurs liés aux technologies de l'information (IT), etc. font l'objet d 'actions de développement. Tandis que le secteur du textile et de l'habillement, fera l'objet d 'un appui sous forme d 'actions incluant entre autres les restructurations financières. En principe, les PME du secteur manufacturier, l'industrie du tourisme, le secteur de l'immobilier et le commerce ne sont pas inclus dans le cadre de ce projet.

En principe, les crédits accordés devront être utilisés pour les investissements dans les équipements et les installations ou pour le développement de produits finis, et ne pourront l'être en tant que fonds de roulement.

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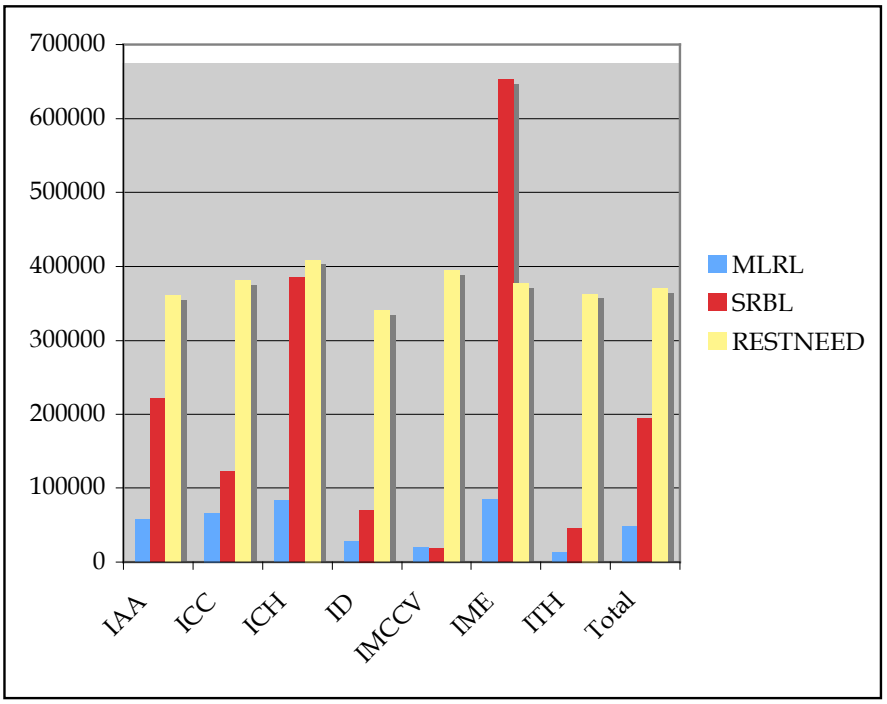


Figure 11 : Situation actuelle concernant les crédits à court terme et les crédits à moyen et long termes

MLRL: prêts bancaires à moyen et long termes
SRBL : prêts bancaires à court terme
RESTNEED: besoins de restructuration financière

V. Conclusion

Ce papier fournit un diagnostic sur la fragilité du positionnement des PME tunisiennes dans le développement du secteur privé et propose des recommandations pour le consolider. A cause des changements climatiques et un environnement international difficile, la plupart des PME tunisiennes se trouvent dans une situation très critique. Toutefois, plusieurs défis demeurent à relever, notamment, la pression croissante de la concurrence étrangère et l'augmentation importante du prix du pétrole. En outre, en prévision de l'abolition des droits de douane en 2008 en raison d 'un accord de partenariat avec l'Union européenne, le renforcement de la compétitivité des industries tunisiennes est devenu une question urgente. On a constaté que l'obtention des prêts était généralement difficile. Environ 66% des PME Tunisiennes estiment que les conditions de financement en Tunisie, sont de plus en plus difficiles. Cette étude a été effectuée auprès d'un échantillon de 59 entreprises, a relevé également que l'indice de perception de conditions de financement des PME tunisiennes (degré de satisfaction par rapport aux services proposés) se situe au niveau de -11,9 sur une échelle allant de -25 à +25. A cet égard 21% seulement des demandes de financement déposées par les PME auprès des banques sont satisfaites, alors que 34% donnent lieu à un financement partiel, 29% sont refusées en raison des conditions non acceptées et 14% sont rejetés catégoriquement. Dans un tel contexte, une très grande attente des entreprises à l'égard des crédits à deux étapes (TSL) destinés aux PME accordés par les institutions financières étrangères sous forme de ligne de crédit.

Le financement constitue le premier problème qui entrave le développement des PME en Tunisie. Car il demeure la locomotive à même d'apporter une dynamique de croissance pour ces entreprises. D'où, la nécessité de réformer le secteur bancaire pour qu'il puisse soutenir davantage les PME, par le biais des crédits, mais également, à travers un accompagnement et soutien durant les phases les plus cruciales. De leur côté, les PME sont invitées à faire preuve de transparence et à honorer leurs engagements financiers en respectant les termes des contrats des crédits conclus avec les banques(le taux de créances douteuses s'élève en Tunisie à 24%, contre 5 % au Maroc).

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Annexes

Annexe 1

Fonds accordés aux PME

FOPRODI (lancé en 1973 et renouvelé en 1999) Fonds de Promotion et de Décentralisation Industrielle		
Conditions d'acceptabilité requises	Caractéristiques	Autres informations
- Investissements dans la création de nouvelles entreprises et dans l'extension des activités - Industries manufacturières et autres services connexes	4 M DT maxi. par projet Echéance : 12 ans (période de grâce : 5 ans) Taux d'intérêt : 3% Capital propre minimum : 30% Et beaucoup d'autres aides et subventions	En place depuis 1999. Le FOPRODI n'est octroyé que dans le cas ou le projet comporte une participation d'une SICAR .
FONAPRAM (1981) Fonds National de Promotion de l'artisanat et des petits métiers		
Conditions d'acceptabilité requises	Caractéristiques	Autres informations
Entrepreneurs individuels dans le secteur de l'Artisanat et des Petits Métiers	50.000 DT maxi. par projet. - Echéance : 11 ans (période de grâce : 7 ans) - taux d'intérêt : 0% - Capital propre minimum : 40% - Primes d'investissements de 6% du coût du projet	80.000 DT maxi. pour les projets promus par des jeunes sortant de l'université
RITI(1998) Régime d'Incitation à l'Innovation dans les Technologies de l'Information		
Conditions d'acceptabilité requises	Caractéristiques	Autres informations
Projets nouvellement créés	500.000 DT maxi par projet. - Echéance : 7 ans - taux nominal majoré du taux d'appel d'offre de la BCT - Capital propre minimum : 50%	
FODEC (1995) Fond de développement de la compétitivité industriel		
Conditions d'acceptabilité requises	Caractéristiques	Autres informations
Essentiellement destiné au : -Programme de mise à niveau -Restructuration financière des entreprises. -Financement des activités des Centres techniques. -Financement des études sectorielles et stratégiques et toute autre étude en rapport avec l'amélioration de la compétitivité des entreprises.	Aides financières destinées au Programme de Mise à Niveau (PMN) : -70% du coût de l'étude de diagnostic -70% des autres investissements immatériels. -20% des investissements matériels (Equipements, installations et constructions) s'ils sont financés par des fonds propres et 10% s'ils sont financés au moyen de prêts. Pour ce qui est des autres interventions du fonds, le ministre chargé de l'industrie ordonne le	
	payement des aides en fonction des programmes et budgets présentés à cet effet.	

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Annexe 2

Entreprises ayant fait l'objet de l'enquête d'échantillonnage et besoins en financement

N°	Raison sociale	Secteur d'activité	Activités de l'entreprise	Montant du financement souhaité	Objectif(s) du financement
1	SIED	ID	Fabrication et commercialisation de produits en matière plastique (contenants pour produits alimentaires)	1.800.000 DT	Développement des activités, introduction de nouvelles technologies d'emballage
2	LE CAVALIER	ITH	Fabrication et commercialisation de vêtements (Jeans)	2.000.000 DT	Développement des activités par la création de sa propre ligne Assistance technique T/A
3	OLIVIA	IAA	Transformation et commercialisation de produits alimentaires (Conserves d'olives)	450.000 DT	Développement des activités
4	BORWISE	SERVICE	Assemblage d'appareils électroniques et commercialisation (PC)	250.000 DT	Création nouvelle entreprise Assistance technique T/A
5	OFFICPLAST	ID	Produits finis en matière plastique (articles de bureautique)	400.000 DT	Création nouvelle entreprise
6	GLOBAL PHONING	SERVICE	Réalisation d'animations	450.000 DT	Création nouvelle entreprise Assistance technique T/A
7	ALPHA DIET	IAA	Production et commercialisation de produits alimentaires diététiques	2.400.000 DT	Création nouvelle entreprise
8	CANADO- TUNISIENNE	IAA	Transformation de produits alimentaires (conserves de fruits)	600.000 DT	Création nouvelle entreprise
9	CT Soft	SERVICE	Développement de logiciels	250.000 DT	Développement des activités

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10	IME	ID	Edition - Impression	490.000 DT	Développement des activités Assistance technique T/A
11	IMMAGICA	ID	Impression en rapport avec la publicité	120.000 DT	Restructuration financière[16]
12	OZALIS	ITH	Vêtements (Benetton)	Néant	Développement des activités
13	STMN	IME	Fabrication de pièces pour machines (câbles en acier)	400.000 DT	Développement des activités Assistance technique T/A
14	SIPA	IAA	Transformation de produits alimentaires (gâteaux)	1.200.000 DT	Développement des activités Assistance technique T/A
15	CCO	IAA	Transformation de produits alimentaires (Conserves de fruits et de légumes)	2.000.000 DT	Restructuration financière
16	MEMPHIS INT créat.s	ITH	Vêtements (Jeans)	1.000.000 DT	Restructuration financière
17	OKIANOS	SERVICE	Agence de publicité	175.000 DT	Création nouvelle entreprise
18	ARCHIDOC	SERVICE	Technologies de l'information (Activités d'appui en rapport avec l'Internet)	251.000 DT	Développement des activités
19	WEST PHARMA	ID	Fabrication et commercialisation de produits pharmaceutiques	800.000 DT	Développement des activités
20	GUHMETEX	ITH	Vêtements (Vêtements pour femmes)	300.000 DT	Développement des activités. Propre création
21	ORIENTAL DESIGN	IMCCV	Produits en verre (verre soufflé pour décoration)	200.000 DT	Construction d'une nouvelle usine. Assistance technique T/A
22	SOPROTIC	ICC	Fabrication de chaussures	1.100.000 DT	Développement des activités. Création de plus de valeur ajoutée

[16] Restructuration financière : Mesures d'amélioration de la structure financière des entreprises. Le principal moyen utilisé est la transformation des crédits à court terme en crédits à moyen et long termes..

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23	SLAMA FRERES	IAA	Raffinage huile végétale, fabrication graisse alimentaire	1.400.000 DT	Financement de la 4ème phase de la mise à niveau
24	ECLAIR CONF.	ITH	Vêtements (Pour les enfants)	250.000 DT	Développement des activités
25	STAALI CONF.	ITH	Vêtements (Vêtements pour femmes)	180.000 DT	Développement des activités
26	SOTOCONFEX	ITH	Vêtements (Pour les enfants)	200.000 DT	Développement des activités
27	BITANA	ITH	Vêtements (Vêtements pour hommes/ femmes/ enfants)	250.000 DT	Développement des activités
28	MJL	ITH	Vêtements (Vêtements pour femmes)	140.000 DT	Restructuration financière
29	WIFEK	ITH	Vêtements (Vêtements pour hommes)	300.000 DT	Développement des activités
30	G.A. Jouda	IAA	Transformation des produits alimentaires (concentré de tomate)	Néant	Développement des activités Nouveau produits.
31	FROMAGERIE Ghezala	IAA	Transformation de produits alimentaires (fromage)	250.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Création nouvelle entreprise
32	BOUGIE Tunisienne	ICH	Fabrication et commercialisation de produits à usage domestique (bougies)	154.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Développement des activités
33	CHAPPEL Industrie	IME	Fabrication et commercialisation de produits électro- ménagers et de télécommunications	500.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Développement des activités Assistance technique (T/A)
34	Décoration de Carthage	IMCCV	Fabrication et commercialisation d'articles de décoration	700.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Restructuration financière

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35	NET COM.	SERVICE	Technologies de l'info. (Mise en place de réseaux, panneaux de distribution)	117.800 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Restructuration financière
36	Savoir Faire en FER	ID	Importation et commercialisation de meubles	100.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Restructuration financière
37	IMC	ITH	Vêtements (pour femmes)	180.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Création nouvelle entreprise
38	SOGIP	ICH	Fabrication et commercialisation de peintures	450.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Restructuration financière
39	PACK	ICH	Fabrication et commercialisation de divers sortes d'emballage	189.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Restructuration financière
40	STYLE Fashon	ITH	Vêtements (pour femmes)	240.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Développement des activités
41	NOUHA TEX	ITH	Vêtements (pour enfants)	500.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Restructuration financière

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42	SCK Metrologie	SERVICE	Services d'ingénierie	450.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Création nouvelle entreprise
43	Ipsem Group	SERVICES	Logistique (transport maritime)	243.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Création nouvelle entreprise
44	SOVIA	IAA	Transformation de produits alimentaires (fromage)	253.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Développement des activités
53	Maille CLUB	ITH	Vêtements (pour hommes)	4.700.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Développement des activités
54	ARELEC	IME	Fabrication et commercialisation d'engins de construction	350.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Restructuration financière
55	BIO Plast	IME	Fabrication et commercialisation de d'articles en plastique (pour produits de beauté)	340.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Création nouvelle entreprise Assistance technique (T/A)
56	HYDROMER Systems	IME	Fabrication et commercialisation d'appareil de pression hydraulique	1.000.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Restructuration financière

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57	Global Systems	SERVICE	Centre d'appels	250.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Création nouvelle entreprise Assistance technique (T/A)
58	STEM	IMCCV	Fabrication et commercialisation de matériaux de construction	750.000 DT (Crédit d'investisse-ment en équipements à moyen/long termes)	Restructuration financière
59	COVEP	ITH	Vêtements (Hommes/Femmes)	700.000 DT (Crédit d'investisseme nt en équipements à moyen/long termes)	Développement des activités
Total				**33. 991.000 DT**	

Annexe 3

Exemples d'entretien avec les entreprises concernées

(Cas N°1 : création d'une nouvelle société)

Nous avons visité la nouvelle usine de la société A implantée à Siliana (zone industrielle API) et filiale de la société mère B. Elle prévoit de débuter ses nouvelles activités vers la mi-septembre 2010. Le PDG, M. M*** ; de cette société nous a décrit sommairement les activités de l'entreprise et donné des précisions concernant la demande de financement. Un résumé de l'entretien est donné ci-dessous.

a) Contexte :

La société B (société mère ayant le même PDG à sa tête) est une société qui a pour activité l'importation, la fabrication et la commercialisation de produits électroménagers. Cette société se consacre à la production et à la commercialisation de TV de marque japonaise (le siège de la société japonaise S se trouve en Europe). M. M*** était le responsable du département commercial de la société S et a fondé en 2012 la société A d'assemblage et de commercialisation de PC dont il est le PDG.

b) Profil du projet

- Activité de l'entreprise : assemblage et commercialisation d'ordinateurs personnels (PC)
- Marché visé : le marché local
- Production annuelle (objectif initial) : 3100 unités, avec un chiffre d'affaires de 3.000.000 DT
- Acheteurs potentiels : Au moment du lancement initial du projet, les revendeurs (clients fidèles de la société B) étaient assurés. Et on peut estimer que les risques étaient limités. Il est également prévu d'envisager à l'avenir des exportations.
- Equipements, etc. : approvisionnement à partir de la société S (située en Europe) pour les principaux équipements destinés à l'assemblage.
- Montant total du projet ; 487.000 DT
- Montant du capital : 243.000 DT (dont 103.000 DT financés par une SICAR)

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- Effectif : 35 employés

c) Financements

- Financement BFPME : 108.000 DT (Durée 7 ans/ taux d'intérêt TMM + 3%) / JBIC – TSL
- Institutions partenaires du financement : 108.000 DT
- Capital et autres : 271.000 DT

Total : 487.000 DT

d) Commentaires :

- Un très grand intérêt pour les possibilités de financement à moyen et à long terme assuré par la JBIC. La société aimerait que cela soit utile pour les fonds de stabilité à long terme.

- En outre, les responsables demandent s'il est possible d'intégrer des fonds de roulement à court terme en tant que '' package '' dans le cadre du financement de la JBIC ? Il existe également des besoins de financement à court terme (montant à court terme : 250.000 DT). On souhaite que ces thèmes futurs soient étudiés.

- Côté technique, les sites dépendant de la société S sont nombreux, et reçoivent individuellement des conseils relatifs aux techniques établies par cette société.

