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CONTENTS

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"Revenue-led Spending" or "Spending-led Revenue" :
Evidence from Iran (1978-2012)

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Abstract: *The main purpose of this study is to investigate the Long and short Run relationship between government revenue and government expenditure in Iran Country covering data 1978- 2012 with using An Auto Regressive Distributive Lag (ARDL) Approach. We investigated causality between revenue and government expenditure by using an application of Toda-Yamamoto approach. Autoregressive Distributeded Lag (ARDL) technique is used to describe both long run relationships and short run dynamic adjustments between government revenue and expenditure variables. The results of this paper support the Freidman (1978) hypothesis that government revenues cause expenditure and revenues have a positive causal impact on government expenditure.*

Key words: structural break, Toda-Yamamoto approach, **ARDL** technique, and Iranian economy.

JEL classification numbers: C12, O17, C52.

1. Introduction

To take a good decision and to improve their societies, the governments need to design the budget. To do its functions a government uses budget as a planning and financial tool. One of the debates of public finance is to find the relationship between government revenue and expenditure and considerable theoretical and empirical research has been carried out on this issue. If policymakers understand the relationship between government expenditure and government revenue, without a pause government deficits can be prevented. Hence the relationship between government expenditure and government revenue has attracted significant interest. This is due to the fact that the relationship between government revenue and expenditure has an impact on the budget deficit. Over the Past three decades, a large number of studies have investigated the relationship between government revenue and government expenditure. Understanding the relationship between government revenue and government expenditure is important from a policy point of view, especially for Asian countries, which is suffering from persistent budget deficits.

There is a budget deficit while the government revenues are less than the government expenditures. Vice versa, when the government expenditures less than its revenues it is said that the government has budget surplus. There are always the budget deficit for iran during all of years of this study. In other words, the budget deficit is a characteristic of Iran economics .Some time the governments to reduce the unemployment rate at their societies use the budget deficit policy but having the budget deficit in the long period not only is a policy but also is a problem for society that it needs to solve. To solve this problem the government should reduce its expenditures or it should increase its revenues resources. The budget revenue resources should be stationary and they must have the lowest fluctuations. Strongly dependent budget with the oil revenue shows the government have to change its expenditures or revenues. To achieve these aims the government should know the relationship between government revenues and expenditures. It has been observed that in some cases revenue

increase or expenditures reduction affect on its corresponding variable and makes the adopted policy ineffective. So before to make a decision about reducing of the expenditure or increasing revenues it is important to know the amount of dependences of those variables that affect on the government expenditures. To obtain the appropriate financial policy to reduce or remove budget deficit it is necessary to find the relationship between government revenues and expenditures. The main purpose of this paper is to investigate the relationship between government revenue and expenditure in Iran for the period from 1978-2011. The paper is divided into five sections. Following this introduction, literature review of relevant studies will be presented. Section three will discuss data and methodology that is used in this research. Empirical results are reported in section four. Section five will conclude this exercise.

2. Theoretical Literature Review:

The causal relationship between revenues and government expenditure is a classic problem of Public Economics. There are four propositions that can potentially explain observed spending-revenue behavior. The propositions are briefly discussed as follows: Friedman leads the *tax-and-spend* school, which contends that raising taxes will simply lead to more spending. Friedman (1982) [cited in Narayan (2005: 1205)] puts his point in the following way: "You cannot reduce the deficit by raising taxes Increasing taxes only results in more spending, leaving the deficit at the highest level conceivably accepted by the public. Political rule number one is government spends what government receives plus as much more as it can get away with". Also Milton Friedman (1982) suggests cutting taxes as a remedy to budget deficits, since taxes have a positive causal impact on government expenditure. According to Friedman, a cut in tax leads to higher deficits, which should influence government to reduce its level of spending, (Moalusi, 2004). Buchanan and Wagner (1977, 1978) put forward an alternative version of the tax-and-spend hypothesis. In contrast to Friedman (1978), they argue that tax increases would lead to spending reductions. The building block of the Buchanan and Wagner (1977, 1978) version of the tax-and-spend hypothesis is that taxpayers suffer from fiscal illusion. According to the authors, tax cuts lower the perceived price of government provided goods and services by the public, which in turn boosts the public demand for these goods and services. However, the public may actually incur even higher costs. One reason for this is the indirect inflation taxation that results if the government resorts to excessive money creation. Another reason is higher interest rates associated with government debt financing may crowd out private investment. To reduce expenditures, Buchanan and Wagner favor limiting the ability of the government to resort to deficit financing. In sum, while tax changes as before drive spending changes, the relationship between the two is a negative one.

The second school known as spend-and-tax school is built on the tenet that expenditure causes revenue proposed by Peacock and Wiseman (1961, 1979). According to the spend-and-tax hypothesis, the level of spending is first determined by the government and then tax policy and revenue are adjusted to accommodate the desired level of spending. A version of this hypothesis is suggested by Roberts (1978), and Peacock and Wiseman (1979) according to whom crisis situations (due to for example wars, natural disasters, or deep recessions) justify temporary increases in expenditures and taxes to pay for them. However, tax increases may become permanent; reflecting an upward adjustment in the level of tax tolerance of the citizens and their attitude towards the proper size of the government after the crisis has passed. This in turn allows for a permanent increase in the level of government expenditures. Another version of this hypothesis is based on the works of Barro (1974, 1979, 1986). In his tax smoothing hypothesis, government spending is considered as an exogenous variable to which taxes adjust. Moreover, the intertemporal budget constraint requires that an

increase in current expenditures be matched by higher future taxes. Barro, therefore, rejects the notion that the taxpayers suffer from fiscal illusion. Quite the contrary, within the framework of the Ricardian equivalence theorem, he maintains that taxpayers are sophisticated, or rational, enough to see that an increase in the current debt in nothing but a delayed form of taxation. Taxpayers are, therefore, expected to fully capitalize the future tax liability. As pointed out by von Furstenberg et al. (1992), changes in spending can precede changes in taxes if a political majority raises pre-election expenditures, which are then paid for by subsequent post-election tax increases, or if they cut taxes as a compensation for earlier decisions to restrain expenditures. Since it is changes in expenditures that drive changes in taxes in this scenario, the preferred approach to fiscal deficit reduction relies on cutting expenditures.

Fiscal synchronization hypothesis as the third school of thought argues that governments may change expenditure and taxes concurrently (Meltzer & Richard, 1981; Musgrave, 1966). This implies bidirectional causality between government expenditure and revenue. Under the fiscal synchronization hypothesis, citizens decide on the level of spending and taxes. This is done through comparing the benefits of government to citizen's marginal cost, (Narayan, 2005). Barro's (1979) tax smoothing model provided further credence to the fiscal synchronization hypothesis. His model was based on the Ricardian equivalence view that deficit financed government expenditure today results in future tax increases, (Narayan, 2005). The implication of this hypothesis is that causal relationship between government revenue and spending is bidirectional.

Finally, fourth school, fiscal neutrality school, proposed by Baghestani and McNown (1994) believe that none of the above hypotheses describes the relationship between government revenues and expenditure. Government expenditure and revenues are each determined by the long run economic growth reflecting the institutional separation between government revenues and expenditure that infers that revenue decisions are made independent are expenditure decisions. A major advocate of this view is Wildavsky (1988) who maintains that separate institutions such as the executive and legislative branches of the US government participate in the budgetary process to determine the level of taxation and spending. Budgeting can be incremental and adjustments can be made on the margin if these separate institutions reach a consensus on the fundamentals. In this case there is no causality between the two variables, and hence they are independent of one another.

3. Empirical Literature Review

Numerous empirical studies available on revenue and expenditure nexus all over the world but there is no consensus about the linkage between these variables. Though over the last three decades several studies have been carried out in different countries to investigate the issue in the public economics, findings vary from country to country and also within the country. Considerable empirical works have been done with respect to the four above mentioned hypotheses. Using different econometric methods, studies have reached to different results. Different studies have focused on different countries, time periods, and have used different proxy variables for government revenue and expenditure. The empirical outcomes of these studies have been varied and sometimes conflicting. The results differ even on the direction of causality and it is long-term versus short term impact on government policy. We now move on to review some of the empirical studies of the relationship between government revenue and expenditure.

Hasan and Lincoln (1997) carried out a research on this issue for United Kingdom by using cointegration technique and quarterly data from 1961-93 was used for this purpose. This study reveals that government tax revenue Granger causes government expenditures and vice versa. E.g. Shah and Baffes (1994) in their study for Latin American countries concluded bidirectional causality between government revenue and expenditure for Argentina over the 1913-1984 periods and for Mexico over

the 1895-1984 periods; while for Brazil they found unidirectional causality running from revenue to expenditure. Owoye (1995) investigated the issue for the G7 countries. He found bidirectional causality for five of the seven countries and for Japan and Italy he found causality running from revenue to expenditure. Abdul Aziz and Shah Habibullah (2000) investigated causality between taxation and government spending by using an application of Toda-Yamamoto approach in Malaysia for the period 1960 to 1997. Their evidence generally supports the existence of bidirectional causality between government spending and tax revenues. Kollias and Makrydakis (2000) examined tax and spending relationship in four countries namely; Greece, Portugal, Spain, Ireland which are comparatively poorer countries in European Union. They found that cointegration prevails in only Greece and Ireland cases and whereas there is no long run relationship in the models for Spain and Portugal. Moreover, bidirectional causality between government spending and revenue exists in Greece and Ireland. As far as Spain and Portugal cases are concerned, in the former country, causality runs from revenue to expenditure and in the later country, there is no causal link between these two important fiscal variables. Chang et al (2002) conducted a study to examine this relationship in ten industrialized countries including three newly industrialized Asian economies namely, Taiwan, South Korea and Thailand. In this study, GDP variable is also included in the model as a control variable along with government expenditures and tax variables and Johansen cointegration technique is exercised for analysis. They claimed that cointegration among the variables prevails for seven countries and found causality from government revenues to government expenditures for UK, USA, South Korea, Japan and Taiwan whereas causality runs from government expenditures to revenues for South Africa and Australia. This study also found independence between revenues and expenditures for New Zealand and Thailand. Maghyereh and Sweidan (2004) examined tax-spend, spend-tax and fiscal synchronization hypothesis for Jordan using annual time series data from 1969 to 2002. The authors used real GDP as control variable along with real government expenditures and real government revenues and Granger causality test based on Multivariate ECM. They conclude evidence in favor of bidirectional causality between revenue and expenditure. The result also suggests that there is long-run interdependence between output and fiscal variables indicating effectiveness of fiscal policy in Jordan. Carneiro *et al.* (2005) investigated this issue for Guinea-Bissau over the period 1981 to 2002. They found that Guinea-Bissau's experience is consistent with the "spend - tax" hypothesis. Barua (2005) examined revenue and expenditure causality in Bangladesh by using annual data over the period 1974-2004. The results of Johansen test suggest that there is a long-run relationship between government expenditure, revenue and GDP and the Granger Causality test on the corresponding Vector Error Correction (VEC) model suggests that there is no causal relationship between revenue and expenditure in the short run. It is also observed that the short run relation extends from both the fiscal variables to GDP, and not the other way around. Tsen and Kian-Ping (2005) examined this relationship in Malaysia for the period from 1965 – 2002. Augmented Dickey-Fuller and Phillips-Perron Unit root tests, Johansen cointegration and error correction models were applied to data. The results supported tax-spend hypothesis. Government revenue was found to Granger cause expenditure in Malaysia. In another study, Narayan and Narayan (2006) found tax-and-spend hypothesis for Mauritius, El Salvador, Chile, Paraguay and Venezuela. For Haiti, there is evidence for supporting the fiscal synchronization hypothesis, while for Peru, South Africa, Guatemala, Guyana, Uruguay and Ecuador there is evidence of neutrality by application of the Toda and Yamamoto (1995) test for Granger causality. Nyamongo et al. (2007) in a study of the government revenue and expenditure nexus in South Africa found different results. A monthly data was used, and modified unit root test and Vector Error Correction Model (VECM) were applied on data. It was found that government revenue and expenditure are cointegrated, and a long-run relationship exists between them. Applying Granger causality through VECM model, it was found bidirectional Granger causality which supports fiscal synchronization hypothesis. In the short-run no Granger causality was found between variable, suggesting fiscal neutrality hypothesis in South Africa for the period of study. the study Wolde-Rufael (2008) for 13 African countries by using Toda and Yamamoto causality test show the direction of causation are mixed and his empirical evidence suggests that there was a bidirectional causality running between expenditure and revenue for Mauritius, Swaziland and Zimbabwe; no causality in any direction for Botswana, Burundi and Rwanda; unidirectional causality running from revenue to expenditure for Ethiopia, Ghana, Kenya, Nigeria, Mali and Zambia; and an un-directional causality running from expenditure to revenue for Burkina Faso only. Chaudhuri and Sengupta