Avis :

- Il s'agit d'une entreprise en rapport avec les technologies de l'information qu'encourage activement le Gouvernement tunisien, et eu égard à son environnement il apparaît que les risques sont relativement limités et qu'il existe dans le futur des possibilités très intéressantes d'exportation de ses produits. On considère présentement que ces divers éléments peuvent être considérés raisonnablement comme positifs.

(Cas N° 2 : Mise à niveau)

Il s'agit d'une entreprise proposée par la BFPME. Nous avons visité son usine qui a été fondée en 2003. Le responsable M. M. *** nous a décrit sommairement les activités de l'entreprise et donné des précisions concernant la demande de financement, etc.

a) Contexte :

M. M*** (30 ans) a suivi des études en chimie appliquée aux produits alimentaires et a bénéficié du soutien de son père qui était lui-même gérant d'une société de produits alimentaires. M .M*** a créé en 2008 la société S de fabrication de matière première destinée à la production de crème pour des pâtisseries. Vers la fin de l'année 2006, l'usine a été fondée. La société n'a pas trouvé de problèmes quant à la commercialisation de ses produits et pendant trois années elle a dégagé des résultats positifs. En 2012, le chiffre d'affaires était de 1.597.000 DT et les bénéfices nets s'élevaient à 25.000 DT. En outre, cette société a reçu trois fois le prix d'excellence des produits alimentaires tunisiens. A l'avenir, la société a décidé d'investir 700.000 DT pour le renouvellement des installations de l'usine et prévoit d'exporter vers les marchés européens.

b) Profil des activités :

- Dénomination : société S
- Activités de la société : fabrication et commercialisation de crème pour la pâtisserie
- Montant total du projet : 700.000 DT
- Chiffre d'affaires (après la mise à niveau) : 4.350.000 DT
- Acheteurs : les entreprises de production de pâtisseries locales en Tunisie. Développement vers des exportations destinées à l'Europe.
- Machines et équipements, etc. Installation de nouveaux équipements de production et amélioration des équipements existants / augmentation du nombre des équipements destinés à la conservation/ amélioration des installations destinées à l'expédition

c) Financements :

* Financement par la BFPME : 215.000 DT (Durée 7 années/ taux d'intérêt TMM + 3%) JBIC – TSL
* Financement BIAT : 215.000 DT
* Autres fonds : 270.000 DT

Total : 700.000 DT

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d) Commentaires :

- Intérêt pour le financement à moyen et long termes offert par la JBIC et de préférence par l'intermédiaire de la BFPME.
- En plus du présent projet, la société souhaiterait entamer la 2ème phase de mise à niveau, le montant total serait de 1.200.000 DT.
- Assistance technique (T/A) : En plus de l'assistance technique, la société souhaiterait un appui au niveau du marketing.

Avis :

- En ce qui concerne les projets de mise à niveau et d'amélioration des compétences dans le domaine des exportations de produits finis soutenu par le Gouvernement tunisien et selon une étude de marché menée par une société de conseil, l'évaluation est positive précisant que les possibilités de succès sont réelles vu le bon rapport qualité/prix et qu'il était donc possible d'envisager d'aller de l'avant.

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Global Journal of Management and Business Research: C Finance
Volume 15 Issue 2 Version 1.0 Year 2015
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Stock Market and Economic Development in Bangladesh: A Case Study of Chittagong Stock Exchange

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GJMBR - C Classification : *JELCode : G00*



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Stock Market and Economic Development in Bangladesh: A Case Study of Chittagong Stock Exchange

Manjurul Alam Mazumder

Abstract- The stock market plays an important role in economic development of Bangladesh. It transfers the fund from surplus units to deficit units for investment. The main purpose of the study is to examine the significance of stock market in economic development of Bangladesh. The study has used only secondary data. The secondary data are collected only relevant to study such as market capitalization, stock turnover, number of listed securities and companies, stock index, GDP for measuring economic development during the period of 2003- 2013. The main reason to consider the certain period is the availability of data. The study has used some statistical measures of means, growth rate,andRatio of total market capital to GDP method. This study revealed that stock markets have made substantial contribution in economic development of Bangladesh. The study seems to carry an enormous academic value since a few studies have been undertaken in this area. It may be helpful to the owners of CSE, Management,SEC, Academic researchers and national policy makers who have been making endeavor to the development of stock market development as well as Bangladesh Economy as a whole.

Keyword: bangladesh, economic development, market capitalization, stock market.

I. Introduction

Stock market is considered to be a barometer of the Economy. The economic development of a country depends largely on the effective performance of stock market. The stock market augment the process of economic development though a number of ways: a) bringing together holders of surplus funds and users of such funds; b) offering a broad spectrum for investment and financing choices to both investors and issuers, c) drawing more institutions into investment, and e) reducing the dependence of industrial enterprises on non-security market for capital. Stock market can perform well to meet the continuous financial needs of business enterprises if exist a congenial environment for boosting confidence of both stock market operations and investors. The growth and development of stock market in a market economy largely depend upon the creation of enabling environment for boosting up investors' confidence. Bangladesh capital market has achieved some major milestone events in the recent past. The capital market operations in this part of the country started in mid-fifties with the establishment of East Pakistan Stock Exchange Association in 1954, which started trading in 1956. Initially it was a mutual organization (cooperative body) which was corporatized in recent activity of the Dhaka Stock Exchange (DSE) in term of turnover in the name of Dacca Stock Exchange Ltd. During those early periods until 1971, all trades in the exchange were conducted using trading data collected over telephone from Karachi Stock Exchange. After independence of Bangladesh, the operations of the stock exchange remained suspended until August 1976. At that time market trading started with only 14 listed companies having market value of only taka 90 million. The trade volume was very thin and could not attract investors. Over time some reform in-initiatives were taken to strengthen the market. First time Tk.1crore daily trades were recorded in April 1992. Government adopted the Securities and Exchange Commission Act 1993 and established the SEC as the regulatory authority for the market and the Securities and Exchange Commission (SEC), established in 1993 under this Act, as the central regulatory agency oversees the activities of the entire capital market including issue of capital, monitoring the issue of stocks and operation of the stocks market including regulating of portfolio market.

Bangladesh capital market is one of the smallest in Asia but within the south Asian region, it is the third largest one. It has only two full-fledge automated stock exchange Namely Dhaka Stock Exchange (DSE), Chittagong stock exchange (CSE) and OTC stock exchange operated by CSE. It also consists of a dedicator regulator, the Securities and Exchange Commission (SEC), since, it implements rules and regulations, monitor their implication to operate and develop the capital. It consists of Central Depository in Bangladesh that provides factices for settlement of transaction of dematerialized securities in CSE market and DSE.

II. Rationale of the Study

The Stock market is the market for long-term loans and equity capital. Developing countries in fact, view capital market as the engine for future growth

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through mobilizing of surplus fund to the deficit group. An efficient capital market may perform as an alternative to many other financing sources as being the least cost capital source. Especially in a country like ours, where savings is minimal, and capital market can no wonder be a lucrative source of finance.

At times when the banking sector of the country is facing the challenge of bringing down the advance-deposit ratio to sustainable level, the economy of the country is unfolding newer horizon of opportunities. Due to over-exposure level of the financial system the securities market could play a very positive role, had there been no market debacle.

The capital market also helps increase savings and investment, which are essential for economic development. A Stock market, by allowing diversification across a variety of assets, helps to reduce the risk of the investors must bear, thus reducing the cost of capital, which in turn spurs investment and economic growth.

From the above points it is easily realize that Stock Market is the most important sector to accumulate capital for the industrialization of the country, but it is most vulnerable. For that, I have motivated to dig deep into these issues and accordingly I have under taken the study to evaluate the performance of the Stock Market. The study is an endeavor that will be helpful to the listed companies, stock brokers, Management of CSE, SEC, and Bangladesh Government.

III. Objectives of the Study

The main objective of the paper is to ascertain the impact of stock market on the economic development of Bangladesh. Morespecifically the main aim of this study is to evaluate stock market performance of the Chittagong Stock Exchange, highlight its growth and development, analyze the performance of securities listed and examine the market capitalization as well as the contribution to GDP of the country.

IV. Methodology

The article is basically based on secondary data. Annual Reports and Monthly Reviews of Chittagong Stock Exchange Ltd., Annual Reports of Securities and Exchange Commission, Investment Corporation of Bangladesh are the main sources of secondary data. In addition, capital market reports, Resumes of the Activities of Financial Institutions of Bangladesh, Annual Reports and other necessary papers of the listed companies of CSE and other related organizations are also viewed.

a) About CSE

Chittagong Stock Exchange (CSE) the second stock exchange of the country was established on 12 February, 1995 with the mission: To create an effective, efficient and transparent market atmosphere of international standard to save and invest in Bangladesh in order to raise fund and accelerate industrial growth for overall benefit of the economy. Being a modern stock exchange, after it's setting up in Agrabad commercial area of the port city, CSE has infused many new and innovative ideas for the development of share market. After six months of its incorporation in 1995 floor trading was started with open cry- out auction system. In the backdrop of a strong need to institute a dynamic automated and transparent stock exchange in the country, seventy reputed business personalities under the leadership of Mr. Amir Khosru Mahmud Chowdhury MP, the founder president established this bourse in the commercial capital Chittagong. Only 30 securities were listed on the first day trade when market capitalization stood at US$ 0.2 Billion. Now CSE is a completely automated exchange with screen based trading facility on countrywide communication network. A policy-making committee having 18 members including 12 elected from its general members runs CSE. The Security and Exchange Commission selects other six members. The members of the committee elect the President and 3 vice-presidents of CSE.

The committee runs the exchange following the Security Act 1920, the Security Ordinance 1969, the Security and Exchange Commission Act 1993, the CSE Automatic Transaction Regulation 1999, the Chittagong Stock Exchange Investors Protection fund Regulation 1999, the Margins Rules 1999, and the Stock Exchange Transaction Resolution Provision 1998.

CSE made the government to launch the central depository system on wide area network connecting Dhaka, Shylet,Rajshai,Coxesbazar, based brokers to Chittagong enabling hinders of thousands of people to invest in the securities market.CSE made the government to launch the central Depository System and ails after proactive initiative of CSE,SEC is now in the process of implementing the idea of establishing a securities trading institute in the country alongside CSE has always been very active in the promoting stock investment by creating awareness among the general public since its inception.

CSE is committed to build and maintain a transparent, accountable and modern stock exchange to cater of the needs of the capital market for the best interest of the national economy.

b) Indices

i. *CSE30*

CSE-30 index is very useful for providing a historical comparison of returns on money invested in the stock market against other forms of investments. It can also be used as a standard against which to compare the performance of an equity fund, the CSE said in a statement.

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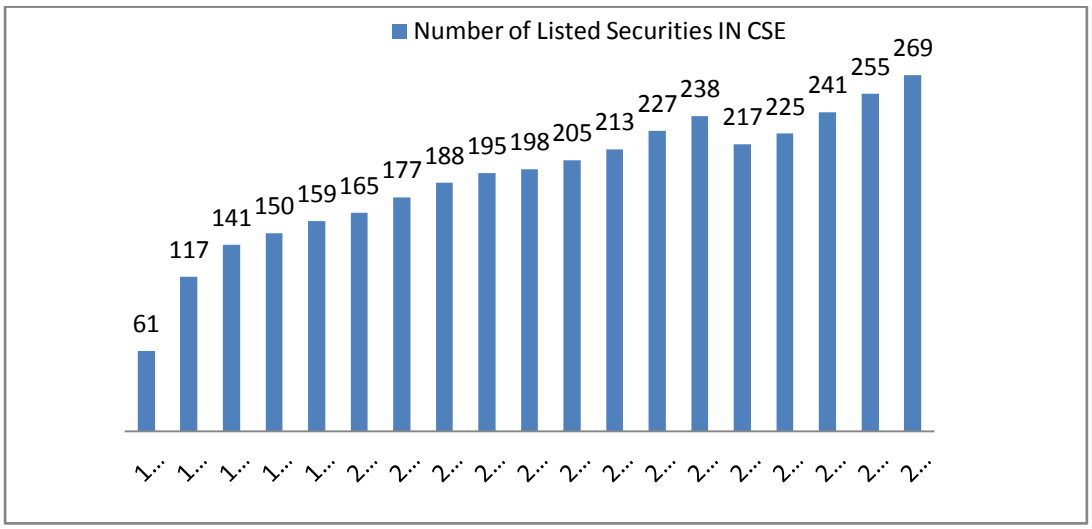
ii. *CSCX (Selective category Index)*

CSCX (CSE Selective Categories' Index) comprised A, B & G category companies. This index includes all but not the Z category companies. This also excludes the companies/scripts which are debt securities, mutual funds, suspended for indefinite period and non-traded for preceding six months of review meeting. The index will be reviewed in the Index Committee Meeting after every six months like other two indices of CSE.

iii. *CASPI (All Price Index)*

The only index the CSE has been maintaining since 10th October 1995 is an ALL SHARE PRICE INDEX using Chained Panache method.. This index was subject to unusual ups and downs and without a distinct base value. Therefore in need of a clean slate CSE finds the date 1 January 2000 is the best date to start new Indices. An All-Share Price Index with new formula and base date 30th December 1999 (the last day of the year) and new base index of thousand (to mark the millennium) will replace the existing one and A completely new Selective Index incorporating 30 scripts with base date 30th December 1999 and base index 1000.

c) Number of Listed Securities in CSE

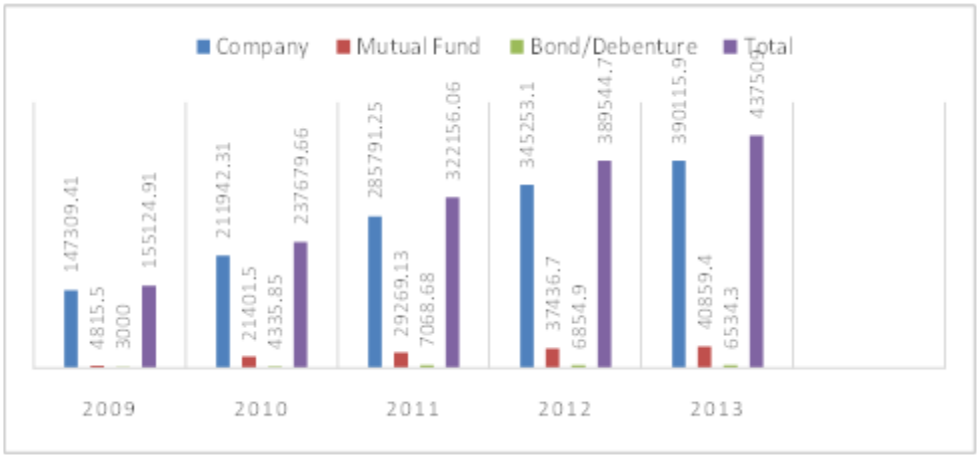


It is observed from the graph that between 1995 and 1996 the number of listed securities in CSE increase sharply. But from 1996 to 2008 it increased slowly. Between 2008 and 2009 number of listed securities fall into 217 from 238.From 2009 to 2013 almost every year number of listed securities increased.

d) Financial Performance of Listed Securities in CSE

To measure the financial performance of listed securities in CSE, we need to measure the yearly increase or decrease of the Paid up capital and Market capital of listed companies.

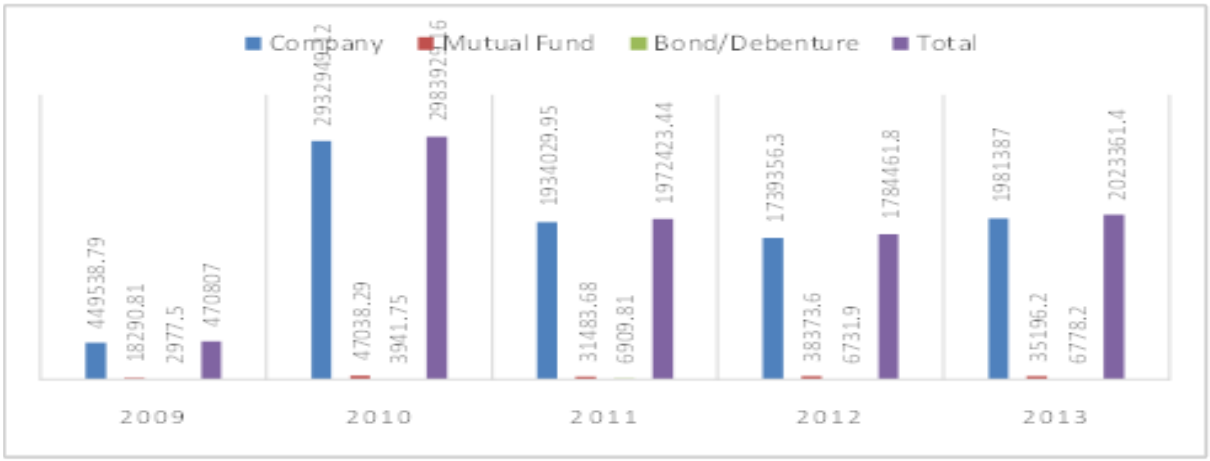
i. *Paid-up capital of listed company in CSE(Million Taka)*



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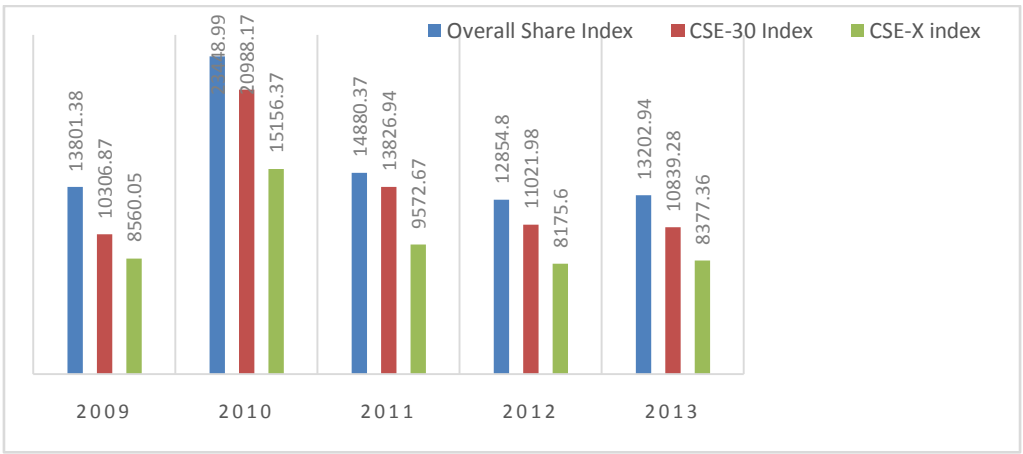
From the above graph we can easily say that, Paid up capital of listed company in CSE increase gradually year by year. This is the good sign for the development of the share market of our country. If our Share markets develop properly, industrialization of the country can achieve easily. As we know that without development of the stock market, industrialization of a country is quite impossible. At last we can say that paid up capital showing positive performance.

ii. *Market Capital of the Listed Securities in CSE (Million Taka)*



From the graph we are able to realize that, Market capital of the listed securities is not stable. In 2010 there was an excellent market capital increase happen in compare to year 2009.but it fell in 2011 in great extent. In 2012 and 2013 it increases slightly. To develop a country gradual increase in the market capital is indispensable. Although last two years it increase partially but it should be increased in proportion.

e) Price Index of Listed Securities in CSE (Million Taka)



In the above table we see that, in 2010 price indices increased sharply in compare to year 2009. But it fell in 2011 dramatically. Although it again fell in 2012 slightly, but in 2013 it increased slightly. so we can say that price indices show, our capital marker is highly instable. To show excellent performance, it needs to be stable. SEC should work for making stable stock market, which will attack the small investors to come forward to invest in stock market.

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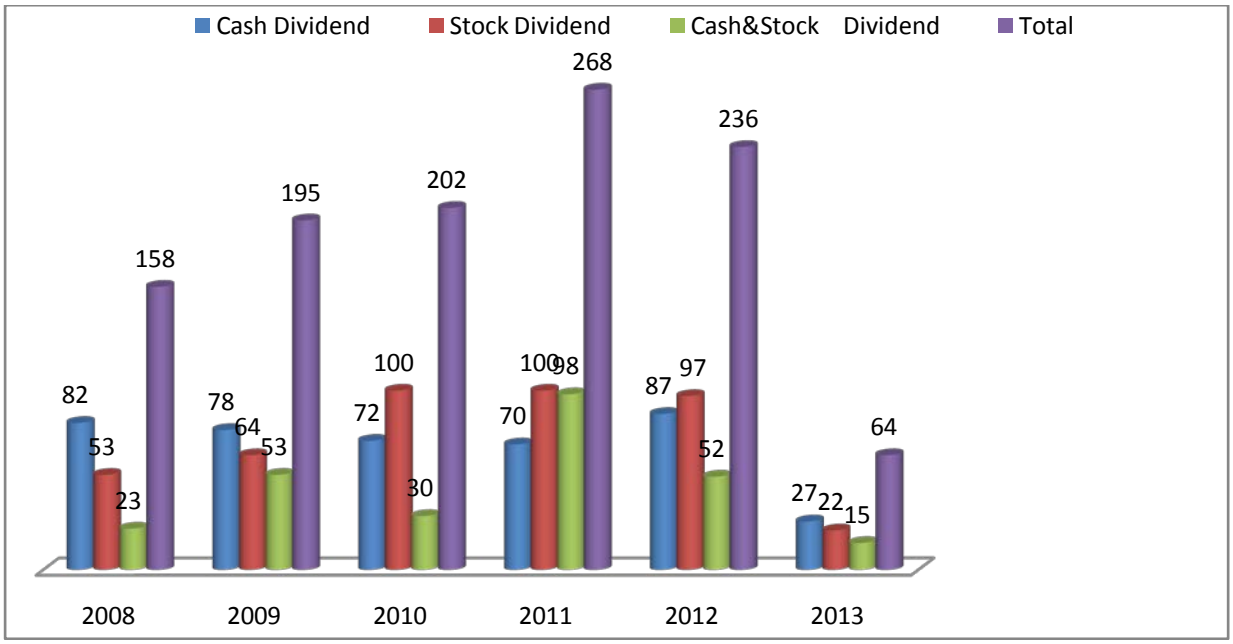
f) Sector Wise Financial Performance of Listed Securities (Million Taka)

Sl No	Sector	Index			% Change	% Change
		2011	2012	2013	2011-2012	2012-2013
1	Life Insurance	102218.47	98375.34	124880.73	(3.76)	26.94
2	General Insurance	11675.85	8978.52	9135.30	(23.10)	1.75
3	Textile & Clothing	4131.89	3308.72	3646.20	(19.92	10.20
4	Pharma&Chemicals	15856.2	14206.86	18050.36	(10.40)	27.05
5	Foods and Allied	7660.66	6094.49	9041.37	(20.44)	48.35
6	Cement	3446.34	3837.81	4294.44	11.36	11.90
7	Eng. & Electrical	4429.12	4821.48	6405.86	(25.01)	32.86
8	Leather & Footwear	4317.63	3445.34	5283.05	(20.19)	53.34
9	Services & Property	3305.39	3548.61	2925.28	7.36	(17.57)
10	Papers & Printing	1783.92	977.48	1383.45	(45.21	41.53
11	Energy	8738.66	8702.14	9890.80	(0.42)	13.66
12	Mutual Funds	5526.33	5443.53	4833.91	(1.50)	(11.20)
13	Bank	59775.75	43801.42	37597.31	(26.72)	(14.16)
14	Ceramic	729.8	545.36	535.56	(25.27)	(1.80)
15	ICT	8221.34	7128.97	8039.11	(13.29)	12.77
16	Leasing & Finance	28801.83	23464.85	23028.06	(18.53)	(1.86)
17	Telecommunication	989.74	1104.68	1341.85	11.61	21.47
18	Miscellaneous	6858.11	6752.03	6306.06	(1.55)	(6.60)

From the above table, it appears that between 2011 and 2012 Telecommunication sector gained most in respect of sector index followed by Papers & Printing sector. But in the 2013 Leather & Footwear sector gained most in respect of sector index followed by Foods & Allied sector. In the overall market situation Telecommunication sector growth sharply and Cement sector increase constantly. But the loss of mutual funds sharply increases. Sectors which made the loss in two financial years: Mutual Funds, Bank. Ceramic, Leasing and Finance, Miscellaneous.

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g) Number of the Listed Companies in the CSE Declared Dividend



From the above table we see that, in the 2011 highest listed number of the companies declared dividend as calculated total 268 companies and lowest dividend declaration occurred in the 2013 recorded as total 64 companies. We also see that from 2008 to 2011 dividend declaration of the listed companies grew gradually and it fell last two years. But in the last year it fell sharply. So we say that in the last year performance of the listed securities is not expected good.

h) Market Capital Growth and Turnover of CSE

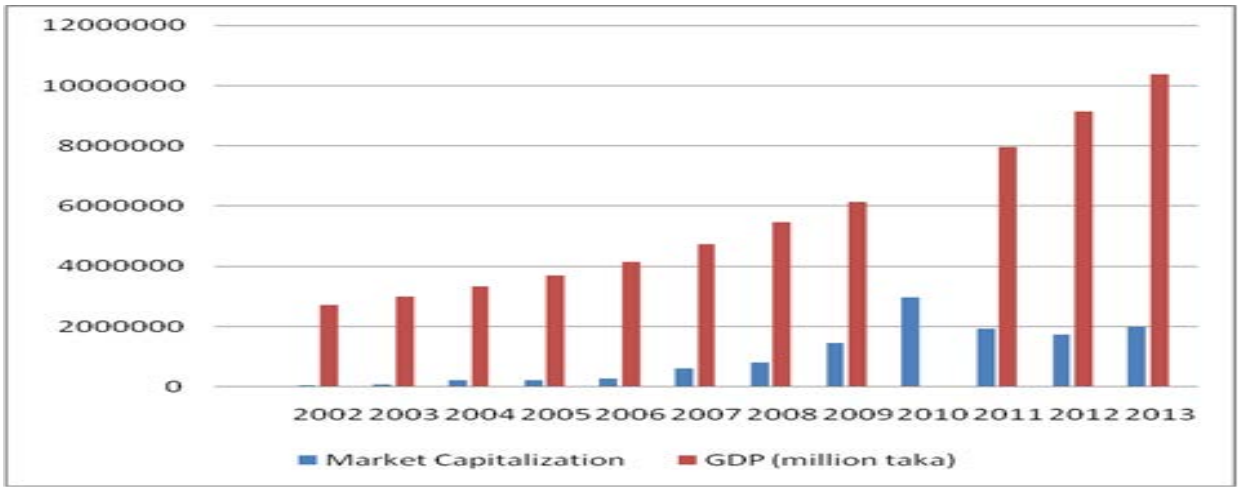
Year	Listed securities	(IPO)	Issued Capital (Mn Tk.)	Market Capitalization (Million Tk.)	Turnover (Mn Tk.)	Price Index*
2002	185	9	31079.9	60467.7	13586.1	1841.14
2003	199	10	41967.6	85312.3	6688.6	1642.78
2004	195	3	46978.7	215010.8	17551.3	3597.70
2005	210	16	55519.3	219942.8	14042.7	3378.68
2006	213	6	69378.4	270510.7	15893.1	3724.39
2007	227	13	89173.9	612580.02	52590.3	7657.06
2008	238	-	121603.2	807684.03	99803.7	8692.75
2009	217	18	155124.9	1470807.05	162562.6	13181.37
2010	232	7	206774.00	2241768.00	217112.09	23449.0
2011	241	13	285791.25	1934029.95	186337.01	14880.37
2012	255	16	389544.7	1784461.8	116905.11	12854.80
2013	269	14	437513.6	2023361.4	99038.1	13202.95

**All share price index is calculated on weighted average method from 24 November, 2001.*
**All share price index is calculated on General Share Price Index (excluding 'Z' group) by withdrawing weighted averageMethod from 9 December,2003.*
The index base was 1000 for CSE From the year 2000. Previously it was 100.

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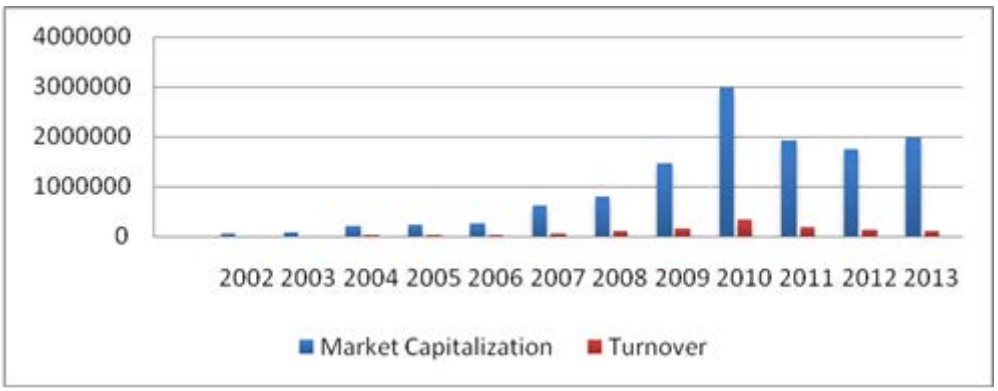
From the above table, we can easily evaluate the performance of CSE. From 2002 to 2013 number of listed company increased, although initial public offerings fluctuate that means not that CSE perform weakly. It means, in every year except 2008 companies issued new shares for the public. Issued capital and market capitalization of the CSE increased every year through the era. Higher the market turnover indicates the higher performance, Market turnover of the CSE fluctuate. It should be gradually increased. Price index increased gradually this is also good.

i) Market Capitalization of CSE and Contribution to the GDP



From the above table we can easily say that, from 2002 to 2004 market capitalization and its contribution in the GDP increased at 6.07% from 2.21%, but in the 2005 it decreased to the 5.61%. It again increased in the year 2006 to 6.44%. From the year 2006 to 2009 it increased moderately at 23.92% from 6.44 %.In the year 2010 it increased sharply to 43.20%, but it fell in the year 2011 to 24.27% and in the 2012 to 19.01%. In the last year it increased slightly to 19.08%.

j) Market Capitalization and Turnover of the CSE



From the above chart, we can say that highest market turnover ratio with the market capitalization in 2002 and lowest in the 2013.Average market market capitalization is TK 1031542.25 million and the average market turnover value is Tk93701.52 million. The average market turnover ratio with the market capitalization is 9.08, By considering overall calculation we can say that ,the contribution of the CSE in the market capitalization of our country is indispensable. So SEC should make necessary rules and regulations to increase performance of the CSE.As the performance of the CSE will increase our country capitalization also increase for the industrialization and development.

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k) Performance Summary Statistics of CSE

Particulars	2008	2009	2010	2011	2012	2013
Market Days	238	244	244	235	238	238
New Listing	15	16	23	14	14	17
No. of Securities	238	217	225	241	255	269
% Changes	3.93	(8.82)	3.69	7.11	5.81	5.49
Annual Turnover(BDT Mn)	10074705	16201931	34092930	18633654	11690522	9903754
% Changes	92.37	60.82	110.43	(45.34)	(37.26)	(15.28)
Daily Average Turnover(BDT Mn)	423.30	664	1397.30	792.92	491.20	416.12
% Changes	91.63	56.86	110.44	(43.25)	(38.05)	(15.28)
Number of Shares Traded(`000)	972811	1338780	2129129	2518282.47	2863509.68	2763476.06
% Changes	49.15	37.62	59.04	18.28	13.71	(3.49)
Number of Contracts	2805138	4403202	7415220	6059995	4375574	3896618
% Changes	79.09	56.97	68.41	(18.28)	(27.80)	(10.95)
Market Cap.(MnTk)	807875	1470807	2983929	1972423	1784461	2023261
% Changes	31.75	82.06	102.88	(33.90)	(9.53)	13.38
CASPI	869.75	13181.38	23448.99	14880.37	12854.80	13202.94
CSE-30	7566.95	10306.87	20988.17	13826.94	11021.98	10833.28
CSCx	5680.59	8560.05	15156.37	9572.67	8175.60	8377.36
Number of Company Declared Cash Dividend	82	78	72	70	87	27
Number of Company Declared Stock Dividend	53	64	100	100	97	22
Number of Company Declared Cash & Stock Dividend	23	53	30	98	52	15

In the table we see that, from the year 2008 to 2013 market days fluctuate within nine days. In the market days, new listing number of securities changed positively from 2008 to 2013 except the year 2009. Number of the share traded also increased over the period except 2013.