(2009), by using an error-correction model and Granger causality test for southern states in India reported that the tax-spend hypothesis is supported by the analysis and also the spend-tax hypothesis is valid for some states. Ravin thirakumaran (2011) examined the relationship between government revenue and expenditure in Sri Lanka for the period from 1977-2009. A time series methodology of Engle-Granger's approach of cointegration and error correction model framework is investigated. The study concluded that bidirectional causality exists between government revenue and expenditure and there is long-run equilibrium between the two variables in Sri Lanka economy. Subhani et al. (2012) found the opposite causality direction confirming the tax-spend hypothesis. They studied the causality direction between government expenditure and revenue for Pakistan. Annual data for the period from 1979-2010 were used, and Granger causality was applied to variables in question. The paper found that government revenue Granger cause government expenditure in Pakistan for the period under investigation.

To the best of the author's knowledge, the evidence on the relationship between government revenue and expenditure for Iran is scarce. Zonnoor, S. H (1995) examined the growth of government expenditures and revenues in Iran over the period of 1970 - 1990 in light of conventional theories as to the nature of public sector economic activity. In his study simple forms of government expenditure and tax functions are estimated. They also examined the speed of the adjustment process by estimating a simple disequilibrium model of government expenditures and receipts. Using a constant shares model as well as a constant marginal shares model, they compared the pattern of expenditures and the revenues structure before and after the Iran's revolution.Elyasi and Rahimi (2012) found bidirectional causality between government revenue and expenditure in Iran. Annual data for the period from 1963-2007 were used, and variables were tested for stationarity. The paper included a comprehensive list of studies on causality between government revenue and expenditure for country specific and for multi-countries studies. The evidence cited on the direction of causality is mixed in those studies. Different data sets, econometric methodologies and different country characteristics are some of reasons cited for the different results on the direction of causality.

4. Toda-Yamamoto Augmented Granger Causality Approach

Various tests are present to check the causality among variables i.e. Granger (1969), Engle & Granger (1987) and Johansen & Jesulious (1990). These tests are not free from errors like they require stationarity requirements, selection of maximum lag length and they are very sensitive to model specification. It is necessary to pretest the unit root and cointegration while applying these tests. To overcome these problems, the present study applies a more robust causality technique given by Toda Yamamoto (1995) and it is further explained by Rambaldi & Doran (1996) and Zapata & Rambaldi (1997).The Augmented Granger Causality Approach given by Toda Yamamoto (1995) is very simple to apply and it also follows asymptotic Chi-square distribution. The major advantage of above said approach is that, in this technique, it is not necessary to check the pre testing of the order of integration or cointegration properties among variables (Toda Yamamoto, 1995; Dolado & Lütkepohl, 1996; Giles & Mirza, 1999). Rambaldi & Doran (1996) have modified Wald test that is considered more efficient when Seemingly Unrelated Regression (SUR) Model is used in the estimation. One of the attractiveness of using SUR is that it takes care of possible simultaneity bias in the system of equations.

$$Y_t = \alpha_0 + \beta_{1i} \sum_{i=1}^{k} Y_{t-i} + \beta_{2j} \sum_{j=k+1}^{d_{max}} Y_{t-j} + \gamma_{1i} \sum_{i=1}^{k} X_{t-i} + \gamma_{2j} \sum_{j=K+1}^{d_{max}} X_{t-j} + \varepsilon_{1t} \qquad (1)$$

$$X_t = \alpha_1 + \lambda_{1i} \sum_{i=1}^{k} X_{t-i} + \lambda_{2j} \sum_{j=k+1}^{d_{max}} X_{t-j} + \delta_{1i} \sum_{i=1}^{k} Y_{t-i} + \delta_{2j} \sum_{j=K+1}^{d_{max}} Y_{t-j} + \varepsilon_{2t} \qquad (2)$$

This test has an asymptotic chi-squared distribution with k degrees of freedom in the limit when a VAR[k+dmax] is estimated (where dmax is the maximal order of integration for the series in the system). Two steps are involved with implementing the procedure. The first step includes determination of the lag length (k) and the maximum order of integration (dmax) of the variables in the system. Measures such the Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), Final Prediction Error (FPE) and Hannan-Quinn (HQ) Information Criterion can be used to determine the appropriate lag order of the VAR. , we use Akaike Information Criterion (AIC) and Schwarz Information Criterion (SC) to select the optimal lag to include in models. We use the Augmented Dickey-Fuller ,Zivot-Andrews and Lee – Strazicich (2003,2004) tests to determine the maximum order of integration. Given the VAR(k) selected, and the order of integration dmax is determined, a levels VAR can then be estimated with a total of p=[k+ dmax] lags. The second step is to apply standard Wald tests to the first k VAR coefficient matrix (but not all lagged coefficients) to conduct inference on Granger causality. Also ,Toda and Yamamoto cannot be used if the maximum number of unit-roots in the VAR is larger than the optimal lag-length. Thus, in some cases, it might not be possible to conduct causality tests.

4-1. DATA AND ECONOMETRIC METHODOLOGY

This study aims to provide empirical evidence on the relationship between government revenue and expenditure for Iran and give insights on the causality patterns. Therefore, in this paper the Toda-Yamamoto approach is used to check the causality between two variable. However before going to estimate the data it is necessary to check the unit root presence in the data and for that in this study the ADF and Zivot-Andrews and Lee – Strazicich (2003,2004) unit root test is used in order to know the order of integration of the series. Although,to determine lag length of model , we employee Final prediction error (FPE), Akaike information criterion (AIC) and Schwarz information criterion (SC). Annual time series variables data which utilized in this paper are include the government revenue (TR) and government expenditure (GE) gathered from web site Central Bank of Iran. The logarithm of the government expenditures and government revenues are used in the empirical analysis. The transformation of the series to logarithms is intended to eliminate the problem of heteroskedasticity. Annual data for the period from 1978 – 2012 are used in this study. We select these period because time series data on government revenue and government expenditure are only available for this period.

4-2.   Findings and Discussion
4-2-1. Augmented Dickey-Fuller Unit Root Testing for order of integration:

Most of time series have unit root as many studies indicated including (Nelson and Polsser, 1982), and as proved by (Stock and Watson, 1988) and (Campbell and Perron, 1991) among others that most of the time series are non-stationary. The presence of a unit root in any time series means that the mean and variance are not independent of time. Conventional regression techniques based on   non stationary time series produce spurious regression and statistics may simply indicate only correlated trends rather than a true relationship (Granger and Newbold, 1974). Conventional tests for identifying the existence of unit roots in a data series include that of the Augmented Dickey Fuller (ADF) (1979, 1981). Our main reason for conducting unit root tests is to determine the extra lags to be added to the vector autoregressive (VAR) model for the Toda and Yamamoto test.Prior to testing for a causality relationship between the time series, it is necessary to establish whether they are integrated of the same order. To this end in the first step of the empirical analysis, the Augmented Dickey Fuller (ADF) unit-root tests have been carried out for the both variables: government

expenditure and Government Revenue, both in logarithm. The results reported in Table 1, indicate that both of the variables are nonstationary.

Table1.Augmented Dickey-Fuller Unit Root Test

Variable	With constant & trend	Critical value (5%)	With Constant	Critical value (5%)
Government Revenue	-2.22	-3.55	0.616	-2.957
Government Expenditure	-3.185	-3.574	0.44	-2.976
First-Difference Government Revenue	-4.620*	-3.562	-4.581*	-2.960
First-Difference Government Expenditure	-3.900*	-3.56	-3.907*	-2.960

Note : (*), indicate the rejection of null hypotheses in a level of 5 % respectively.

4-2-2 . Zivot-Andrews unit root test with structural break.

Zivot and Andrews (1992) propose a variation of Perron's (1989) original test in which the time of the break is estimated, rather than known as an exogenous phenomenon. The null hypothesis in their method is that the variable under investigation contains a unit-root with a drift that excludes any structural break, while the alternative hypothesis is that the series is a trend stationary process with a one-time break occurring at an unknown point in time. By endogenously determining the time of structural breaks, ZA argue that the results of the unit root hypothesis previously suggested by earlier conventional tests such as the ADF test may change. In this methodology, *TB* (the time of break) is chosen to minimize the one-sided *t*-statistic of *a*=1. In other words, a break point is selected which is the least favorable to the null hypothesis. The ZA model endogenises one structural break in a series (such as *yt*) as follows:

$$H_0 : y_t = \mu + y_{t-1} + e_t \qquad (3)$$

$H_{1:}$

$$Model\ (A): y_t = \hat{\mu}^A + \hat{\theta}^A DU_t(\hat{T}_b) + \hat{\beta}^A t + \hat{\alpha}^A y_{t-1} + \sum_{j=1}^{k} \hat{C}^A{}_j \Delta y_{t-j} + \hat{e}_t \quad (4)$$

$$Model\ (B): y_t = \hat{\mu}^B + \hat{\beta}^B t + \hat{\gamma}^B DT_t(\hat{T}_b) + \hat{\alpha}^B y_{t-1} + \sum_{j=1}^{k} \hat{C}^B{}_j \Delta y_{t-j} + \hat{e}_t \qquad (5)$$

$$Model\ (C): y_t = \hat{\mu}^C + \hat{\theta}^C DU_t(\hat{T}_b) + \hat{\beta}^C t + \hat{\gamma}^C DT_t(\hat{T}_b) + \hat{\alpha}^C y_{t-1} + \sum_{j=1}^{k} \hat{C}^C{}_j \Delta y_{t-j} + \hat{e}_t \quad (6)$$