In 2013, CSE all share price index (CASPI), CSE selective categories Index (CSCX) recorded increase by 2.71% & 2.47% respectively while the CSE-30 Index decreased by 1.66% on point to point basis compared to the previous year. The average daily turnover decline by 15.29% recording Tk416.12 million in 2013 against Tk 491.20 million in 2012.market capitalization at the end of the year 2013 was USD26023 million as compared to USD22376 million, registering increase of 16.30%.the year 2013.

l) Financial Highlights of the CSE

Particulars	2008	2009	2010	2011	2012	2013
Operating income	124885616	191046083	279130352	227056343	212565076	154704104
Other Income	64877717	87154367	226862093	368026996	439015114	526943090
Total Income	189763333	278218450	505982445	595083339	651580190	681647194
Operating Expenses	61859317	86662956	122166207	146945839	153852680	236804807

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Depreciation& Amortization	6644434	10125834	14311626	40935149	46883874	**53307883**
Total Expenditure	**68503751**	**96788790**	**136477833**	**187880988**	**200736554**	**290112690**
Excess Income over Expenditure	**121259582**	**181429660**	**369504612**	**407202351**	**450843636**	**391534504**
Total Reserves & Funds	722894478	2017435249	3780639861	4186442212	4637285848	**257152837**
Investment in FDR	405000000	1687500000	2005000000	2830000000	3450000000	**3775000000**
Paid-up Capital	405000000	41100000	43800000	44400000	44400000	**6345248400**
No. of Employees	68	73	84	98	97	**96**

In the above table show the financial position of the CSE from the year 2008 to 2013. In the table we see that total income and expenditure of the CSE increased in every year from 2008 to 2013. For the increased amount of the total expenditure of CSE, netprofit fluctuates in every year. Sometimes it was better than the previous year; few times it was worse than the previous year. Investment in the FDR, paid up capital increased gradually in every year. Employees of CSE increased gradually in every year up to the year 2011, last two years it was decreased by two employees.

The year 2013 ended with a net profit of Tk391.53 million which was 59.31 million lower than that 2012. The exchange achieved surplus during the year, the operating revenue declined by 27.22% as the row of falling turnover continued this year too. The listing fee also dropped by tk35.84 million. Meanwhile, as the free annual maintenance period came to end the expenses under this head increased by T57.23 million in 2013. The general expenses increased by Tk24.09 million due to increase legal and professional expenses centring demutualization.CSE has to count excess depreciation of Tk 5.88 million due to the change in fixed asset base for revaluation as per the requirement of the exchange Demutualization Act 2013.In the 2013 total reserves and funds decreased with compare to year 2012 but investment in FDR and paid-up capital increased in 2013 against the year 2012. After all, although net profit decreased in the year 2013 than the year 2012,but performance through the year was good.

V. Key Findings and Recommendation

Number of listed securities showing an increasing trend, from 2009 to 2013 almost every year it hadincreased. The paid up capital of the listed securities increase gradually year by year which is a good sign for the development of the stock market. Priceindicesare showing an unstable position of CSE, in 2009 it was low then in 2010 it had increased but it fell in 2011 dramatically. Although it again fell in 2012 slightly, but in 2013 it increase gratually.To show excellent performance, it need to be stable. SEC should work for making stable stock market.

Though the initial public offering fluctuate, number of listed companies in CSE increased from 2002 to 2013.Issued capital and market capitalization of the CSE increased every year through the era. Market turnover of CSE fluctuate over the year, CSE should try to increase it gradually.

The average contribution of the CSE to the GDP is 18.29%, this is mentionable contribution of the Chittagong Stock Exchange. So we can say that performance of the Chittagong stock exchange is the most important factor for the development of the country. Government should take necessary steps to develop our capital market to develop the country.

Average market capitalization of CSE is TK 1031542.25 million and the average market turnover value is Tk93701.52 million. The average market turnover ratio with the market capitalization is 9.08. By considering overall calculation the study shows that, the contribution of the CSE in the market capitalization of the country is indispensable.Since the performance of the CSE will increase capitalization, industrialization and development of the country,SEC should make necessary rules and regulations to increase performance of the CSE.

VI. Conclusion

At the end of the study, it is understood that there is no way to improve our economy without augmenting the industrial sector from the present stalemate situation. At the beginning of the new millennium signs of improvement in the stock market are seen and it is evident that it has started contributing to the development of an alternative source of industrial financing gradually. CSE's contribution to this gradual change is immense which cannot be ignored. CSE's

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relentless endeavour since its establishment to develop an active and vibrant capital market in the country has become a landmark of success.. CSE's continuous efforts in the pursuit of developing a mature, stable and an expanded stock market will always be there in its mission and vision.CSE has been performing different investment related jobs, and undertaking and implementing different programs in order to accomplish its objectives.

The study shows that CSE develop capital market of Bangladesh by developing many tools in the capital market which are previously discussed, the contribution of the CSE is indispensable in the industrialization of the country, CSEcreate employment opportunity in the country.Since the establishment to the present situation CSE's gradual development indicates a bright future of the capital market as well as the economic growth of Bangladesh..

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Global Journal of Management and Business Research: C Finance
Volume 15 Issue 2 Version 1.0 Year 2015
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

"The Influence of Investor Psychology on Regret Aversion"

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GJMBR - C Classification : *JELCode : G11*



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"The Influence of Investor Psychology on Regret Aversion"

Dr. Tarika Singh [α] & Mr. Gajendra Singh Sikarwar [σ]

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I. Introduction

Due to the Liberalization, Globalization and Privatization financial sector is also progressive at a very fast pace and due to which question arising is of what is the effect the investors' psychology on the regret aversion. It is very difficult for investor to take decision and survive in this highly competitive economic world as well s for organizations coming up with financial products. If they are unable to comprehend the investor psychology on regret aversion, they will fail.

The Investor psychology is the scientific study of investor mind and behavior. Psychology is the study of the human brain including people's behaviors, attitudes, feelings and personality. Investors, like any decision maker, feel regret when they compare the outcome of an investment with what the outcome would have been they invested differently. To take any good decision investor check positives and negatives of each option, and consider all the alternatives.

Regret Aversion in simple words is the trend to avoid making decision due to the fear of experiencing the hurt of regrets. investor avoid taking decisive actions due to regret aversion because they fear that, in perception, whatever course they select will prove less than optimal. Essentially, this bias seeks to forestall the pain of regret associated with poor decision making. There is a role of regret aversion in decision making. Specifically, it examines how regret aversion influences decision process, choice, and post-decisional behaviors and feelings most investors are familiar with the painful pangs of regret resulting from negative Consequences of a decision, such as receiving a bad grade after not studying, losing money after making a stupid investment, or feeling frustrated after taking the wrong decision about investment. Regret is considered an important negative emotion.

This research focuses on influence of investor psychology on regret aversion. This study examined investors' decisions to realize gains and losses in the any kind of financial decision they make. Specifically, the attention is focused on the different gender, age, qualification and Income.

II. Regret Aversion

Bell, Loomes & Sugden (1982) came up with very first definition of regret aversion and said that it motivates individuals to engage in decision behaviors and choices that avoid future regret, for example, by choosing the option for which the least regret is expected. Later, *Shefrin and Statman (1985)* suggested that regret aversion is an emotional feeling associated with the ex post knowledge that a different past decision would have fared better than the one chosen, as one of the factors leading to the disposition effect. *Samuelson and Zeckhauser (1988)* said regret aversion refers to the phenomenon that people keep the status quo because they know from experience that options that seem to be favorable given the apparently correct information at the time the decision is to be made, may later turn out to be less favorable than previously assumed.

Baber and Odean (1999) suggested investors want to avoid regret. When investors hold the paper gains stock, investors worry about the stock price will fall, so investors sell paper gains stock to become realized gains. Conversely, when investors ride the paper losses stock, investors will expect the stock price will go up in the future, so they will ride the loss stock.

Regret Aversion can be only put as the tendency to avoid making decision due to the fear of experiencing the pain of regrets. People demonstrate regret aversion avoid taking decisive actions because they fear that, in hindsight, whatever course they select will prove less than optimal. Essentially, this bias seeks to forestall the pain of regret associated with poor decision making. Each word has its own meaning.

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III. Relationship between Disposition Effect and Regret Aversion

Shiller (2000) argued that regret theory may apparently help explaining the fact that investors defer the selling of stocks that have gone down in value and accelerate the selling of stocks that have going up in value. Since the fear of regret leads investors to postpone losses, symmetrically, the desire for pride leads to the realization of gains. In short it can be inferred that investors might feel regret when they realize a loss, and, conversely, feel pride when they realize a paper gains.

IV. Investor Psychology

Elliott (1930) developed the Elliott wave theory. Through use of sophisticated measurements that he called "wave counting," a wave theorist could forecast market turns with a high degree of accuracy. Further, *Sun1 and Hsiao (1983)* proposed Prospect Theory. Prospect theory to explain how decision makers actually behave when confronted with choice under uncertainty and formalizes an S-shaped value function to substitute for expected utility function of expected utility theory. *Weber & Camerer (1998)* found evidence of disposition affect in experimental market by pooling investor responses and analyzing buy and sale trends of sis risky assets. They argued that this was a construct of investor being risk averse with winnings, and risk seeking with losses with the purchase price as the reference point.

Traditional economic modeling assumes that people make *decisions rationally,* taking into account all available information (adjusted for the cost of gathering and analyzing the information). However, increasing evidence suggests that people's decision making is influenced by certain behavioral biases and has led to a growing body of work investigating the impact of these biases on financial markets.

The *impact of psychology* can be clearly seen in investor behavior, such as "herding". This can lead to bubbles and crashes and fear of regret, for example, where investors avoid selling a poorly performing investment because they do not want to admit to having made a bad decision to begin with.

V. Relationship between Investor Psychology and Regret Aversion

Investor psychology is the mental conflict that people experience when they are presented with evidence that their beliefs or assumptions are wrong; as such, *cognitive* dissonance might be classified as a sort of pain of regret, regret over mistaken beliefs. As with regret theory, the theory of regret aversion goes parallel. *Festinger (1957)* asserts that there is a tendency for people to take actions to reduce cognitive dissonance that would not normally be considered fully rational: the person may avoid the new information or develop contorted arguments to maintain the beliefs or assumptions. There is empirical support that people often make the errors represented by the theory of cognitive dissonance. *McFadden (1974)* modeled the effect of cognitive dissonance in terms of a probability of forgetting contrary evidence and showed how this probability will ultimately distort subjective probabilities.

Goetzmann and Peles (1993) have argued that the same theory of cognitive dissonance could explain the observed phenomenon that money flows in more rapidly to mutual funds that have performed extremely well than flows out from mutual funds that have performed extremely poorly: investors in losing funds are unwilling to confront the evidence that they made a bad investment by selling their investments.

VI. Literature Review

Recent literature in empirical finance is surveyed in its relation to underlying behavioral principles, principles which come primarily from psychology, sociology and anthropology. In a study of verbal expressions of emotions,

Shimanoff (1984) found that regret was the most frequently named *negative emotion, attitudes* toward regret are mainly favorable versus unfavorable, whether individuals are self-serving in their ascription of regret experiences, and which beneficial functions people ascribe to regret versus other negative emotions. Although previous research has offered comparative profiles of various specific emotions in terms of psychology, intensity, or duration the present research is the first to benchmark regret against other common emotions in terms of these basic evaluations.

Lankman (1993) confirmed that regret is a common, if not universal, experience. Regret the persistence of the possible. Evidence for regret aversion has been documented in areas *Richard, van der Pligt, de Vries (1996),* negotiation behavior. *Larrick & Boles, (1995),* health-related decisions *Connolly & Reb, (2003),* lottery ticket purchases *Zeelenberg & Pieters, (2004),* and monetary gambles in the laboratory Z*eelenberg, Beattie, van der Pligt, & de Vries, (1996),* among others.

Shefrin and Statman, (1985) examined the influences of *overconfidence, mental accounting, regret aversion and self-control* on the disposition effect of selling winners too early and holding losers too long. The findings show that (1) overconfidence, mental accounting and self- control positively influence the disposition effect, and (2) self-control negatively influences the disposition effect. As predicted, self control can reduce irrational behavior of investor.

Zeelenberg (1999b) and Roese (2005) found regret can tell us that we could have done better by choosing a different option. The regret experienced after trusting an untrustworthy leader, losing money in a

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phony investment, *cheating* on one's spouse, or not blowing the whistle about corporate wrong -doing is likely to increase the probability of better choices in the future. By making better choices, in turn, decision makers should experience less regret. Thus, being willing to experience regret in the short -run might lead to better choices and less future regret.

Simonson (1989); Slavic (1975) studied the effects of decision making and explained as the result of decision makers, tendency to make easily justifiable reason-based choices. All violate certain normative principles of choice. However, as a pretest showed, the justifications underlying the effects are not all are considered equally unreasonable.

Janis and Mann (1977) said that anticipatory regret might again lead to increased information purchase and, as a consequence, lead to worse overall monetary payoffs. The results show that making regret salient led to less rather than more information search under these conditions. It appears, then, that anticipatory regret did not lead to "mindless" information collection with the purpose of providing a justification that could protect the decision maker if the choice outcome turned out to be bad. *Bell, Loomes & Sugden, (1982) Zeelenberg (1999)* said that investor psychology is the pre-choice decision process. The results told that increasing *anticipatory* regret can, in some circumstances, lead to better, more heedful decision making.

Larrick & Boles (1995) suggested that decision makers' tendency to seek feedback is actually much stronger than the tendency to avoid feedback when both options are equally effortless and costless to implement and regret is not particularly salient. However, once regret is more salient, feedback avoidance increases substantially and bad decision making increases as well.

Subash (2011/2012) founds investors who are participating in the Indian Stock Market is rational at all times. The work focuses on nine identified *behavioral biases,* namely: Overconfidence, Representativeness, Herding, Anchoring, Cognitive Dissonance, Regret Aversion, Gamblers' Fallacy, Mental Accounting and Hindsight Bias. Effects of these nine factors on the decision making process of portfolio investors in Kerala, India has been analyzed in this study. The influence has primarily been analyzed in terms of whether behavioral factors affect the investors' decision to buy sell or hold stocks.

Barber and Odean (2001) partitioned investors based on gender and, based on the previous psychological research fact that men are more overconfident than women, tested the theory that overconfident investors trade excessively. They document that men trade 45% more than women, and find that men's net returns were cut by 2.5% a year while it was 1.72% for women, in data gathered from 1991 through 1997.

Montier (2002) Cognitive Dissonance is the mental conflict that people experience when they are presented with evidence that their beliefs or assumptions are wrong."

Markowitz and Pompian (2006) told that I should have computed the historical covariance of the asset classes and drawn an efficient frontier. Instead, I visualized my grief if the stock market went way up and I wasn't in it-or if it went way down and I was completely in it. My intention was to minimize my future regret, so I split my [pension scheme] contributions 50/50 between bonds and equities.

Chandra (2008) explored the impact of *behavioral factors* and investor's psychology on their decision-making, and to examine the relationship between investor's attitude towards regret and psychology of decision-making. Chandra founds that unlike the classical finance theory suggests, individual investors do not always make rational investment decisions. The investment decision-making is influenced, largely, by behavioral factors like greed and fear, Cognitive Dissonance, heuristics, Mental Accounting, and Anchoring. These *psychological factors* must be taken into account as regret factors while making investment decisions.

Poteshman and Serbin (2003) research show that to their detriment, investors tend to select a stock's 52-week high as the appropriate reference point. *Samuelson and Zeckhauser (1988)* said regret aversion is closely linked to the theory of omission bias, which holds that people perceive harmful commissions as worse than corresponding omissions and, therefore, prefer omission to commission.

Ritov and Baron (1992) said selection of an alternative also means commitment to the alternative. Psychological commitment claims behavior on behalf of a position, as a change may damage self-esteem. When a *poor decision* is undeniable to ourselves, the natural survival instinct is to downplay the importance of the event or change the way we think about the outcome altogether. That is, we change the reference point from which the outcome is evaluated.

Wang, Zhoa, Chan, and Chau (2000) demonstrated that developers become *over- confident* and that their over-confidence leads to over-building. These actions are found to cause excessive volatility in the real estate sector and even affect real estate cycles.

Hirshleifer, Subrahmanyam, & Titman (1994) experimental and empirical evidence show individual in groups abides the *group decision,* even when they perceive the group to be wrong. Individual suppresses their own beliefs and relies on their investment decision solely on the collective action, even though they disagree with the prediction.

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Savage's (1951) told that regret rule for decision making under ignorance. The *absence of any knowledge* about the probabilities with which different states of the world occur and that was perhaps the first formulation of a decision rule that seeks to minimize the regret for having chosen the relatively worse option.

Zeelenberg (2002) found further direct evidence for the role of having *good reasons* for one's choice. They studied regret after consumer decisions based on more or less convincing reasons and found that regret was more intense after unreasonable choices such as switching to a different product when the product performed well in the past, or not switching when it performed badly.

Reb and Connolly (2005) justified of the decision process may be of even stronger importance for the experience of regret. In the series of scenario - based studies, tested the effect of decision process quality on anticipated regret.

Based on the above extensive review of literature the objectives of the study were formulated to carry out a study on Investor Psychology and Regret Aversion in Indian context. The review was used as base for questionnaire preparation too.

VII. Objectives

1. To design, develop and standardize a measure to evaluate Investor Psychology.
2. To design, develop and standardize a measure to evaluate Regret Aversion.
3. To find out the underlying factors of Investor Psychology and Regret Aversion.
4. To find out differences between male and female Investors on Psychology and Regret Aversion.
5. To find out the causal relationship between Investor Psychology and Regret Aversion.
6. To open new vistas for further study.