Equation (4), which is referred to as model C by ZA, accommodates the possibility of a change in the intercept as well as a trend break. ZA also consider two other alternatives where a structural break impacts on the intercept only (model A) or trend only (model B). Model C is the least restrictive compared to the other two models; In above equations *DUt* is a sustained dummy variable capturing a shift in the intercept, and *DTt* is another dummy variable representing a shift in the trend occurring at time *TB*. Zivot and Andrews (ZA) (1992) argue that the results of the conventional unit root tests may be reversed by endogenously determining the time of structural breaks. The null hypothesis in the Zivot and

Andrews test is a unit root without any exogenous structural change. The alternative hypothesis is a stationary process that allows for a one-time unknown break in intercept and/or slope. The alternative hypothesis is that the series, yt, is I(0) with one structural break. TB is the break date, and the dummy variables are defined as follows:

$$DU_t = \begin{cases} 1 & if \ t > TB_1 \\ 0 & if \ t \le TB_1 \end{cases} \quad and \quad DT_t = \begin{cases} t - TB_1 & if \ t > TB_1 \\ 0 & if \ t \le TB_1 \end{cases}$$

The null is rejected if the *a* coefficient is statistically significant. The optimal lag length is determined on the basis of the t-test or SBC. The "trimming region" where we search for the minimum t ratio is assumed to be within 0.05T-0.95T or $0.05T \le TB1 \le 0.95T$. Based on the results reported in Tables 1, ZA models indicate that all series under investigation are non-stationary. The same unit root tests have been applied to the first difference of the variables and in most cases we rejected the null hypothesis of unit root. Hence, we maintain the null hypothesis that each variable is integrated of order one or I(1). the reported t statistics in Table 1 for $\hat{\mu}, \hat{\beta}, \hat{\theta}, \hat{\gamma} \ and \ \hat{\alpha}$ are significant in the majority of cases. Given the fact that all of the estimated coefficients for the indicator and trend dummy variables are statistically significant, one can argue that the estimated structural break dates are indeed statistically significant.

Table 2. The Zivot-Andrews test results

	Series	T	T_b	Lag	$\hat{\mu}$	$\hat{\beta}$	$\hat{\theta}$	$\hat{\alpha}$	$\hat{\gamma}$	$\hat{c}$
MODEL(A)	LTR	33	1994	1	2.31 (3.92)	0.06 (3.21)	0.46 (3.21)	-0.36 (-3.67)	---	0.09 (0.56)
	LGE	33	1994	1	1.70 (3.85)	0.03 (2.69)	0.37 (3.40)	-0.24 (-3.45)	---	-0.04 (-0.27)
	ΔLTR	32	1990	1	0.22 (2.63)	-0.01 (-3.2)	0.6 (4.03)	-**-1.42 (-5.7)	---	0.23 (1.39)
	ΔLGE	32	1991	1	0.2 (2.99)	-0.01 (-2.960	0.41 (3.69)	-1.16 (-4.61)	---	0.05 (0.32)
MODEL(B)	LTR	33	2008	1	1.35 (2.51)	0.05 (2.65)	---	-0.22 (-2.43)	-0.04 (-1.44)	0.14 (0.83)
	LGE	33	1986	1	1.86 (2.07)	-0.003 (-0.08)	---	-0.22 (-2.26)	0.05 (1.15)	0.29 (1.58)
	ΔLTR	32	1995	1	-0.10 (-0.56)	0.02 (1.74)	---	-1.06 (-3.91)	-0.04 (-1.86)	0.03 (0.2)
	ΔLGE	29	1995	4	-0.67 (-4.57)	0.07 (5.54)	---	**-1.65 (-6.12)	-0.08 (-5.52)	0.35 (1.72)
MODEL(C)	LTR	33	1993	1	3.21 (2.65)	0.05 (2.73)	0.59 (2.69)	-0.46 (-2.81)	0.04 (1.15)	0.2 (1.07)
	LGE	33	1985	1	1.81 (2.09)	0.04 (0.65)	-0.18 (-1.10)	-0.25 (-2.38)	0.11 (0.15)	0.28 (1.54)
	ΔLTR	32	1990	1	0.65 (2.51)	-0.06 (-2.34)	0.78 (4.4)	**-1.50 (-6.14)	0.05 (1.74)	0.29 (1.77)
	ΔLGE	29	1994	4	-0.56 (-3.45)	0.06 (4.53)	0.22 (2.05)	**-1.94 (-5.59)	-0.08 (-5.27)	0.58 (2.78)

Notes : For Government Revenue and Government Expenditure we assumed break in both Intercept and trend. The 5% critical value, test is -5.080, For Government Revenue and Government Expenditure.They are obtained using 1-lag for both tests. Zivot-Andrews test the null hypothesis of unit-root.

4-2-3. Minimum Lagrange Multiplier (LM) Unit Root Test with Two Endogenous Structural Breaks for order of integration:

However, recent contributions to the literature suggest that such tests may incorrectly indicate the existence of a unit root, when in actual fact the series is stationary around a one-

time structural break (Zivot and Andrews, 1992; Pahlavani, et al, 2006).Therefore I this section we applied Lee and Strazicich with Two Endogenous Structural Breaks fordetermine the order of integration.

Lee and Strazicich (2003) consider the data-generating process (DGP) as follows:

$$y = \delta Z_t + e_t \;, e_t = \beta e_{t-1} + \varepsilon_t \;(7)$$

where Zt is a vector of exogenous variables and ε_t is an iid Gaussian error term. In the following, we will consider a model allowing for two changes in level and trend, i.e. Model A allows for two shifts in level and is given by$Z_t = [1, t, D_{1t}, D_{2t},]$ and Model C allows for two changes in the level and trend and is described$Z_t = [1, t, D_{1t}, DT_{1t}, D_{2t}, DT_{2t}]'$ where Djt and DTjt for j = 1, 2 are dummies with Djt = 1 for t ≥TB$_j$ + 1 and 0 otherwise and DT$_{jt}$ = t - T$_{Bj}$ for t ≥ T$_{Bj}$ + 1 and 0 otherwise. T$_{Bj}$ denotes the jth break date. The DGP given in equation (3) allows for breaks under the null (β = 1) and the alternative (β < 1). Lee and Strazicich (2003) use the following regression to obtain the LM unit root test statistic:

$$\Delta y_t = \delta' \Delta Z_t + \emptyset \tilde{S}_{t-1} + \sum_{i=1}^{k} \gamma_i \Delta \tilde{S}_{t-j} + u_t \qquad (8)$$

With $\tilde{S}_t = y_t - \tilde{\psi}_t - Z_t \tilde{\delta}$, $t = 2, \ldots\ldots, T$ the detrended series. $\tilde{\delta}$ Are the coefficients from the regression of Δy_tonΔZ_t, $\tilde{\psi}_t = y_t - Z_1 \tilde{\delta}$where y$_1$ and Z$_1$ correspond to the first observations. The lagged terms $\Delta \tilde{S}_{t-j}$ are included to correct for serial correlation. From equation (4), the LM test statistics are given by the t-statistics testing the null hypothesis $\emptyset = 0$. The break dates are determined endogenously by a grid search over all possible dates, i.e. once 10% of the endpoints are eliminated, such that they minimize the test statistic. The critical values are tabulated in Lee and Strazicich (2003, 2004) for the single-break and two-break cases respectively.

Following Lee and Strazicich, the two-break minimum LM unit root test are applied to determine the order of integration both Model A and B for the major macroeconomic variables of the IRAN economy. Table 2 provides the results. The estimation results fail to reject the null hypothesis of a unit root for both variables. The same unit root tests have been applied to the first difference of the variables and in all cases we rejected the null hypothesis of unit root. Hence, we maintain the null hypothesis that each variable is integrated of order one or I(1).

Table 3. Lee-Strazicich Minimum LM Two-Break Unit-Root Test

	Series	TB_1	TB_2	S_{t-1}	DT_{1t}	B_{1t}	B_{2t}	DT_{2t}	k
MODEL(A)	LGE	1991	2008	-0.09 (-1.54)	----	-0.03 (-0.17)	0.3 (1.75)	---	1
	LTR	1988	1999	-0.15 (-1.95)	----	-0.42 (-1.78)	0.54 (2.32)	---	1
	ΔLGE	1990	2001	*-1.22 (-4.50)	----	0.3 (2.14)	-0.02 (-0.15)	---	1
	ΔLTR	1989	2002	*-1.44 (-5.51)	----	0.48 (2.48)	-0.10 (-0.54)	---	1

Note: * indicates the rejection of the null hypothesis at the 1% level of significance, ** at 5%. See Lee and Strazicich (2003) for the critical values.

After the ADF , Zivot-Andrews test and Lee and Strazicich Unit Roottests and having determined that $d_{max} = 1$, we Following the modeling approach described earlier ,In the two step to determine lag length of VAR(k) , we employee Final prediction error (FPE), Akaike information criterion (AIC) and Schwarz information criterion (SC), lag selection criteria are used. The result of selecting optimal lag length of VAR is reported in Table 3. FPE, AIC and SC information criterion indicate that lag order of VAR (k) is one. According to lag length of VAR process, we employee modified Wald test for VAR(2) to get results of causality test between entrepreneurship and unemployment.

Table4. Lags under different criteria for VAR model

Lag	FPE	AIC	SC
0	*0.1281*	3.621321	3.715617
1	0.000658*	-1.651708*	-1.368819*
2	0.000816	-1.441754	-0.970273
3	0.000784	-1.491999	-0.834925
4	0.000919	-1.358647	-0.509981

Notes:* indicates lag order selected by the criterion; FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion,

4-3.   Results of Toda Yamamoto Augmented Granger Causality Technique:

The present study applies Toda Yamamoto Augmented Granger Causality approach to examine the causal nexus among Entrepreneurship to unemployment rate.

Table 5. Todo- Yamamoto Causality (modified Wald) test results

Null hypothesis	Lag(k)	k+dmax	MWald statistics	p-values	Decision
H_0: GE does not Granger cause TR	1	2	1.427	0.232	Do not reject H_0
H_0: TR does not Granger cause GE	1	2	2.736	0.09*	Reject H_0

*indicate rejection of the null at the 10% level

The empirical results of Granger Causality test based on Toda and Yamamoto (1995) methodology is estimated through MWALD test and reported in Table: 4. The estimates of MWALD test show that , there is strong evidence of causality running from Government Revenue (TR) to Government Expenditure (GE) at the 10% level of significance. The results do not reveal causality from Government Expenditure to Government Revenue. Therefore, we can conclude that there is a uni-directional of causality that runs from Government Revenue (TR) to Government Revenue for IRAN.