VIII. Research Methodology

The study was exploratory in nature and survey was used to complete it. Population subsumed the entire Investors of Gwalior region. Since there was no list of existing investors of Gwalior region, no sampling frame was used. Individual Respondent was the sampling element. 200 individuals including 100 male and 100 female investors were the respondents and Non probability judgmental sampling was used.

IX. Tools used for Data Collection

For the purpose of data collection, a standardized questionnaire was used as a base (Marcatto and Ferrante, 2008). The same was re-standardized again in Indian context. Responses were solicited on Likert-type scale 1 to 5, where 1stands for minimum agreement and 5stands for maximum agreement would be used.

X. Tools used for Data Analysis

1. Item to total correlation was used to check the internal consistency of the questionnaires.
2. Reliability test was applied to check the reliability of the questionnaire with the help of Cranach Alpha.
3. Factor analysis was applied to find out the factors of Investor Psychology as well as Regret Aversion.
4. The simple linear regression was used to find out cause and effect relationship between Investor Psychology and Regret Aversion.
5. MANOVA was used to compare the Psychology and Regret Aversion of different categorical factors.

XI. Results and Discussions

a) Reliability Test

Cronbach Alpha reliability method was applied to check the reliability of all items in the questionnaire. The reliability measure of questionnaire (combined) was computed by using SPSS software. Cranach alpha Reliability coefficients were computed to calculated reliability of all items in the questionnaires of *Investor Psychology and regret Aversion.*

b) Reliability Statistics

Reliability of both the questionnaires was checked through SPSS 18 was greater than 0.7. It is considered that reliability of all measure is adequate. So the statements in the questionnaire were treated as reliable statements.

Reliability Statistics of Investor Psychology

Reliability Statistics

Cronbach's Alpha	N of Items
.728	12

Reliability Statistics of Regret Aversion

Reliability Statistics

Cronbach's Alpha	N of Items
.723	8

c) KMO and Bartlett's Test

Further KMO Bartlett's test was used for sample adequacy. The results are discussed in table below.

The Kaiser Meyer Olkin Measure of Sampling Adequacy value was 0.718 indicating that the sample was adequate to consider the data as normally distributed. The Bartlett's Test of Sphericity tests the null hypothesis that the item-to-item correlation matrix was an identity matrix. The hypothesis was tested through

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Chi-Square test; the value of Chi-square was found to be 1242.851, which is significant at 0% level of significance. Therefore, null hypothesis is rejected; indicating that the item-to-item correlation matrix is not an identity matrix and is therefore suitable for factor analysis.

Principle component factor analysis with Varimax rotation and Kaiser Normalization was applied. The factor analysis resulted in 4 factors for Investor Psychology. The details about factors, the factor name, Eigen value, Variables converged; Loadings, Variance% and cumulative% are shown follows

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.718
Bartlett's Test of Sphericity	Approx. Chi-Square	1242.851
	Df	190
	Sig.	.000

d) Factor analysis of Investor Psychology

Factor name	Total eigen values	% of variance	Items converged	Factors loads
1.Curious and fearless	2.050	17.081	R-1. My style is more spontaneous action then Cool deliberation.	.268
			R-9. I like to gather data a lot on any new Opportunities that arise.	.408
			R-10. I love taking chances.	.383
			R-11. Success is all about that matters to me.	.491
2. Distressed	1.929	16.076	R-4. I am someone who prefers routine to Uncertainty.	.369
			R-7. I never upset people.	.464
			R-12. Occasionally people make me angry.	.288
3. Balance Decision making	1.666	13.881	R-5. I would rather achieve balance than Success In my life.	.537
			R-6. I like to make decisions quickly and Instinctively.	.370
4. Heuristic	1.483	12.355	R-2. When things go wrong at work it takes me A while to get over it.	.145
			R-3. High risk activities excite me.	.299
			R-8. Before buying a quiet expensive item I do Exhaustive research.	.376

e) Description of Investor Psychology factors

1. *Curezious and fearless:* - This factor has included the most important determinant of research total variance 17.081. Major elements of this factor include "R-1. My style is more spontaneous action then cool deliberation."(0.268). "R-9 I like to gather data a lot on any new opportunities that arise.''(0.408). "R-10 I love taking chances. (0.383)" "R-11 Success is all about that matters to me."(0.491).
2. *Distressed:* - This factor has included the most important determinant of research total variance 16.076. Major elements of this factor include "R- 4. I am someone who prefers routine to uncertainty (0.369)." "R-7 I never upset people (0.464)." R-12 Occasionally people make me angry (0.288)."

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3. *Balance Decision making:* - This factor has included the most important determinant of research total variance 13.881. Major elements of this factor include "R-5. I would rather achieve balance than success in my life. (0.537)" "R-6 I like to make decisions quickly and instinctively (0.370)".
4. *Heuristic:* - This factor has included the most important determinant of research total variance 12.355. Major elements of this factor include. "R-2 When things go wrong at work it takes me a while to get over it. (0.145)". "R-3 High risk activities excite me. (0.299)". "R-8 Before buying a quiet expensive item I do exhaustive research. (0.376)"

f) KMO test table for Regret Aversion

The Kaiser Meyer Olkin Measure of Sampling Adequacy value was 0.737 indicating that the sample was adequate to consider the data as normally distributed. The Bartlett's Test of Sphericity tests the null hypothesis that the item-to-item correlation matrix was an identity matrix. The hypothesis was tested through Chi-Square test; the value of Chi-square was found to be 283.761, which is significant at 0% level of significance. Therefore, null hypothesis is rejected; indicating that the item-to-item correlation matrix is not an identity matrix and is therefore suitable for factor analysis.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.737
Bartlett's Test of Sphericity	Approx. Chi-Square	283.761
	Df	28
	Sig.	.000

Principle component factor analysis with Varimax rotation and Kaiser Normalization was applied. The factor analysis resulted in 3 factors for Investor Psychology. The details about factors, the factor name, Eigen value, Variables converged; Loadings, Variance% and cumulative% are shown follows

g) Factor analysis of Regret Aversion

Factor name	Total eigen values	% of variance	Items converged	Factors loads
1.Risk Averse	2.231	27.839	R- 13. Whenever I make a choice, I'm curious about what would have happened if I had chosen Differently.	.421
			R-16. When I think about how I'm doing in life, I Often assess opportunities I have passed up.	.470
			R-19. I find that to adopt a careful, analytical Approach to making decision takes too long.	.522
			R-20. I am always prepared to take a gamble.	.352
2. Risk Neutral	1.391	17.390	R-15. If I make a choice and it turns out well, I still Feel like something of a failure if I find out that another choice would have turned out Better.	.422
			R-18. I feel at home in situations where I am under In pressure to make quick decision.	.277
3. Risk Taking	1.325	16.560	R-14. Whenever I make a choice, I try to get in-formation how the other alternatives turned Out.	.217
			R-17. Once I make a decision, I don't look back.	.224

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h) Description of Regret Aversion Factor

1. *Risk Averse:* - This factor has included the most important determinant of research total variance 27.889. . Major elements of this factor include. "R- 13 whenever I make a choice, I'm curious about what would have happened if I had chosen differently (0.421)." "R-16 When I think about how I'm doing in life, I often assess opportunities I have passed up. (0.470)" "R-19 I find that to adopt a careful, analytical approach to making decision takes too long (0.522)" "R-20 I am always prepared to take a gamble. (0.352)."
2. *Risk Neutral:* - This factor has included the most important determinant of research total variance 17.390. Major elements of this factor include. "R-15 If I make a choice and it turns out well, I still feel like something of a failure if I find out that another choice would have turned out better. (0.422)" "R-18 I feel at home in situations where I am under in pressure to make quick decision (0.277)"
3. *Risk Taking:* - This factor has included the most important determinant of research total variance 16.560. Major elements of this factor include. "R-14 Whenever I make a choice, I try to get in- formation how the other alternatives turned out. (0.217)" "R-17 Once I make a decision, I don't look back (0.224).

Further to find out Relationship between Investor Psychology and Regret aversion and different demographic variables, generalized linear model were applied to the data.

i. *Manova*

a. Descriptive statics

Ideally, we would like to see a significant relationship between the investor psychology and the regret aversion. Both these variables are dependent here.

Box's Test of Equality of Covariance Matrices[a]

Box's M	84.794
F	1.298
df1	54
df2	2593.666
Sig.	.072

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + gender + age + income + gender * age + gender * income + age * income + gender * age * income

The Box's Test of Equality of Covariance Matrices checks the assumption of homogeneity of covariance across the groups using $p < .001$ as a criterion. Here, we do not have a concern – as Box's M (84.79) was not significant, p (.072) > (.001) – indicating that there are no significant differences between the covariance matrices. Therefore, the assumption is not violated and Wilk's Lambda is an appropriate test to use.

The following is the MANOVA using the Wilk's Lambda test.

Using an alpha level of .00, we see that this test is significant, Wilk's = .014. This significant F indicates that there are significant differences among the age gender, income, groups on a linear combination of the investor psychology and regret aversion.

Table : Interpretation of Wilki's Lambda

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.986	5827.452[b]	2.000	168.000	.000
	Wilks' Lambda	.014	5827.452[b]	2.000	168.000	.000
	Hotelling's Trace	69.374	5827.452[b]	2.000	168.000	.000
	Roy's Largest Root	69.374	5827.452[b]	2.000	168.000	.000
	Pillai's Trace	.002	.180[b]	2.000	168.000	.835
	Wilks' Lambda	.998	.180[b]	2.000	168.000	.835

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Gender	Hotelling's Trace	.002	.180[b]	2.000	168.000	.835
	Roy's Largest Root	.002	.180[b]	2.000	168.000	.835
Age	Pillai's Trace	.038	1.080	6.000	338.000	.374
	Wilks' Lambda	.963	1.077[b]	6.000	336.000	.376
	Hotelling's Trace	.039	1.074	6.000	334.000	.377
	Roy's Largest Root	.031	1.743[c]	3.000	169.000	.160
Income	Pillai's Trace	.037	1.049	6.000	338.000	.393
	Wilks' Lambda	.964	1.043[b]	6.000	336.000	.397
	Hotelling's Trace	.037	1.037	6.000	334.000	.401
	Roy's Largest Root	.022	1.240[c]	3.000	169.000	.297
gender * age	Pillai's Trace	.079	2.309	6.000	338.000	.034
	Wilks' Lambda	.923	2.299[b]	6.000	336.000	.034
	Hotelling's Trace	.082	2.290	6.000	334.000	.035
	Roy's Largest Root	.053	2.997[c]	3.000	169.000	.032
gender * income	Pillai's Trace	.036	1.037	6.000	338.000	.401
	Wilks' Lambda	.964	1.036[b]	6.000	336.000	.402
	Hotelling's Trace	.037	1.035	6.000	334.000	.402
	Roy's Largest Root	.032	1.827[c]	3.000	169.000	.144
age * income	Pillai's Trace	.063	.610	18.000	338.000	.892
	Wilks' Lambda	.938	.607[b]	18.000	336.000	.894
	Hotelling's Trace	.065	.605	18.000	334.000	.895
	Roy's Largest Root	.045	.838[c]	9.000	169.000	.582
gender * age * income	Pillai's Trace	.061	.753	14.000	338.000	.720
	Wilks' Lambda	.940	.750[b]	14.000	336.000	.723
	Hotelling's Trace	.063	.746	14.000	334.000	.727
	Roy's Largest Root	.039	.951[c]	7.000	169.000	.469

*a. Design: Intercept + gender + age + income + gender * age + gender * income + age * income + gender * age * income*

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level.

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We see that there are three functions age, gender, income; are significant in examining group differences. With our univariate F-tests, we identify the insignificant variables. When it comes to finding out differences among various sub categories of age, income and gender, we see the differences are insignificant.

XII. Interpreting the Post hoc Test for Age

The MULTIPLE COMPARISONS table is showing the results for the Tukey HSD and the LSD follow-up tests. Since the assumption of homogeneity of variance was met in our example – we only need to review the Tukey HSD information. The information for the LSD can be ignored at this time.

The Tukey HSD tests the null hypothesis that the two means are equal.

At first glance, this table is rather intimidating – however, there is only certain pieces of data that we need to make our conclusion. We can see that the mean of age category (I) 25 - 35 differs significantly in income from (IV) 55 - 65 years of age category for Investor Psychology.

Multiple Comparisons

Dependent Variable		(I) age	(J) age	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Invphy	Tukey HSD	1.00	2.00	-1.00	.921	.696	-3.39	1.39
			3.00	-.48	.921	.953	-2.87	1.91
			4.00	1.76	.921	.229	-.63	4.15
		2.00	1.00	1.00	.921	.696	-1.39	3.39
			3.00	.52	.916	.942	-1.86	2.90
			4.00	2.76*	.916	.016	.38	5.14
		3.00	1.00	.48	.921	.953	-1.91	2.87
			2.00	-.52	.916	.942	-2.90	1.86
			4.00	2.24	.916	.073	-.14	4.62
		4.00	1.00	-1.76	.921	.229	-4.15	.63
			2.00	-2.76*	.916	.016	-5.14	-.38
			3.00	-2.24	.916	.073	-4.62	.14
	LSD	1.00	2.00	-1.00	.921	.277	-2.82	.81
			3.00	-.48	.921	.600	-2.30	1.33
			4.00	1.76	.921	.058	-.06	3.57
		2.00	1.00	1.00	.921	.277	-.81	2.82
			3.00	.52	.916	.571	-1.29	2.33
			4.00	2.76*	.916	.003	.95	4.57
		3.00	1.00	.48	.921	.600	-1.33	2.30

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	3.00	2.00	-.52	.916	.571	-2.33	1.29
		4.00	2.24*	.916	.016	.43	4.05
		1.00	-1.76	.921	.058	-3.57	.06
	4.00	2.00	-2.76*	.916	.003	-4.57	-.95
		3.00	-2.24*	.916	.016	-4.05	-.43
		2.00	.27	.761	.984	-1.70	2.25
	1.00	3.00	.45	.761	.934	-1.52	2.43
		4.00	1.05	.761	.512	-.92	3.03
		1.00	-.27	.761	.984	-2.25	1.70
	2.00	3.00	.18	.757	.995	-1.78	2.14
		4.00	.78	.757	.732	-1.18	2.74
Tukey HSD		1.00	-.45	.761	.934	-2.43	1.52
	3.00	2.00	-.18	.757	.995	-2.14	1.78
		4.00	.60	.757	.858	-1.36	2.56
		1.00	-1.05	.761	.512	-3.03	.92
	4.00	2.00	-.78	.757	.732	-2.74	1.18
		3.00	-.60	.757	.858	-2.56	1.36
regaversion		2.00	.27	.761	.721	-1.23	1.77
	1.00	3.00	.45	.761	.553	-1.05	1.95
		4.00	1.05	.761	.169	-.45	2.55
		1.00	-.27	.761	.721	-1.77	1.23
	2.00	3.00	.18	.757	.812	-1.31	1.67
		4.00	.78	.757	.304	-.71	2.27
LSD		1.00	-.45	.761	.553	-1.95	1.05
	3.00	2.00	-.18	.757	.812	-1.67	1.31
		4.00	.60	.757	.429	-.89	2.09
		1.00	-1.05	.761	.169	-2.55	.45
	4.00	2.00	-.78	.757	.304	-2.27	.71
		3.00	-.60	.757	.429	-2.09	.89

Based on observed means.
The error term is Mean Square(Error) = 14.330.
**. The mean difference is significant at the .05 level.*

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XIII. Interpreting the Post hoc Test for Income

The *MULTIPLE COMPARISONS* table (in our example) is showing the results for the Tukey HSD and the LSD follow-up tests. Since the assumption of homogeneity of variance was met in our example – we only need to review the Tukey HSD information. The information for the LSD can be ignored at this time.

We can see that this test indicates the differences in mean income levels amongst the groups. The first row indicates the difference in income level between those in group 1 (up to 2 lakh) versus those who are in group 2 (2-5 lakh) and group 3 (5-10 lakh) and group 4(55 lakh above). We can determine that the mean difference by examining the second column of the table. Here we cansee that the mean difference on Investor Psychology as well as Regret Aversion among different income groups are not significant.