4-4. Cointegration Analysis with Structural Breaks

As had been noted as far back as 1989 by Perron, ignoring the issue of potential structural breaks can render invalid the statistical results not only of unit root tests but of cointegration tests as well. Kunitomo (1996) explains that in the presence of a structural change, traditional cointegration tests, which do not allow for this, may produce "spurious

cointegration". In the present research, therefore, considering the effects of potential structural breaks is very important, especially because the Iranian economy has been faced with structural breaks like revolution and war in addition to some policy changes. Saikkonen and Lütkepohl (2000a, b, c) have proposed a test for cointegration analysis that allows for possible shifts in the mean of the data-generating process. Because many standard types of data generating processes exhibit breaks caused by exogenous events that have occurred during the observation period, they suggest that it is necessary to take into account the level shift in the series for proper inference regarding the cointegrating rank of the system. They argued that "structural breaks can distort standard inference procedures substantially and, hence, it is necessary to make appropriate adjustment if structural shifts are known to have occurred or are suspected" (2000b: 451). The Saikkonen and Lütkepohl (SL) test investigates the consequences of structural breaks in a system context based on the multiple equation frameworks of Johansen-Jeslius, while earlier approaches like Gregory-Hansen (1996) considered structural break in a single equation framework and others did not consider the potential for structural breaks at all. According to Saikkonen and Lütkepohl (2000b) and Lütkepohl and Wolters (2003), an observed n-dimensional time series yt = (y1t,...., ynt), yt is the vector of observed variables (t=1,..., T) which are generated by the following process:

$$y_t = \mu_0 + \mu_1 t + \gamma_1 d_{1t} + \gamma_2 d_{2t} + \gamma_3 d_{3t} + \delta Dt_{ot} + \delta_2 Du_{1t} + x_t \ (9)$$

Where *DT0t* and *DU1t* are impulse and shift dummies, respectively, and account for the existence of structural breaks.and account for the existence of structural breaks. *DT0t* is equal to one, when t=T0, and equal to zero otherwise. Step (shift) dummy (Du_{1t}) is equal to one when (t>T1), and is equal to zero otherwise. The parametersγ_i(I=1,2,3), μ_0, μ_1, and $\delta$are associated with the deterministic terms. The seasonal dummy variables *d1t, d2t,* and *d3t,* are not relevant to this research since our data are yearly. According to SL (2000b), the term *xt* is an unobservable error process that is assumed to have a VAR (p) representation as follows:

$$x_t = A_1 x_{t-1} + \cdots + A_p x_{t-p} + \varepsilon_t \quad , \quad t = 1,2$$

By subtracting xt-1 from both sides of the above equation and rearranging the terms, the usual error correction form of the above equation is given by:

$$\Delta x_t = \prod x_{t-1} + \sum_{j=1}^{p-1} \Gamma_j \Delta x_{t-j} + u_t$$

This equation specifies the cointegration properties of the system. In this equation, *ut* is a vector white noise process; *xt= yt -Dt* and*Dt* are the estimated deterministic trends. The rank of *Π*is the cointegrating rank of xt and hence of yt (SL, 2000b). The possible options in the SL procedure, as in Johansen, are three: a constant, a linear trend term, or a linear trend orthogonal to the cointegration relations. In this methodology, the critical values depend on the kind of the above-mentioned deterministic trend that included in the model. More interestingly, in SL, the critical values remain valid even if dummy variables are included in the model, while in the Johansen test; the critical values are available only if there is no shift dummy variable in the model. The SL approach can be adopted with any number of (linearly independent) dummies in the model. It is also possible to exclude the trend term from the model; that is, *μ*=0 maybe assumed *a priori*. In this methodology, as in Johansen's, the model selection criteria (SBC, AIC, and HQ) are available for making the decision on the VAR order. In the following section, we have applied SL tests for the cointegration rank of a system in the presence of structural breaks.

4-4-1. *Empirical Results based on the SL Procedures*

As explained above Saikkonen and Lütkepohl (2000b) derived the likelihood ratio (LR) test in order to determine the number of cointegrating relations in a system of variables, by considering for the presence of the potential structural breaks. We now apply a maximum likelihood approach; based on SL; for testing and determining the long-run relationship in the model under investigation. As mentioned earlier, in this procedure SL assumed that the break point is known a priori. In the last section, we determined the time of the break endogenously by Zivot-Andrews

(1992) procedure. Following the SL procedure we consider three cases: impulse dummy and shift with intercept included; impulse dummy and shift with trend and intercept included; and finally, impulse dummy and shift with a trend statistically independent (orthogonal) to cointegration relation included. The cointegration results in these three cases are presented in tables (2) The optimal number of lags is determined by SBC, which is more appropriate for the short span of the data. The hypothesis of the long-run relationship among non-stationary variables is tested and the result is reported in table (2). These tables indicates that the hypothesis of no cointegration (r=0) is rejected at the 10% significance level at C (Intercept included) and CO (Trend orthogonal to

cointegration relation) Models . therefore the existence of one cointegration vector is not rejected in any of the three cases mentioned above.

Table 6. Saikkonen and Lutkephol cointegration test results

null hypothesis		LR	Critical values		
			10%	5%	1%
Intercept included (C)	$r = 0$	12.07	*10.47	12.26	16.10
	$r = 1$	1.36	2.98	4.13	6.93
Intercept and trend included (C/T)	$r = 0$	11.58	13.88	15.76	19.17
	$r = 1$	1.44	5.47	6.79	9.73
Trend orthogonal to cointegration relation (C/O)	$r = 0$	10.86	*8.18	**9.84	13.48
	$r = 1$	----	----	----	----

Note: *, ** Indicates that the corresponding null hypothesis is rejected at10% and 5% level. Critical values are tabulated by SL (2000b). The optimal number of lags (searched up to 1 lags) is determined by the SBC.

4-5. Estimated Long and Short Run Coefficients using the ARDL Approach

There are several methods available to test for the existence of long-run equilibrium relationship among time series variables. The most widely used methods include Engle and Granger (1987) test, fully modified OLS procedure of Phillips and Hansen's (1990), maximum likelihood based Johansen (1988, 1991) and Johansen- Juselius (1990) tests. These

methods require that the variables in the system are integrated of order one i.e. I(1). In addition, these methods suffer from low power and do not have good small sample properties. Due to these problems, a newly developed autoregressive distributed lag (ARDL) approach to cointegration has become popular in recent years. An ARDL model is a general dynamic specification, which uses the lags of the dependent variable and the lagged and contemporaneous values of the independent variables, through which the short-run effects can be directly estimated, and the long-run equilibrium relationship can be indirectly estimated.

This study employs ARDL approach to co-integration following the methodology proposed by Pesaran and Shin (1999). This methodology is chosen as it has certain advantages on other co-integration procedures. For example, it can be applied regardless of the stationary properties of the variables in the sample. Secondly, it allows for inferences on long-run estimates which are not possible under alternative co-integration procedures. Finally, ARDL Model can accommodate greater number of variables in comparison to other Vector Autoregressive (VAR) models.

ARDL analysis is based on the interpretation of three equations: Dynamic equation, Long-run equation and Error-correction equation. The first step is to examine the existence of a long-run relationship among all variables in the equation under examination. Conditional upon cointegration is confirmed, in the second stage, the long-run coefficients and the short-run coefficients are estimated using the associated ARDL and in the three stage An error correction model (ECM), are estimated to explain the short-run Relationship between variable .

Table (7) shows the results from Dynamic equation. Having estimated the dynamic equation, to ensure the presence of long-run relation Benerji- Dolado and Master test has been used. The calculated t is

$$t = \frac{\sum \hat{a}_i - 1}{\sum S\hat{a}_i} = \frac{\mathbf{0/48099 - 1}}{\mathbf{0/063971}} = \mathbf{-8/11}$$

which is greater than the critical absolute value of Benerji- Dolado and Master (-3.28). So, the null hypothesis is rejected and the existence of long-run relation among the variables is realized.

Table7. Results from estimating dynamic model of ARDL

Dependent Variable: Log(Government Expenditure)			
Regressors	Coefficient	t	p-value
LGE(-1)	**0.48**	**7.51**	**0.00**
LTR	**0.50**	**8.29**	**0.00**
C	**0.349**	**3.99**	**0.00**
Serial Correlation = **0.22** **(0.63)** Functional Form = **0.04** **(0.824)** Heteroscedasticity = **1.03** **(0.596)**			$\mathbf{0/99 = R^2}$

The results summarized in table (8) indicate that the revenue government Has Positive and significant effect on the government expenditure in Iran. The estimated coefficient

provides the income elasticity which shows the expected signs. i.e. 1% increase in revenue government would lead to increase the government expenditure to Iran by 0.97 percent.

Table 8. Result from estimating the long-run relation

Dependent Variable: Log(Government Expenditure)			
Regressors	Coefficient	t	(p-value)
C	0.67	4.47	0.00
LTR	0.97	6.63	0.00

An error correction model (ECM), are estimated to explain the short-run Relationship between revenue and government expenditure in Iran. The findings, which are summarized in table (9), show that the estimated coefficients of model in short run are less than the estimated coefficients in long run. The results illustrate that the short-run changes in explanatory variable is significant. It can be seen that the revenue government has the short-and –long run effects on the government expenditure in standard level of significance. Moreover, the revenue governments show positive and significant impacts on government expenditure. The results also show that the error correction coefficient denotes the appropriate sign and is statistically significant. It indicates that 0.51 of deviation of the government expenditure from its long-run equilibrium level is corrected each year, which is a relatively slow adjustment rate.

Table 9. Result from estimating ECM

Regressors	Coefficient	t	p-value
dLTR	0.503	8.92	0.00
dC	0.34	3.99	0.00
Ecm $_{-1}$	-0.51	-8.11	0.00
$0.67 = \overline{R}^2$ $0.69^2 = R$			

Finally, we have examined the stability of the long-run parameters together with the short-run movements for the equations. For test, we relied on cumulative sum of recursive residuals (CUSUM) and cumulative sum squares (CUSUMSQ) tests proposed by Borensztein, et al. (1998). The same procedure has been utilized by Pesaran and Pesaran (1997), Suleiman (2005) and Mohsen et al. (2002) to test the stability of the long-run coefficients. The tests applied to the residuals of the ECM model. Graphical representations of CUSUM and CUSUM square are shown in figure1 and 2. According to Bahmani and Oskooee, (2004) the null hypothesis (i.e. that the regression equation is correctly specified) cannot be rejected if the plot of these statistics remains within the critical bounds of the 5% significance level. It can be seen from the figure that the plot of CUSUM stay within the critical 5% bound for all equations and CUSUMSQ statistics does not exceed the critical boundaries that confirms the long-run relationships between financial variables and also shows the stability of co-efficient.