Multiple Comparisons

Dependent Variable	(I) income	(J) income	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Invphy	1.00	2.00	-1.56	1.019	.421	-4.21	1.08
		3.00	-1.17	.970	.624	-3.69	1.35
		4.00	-1.30	1.323	.759	-4.73	2.13
	2.00	1.00	1.56	1.019	.421	-1.08	4.21
		3.00	.39	.762	.956	-1.58	2.37
Tukey HSD		4.00	.26	1.178	.996	-2.80	3.32
	3.00	1.00	1.17	.970	.624	-1.35	3.69
		2.00	-.39	.762	.956	-2.37	1.58
		4.00	-.13	1.136	.999	-3.08	2.82
	4.00	1.00	1.30	1.323	.759	-2.13	4.73
		2.00	-.26	1.178	.996	-3.32	2.80
		3.00	.13	1.136	.999	-2.82	3.08
Invphy	1.00	2.00	-1.56	1.019	.127	-3.57	.45
		3.00	-1.17	.970	.229	-3.09	.75
		4.00	-1.30	1.323	.327	-3.91	1.31
	2.00	1.00	1.56	1.019	.127	-.45	3.57
		3.00	.39	.762	.608	-1.11	1.89
LSD		4.00	.26	1.178	.825	-2.06	2.59
	3.00	1.00	1.17	.970	.229	-.75	3.09
		2.00	-.39	.762	.608	-1.89	1.11
		4.00	-.13	1.136	.909	-2.37	2.11

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		1.00	1.30	1.323	.327	-1.31	3.91
	4.00	2.00	-.26	1.178	.825	-2.59	2.06
		3.00	.13	1.136	.909	-2.11	2.37
		2.00	-.58	.842	.902	-2.76	1.61
	1.00	3.00	-.20	.801	.995	-2.28	1.88
		4.00	1.67	1.093	.425	-1.17	4.50
		1.00	.58	.842	.902	-1.61	2.76
	2.00	3.00	.38	.629	.930	-1.25	2.01
		4.00	2.25	.973	.101	-.28	4.77
Tukey HSD		1.00	.20	.801	.995	-1.88	2.28
	3.00	2.00	-.38	.629	.930	-2.01	1.25
		4.00	1.86	.939	.197	-.57	4.30
		1.00	-1.67	1.093	.425	-4.50	1.17
	4.00	2.00	-2.25	.973	.101	-4.77	.28
		3.00	-1.86	.939	.197	-4.30	.57
regaversio		2.00	-.58	.842	.493	-2.24	1.08
	1.00	3.00	-.20	.801	.805	-1.78	1.38
		4.00	1.67	1.093	.129	-.49	3.82
		1.00	.58	.842	.493	-1.08	2.24
	2.00	3.00	.38	.629	.546	-.86	1.62
		4.00	2.25*	.973	.022	.32	4.17
LSD		1.00	.20	.801	.805	-1.38	1.78
	3.00	2.00	-.38	.629	.546	-1.62	.86
		4.00	1.86*	.939	.049	.01	3.72
		1.00	-1.67	1.093	.129	-3.82	.49
	4.00	2.00	-2.25*	.973	.022	-4.17	-.32
		3.00	-1.86*	.939	.049	-3.72	-.01

Based on observed means.

The error term is Mean Square(Error) = 14.330.

**. The mean difference is significant at the .05 level.*

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XIV. Oneway Interpretation: for Gender as Categorical Variable

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Invphysco	1.00	100	49.3800	4.83627	.48363	48.4204	50.3396	32.00	58.00
	2.00	100	50.0900	4.70567	.47057	49.1563	51.0237	32.00	58.00
	Total	200	49.7350	4.77270	.33748	49.0695	50.4005	32.00	58.00
regaversion	1.00	100	32.9100	3.96728	.39673	32.1228	33.6972	23.00	39.00
	2.00	100	33.4800	3.74025	.37403	32.7379	34.2221	23.00	40.00
	Total	200	33.1950	3.85634	.27268	32.6573	33.7327	23.00	40.00

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Invphysco	.608	1	198	.436
Regaversion	1.353	1	198	.246

In the table 'Test of Homogeneity of Variances' we can find the result of Levene's Test for Equality of Variances. It tests the condition that the variances of both samples are equal, indicated by the Levene Statistic. In this statistic, a high value results normally in a significant difference, in this example that is Sig. = 0,000. Strictly speaking, the Bonferroni procedure can therefore not be used, as it assumes equal variances. However, we are dealing with large a sample, which reduces the problem, and the Bonferroni test can be used and interpreted with care.

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Invphysco	Between Groups	25.205	1	25.205	1.107	.294
	Within Groups	4507.750	198	22.766		
	Total	4532.955	199			
regaversion	Between Groups	16.245	1	16.245	1.093	.297
	Within Groups	2943.150	198	14.864		
	Total	2959.395	199			

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As we can see, there is not much difference between the two Mean Squares for investor psychology (25.207, 22.766 and regret aversion 16.245, 14.864), resulting in a no significant difference (F = 1.107 investor psychology and 1.093 regret aversion; Sig. = 0.294 investor psychology 0.297 regret aversion). This means that H0 must not be rejected. Thus: the average age of people who find regret aversion, investor psychology, or Exciting are all equal.

XV. Conclusion

The casual study was based on a survey of 200 males and females investors belonging in different location of the Gwalior region. The variables of the study were the Investor Psychology, Regret Aversion. The objectives of the study were to identify the Factors affecting Investor Psychology and Regret Aversion & further to find relationship between Investor Psychology and Regret Aversion. The study resulted in four factors for Investor Pshycology viz Curezious and fearless, Distressed, Balance Decision making and Heuristic. Three factors were found for Regret aversion: Risk Averse, Risk Neutral and Risk Taking.

The result reveals that there is significant difference between investor psychology for age group category (I) 25 - 35 and (IV) 55 - 65 years. We can see here that there is a gradual change in the value system of people in India and people are now more concerned with quality life rather than economic achievement.

Previous research has shown differences in financial satisfaction by gender, though there were differences depending on what aspects of personal finance were measured (Hira & Mugenda, 2000). As quoted by Woodyard and Robb (2012), Previous research (Hilgert et al., 2003: Lusardi & Mitchell, 2006, 2007) has shown that objective knowledge influences financial behavior, and the general assumption has been that there is a subsequent impact on financial satisfaction as well. Financial decisions are taken in situations of high complexity and uncertainty which compels the decision maker to rely on institution.

Several factors influence decision making. These factors, including past experience (Juliusson, Karlsson, & Gärling, 2005), cognitive biases (Stanovich & West, 2008), age and individual differences (Bruin, Parker, & Fischoff, 2007), belief in personal relevance (Acevedo, & Krueger, 2004), and an escalation of commitment, influence what choices people make. Understanding the factors that influence decision making process is important to understanding what decisions are made.

Weber(2003)

The conclusion drawn from this research lead to recommendations for a series of action which if adopted would help to establish the investor psychology which would improve the satisfaction of investor psychology similar results.(e.g., Bell, 1982; Loomes & Sugden, 1982; Zeelenberg, 1999a) but also the pre - choice decision making. Therefore, investor must recognize this fact and try to practice some mechanisms to control his (her) irrational behavior Based on the prospect theory of Kahneman and Tversky (1979), Shefrin and Statman (1985). The psychology effect implies that investors, in trying to avoid regret, will have a greater tendency to sell winners than losers. Investors will tend to hold losers too long and sell winners too soon. Therefore, investor must try to practice some mechanisms to control his (her) irrational behavior.

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Global Journal of Management and Business Research: C Finance
Volume 15 Issue 2 Version 1.0 Year 2015
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals Inc. (USA)
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

The Impact of Public Spending on Imports in Algeria. Econometric Study between the Period (1990 - 2012)"

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Abstract- We consider public spending as a very important tool in the financial policy and participate essentially in imports. So, there are many studies related to public spending and import. The work below is an application of Co-integration analysis (test of constant variables (augmented Dickey-Fuller) and the test of (Johansen and Juselius). In addition to a corrections sample and the annual report of the period between 1990 – 2012. The aim is to study the impact of public spending on import in Algeria.

Keywords: public spending, importation, test of constant variables, correction of mistakes.

GJMBR - C Classification : JELCode : P35



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The Impact of Public Spending on Imports in Algeria. Econometric Study between the Period (1990 – 2012)"

Sofiane Maachi[α] & Pr Zairi Belkacem[σ]

Abstract- We consider public spending as a very important tool in the financial policy and participate essentially in imports. So, there are many studies related to public spending and import. The work below is an application of Co-integration analysis (test of constant variables (*augmented Dickey-Fuller*) and the test of (*Johansen and Juselius*). In addition to a corrections sample and the annual report of the period between *1990 – 2012*. The aim is to study the impact of public spending on import in Algeria.

Keywords: public spending, importation, test of constant variables, correction of mistakes.

I. Introduction

Government is responsible of any economic state; employment, law, unemployment, price stability, salaries and economic rise. They are the most important goals of any government.

Government rely on their futuristic sight in planning to reach their goals. In order to realize these goals, they have to use taxes in different forms and initiate a good public spending policy. So, our choice comes on that economic and financial policies and their role in the economic sphere, of any country. This work is an attempt about all these elements, since we lack many points about this topic; we decided to do the research.

II. Studies Obstacles

According to « *John Maynard Keynes* » (*John Maynard KEYNES,1936*), the financial thought rely on public spending and he considered it as an important Financial policy in order to reach a kind of economic development. Keynes principle was that "*supply create the offer*" that's to say public spending is a public supply that create parallel response with the offer, consequently an increase in national income.

In *2001*, Algeria adopted this public spending in 3 forms, within different periods. In *2001 – 2004*, the weakening economic program, the complementary to launch the economy between *2009 – 2014*.

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The main objective of their programs is to ameliorate the financial position, due to the crises of oil prices within the last years.

Algeria has adopted these policies to reach the economic stability of the country.

In this study we attempt to focus on public spending and the possible changes in imports. This is to show how to relive economic disturbances so as to create economic stability.

In our study the following questions were raised:

- In what way can the change in public spending influence the imports in Algeria?
- What is the relationship between public spending and the imports in Algeria between the
- period *1990 – 2012*.

III. Public Spending

Public spending as an important tool in the political policy has witnessed many phases, theorical and practical answers. In the classical period, governments restrained public spending to a low level and restricted the role of government in spending. According to them, this latter is a waste and unproductive, however within the economic development changes permit to reinforced public spending since it's an important element in the social and economic balance. This is due to the world economic crisis witnessed in 2008 which increased the spending in general (Bernier wasmone, 1989).

A.P. Lerner abolished the classical thoughts about spending, when he created functional finance and encourages the policy of any country (*Ahmed abedda mahmoud, 1971*).

- In the modern financial thought, both (*Myrdal and Lindale*) (*Two Swedish known economists*) considered that public spending is so essential in order to avoid taxes imposed which emerged numerous problems .This phenomena was seen in the nineteenth century.

The financial policy cooperate with the general spending, this policy is applied in hard moments. Like crisis or unemployment where it's necessary to raise the averages of spending and reduce taxes of consumption and also taxes an investments. In case of inflation, the

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financial policy is required to decrease spending by increasing the averages of taxes to allow a decrease in consumption and to raise the average of benefits in order to decrease the spending on investment.
So, we can define public spending as follow:

- Public spending is all the sums of money spent by a person to realize a general need (*al-housin khalef, 2008*).

It is first, a sum of money, second this sum is released by a general power, third it is designed to reach a general need.

IV. The Orientation of Imports in Algeria

The economy of Algeria rely mostly on the import of the raw material, semi-industrial and industrial product. There is a close link between public spending and the imports. The source of Algerian spending comes from taxes and oil. This is the most important source since *90%* of the balances revenues are from oil.

The international trade of Algeria is the same compared with most Arab countries, and developing countries because it's attached with the industrial countries and International markets, especially Europe in matters of export and imports.

The European community is the most important market for Algeria. The average imports from this market between *2001 – 2012* had reached *54%*, and *61.36%* of the exports. As a result Algeria has great commercial exchanges within European countries.

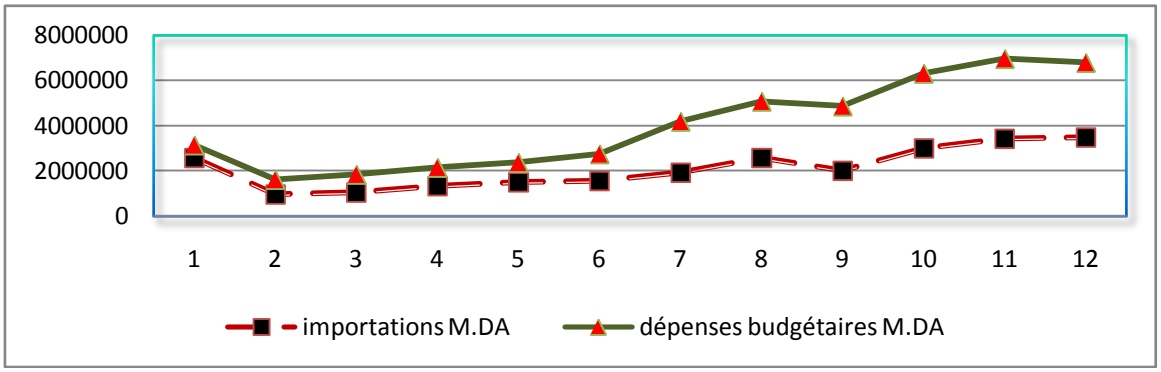
The position of imports in Algeria is similar to the export, since the European countries are the most essential partners for Algeria.

V. The Causality Relationship between the Public Spending and Import in Algeria

Algeria has relied on the « *John Maynard Keynes* » average to achieve the economic growth because of lack of private investment inside the country or outside it, and the reed to prepare one's national economy to start a new phase by relying on a strategy that aims at reinforcing underground structure (*construction*) and form human capital through education, and improve services in general.

This resulted in important public spending which contributed to increase in the size of demand and therefore the use of import of mainly industrialized products due to the lack of production (*Boudakhdakh karim and selamna mohammed,2011*) as shown in the line graph below.

Figure 01 : L'évolution des dépenses publiques et les importations en Algérie de *2001 à 2012*



Source: customs general direction. National institute of computer science and statistics C.N.I.S

- *ONS: Algeria in some numbers, 2001 / 2011…..*
- *ONS: Evolution of the commercial balance of Algeria, period 2001 – 2012.*

During the previews conditions, that's to say, huge dispenses by the government and the absence of an industrial basis capable to absorb these dispenses, the size of import rose and this helped in energizing (improving) the economy of other exporting countries.

Besides, Algeria hasn't benefited from external demand on its local products outside fuel sector.

VI. Designation of a Sample used in Study

Empirical economic literature includes a lot of studied which deals with the public spending *DEP* and the import *IMP* and we notice that these studies conclude in variable results.

In addition, Algeria aims at applying (implementing) a contributory and complementary analysis (*Co integration analysis*) and a sample of

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correction of mistakes on the annual declarations between (*1990 – 2012*), to study the relationship between public spending and the import. But before doing studying this relationship we have to anal use the time sequences to be sure of its stability (*sedentation*) through time and designate its complementary degree.

In this study, we shall construct a standard sample to know the importance of the public spending The sample takes the mathematical general form.

on the imports between (*1990 – 2012*), using a new classical sample of development which constitutes variability's and define IMP as a variety which represents the imports supposing it is (*function*) in both the *PIB* and inflation INF, the price of the benefit (*PBRL*) and the public spending *DEP* as interpreting variability's:

$$IMP = f(PIB, INF, TR, DEP) \ldots\ldots\ldots\ldots\ldots \quad (1)$$

IMP: The real inside result

PIB: Real Gross Domestic Product (*real GDP*),((*Including the prices of 1990 and 2012*),Prices into *US* dollars.

INF: Inflation Value Rate, taken as a percentage.

IMP: The value of total imports (*taking the prices of 1990 and 2001*), as measured in *USD* prices and which represents foreign trade.

PBRL: The value of a unit price of a crude oil barrel, measured into *US* dollars

DEP: The public spending in American dollar.

We could have the statistics of the different variables which constitute the international from a basis of information about the indicators of the international sector of statistics and the ministry of finance.

Table 01 : Sample of the development of variability's

Unit: million American dollars

YEARS	PIB (M$)	IMP (M$)	INF %	DEP (M$)	PBRL/$
1990	61900	9684	16,7	10100	24,34
1991	61100	7681	25,9	11000	21,04
1992	62200	8406	31,7	12000	20,03
1993	60900	8788	20,5	12000	17,8
1994	60400	9365	29	12500	16,3
1995	62700	10761	29,8	13000	17,6
1996	65300	9098	18,7	13500	21,7
1997	66000	8687	5,7	13800	19,49
1998	69300	9403	5	14200	12,94
1999	71600	9164	2,6	14500	17,91
2000	73100	9173	0,34	14800	28,5
2001	75100	9940	4,2	15400	24,85
2002	78600	12009	1,42	16200	25,24
2003	84000	13534	2,58	16900	28,96
2004	88000	18199	3,56	17600	38,66
2005	92900	20357	1,64	18000	54,64
2006	94500	21456	2,53	18700	65,85
2007	97000	27631	3,25	19800	74,9
2008	100280	39479	4,4	21600	99,9
2009	10006,7	39297	5,7	22800	62,3

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2010	12034,5	40212	3,9	24900	80,2
2011	14480,7	47300	4,5	26800	112,9
2012	20795,5	23031	8,9	28400	113,4

Source: Performed by the author by using following data :
- *The national statistics Office: www. ONS.dz*
- *The central bank of Algeria: www.BCA.org.dz*
- *Ministry of finance - Algeria: www. MF.dz*
- *The international bank B.Mondial,*
- *The general direction of customs.*

$$IMP_t = f(PIB_t, INF_t, PBRL_t, DEP_t) = \beta_0 + \beta_1.PIB_t + \beta_2.INF_t + \beta_3.PBRL_t + \beta_4.DEP_t + \varepsilon_t$$

The model becomes the following mathematical mode.

ε : represents the spontaneous mistake limit of the equation (*error term*) and which supposes that its values are distributed in a natural way and with an average equal to zero and a stable differentiation.

These hypotheses are necessary for obtaining impartial potentials characterized by competence to each of the teachers of the modal $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ according to the economical theory predictions which shows that the effect of the public spending and the effect of the internal strut should be positive:

$$\frac{\partial IMP}{\partial DEP} \rangle 0 \quad \& \quad \frac{\partial IMP}{\partial PIB} \rangle 0$$

The utilized metric method used in this study try to estimate the relation throughout a period of time (*1990 – 2012*) which include *22* temporal observations for each variant from the modal. This type of analyses has a great important in the inquiry of the nature of the relation between the public spending and the acuity of importing in Algeria.

Through that type of analyses we are going to estimate the modal of the study as follows:

$$LnIMP_t = \alpha + \beta_1 LnPIB_t + \beta_2.LnINF_t + \beta_3.LnPBRL_t + \beta_4.LnDEP_t + \varepsilon_t \quad \ldots\ldots\ldots\ldots \quad (2)$$

A variants logarithm was used in the modal become a doubled logarithm (*Double-log regression modal*), so that we avoid probable metric problems.

Moreover, the double logarithm modal potentials express flexibility of all variants in regard to the economic growth, the variants flexibility in regard with the economic growth becomes $\beta_1, \beta_2, \beta_3, \beta_4$ successively.

To prove that, admitting that the equation relation in the modal be:

$$IMP = \beta_0 PIB^{\beta_1} INF^{\beta_2} PBRL^{\beta_3} DEP^{\beta_4} e^{\varepsilon t}$$

As DEP flexibility in regard to the importing activities be:

$$E_{DEP} = \frac{\partial IMP}{\partial DEP} \times \frac{DEP}{IMP}$$

When comparing the importing activities *IMP* in regard to the public spending *DEP*, we obtain:

$$\frac{\partial IMP}{\partial DEP} = \beta_4 \left(\beta_0 PIB^{\beta_1} INF^{\beta_2} PBRL^{\beta_3} DEP^{\beta_4 - 1} e^{\varepsilon t} \right)$$

$$= \beta_4 \left(\beta_0 PIB^{\beta_1} INF^{\beta_2} PBRL^{\beta_3} DEP^{\beta_4} e^{\varepsilon t} \right) DEP^{-1}$$

After setting, it becomes:

$$\frac{\partial IMP}{\partial DEP} = \beta_4 \times \frac{\left(\beta_0 PIB^{\beta_1} INF^{\beta_2} PBRL^{\beta_3} DEP^{\beta_4} e^{\varepsilon t} \right)}{DEP}$$

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With a simple replacement from the equation relation in the modal, we obtain:

$$\frac{\partial IMP}{\partial DEP} = \beta_4 \times \frac{IMP}{DEP}$$

With replacement of the value of $\frac{\partial IMP}{\partial DEP}$ in the flexible mode above, it becomes:

$$E_{DEP} = \beta_4 \times \frac{IMP}{DEP} \times \frac{DEP}{IMP}$$

After simplification, we get:

$$E_{DEP} = \beta_4$$

So, as for the flexibility of the rest of variants (*PIB ،INF، PBRL*) in regard to the economic growth .

A variants logarithm was used in the modal become a doubled logarithm (*Double-log regression modal*), so that we avoid probable metric problems.

Moreover, the double logarithm modal potentials express flexibility of all variants in regard to the economic growth, the variants flexibility in regard with the economic growth becomes $\beta_1, \beta_2, \beta_3, \beta_4$ successively.

To prove that, admitting that the equation relation in the modal be:

$$IMP = \beta_0 PIB^{\beta_1} INF^{\beta_2} PBRL^{\beta_3} DEP^{\beta_4} e^{\varepsilon t}$$

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$$= \beta_4 \left(\beta_0 PIB^{\beta_1} INF^{\beta_2} PBRL^{\beta_3} DEP^{\beta_4} e^{\varepsilon t}\right) DEP^{-1}$$

After setting, it becomes:

$$\frac{\partial IMP}{\partial DEP} = \beta_4 \times \frac{\left(\beta_0 PIB^{\beta_1} INF^{\beta_2} PBRL^{\beta_3} DEP^{\beta_4} e^{\varepsilon t}\right)}{DEP}$$

With a simple replacement from the equation relation in the modal, we obtain:

$$\frac{\partial IMP}{\partial DEP} = \beta_4 \times \frac{IMP}{DEP}$$

With replacement of the value of $\frac{\partial IMP}{\partial DEP}$ in the flexible mode above, it becomes:

$$E_{DEP} = \beta_4 \times \frac{IMP}{DEP} \times \frac{DEP}{IMP}$$

After simplification, we get:

$$E_{DEP} = \beta_4$$

So, as for the flexibility of the rest of variants (*PIB ،INF، PBRL*) in regard to the economic growth.

VII. Results of the Study of the Impact of Public Spending on Imports in Algeria

Annual data (*1990 – 2012*) of the study variants were represented with (*IMP،PIB ،INF، PBRL ،DEP*), have been used to explain the effect of the public spending on the import activity in Algeria, throughout evaluating the modal of the study:

$$LnIMP_t = \alpha + \beta_1 LnPIB_t + \beta_2 . LnINF_t + \beta_3 . LnPBRL_t + \beta_4 . LnDEP_t + \varepsilon_t$$

$$t = 1,2,.....,22$$

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This study doesn't accurate results in regard to the time chains, we are going to use the URT (*the Unit root test*) which brings out more accurate results.

We've used in this study ADF (*Augmented Dickey-Fuller*) test.

a) Testing the stability of the variants: (The Unit Root Test)

The test (*ADF*) is one of quantitative tests in this study so as to detect the variations stability and static or the chronological series whereas the test (*DF*) which is a simple test has been avoided because it doesn't correspond to (arriver) or ignores the auto-correlation in the uncertain error thus the sizes (greatnesses) of least squares don't satisfy the decline equation of the efficient estimates.

i. *ADF (Augmented Dickey-Fuller) test*

The ADF test is given by the following equation as fellow:

$$\Delta Y_t = A_1 + A_2 T + \lambda Y_{t-1} + \sum_{i=1}^{m} \lambda_i Y_{t-m} + U_t$$

By presenting the datum (pieces of data) of the test of the root unity (test ADF) which are given is table n° 2, it clearly appears that all the variations used in this estimate contain (insert) the root unity, however we have to accept that the hypothesis of the unity root is useless for all the variations at the abstract level 5 % . That is to say that they are not stable in the general level in the case where it is categorical and without general direction (Intercept) and also is the case of its presence category (Trend and Intercept) or the in existence and the general chronological direction

Tableau 02 : Résultats du test *Dickey-Fuller Augmented*

-Dickey-Fuller Test Augmented			abstract level and test	caractéristiques	
None	Trend & Intercept	Intercept			
-2.674290 -1.957204 -1.608175	-4.440739 -3.632896 -3.254671	-3.769597 -3.004861 -2.642242	1% 5% 10%	Critical Values / variabls	
-0.90 0.3143 22.64	-1.52 0.7890 22.69	-1.38 0.5710 22.67	t Prob* AIC**	Level	Logarithme real GDP (Ln PIB)
-4.65 0.0001 22.73	-4.67 0.0065 22.85	-4.58 0.0018 22.81	t Prob AIC	1st difference	
-0.35 0.5424 20.05	-5.007 0.0040 19.68	-5.61 0.0002 19.61	t Prob AIC	Level	Logarithme of importation (Ln IMP)
-2.48 0.0163 19.95	-1.71 0.7034 20.09	-2.06 0.2606 20.05	t Prob AIC	1st difference	
0.81 0.8802 -9.60	-2.99 0.1562 -9.77	-2.36 0.1632 -9.70	t Prob AIC	Level	Logarithme of inflation (Ln INF)
-5.08	-5.21	-5.15	t		

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0.0000 *-9.66*	*0.0024* *-9.59*	*0.0006* *-9.61*	Prob AIC	1st difference	
2.38 *0.9937* *14.80*	*2.44* *1.0000* *14.82*	*5.33* *1.0000* *14.78*	t Prob AIC	Level	Logarithme of public spending **(**Ln DEP**)**
-0.49 *0.4897* *14.97*	*-3.01* *0.1505* *14.72*	*-1.43* *0.5455* *14.96*	t Prob AIC	1st difference	
1.28 *0.9447* *8.09*	*-1.93* *0.6035* *7.97*	*0.25* *0.9702* *8.16*	t Prob AIC	Level	Logarithme of price of a crude oil barrel **(**Ln PBRL**)**
-4.81 *0.0000* *8.21*	*-5.49* *0014* *7.98*	*-5.26* *0.0004* *8.18*	*t* *Prob* *AIC*	*1st difference*	

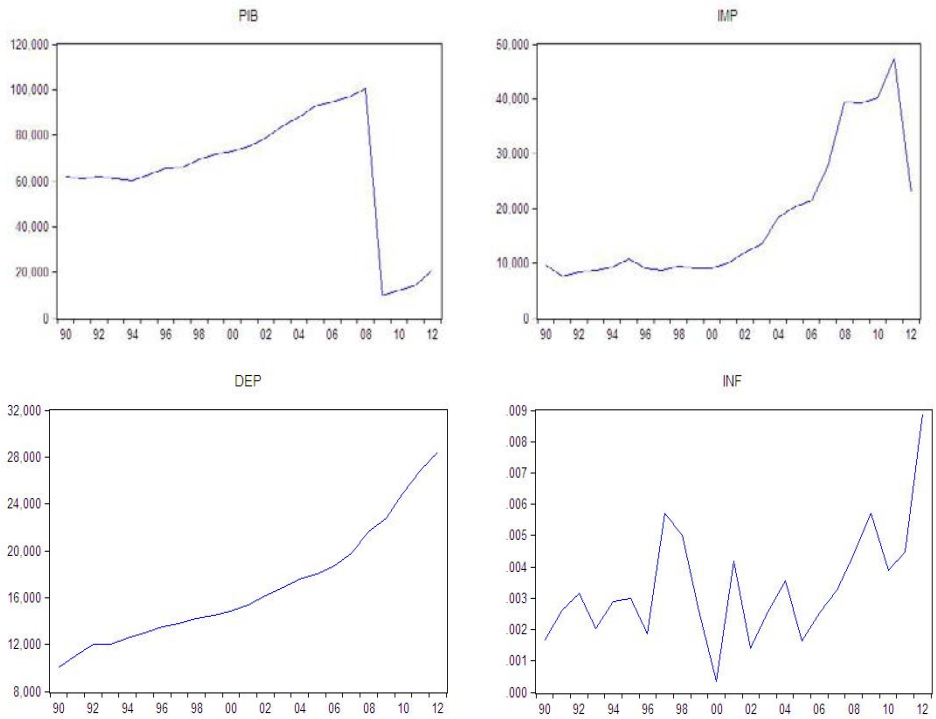
** - Mackinnon (1996) one-sided P-values.*

*** - (P = 1).*

See annex n° (01)

The illustrated finding in the table above show that the calculated of (t) are lower than the critical values in *5%. It has been revealed that all the first differences of the variables became stable when taking them in the estimation, it doesn't include the unit root which means the refuse of the hypothesis of the non existence of the unit root, where the calculated values of (t) are greater than the critical values in the significance level 5%,* (*Ln PBRL , Ln PIB*) or *1%* (*Ln INF , Ln DEP*) or *10%* (*Ln IMP*), and then the variable become integral from the first close and stable which justifies the ongoing to implementing to the common integration and designing the model of mistake correction.

Figure (*02*) clarifies the time chains path in the general level and the path of these chains after taken the first differences:



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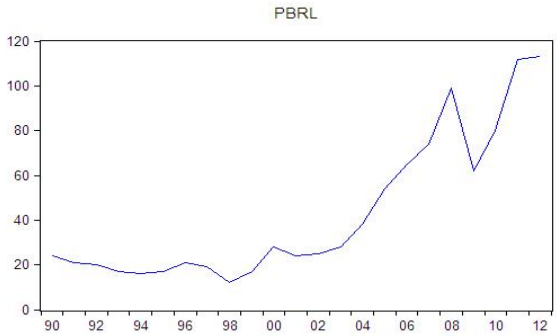


Figure 02 : Temporal chains in levels and first differences according to ADF test

The graphic of the test (Eviews.8) have been calculated in function of the realizations by (Eviews 8), used in this study, these values vary according to the number of the greatnesses of the test sample.

b) The co-Integration Test according to Johansen and Juselius method

Regarding that the temporal chains of the model variables are integral from the first class, it was quite important to test the presence of a long-term balance between them, despite of the existence of a disruption in the short-term. According to the testing of the common integration between the variables used in the method (*Johansen, 1988*) and (*Johansen and Juselius, 1990*), which consists of two and more variable and considered as the best one in case of two variable because it allows the mutual effect or the feedback effect among variables being studied and not existing in the method (*Engle-Granger*) (*Khaled ben hamed ben abdellah el-kadire, 2005*).

Johansen and *Juselius* method depends on testing the number of the relation of common integration in the *VAR* system vector autoregressive (*VAR*) wish represents the relation of the long-term of variables in the equations system with consideration that all variables are internal in the modal.

The test has been held with (*J.J*) method with rupture and temporal direction in the integration equation and *VAR* test which is shown in table *N° 03*.

Table 03 : Johansen and Juselius Test

Critical Values 5%		Critical Values 1%		Maximal Eigen Value Statistic	Trace Statistic	Eigen Value	Vector
Test auto-grande vecteur	Test d'impact	Test auto-grande vecteur	Test d'impact				
33.87	*69.81*	*39.37*	*77.81*	*33.44*	*90.44*	*.796*	$r = 0$ *
27.68	*47.85*	*32.71*	*54.68*	*28.93*	*57.00*	*.747*	$r \leq 1$
21.13	*29.79*	*25.86*	*35.45*	*18.29*	*28.07*	*.581*	$r \leq 2$
14.26	*15.49*	*18.52*	*19.93*	*6.75*	*9.78*	*.275*	$r \leq 3$
3.84	*3.84*	*6.63*	*6.63*	*3.02*	*3.02*	*.134*	$r \leq 4$

See annex N° (02)

The test and the great individual value test in the table above show the regression of the null hypothesis saying ($r = 0$) that there's no common integration between variables in the significance level *5%*, where the calculated value of the trace test (λ *trace*) estimated (*90.44*) greater than the two critical value (*77.81*) and (*69.71*) in *1%* and *5%* , successively, while the following value estimated by (*57.00*) is less than the critical value of (*58.68*) and (*47.85*). This is the test of the greatest possibility which show the non-regression of the null hypothesis saying the existence of a unique vector at most of the common integration. Furthermore, the maximal Eigen statistic (λ *max*) has given the same results of the test. In consequence to, it's obvious that

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(*IMP*) representing the importation in Algeria is integral to a common integration with the public spending (*DEP*), the Gross domestic product (*PIB*), the inflation level (*INF*) and the oil price (*PBRL*).

These results mean that there's a stagnant linear continuation between (*IMP*) and the variables (*DEP,PBRL,INF,PIB*) despite of the fact that these variables are not stagnant. Moreover, these finding certifies that, finally, there's a long term balanceable relation between these variables which means that they are not far from each other where they go similarly.

As we can express the equation of the common integration as follows:

$$LnIMP_t = -1.324 - 0.182LnPIB_t - 0.556LnINF_t - 0.378LnPBRL_t + 0.0062LnDEP_t$$
$$(0.19141) \quad (0.4386) \quad (0.69) \quad (0.02432)$$

$$\log \cdot Likelihood = 514.8499$$

(*The values in brackets represent standardized errors*)

It is evident from the estimations of the Co-integration vector in the above model that flexibility of the public spending on the importations in a long-term is equal to *0.0062%*, which mean that the increase of equation with *10%* leads to an increase in government with an increase rate of *6.2%*, with a positive sign which goes perfectly with the theory, there's a direct relation of a direct investment of a long term with the importation.