Figure 1. CUSUM Plots for test of stability
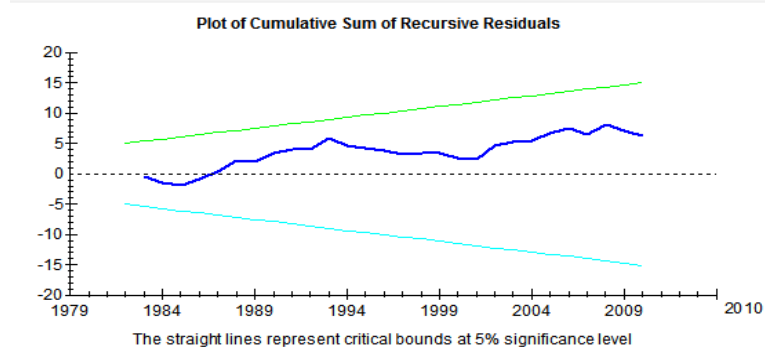
Figure 2. CUSUMSQ Plots for test of stability
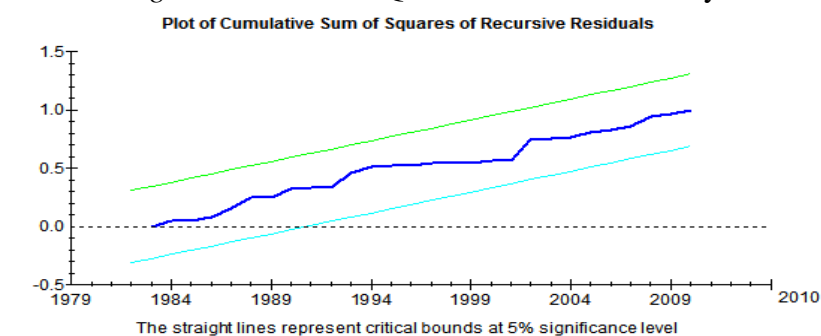
5. Summary and Conclusions

This study is an attempt to Analysis of Long and Short Run Relationship among revenue and government expenditure in Iran: An Auto Regressive Distributive Lag (ARDL) Approach for Iran. To analysis this issue, annual data are exploited for the period 1978-2011. Iran has long history of fiscal imbalance and failed to meet the expenditure with the total collected revenues. There are different theoretical viewpoints on the linkage between government spending and revenue. For example, Freidman (1978) argues that revenue causes expenditure and Barro (1979) as well as Peacock and Wiseman (1979) are of the views that government spending enhances government revenue. The determination of the causal ordering between these two macroeconomic aggregates is vital to ensure enactment of appropriate tax policies and the effectiveness of fund management. We have applied time series econometric techniques such as; unit root analysis with and without structural break , Final prediction error (FPE), Akaike information criterion (AIC) and Schwarz information criterion (SC) for determine lag length of model and Toda - Yamamoto Granger causality test and ARDL technique for Analysis of Long and Short Run Relationship among revenue and government expenditure. Both unit root tests ADF , Zivot-Andrews and Lee and Strazicich unit root test found the variables to be integrated of order one. Toda - Yamamoto Granger causality test found unidirectional causality running from government revenue to government expenditure and ARDL technique showed existed positive Relationship among revenue and government expenditure in Long and Short Run. So, these results consistent with the revenue-spend hypothesis.the results of this paper support the Freidman (1978) hypothesis that government

revenues cause expenditure and revenues have a positive causal impact on government expenditure.

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The Determinants of Gini Coefficient in Iran Based on Bayesian Model Averaging

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Abstract: *This paper has tried to apply BMA approach in order to investigate important influential variables on Gini coefficient in Iran over the period 1976-2010. The results indicate that the GDP growth is the most important variable affecting the Gini coefficient and has a positive influence on it. Also the second and third effective variables on Gini coefficient are respectively the ratio of government current expenditure to GDP and the ratio of oil revenue to GDP which lead to an increase in inequality. This result is corresponding with rentier state theory in Iran economy. Injection of massive oil revenue to Iran's economy and its high share of the state budget leads to inefficient government spending and an increase in rent-seeking activities in the country. Economic growth is possibly a result of oil revenue in Iran economy which has caused inequality in distribution of income.*

Keywords: Gini coefficient, Bayesian Model Averaging (BMA).

JEL classifications: H53, C01, I38

1. Introduction

The economic theories on the income distribution entails a vast array of potential factors by which income inequality can be influenced, with little guidance on selection of appropriate variables to include in Gini coefficient regression. The lack of an accepted empirical specification for use in Gini coefficient regression thus generates uncertainty regarding, for example, which explanatory variables must be included in the model, which functional forms are appropriate, or which lag length captures dynamic responses. In econometrics, all these problems are known as problems of model uncertainty (De luca and Magnus, 2011).

Much of the lengthy econometric literature on the subject of model selection is to do estimate large, flexible models and then performing sequence of tests and various restrictions to find a single best model which has all the irrelevant variables omitted (Koop, 2003). Estimating highly flexible models is far from a solution to addressing model uncertainty (e.g. Danilov and Magnus, 2004). It raises concerns about "overfitting" to arrive at specifications overly sensitive to the particular characteristics of the data sample. The ability to discriminate among competing theories of inequality is further hampered by the collinearity among many of the variables of theoretical interest. For these reasons, it is widely accepted that econometric model building should proceed from and be guided foremost by theoretical considerations (Hopkins, 2004). Therefore drawing proper inference requires formal recognition of this uncertainty in the search for model specification.Bayesian model averaging (BMA) techniques provide a coherentmethod of inference on the regression parameters of Gini coefficient by taking explicit account of theuncertainty due to both the estimation and the model selection steps (De luca and Magnus, 2011).

This paper sets out a BMA approach to assess how macroeconomic factors affectthe Gini coefficient in Iran during 1976-2010.Section 2 presents a brief review of theoretical and empirical literature on income distribution. We also present the empirical results of the paper in section 3, and section 4 concludes.

2. Theoretical Literature

The primary studies concerning determinants of income inequality investigate the effect of economic growth on income inequality. Argument in this field is started by Kuznets's investigation. Kuznets (1955) found an inverted-U shape between per capita income and inequality based on a cross-section of countries:as countries developed, income inequality first increased, peaked, and then decreased. The major driving force was presumed to be structural change that occurred because of labor shifts from a poor and less productive traditional sector to a more productive and differentiated modern sector. Following Kuznets's study, investigation of 60s and 70s were conducted to test Kuznets's inverted-U hypothesis based on cross-section of countries. These studies were confirmed Kuznets's hypothesis (e.g. Kravis, 1960; Oshima, 1962; Paukert, 1973). But further studies have tested on individual countries challenged Kuznets'sinverted-U hypothesis and evaporated it(e.g. Anand and Kanbor, 1993;Fields, 1989;Deininger and Squire, 1997).

Many studies have been done onother influential factors in Income distribution, including inflation, unemployment, investment, education, government expenditures, taxation, financial development,trade openness and et cetera. In the following we refer to a number of these studies.

Table 1: Empirical Studies

The Researcher(s)	Sample	Dependent Variable	Explanatory Variables	The Results
Shultz (1969)	USA (1944-65)	Gini coefficient	Unemployment rate, wholesale price, real GDP growth, trend	This study shows that the unemployment is the most important variable affecting the Gini coefficient and other variables have less importance.
Gustafsson & Johansson (1997)	16 members of OECD countries (1966-94)	Gini coefficient	Unemployment rate, inflation, GDP per capita, import from LCD, public sector	The Paper suggest that many factors affect the development of inequality. Factors are strictly economic or outside a strictly defined market-sphere as well as being demographic. However, a relation between the unemployment rate and inequality could not be found.
Seral (1997)	Cross-section of 45 countries (different years)	Gini coefficient	Income per capita, terms of trade, exchange rate, inflation, investment, public consumption, external position	The paper indicates that growth rate, Income level, Investment rate, Improvement and terms of trade have negative effect on changes in Gini coefficient. Also other variables have no significant effect on independent variable.
Jantti and Jenkins (2001)	United Kingdom (1961-91)	Quintile group income shares	employment rate, inflation rate, real interest rate, GDP growth rate	This paper indicate that when GDP growth rate is added to the regressor, the results alter. Inflation remains statistically insignificant, but the unemployment rate, the real interest rate and the GDP growth are statistically significant.
Abounoori (2003)	Cross-section of 96 developed and developing countries (different years)	Quintile group income shares	Unemployment, inflation, dummy variable for developed/developing countries	In this paper Inflation is found to have an increasing impact on the shares of lower 80% of the income distribution, while reducing the share of the highest 20%. Unemployment has a negative effect on the share of the first 40%, while increases the share of the highest 60%.
Østergaard (2013)	41 Sub-Saharan African countries (1980-2010)	Gini coefficient	Series of economic, demographic and political factor	This study indicate that important factors in making income distribution more equal include the level of education, the degree of government expenditure, and the existence of

				democracy. The Kuznets inverted U-relationship is not supported by the data.

3. Data and Empirical Results

In both theoretical and empirical studies, many different kinds of variables have been considered as significant determinants of Gini coefficient. So in this research, by application of the method of Bayesian Model Averaging (BMA), the effects of influential factors on Gini coefficient which have been regarded in previous studies are investigated.We use Stata program to obtain the coefficient of BMA estimates.

3.1. Data

The variables used in the model arefrom time series data between 1976-2010. All of the data is obtained from Central Bank of Iran (CBI). The variables are regarded based on growth rate and ratio, though all the variables are stationary. Each of variable of model has been presented briefly in Table (2). In advance we concisely explain about some variables of this model.

- The dependent variable is Gini coefficient. Therefore we investigate influential variables on it. The Gini coefficient is the most frequently used indicator of inequality. It is defined as a ratio with values between zero and one in which zero means perfect quality and one means complete inequality.
- The primary studies concerning determinants of income distribution investigate the effect of income level on income inequality. So we use real GDP growth as one of explanatory variable. Also to determine whether income inequality is square root related with economic growth or not, the square of real GDP growth rate is used to examine it.
- Regarding the dependency of Iran to revenue of exported oil and influence of oil revenue on most macroeconomic variables, we consider the ratio of oil revenue to GDP in model.
- Due to importance of education role on income distribution, we use two variables of literacy rate and ratio of the number of public high school student to population (Human capital index) in model.
- One of the subjects discussed in redistribution of incomes is presence of government and its expenditure in economy. Here we include three variables of the ratio of government current expenditure to GDP, the ratio of education department to GDP and the ratio of hygiene and treatment expenditure to GDP in the model in order to investigate their effects on Gini coefficient.
- There are two viewpoints about the relationship between financial development and income distribution. The first viewpoint is argued by Greenwood and Jovanovic (1990), is considered inverse U-shaped relationship between financial development and income inequality. In contrast to the Greenwood-Jovanovic theory, the second viewpoint is assumed a negative linear relationship between these two variables (Banerjee and Newman, 1993; Galor and Zeira, 1993). Accordingly we consider the ratio of M_2 (broad money) to GDP and its square as explanatory variables in model to examine these theories.
- Regarding tax role in government redistribution policy, growth rate of direct taxes, growth rate of direct taxes and the ratio of total tax to GDP are included in the model.

- We use dummy variable in the model in order to consider the effect of war (1980-1988) on income distribution. This dummy variable adopts one for war years and zero for other years.

Table 2: List of model's variables

Variable type	Variable name	Variable symbol
Dependent variable		
	Gini coefficient	gini
Explanatory variable		
	Constant term	constant
	GDP growth rate	grgdp
	The square of GDP growth rate	grgdp2
	Ratio of oil revenue to GDP	rtoigdp
	Inflation rate	inf
	Unemployment rate	ur
	Literacy rate	litert
	Ratio of the number of public high school students to population	rtstupop
	Ratio of government current expenditure to GDP	rtgovgdp
	Ratio of education department to GDP	rtedugdp
	Ratio of hygiene and treatment expenditure to GDP	rthyggdp
	M_2 to GDP ratio	m2gdp
	The square of M_2 to GDP ratio	m2gdp2
	Growth rate of direct taxes	gtaxdi
	Growth rate of indirect taxes	gtaxindi
	Ratio of total tax to GDP	rttaxgdp
	Growth rate of exchange rate	gexr
	The share of exports plus imports to GDP	rteximgdp
	Dummy variable	dum

3.2. Empirical Results Based on BMA

One of the most important privileges about BMA analyzing is the high level of trust in coefficients estimated in explanatory variables. Because these coefficients are not estimated based on just one model but they are derived from averaging model of estimated coefficients in every single variablewith 262144 ($=2^{18}$) recapitulations or effective samplings.The coefficient for each of BMA estimates is calculated in this way:

$$\hat{\beta}_1 = \sum_{i=1}^{I} \lambda_i \hat{\beta}_{1i}$$

λ_i is the possibility of "i" numbers of model and β_{1i} is an estimation of β_1 which is gained in case of M_i model being. Table (3) shows the t-ratioand the posterior inclusion probability (pip) for each of the BMA estimates which shed some light on the relative importance of each regressor. Now we are going to analyze regarding to the results of table (3):

Table 3: The results of BMA estimation

Variable	Coefficient	t-ratio	pip
Constant	0.3720	6.19	1.00
GDP growth rate	0.1312	2.03	0.90
The square of GDP growth rate	-0.1202	-0.40	0.20
Ratio of oil revenue to GDP	0.1195	0.85	0.53
Inflation rate	0.0032	0.23	0.11
Unemployment rate	0.0007	0.46	0.23
Literacy rate	-0.0283	-0.67	0.40
Raito of the Number of public high school students to population	-0.0738	-0.28	0.20
Ratio of government current expenditure to GDP	0.2092	1.25	0.68
Ratio of education department to GDP	-0.0215	-0.25	0.11
Ratio of hygiene and treatment expenditure to GDP	-0.5765	-0.54	0.31
M2 to GDP ratio	0.0037	0.08	0.13
The square of M2 to GDP ratio	0.0060	0.17	0.13
Growth rate of direct taxes	-0.0060	-0.54	0.29
Growth rate of indirect taxes	-0.0007	-0.25	0.11
Ratio of total tax to GDP	-0.0116	-0.12	0.11
Growth rate of exchange rate	0.0014	0.22	0.10
The share of exports plus imports to GDP	0.0042	0.29	0.13
Dummy variable	0.0002	0.34	0.17

As a rough guideline for "robustness" of a regressor, a value pip = 0.5 is sometimes recommended (Raftery, 1995), corresponding approximately with an absolute t-ratio of |t | = 1 (Masanjala and Papageorgiou, 2008). Regarding pip ≥ 0.5 for robustness of a regressor, the results of the table (3) may be explained as follows:

- We see that GDP growth rate is by far the most robust auxiliary regressor with pip = 0.90. It has a positive impact on Gini coefficient. The coefficient of this variable has been obtained 0.13 which indicates that averagely for each percent increase in the economic growth, % 0.13 will be added to the Gini coefficient. Therefore the nature of economic growth in Iran is inclined to more inequality. As a matter of fact, economic growth of Iran is generally in conjunction with oil revenue increase or price perform and liberalization policies which worsen the distribution of income.

- The second effective variable on Gini coefficient is the ratio of government current expenditure to GDP with pip = 0.68.The coefficient of this variable is positive which means an increase in this ratio results in higher degree of inequality. This is probably due to more extensive use of government services by high-income groups of people whereas low-income groups have less chance of using government service. In fact, welfare policies and social spending of government for supporting vulnerable groups has not been efficient.

- The ratio of oil revenue to GDP is the third important auxiliary regressor with pip = 0.53 and it has a positive impact onGini coefficient. Considering economic condition of Iran, oil revenue has an impact on GDP, economic structure and providing the state budget. This result is corresponding with rentier state theory[1] in Iran economy. So that interest groups try to possess greater share of oil rents by penetrating into budgeting

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[1]In political science and international relations theory, a rentier state is a state which derives all or a substantial portion of its national revenues from the rent of indigenous resources to external clients. This theory was first postulated Mahdavy in 1970.

and financial resource allocation. Accordingly it seems oil revenue increase has expanded higher opportunities of rent-seeking and corruption in Iran economy. Besides competitive ability of national products has decreased with increase in availability of foreign exchange resources and more imports of consumption goods and ground is prepared for non-productive and speculative activities and income gap increasing.

- Other considered variables have not strong correlation with Gini coefficient with pip less than 0.5. In fact it seems the other variables have affected the economic inequality from main variables of economic growth, government current expenditure and oil revenue so that after controlling the above variables they have no important effect on Gini coefficient.

3.3. Selection of Optimum Models

"STATA" program present vselect command in order to select variables after performing a linear regression. This command determine the best subsets of each predictor size by using leaps-and-bounds algorithm and provides the five information criteria[2] for each of these models in order to select the optimist model.The optimal model is the one model with these qualities: the smallest value of Akaike's information criterion (AIC),Akaike's corrected information criterion(AICc) and Bayesian information criterion (BIC); the largest value of R^2_{ADJ} (adjusted); and a value of Mallows's C_p that is close to the number of predictors in the models +1 or the smallest among the other Mallows's C_p values. These guidelines help avoid the controversy of which information criterion is the best. Sometimes there is no single model that optimizes all the criteria. There are no fixed guidelines for this situation. Generally, we can narrow the choices down to a few models that are close in optimization (Lindsey and Sheather, 2010). Then we make an arbitrary choice among them. We see the results of vselect command in Table (4):

Table (4): The results of vselect command
Optimal Models Highlighted

Preds	R2ADJ	C	AIC	AICC	BIC
1	.6112954	33.30965	-183.156	-88.67847	-180.163
2	.7417969	13.055	-195.7375	-100.659	-191.248
3	.7781721	8.265046	-199.8671	-103.9949	-193.8811
4	.803071	5.512912	-202.9541	-106.0733	-195.4715
5	.8276937	3.056856	-206.562	-108.432	-197.5829
6	.833581	3.374332	-206.9547	-107.3047	-196.4791
7	.8465719	2.834394	-208.9311	-107.455	-196.959
8	.850569	3.544957	-209.1493	-105.4994	-195.6807
9	.8567865	4.032786	-209.9562	-103.7348	-194.9911
10	.8573041	5.233345	-209.5426	-100.2927	-193.081
11	.8552178	6.722027	-208.5988	-95.79093	-190.6407
12	.8543642	8.061635	-208.0149	-91.03159	-188.5603
13	.8536042	9.383222	-207.5358	-85.65054	-186.5847
14	.8464512	11.292	-205.7457	-78.0958	-183.2981

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[2]An information criterion is a function of a regression model's explanatory power and complexity. The model's explanatory power (goodness of fit) increases the criterion in the desirable direction, while the complexity of the model counterbalances the explanatory power and moves the criterion in the undesirable direction (Sheather, 2009).

15	.8389738	13.15531	-204.0629	-69.61293	-180.1188
16	.8301197	15.0552	-202.2971	-59.79001	-176.8565
17	.8194576	17.00375	-200.4181	-48.30662	-173.481
18	.8066135	19	-198.4269	-34.777	-169.9933

Selected Predictors

1: rtoigdp

2: grgdp rtgovgdp

3: grgdp rtgovgdp litert

4: grgdp rtgovgdp grgdp2 litert

5: grgdp rthyggdp rtoigdp gtaxdi litert

6: grgdp rteximgdp rthyggdp rtoigdp dum gtaxdi

7: grgdp rthyggdp gexr ur rtoigdp gtaxdi rtstupop

8: grgdp rthyggdp gexr ur rtoigdp gtaxdi inf rtstupop

9: grgdp rteximgdp rthyggdp gexr ur rtoigdp dum gtaxdi m2gdp2

10: grgdp rteximgdp rthyggdp gexr ur rtoigdp dum gtaxdi m2gdp2 gtaxindi

11: grgdp rteximgdp rthyggdp gexr ur rtoigdp dum gtaxdi inf m2gdp2 gtaxindi

12: grgdp rteximgdp rthyggdp gexr ur rtoigdp dum gtaxdi rtgovgdp grgdp2 inf rttaxgdp

13: grgdp rteximgdp rthyggdp gexr ur rtoigdp dum gtaxdi rtgovgdp grgdp2 inf rttaxgdp rtedugdp

14: grgdp rteximgdp rthyggdp gexr ur rtoigdp dum gtaxdi rtgovgdp grgdp2 inf rttaxgdp rtedugdp

m2gdp2

15: grgdp rteximgdp rthyggdp gexr ur rtoigdp dum gtaxdi rtgovgdp grgdp2 inf rttaxgdp rtedugdp

m2gdp2 gtaxindi

16: grgdp rteximgdp rthyggdp gexr ur rtoigdp dum gtaxdi rtgovgdp grgdp2 inf rttaxgdp rtedugdp litert

m2gdp2 gtaxindi

17: grgdp rteximgdp rthyggdp gexr ur rtoigdp dum gtaxdi rtgovgdp grgdp2 inf rttaxgdp rtedugdp litert

m2gdp2 gtaxindi m2gdp

18: grgdp rteximgdp rthyggdp gexr ur rtoigdp dum gtaxdi rtgovgdp grgdp2 inf rttaxgdprtedugdp litert

m2gdp2 gtaxindi m2gdp rtstupop

Invoking vselect on the data, we find that R^2_{ADJ} and AIC both select the nine-predictor model. Mallows'sC_p advocatesthe eighteen-predictor model when we choose a model with C_p close to the number ofpredictors +1. Otherwise, when choosing the smallest C_p value, we will choose the seven-predictor model. The level of difference for each criterion from theAIC-chosen predictor size to its own chosen size is minimal. So we choose the seven-predictor model. The optimal model on AICc and BIC is the five-predictor model.

4. Conclusion

The economic theories on the income distribution entails a vast array of potential factors by which income inequality can be influenced, with little guidance on selection of appropriate variables to include in Gini coefficient regression. Besides there is not a generally accepted empirical specification for use in Gini coefficient regressions. To solve this problem, we applied Bayesian Model Averaging (BMA) approach in order to analyze the impact of 18 macroeconomic factors on Gini coefficient in Iran based on annual data from 1976 to 2010.

The results indicate that the GDP growth rate is the most robust auxiliary regressor affecting the Gini coefficient, leading to more inequality. Economic growth is out of favor with low income groups. Thus economic growth policy needs to be revised fundamentally.The second influential factor on Gini coefficient is the ratio of government current expenditure to GDP. The coefficient of this variable is positive which means an increase in this ratio and government interventionworsens the distribution of income. Therefore transfer payments and government expenditure not only failed to achieve one of its rudimentary goals, but also caused more inequality. Also it seems the expenditure is the origin of distribution of rents and corruption and way of its distribution among different groups causes more inequality. The third influential variable on Gini coefficient is the share of oil revenue to GDP which worsens distribution of income. The effect of this variable can happen directly by means of spreading rent-seeking activities or indirectly by means of an increase in imports of consumption goods and decrease of competitive ability of domestic products, reduction of protectionism and the expansion of speculative activity. Other considered variables have not strong correlation with Gini coefficient specially the ratio of M_2 to GDP and its square. So this is inconsistent with Greenwood-Jovanovich theory which assumes inverse U-shaped relationship between financial development and income inequality. Moreover the square of M_2 to GDP coefficient is positive which contrasts to this theory.