However, the rest of variables came with a negative indication which means that it has a negative effect on importation on the long-term, and that is opposite to the economic theory.

The finding have also shown that the coefficients of the common integration vector, which describes the long-term relation, are significant because the value *Log Linklihood* is equal to (*514.8499*).

c) Estimating vector error correction model

After testing the variables with unity root test, that certified the stability of the temporal chains after taking the first differences to it, and also testing the common integration, which proves existence of a common integration, another step comes up which consists of designing a *VAR* in a form of first difference to the variables (*[VECM] vector error Correction Model* to estimate the adaptation speed i.e. adaptation of any disruption in the short-term to a long-term balance between the importations and the study variables), and adding a slow time-gap to error correction term. This is implemented by estimating the following model after adding an individual correlation as follows:

$$\Delta LnIMP_t = \alpha + \sum_{j=1}^{k} \beta_j \Delta LnIMP_{t-j} + \sum_{j=1}^{k} \phi_j \Delta LnPIB_{t-j} + \sum_{j=1}^{k} \lambda_j \Delta LnINF_{t-j}$$
$$+ \sum_{j=1}^{k} \rho_j \Delta LnPBRL_{t-j} + \sum_{j=1}^{k} \gamma_j \Delta LnDEP_{t-j} + \omega Ec_{t-1} + \varepsilon_t$$

Where the parameters α, β, ϕ, λ, ρ, γ in the equation show that they are parameters of importation functions variables in the short-term, and ω denotes error correction coefficient Ec_{t-1} which include the test of the long-term. In addition to, it measures the disruption adaption fast in the short-term to the long-term balance, where the short-term dynamic differs of the long-term balance, and the slowing following variables are added to be sure that ε_t (*the rest*) is stable or from the (*White Noise)* [17] type.

The finding in table (*04*) show that the estimated adaptation coefficients, which are implemented to test the extension of the effect power of the integrated variables in the equation on the importations, where it comprises the weighs through which the common integration vector integrate the mechanism of the short-term, and it measures the response fast of the short-term disequilibrium which occurs in the whole system.

[17] - White Noise: The white noise is a stationary time series or a stationary random process with zero autocorrelation. In other words, in white noise *N (t)* any pair of values $N(t_1)$ and $N(t_2)$ taken at different moments t_1 and t_2 of time are not correlated - *i.e.* the correlation coefficient $r(N(t_1),N(t_2))$ is equal to null.

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Table 04 : Estimating error correction vectors model

t-statistic	Std.Errors	Coefficients	variabls
4.131	*0.00134*	*0.0555*	*C*
-1.51440	*0.015265*	*-0.023*	Ec_{t-1}
0.64	*00.03125*	*0.0202*	Δ *Ln IMP* $_{t-1}$
-4.272	*0.00698*	*-0.029*	Δ *Ln PIB* $_{t-1}$
0.197	*39865.0*	*7864.23*	Δ *Ln INF* $_{t-1}$
3.081	*13.30*	*40.99*	Δ *Ln PBRL* $_{t-1}$
0.331	*0.175*	*0.0583*	Δ *Ln DEP* $_{t-1}$
		0.84	*R2*
		0.028	*S.E*
		12.20	*F - Statistic*
		-136.87	*Log Likelihood*

See annex N° (03)

The table *(04)* shows that the variables shift has help to know possible changes in the (*PIB*) representing the economic growth in Algeria, that is to say, the government expenses lead to importation according to (*Granger*). The variance in the government expenses during the period (*t-1*) by *10%* leads to an increase in the period (*t*) ♣♣[18]wish *0.64%* lead to a slight positive effect in the national economy.

The results also show that the impact of the (*PIB*), the inflation and the petrol price in the period (*t-1*) on the importation is due to the compatibility of the *PIB*. (*-0.029*) it is each year decreasing by *2.9%* which led to an economic balance during *9* years.

The correction of the wrong doing in Ec_{t-1} in the (*VEC*) has taken the negative symbol (-) it means that *2.3%* of the economic imbalances are corrected each year.

VIII. Conclusion

In this study there is a trial to know (*to measure*) the impact of the public expenses on the Algerian importation.

Where the analysis of the study using the standard tests (tests of static variations. Co- integration Test the model of error correction) has revealed the following:

1- The results of the static variations tests (***A****ugmented* ***D****icker* ***F****uller*) have shown that all the variations of the economic study contain the root of the unity that is to say that, it is non – static (*or unstable*) at its level, then by becoming stable in the first differences which means that it is about an integration of first order.

2- The Co- Integration Test (***J****ohansen and* ***J****usellus*) has shown that there is a Co-Integration vector within the variations which indicate the existence of a long term relation between the public expresses and the imports .

3- The model estimation of the correction vectors of error has shown that the public expresses contributed in the imports but it is weak in short term , this is due to the weak rationalization of the public expenses in Algeria , whereas the results obtained by the determination of the model error correction has been rejected (*or refused*) as it has been shown that the public expresses are statically abstract whereas the same model has shown that the other model coefficients are abstract and positively influent on the imports in a short term which is in agreement with the economic theory.

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♣♣Public spending was missing the period (t) is the application first, and influence on the increase in gross product of period (t + 1), so the problem is the non-compliance Temporal between the cause and the result.

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11. ** - It has been one slowdown period (*P = 1*) awarding to the standard (*AIC*).

Site Web

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- Directorate General of Customs National Centre of Informatics and Statistics C.N.I.S.
- The World Bank B.World.
- Ministry of Finance of Algeria: www.MF.dz
- National Statistics Office: www.ONS.dz
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Annexe 3

Annex Nº 01. Results of the static variable in the model.
(Test Augmented Dickey-Fuller)
Ln (PIB) in level.

Null Hypothesis: PIB has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.384300	0.5710
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

R-squared	0.087437	Mean dependent var	-1868.386
Adjusted R-squared	0.041809	S.D. dependent var	19835.26
S.E. of regression	19416.19	Akaike info criterion	22.67211
Sum squared resid	7.54E+09	Schwarz criterion	22.77130
Log likelihood	-247.3932	Hannan-Quinn criter.	22.69548
F-statistic	1.916288	Durbin-Watson stat	1.829762
Prob(F-statistic)	0.181519		

Ln (IMP) in level.

Null Hypothesis: IMP has a unit root
Exogenous: Constant
Lag Length: 3 (Automatic - based on SIC, maxlag=4)

	t-Statistic	Prob.*

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Augmented Dickey-Fuller test statistic		-5.612547	0.0002
Test critical values:	1% level	-3.831511	
	5% level	-3.029970	
	10% level	-2.655194	

*MacKinnon (1996) one-sided p-values.

R-squared	0.744891	Mean dependent var	749.6316
Adjusted R-squared	0.672003	S.D. dependent var	6865.902
S.E. of regression	3932.170	Akaike info criterion	19.61270
Sum squared resid	2.16E+08	Schwarz criterion	19.86124
Log likelihood	-181.3207	Hannan-Quinn criter.	19.65477
F-statistic	10.21965	Durbin-Watson stat	2.068587
Prob(F-statistic)	0.000437		

Ln (INF) in level.

Null Hypothesis: INF has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.361641	0.1632
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

R-squared	0.218058	Mean dependent var	0.000329
Adjusted R-squared	0.178961	S.D. dependent var	0.001999
S.E. of regression	0.001812	Akaike info criterion	-9.702587
Sum squared resid	6.56E-05	Schwarz criterion	-9.603401
Log likelihood	108.7285	Hannan-Quinn criter.	-9.679222
F-statistic	5.577348	Durbin-Watson stat	1.658639
Prob(F-statistic)	0.028450		

Ln (DEP) in level.

Null Hypothesis: DEP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		5.333620	1.0000
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

R-squared	0.587182	Mean dependent var	831.8182
Adjusted R-squared	0.566541	S.D. dependent var	571.8694
S.E. of regression	376.5051	Akaike info criterion	14.78625
Sum squared resid	2835121.	Schwarz criterion	14.88543

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Log likelihood	-160.6487	Hannan-Quinn criter.	14.80961
F-statistic	28.44750	Durbin-Watson stat	1.393478
Prob(F-statistic)	0.000032		

Ln (PBRL) in level.

Null Hypothesis: PBRL has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		0.259798	0.9702
Test critical values:	1% level	-3.769597	
	5% level	-3.004861	
	10% level	-2.642242	

*MacKinnon (1996) one-sided p-values.

R-squared	0.003363	Mean dependent var	4.045455
Adjusted R-squared	-0.046468	S.D. dependent var	13.45708
S.E. of regression	13.76620	Akaike info criterion	8.168817
Sum squared resid	3790.164	Schwarz criterion	8.268003
Log likelihood	-87.85699	Hannan-Quinn criter.	8.192182
F-statistic	0.067495	Durbin-Watson stat	2.415486
Prob(F-statistic)	0.797675		

Annex Nº 02. Results On integration of common variables in the model test. (Test Johansen and juselius) abstract level at 1 %

Date: 10/17/14 Time: 22:44
Sample (adjusted): 1992 2012
Included observations: 21 after adjustments
Trend assumption: Linear deterministic trend
Series: DEP IMP INF PBRL PIB
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.01 Critical Value	Prob.**
None *	0.796570	90.44752	77.81884	0.0005
At most 1 *	0.747877	57.00644	54.68150	0.0055
At most 2	0.581448	28.07188	35.45817	0.0780
At most 3	0.275159	9.781860	19.93711	0.2979
At most 4	0.134112	3.023999	6.634897	0.0820

Trace test indicates 2 cointegrating eqn(s) at the 0.01 level
* denotes rejection of the hypothesis at the 0.01 level
**MacKinnon-Haug-Michelis (1999) p-values
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

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Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.01 Critical Value	Prob.**
None	0.796570	33.44108	39.37013	0.0563
At most 1	0.747877	28.93456	32.71527	0.0334
At most 2	0.581448	18.29002	25.86121	0.1194
At most 3	0.275159	6.757861	18.52001	0.5182
At most 4	0.134112	3.023999	6.634897	0.0820

Max-eigenvalue test indicates no cointegration at the 0.01 level
* denotes rejection of the hypothesis at the 0.01 level
**MacKinnon-Haug-Michelis (1999) p-values

1 Cointegrating Equation(s): Log likelihood 514.8499

Normalized cointegrating coefficients (standard error in parentheses)

DEP	IMP	INF	PBRL	PIB
1.000000	-1.324815	-556659.4	378.6233	-0.182899
	(0.19141)	(438699.)	(69.9100)	(0.02432)

(Johansen and juselius Test) abstract level at *5 %*

Date: 10/18/14 Time: 00:38
Sample (adjusted): 1992 2012
Included observations: 21 after adjustments
Trend assumption: Linear deterministic trend
Series: DEP IMP INF PBRL PIB
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.796570	90.44752	69.81889	0.0005
At most 1 *	0.747877	57.00644	47.85613	0.0055
At most 2	0.581448	28.07188	29.79707	0.0780
At most 3	0.275159	9.781860	15.49471	0.2979
At most 4	0.134112	3.023999	3.841466	0.0820

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.796570	33.44108	33.87687	0.0563
At most 1 *	0.747877	28.93456	27.58434	0.0334
At most 2	0.581448	18.29002	21.13162	0.1194
At most 3	0.275159	6.757861	14.26460	0.5182
At most 4	0.134112	3.023999	3.841466	0.0820

Max-eigenvalue test indicates no cointegration at the 0.05 level

** denotes rejection of the hypothesis at the 0.05 level*

***MacKinnon-Haug-Michelis (1999) p-values*

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Annex N° *03*. Results of the model estimation of vectors error correction.

Vector Error Correction Estimates
Date: 10/17/14 Time: 23:06
Sample (adjusted): 1993 2012
Included observations: 20 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Error Correction:	D(DEP)	D(IMP)	D(INF)	D(PBRL)	D(PIB)
CointEq1	-0.023095	-0.115228	-1.26E-07	0.000990	3.275083
	(0.01525)	(0.29195)	(1.2E-07)	(0.00075)	(0.86639)
	[-1.51440]	[-0.39468]	[-1.05558]	[1.31321]	[3.78013]
D(DEP(-2))	0.058317	-11.78277	1.16E-06	-0.001356	7.206053
	(0.17574)	(3.36435)	(1.4E-06)	(0.00869)	(9.98402)
	[0.33184]	[-3.50224]	[0.84069]	[-0.15605]	[0.72176]
D(IMP(-2))	0.020228	0.922107	-2.06E-07	0.000453	-1.556634
	(0.03125)	(0.59819)	(2.5E-07)	(0.00155)	(1.77518)
	[0.64737]	[1.54149]	[-0.83942]	[0.29315]	[-0.87689]
D(INF(-2))	7864.232	359058.0	-0.337666	1366.105	1590281.
	(39865.0)	(763171.)	(0.31272)	(1971.13)	(2264778)
	[0.19727]	[0.47048]	[-1.07978]	[0.69306]	[0.70218]
D(PBRL(-2))	40.99903	40.39957	-3.05E-05	0.728436	1559.388
	(13.3030)	(254.672)	(0.00010)	(0.65777)	(755.761)
	[3.08194]	[0.15863]	[-0.29189]	[1.10743]	[2.06334]
D(PIB(-2))	-0.029830	-0.156907	2.20E-08	-0.000673	-0.814795
	(0.00698)	(0.13366)	(5.5E-08)	(0.00035)	(0.39665)
	[-4.27248]	[-1.17391]	[0.40150]	[-1.94977]	[-2.05417]
C	555.9196	7498.629	-7.93E-05	1.091921	-11601.77
	(134.568)	(2576.15)	(0.00106)	(6.65372)	(7644.95)
	[4.13116]	[2.91079]	[-0.07512]	[0.16411]	[-1.51757]
R-squared	0.849222	0.555150	0.240893	0.323094	0.597073
Adj. R-squared	0.779632	0.349834	-0.109464	0.010677	0.411107
Sum sq. resids	1030116.	3.78E+08	6.34E-05	2518.461	3.32E+09
S.E. equation	281.4955	5388.922	0.002208	13.91861	15992.11
F-statistic	12.20323	2.703887	0.687564	1.034174	3.210653
Log likelihood	-136.8733	-195.9130	98.24088	-76.73548	-217.6680
Akaike AIC	14.38733	20.29130	-9.124088	8.373548	22.46680
Schwarz SC	14.73583	20.63980	-8.775581	8.722054	22.81530
Mean dependent	820.0000	731.2500	0.000287	4.650000	-2070.225
S.D. dependent	599.6490	6683.284	0.002096	13.99351	20839.52

Determinant resid covariance (dof adj.)	1.41E+16
Determinant resid covariance	1.64E+15
Log likelihood	-492.2212
Akaike information criterion	53.22212
Schwarz criterion	55.21358

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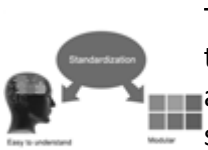
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Complete support for both authors and co-author is provided.

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Based on potential and nature, the manuscript can be categorized under the following heads:

Original research paper: Such papers are reports of high-level significant original research work.

Review papers: These are concise, significant but helpful and decisive topics for young researchers.

Research articles: These are handled with small investigation and applications

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5.STRUCTURE AND FORMAT OF MANUSCRIPT

The recommended size of original research paper is less than seven thousand words, review papers fewer than seven thousands words also.Preparation of research paper or how to write research paper, are major hurdle, while writing manuscript. The research articles and research letters should be fewer than three thousand words, the structure original research paper; sometime review paper should be as follows:

Papers: These are reports of significant research (typically less than 7000 words equivalent, including tables, figures, references), and comprise:

(a)Title should be relevant and commensurate with the theme of the paper.

(b) A brief Summary, "Abstract" (less than 150 words) containing the major results and conclusions.

(c) Up to ten keywords, that precisely identifies the paper's subject, purpose, and focus.

(d) An Introduction, giving necessary background excluding subheadings; objectives must be clearly declared.

(e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition; sources of information must be given and numerical methods must be specified by reference, unless non-standard.

(f) Results should be presented concisely, by well-designed tables and/or figures; the same data may not be used in both; suitable statistical data should be given. All data must be obtained with attention to numerical detail in the planning stage. As reproduced design has been recognized to be important to experiments for a considerable time, the Editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned un-refereed;

(g) Discussion should cover the implications and consequences, not just recapitulating the results; conclusions should be summarizing.

(h) Brief Acknowledgements.

(i) References in the proper form.

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References

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Approach

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- If you desire, you may place your figures and tables properly within the text of your results part.

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- In spite of position, each table must be titled, numbered one after the other and complete with heading
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References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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ISSN 9755853

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