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The Impact of Macroeconomic Changes to the European Currency Market

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Abstract: *This paper consists in the analysis of the reaction of the FX market with respect to announcements concerning new macroeconomic data. The analysis consists in the study of the volatility of changes for a set of currency pairs that include the Euro at the moment of these announcements. A measure of the speed with which new information is included in prices is provided by means of a simple GARCH model fitted at each release. We found evidence that the currencies are immediately reacting to this new information.*

1. Introduction

Besides the fact that it is the currency of the euro area, the euro has a solid international occurrence, standing out strongly as a major international currency, second only to the US dollar. Euro is used increasingly more for billing and payment in international business, not only between the euro area and third countries but also, to a lower extent, between other countries, outside the euro zone.

The euro is now a currency used every day by over 300 million people in 19 countries representing the euro area (Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovenia, Slovakia, and Spain) and enrolled in a fierce competition to win supremacy of the US dollar in international financial markets.

Psychological moment of the euro's emergence was preceded by a time when the idea of the emergence of a new currency has been much discussed. Since the thought of a new currency was launched, there were discourses about the powerful influence that it will have on the future design of the international financial system. In addition, there was the idea that the euro will be able to emulate the US financial market that demands the right to be the largest and most liquid market in the world. The apparition of the euro on 1 January 1999 led to a strong demand for the new currency which has led to an appreciation against the dollar at $ 1.1668 (closing rate of ECU on 31 December 1998) to $ 1.18 for that day. Outright the boom shown for the euro, investors began to focus on uncertainties regarding divergent trends of economic growth in the US and the euro area.

Introduction of the euro has had a particularly important role in ensuring macroeconomic stability; its main role is to maintain price stability in the euro area (defined quantitatively by keeping inflation in the medium term, under, but close to 2%). The European Central Bank has implemented firmness the single monetary policy, leading to enforce trust in the euro, anchoring long-term price trends and activate preconditions for sustainable economic growth.

Currencies markets are highly volatile and do not necessarily reflect the economic basic principles. Lack of strength of the euro immediately after its launch in 1999, did not reflect the rise or differences between interest rates, but instead market uncertainty - both to the commitment of Member States and to the credibility of the policies of the new European

Central Bank. The force acquired later indicates that the currency has been accepted as a global currency, rather than demonstrating a more efficient growth.

Lately, the euro zone was shaken by financial crises that were transferred into the social area as well (Criste et al, 2012 and 2013), the political discords appeared quite often and the entire project is affected.

The financial crisis that has broken out in 2007, and spread throughout Europe since 2008, has been reflecting on the economic activity and employment, generating economic downturn. Gradually, the European crisis has turned into a social one, by transferring the financial problems into the social field. The objective of this article is to highlight some important effects arising from the financial crisis developments and have social and political implications across European countries. The view that the solution to the European crisis would be the application of the austerity policies has proved to be unsustainable, given that such measures have strained the relations between countries and also within countries. In the future, it remains the risk that the imbalances accumulation in the euro area, and more extended, in the European Union, would generate a polarization phenomenon in Europe by increasing the political dissensions between countries, and thereby would affect the default implementation of the European project

The reminder of this paper is structured in the following manner. Section II provides a succinct presentation of specific literature. Section III describes the data and the methodology used for the analysis. Section IV displays the results obtained and their interpretation and the last section concludes.

2. Literature review

In a globalization framework, international trade has in important role, influencing and being influenced by the exchange rates. Ample exchange rates changes can strongly affect the current and trade account balance, but also may increase the risk for companies and financial institutions.

A subject that is addressed very often in the literature in the last years is the issue of financial contagion that is affecting the exchange rates, stock prices, capital flows or sovereign spreads. An incursion in the subject was made by Dornbusch et al (2000), Forbes and Rigobon (2001), Lupu (2012) or Kaminsky and Reinhart (2000).

The theory of rationale expectations implies that unpredictable events, news, have an important role in influencing assets' performance and real variables changes. This hypothesis was adapted in the literature dealing with exchange rate determination. In this sense, it is supposed that present and future values of the significant macroeconomic variables are incorporated in exchange rates (Frenkel and Mussa, 1985; Obstfeld and Rogoff, 1996).

Trying to capture the relation between exchange rates and macroeconomic fundamentals, were built the monetary models (Frenkel, 1976; Mussa, 1976; Dornbusch, 1976) that demonstrated the presence of long run equilibrium between nominal exchange rate and relative money supplies and relative income.

The modelling of the foreign sector, that was considers before as an annex, is now considered a part of the open economy macroeconomics. Obstfeld and Rogoff (2003) added the imperfect competition and nominal rigidities to general equilibrium model in an open economy. Unfortunately, these models were not able to demonstrate an adequate relation between macroeconomic fundamentals and movements of the exchange rates on the short run (Frankel and Rose, 1995; Engel and West, 2005).

If the hypothetical theory suggests a direct relation of the exchange rates with macroeconomic variables, the empirical studies offer mixed results. For Conway et al (1998), disturbances of the exchange rate negatively affect the inflation. Ito and Sato (2008)

discovered that inflation and exchange rate fluctuations are related while Kara and Nelson (2002) detected a low correlation between inflation (CPI) and exchange rate movements. A positive relation between exchange rate fluctuation and interest rate was documented by Simon and Rajak (1999), while Lahari and Hnatrovaska (2008) reported a non-monotonic relation. For developing countries, Kendil (2004) raised out a significant concern regarding negative impact of currency depreciation on economic output.

As in the case of stock exchanges, the currency market has the advantage of offering intra-daily data that is allowing for many statistical analyses. Lupu et al. (2010) performed a research that is investigating the time series properties of a set of intra-day stock returns, intending to develop a methodology able to offer information on dependency patterns of stock returns distributional properties to frequencies.

Lupu and Dumitrescu (2010) built a research instrument for analyzing the relation between economic growth and capital market evolution. The proposed methodology is an event study to see the movement of capital market index in the vicinity of moments when were released communications regarding economic indicators by the national statistical institute.

While the anticipatory role of the exchange rate is justified by theory, the empirical implementation is quite difficile.

When studying the linkage between exchange rate and macroeconomic variables, appears one more hindrance – different frequencies for collected statistical data. More precisely, the frequency for available data on exchange rates is much higher than data for GDP or current account.

3. Data and Methodology

Data consists in five-minute changes for the main currency pairs that include Euro from September 2014 until January 2015. The currencies are the following: EURHUF, EURINR, EURNOK, EURPLN, EURSEK, EURZAR, EURILS. The set of macroeconomic indicators is presented in the following table:

Table 1: Macroeconomic data

PPI YoY
CPI Estimate YoY
CPI Core YoY
Retail Sales MoM
Unemployment Rate
Industrial Production SA MoM
Trade Balance SA
Trade Balance NSA
CPI YoY
GDP SA QoQ
Gross Fix Cap QoQ
Govt Expend QoQ
Household Cons QoQ

A standard GARCH model was fitted at each moment of the release for log-returns of the above mentioned currency pairs. The objective was to capture the changes in volatility (if they exist) in a time frame after each release.

The specification of the model follows the lines of the classical work of Bollerslev (1986), which was an extension of the seminal paper of Engle (1982). The conditional variances are following the dynamics described by the following equation:

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^{m} \alpha_i a_{t-i}^2 + \sum_{j=1}^{s} \beta_j \sigma_{t-j}^2$$

where:

$$\alpha_0 > 0, \alpha_i \geq 0, \beta_j \geq 0$$

For each event in our analysis we fitted this model for the intra-day series of log-returns computed for the above mentioned currencies.

The time frame of the release was considered to be of 30 intervals of five-minute log-returns after each release. The volatility model was fitted for a sample of 200 observations before the release and was used to produce forecast for the time interval following the release. The comparison between the forecast and the squared log-return (as a proxy for the actual level of variance) was performed and the significant values are saved and reported in the Results section.

$$ASqR_t = R_t^2 - \sigma_t^2$$

where $ASqR_t$ is the Abnormal Squared Return computed at moment t, where t counts the 30 intervals after each event. The significance of these abnormal squared returns is decided by measuring the average distance from the variances obtained from the GARCH fit in the period before each event and analyzing the extent to which the distances after each event are larger than twice this average distance, as in Albu et al (2014a) and Albu et al (2014b). We considered we capture a significant volatility reaction if we find at least one $ASqR_t$ larger than twice the average deviation.

The number of significant instances of these $ASqR_t$ was used for the computation of a measure that quantifies the volatility reaction for the respective currency pair as a result of the respective macroeconomic announcement. This gauge will be used in the measurement of the strength of volatility reaction and will be exhibited in the Results section for each currency pair.

4. Results

The descriptive statistics for the log-returns of the currency pairs are presented in the boxplots in the Figure 1 below. We can notice their fat-tail-ness and almost symmetrical dynamics for the whole period we are covering.

Figure 1: Boxplots for the log-returns of the currency pairs at the daily range
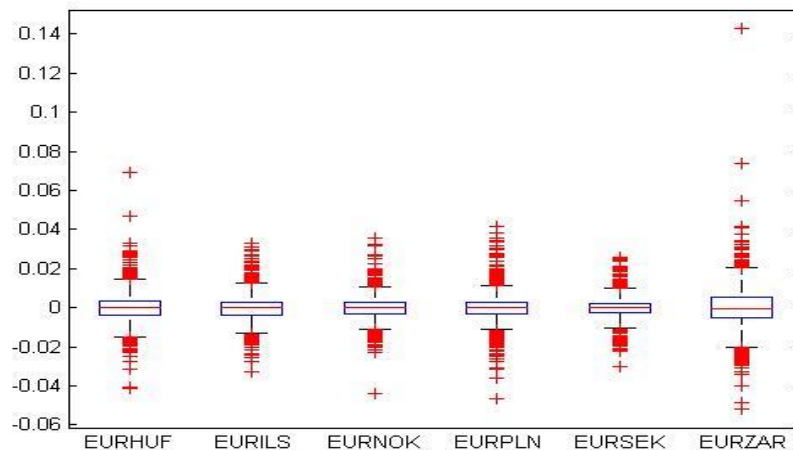
Source: Datastream data and author's calculations

The employment of the volatility event study as explained in the previous section provided the results presented in Table 2. Each cell provides the average volatility reaction for the currency pair stipulated on column, as generated by the macroeconomic event mentioned on the rows. For instance, during the time interval between September 2014 and February 2015, we notice that the EURHUF currency pair exhibited on average about 9.6% volatility reaction to PPI YoY event announced for the Euro currency region.

Table 2: Average volatility reaction to each event

Macroeconomic data	EURHUF	EURILS	EURINR	EURNOK	EURPLN	EURSEK	EURZAR
PPI YoY	0.096	0.128	0.169	0.077	0.090	0.212	0.200
CPI Estimate YoY	0.096	0.154	0.154	0.077	0.096	0.256	0.231
CPI Core YoY	0.077	0.077	0.179	0.115	0.077	0.115	0.103
Retail Sales MoM	0.077	0.077	0.231	0	0	0.154	0.154
Unemployment Rate	0.077	0.077	0.385	0	0	0	0
Industrial Production SA MoM	0.077	0.077	0.385	0	0	0	0
Trade Balance SA	0.077	0.077	0.385	0	0	0	0
Trade Balance NSA	0.192	0	0.077	0.385	0.154	0.154	0.077
CPI YoY	0.103	0	0.077	0.212	0.115	0.154	0.205
GDP SA QoQ	0.154	0.077	0.154	0.115	0.077	0.154	0.128
Gross Fix Cap QoQ	0.115	0.077	0.231	0.128	0.077	0.077	0.077
Govt Expend QoQ	0.103	0.077	0.231	0.128	0.077	0.077	0.077
Household Cons QoQ	0.096	0.154	0.154	0.077	0.096	0.256	0.231

Source: Author's Calculations

We observe that the largest values are obtained in the case of the EURNOK pair as a reaction to the Trade Balance NSA announcement, i.e. 38.5% of the intervals after this event exhibited squared log-returns that were larger than twice the average deviation of squared returns from the fitted GARCH model in the period before the event.

Figure 2: Histograms for the volatility reactions of each currency pair
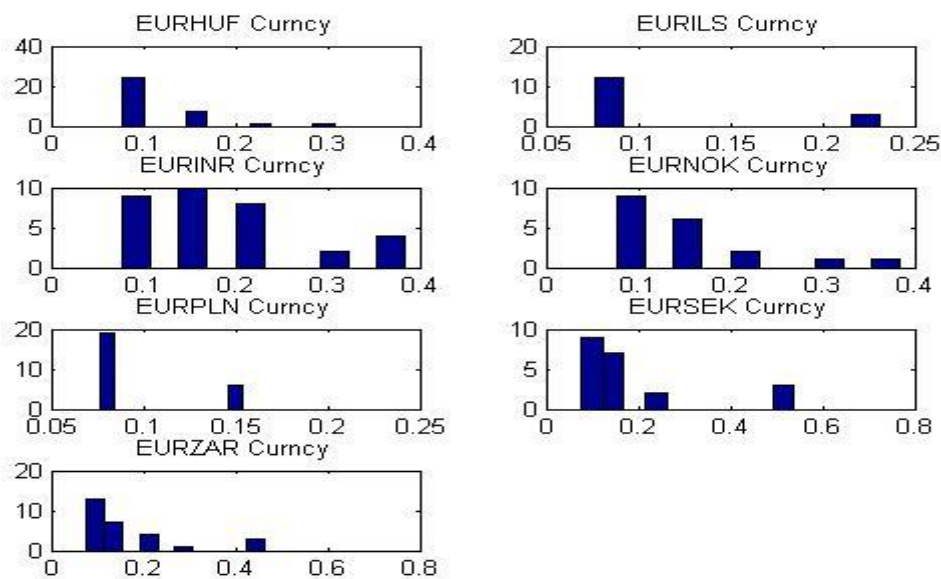
Source: Author's Calculations

In order to better investigate the actual reaction of each currency to all the events in the sample, we built the histograms for all the significant reactions for each pair, presented in Figure 2. We notice that the size of these reactions is relatively similar across all currency pairs, with larger values for EURSEK and EURZAR and with smaller reactions for the EURHUF, EURILS and EURPLN. We could conclude that these countries show less connection to the respective macroeconomic events.

Table 3: Average volatility reaction according to the time of release

Time of Release	EURHUF	EURILS	EURINR	EURNOK	EURPLN	EURSEK	EURZAR
09/30/2014 9:00	0.15	0.23	0.23	0	0.15	0	0
10/02/2014 9:00	0.08	0	0	0.08	0	0	0.08
10/03/2014 9:00	0.08	0	0	0	0.15	0.23	0
10/14/2014 9:00	0.15	0	0.15	0.08	0	0	0
10/16/2014 9:00	0	0	0.23	0	0.08	0.08	0
10/31/2014 10:00	0.08	0.08	0.08	0	0.08	0.15	0.46
11/04/2014 10:00	0.08	0	0	0	0.08	0.54	0.23
11/05/2014 10:00	0.08	0	0	0.31	0	0.23	0
11/12/2014 10:00	0	0	0	0	0	0	0.15
11/14/2014 10:00	0.31	0	0	0	0	0	0.08
11/17/2014 10:00	0.08	0	0.23	0.15	0.08	0	0.08
11/28/2014 10:00	0.08	0	0.15	0.08	0.08	0	0.15
12/02/2014 10:00	0	0	0.08	0.23	0.15	0	0.23
12/03/2014 10:00	0.23	0	0.15	0	0.08	0.15	0
12/05/2014 10:00	0	0	0.08	0.38	0	0.15	0.08
12/12/2014 10:00	0.08	0	0.08	0	0	0.15	0.15
12/16/2014 10:00	0.15	0	0	0	0	0	0
12/17/2014 10:00	0	0	0.15	0	0	0.08	0.08
01/07/2015 10:00	0.15	0	0.08	0.23	0.08	0.08	0.31

01/08/2015 10:00	0	0.08	0.15	0.15	0.08	0	0.15
01/14/2015 10:00	0.08	0.08	0.38	0	0	0	0
01/15/2015 10:00	0	0	0.08	0	0.15	0.08	0.08
01/16/2015 10:00	0.08	0.08	0.31	0.15	0	0.08	0
01/30/2015 10:00	0	0.08	0	0.08	0.08	0	0.08

Source: Author's Calculations

Table 3 presents the results from another perspective – the time distribution of volatility reactions for each currency pair. We notice that larger reactions are observed in January 2015, and we can relate these reactions to the shift in monetary policy that we witnessed in this period for a large set of central banks.

Figure 3: Time distribution of average reactions
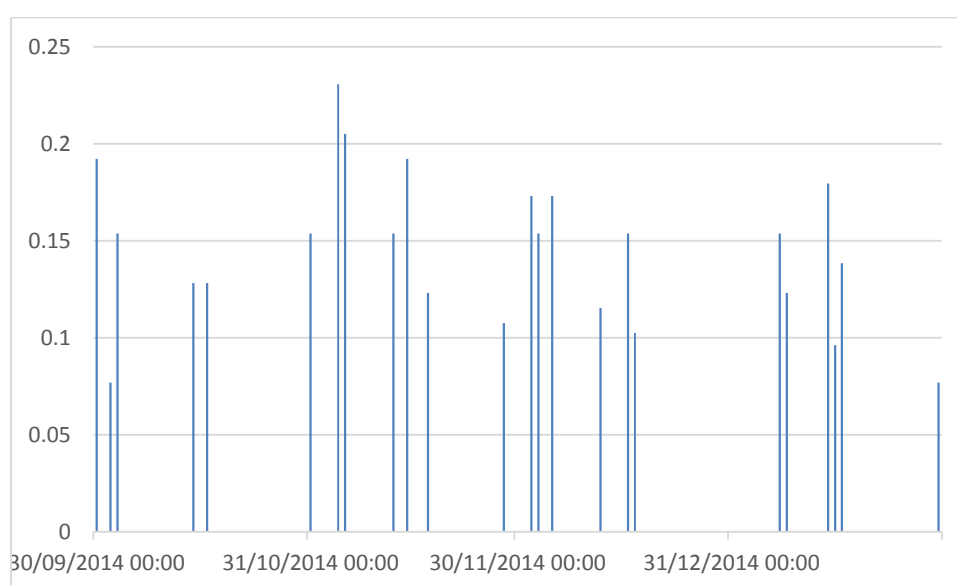
Source: Author's Calculations

A visual representation of Table 3 is realized in figure, where we can see the average dynamics of reactions across all currency pairs in time. We notice a possible clustering of these reactions as time passes, with concentrations around the beginning of November 2014, beginning of December 2014 and beginning of January 2015.

5. Concluding remarks

This paper provides an analysis of the reactions of a set of currency pairs that include the Euro currency to a set of macroeconomic data announcements. We use intra-day data from Reuters and macroeconomic events to build an event study around each such event. We measure the changes in volatilities as in Albu et al (2014b) and we produce a set of results for the volatility changes in the period post each event.

We noticed that the volatility reactions are relatively uniformly distributed across time and the set of currency pairs used in our analysis. A certain clustering phenomena seems to exists, as observed in figure 3, which provides the feeling that these reactions should be connected to the expectations in the monetary policy decisions on one hand and on the other

hand it is possible that the GARCH model used in our analysis does not capture all the clustering volatility effect.

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Analyzing the Market Concentration of the Romanian Capital Market

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Abstract: *The market concentration is an important issue for the competition and supervision authorities, as they are entitled to find the proper measures assuring the stability and fair competition of the markets. In this article, we analyze the market concentration of the Romanian capital market, using the market share of every intermediary, for the 2007-2014 time period. We compute the concentration ratios for the first 4 and 8 largest intermediaries, finding that the Romanian capital market is not concentrated. But the recent trends show early phases of concentration, as the number of brokerage houses decline and the trading activity become concentrated in the first 8 brokerage houses.*

Keywords: capital market, concentration risk, HHI index.

J.E.L. **classification**: C13, C18, G24

1. Introduction

Re-launched at the beginning of the 90s, when the first form of the Financial Supervision Authority was set up, the Romanian capital market began its activity in 1995 and had an uneven development, mirroring the tormented developments of the Romanian economy. The non-linear development is given by the total annual trading value, as well as by the daily average trading value, showing important turbulences in the domestic economy and in the international environment, a sign of a market highly dependent on external capital.

The set-up of the stock exchange came with the launching of numerous traders. In time, the number of intermediaries decreased, as the effects of the decisions made by the authorities to privatize the state owned companies, including through the Mass Privatization Program, which led to the listing of many companies on the RASDAQ market, were fading way. The macroeconomic environment became better once Romania joined the UE on January 1st 2007, the foreign investors being more and more interested in the Romanian capital market, which led to an increase in the foreign capital value and opened the way for foreign intermediaries on the Bucharest stock exchange market.

The evolution of the Romanian stock market during 2007-2009 was investigated by Panait and Lupu (2009), and the authors concluded that the high impact that it took from the 2007 financial crisis was a result of its low level of development/maturity.

In the present study, statistical methods to analyze the concentration on the stock exchange market are used, namely the concentration rate and the Herfindhal-Hirchman index, applied to the data reflecting the annual trading volumes intermediated by each of the companies active on the Bucharest Stock Exchange during 2007-2015. The results show that the brokerage market is not yet a concentrated but the dynamics of the last 3 years indicate an accentuated tendency of concentration, also due to the reduction of the number of intermediaries and increase of the top five trading values.

2. The theoretical background for market concentration analysis

The worldwide economy development generated the proper conditions, both domestically and later on internationally, for certain companies to gain a dominant position on the market, which they used to control the prices of products/services. These practices caused major price distortions resulting in big loses for the buyers, thus raising awareness of the state authorities about the need of limitation of a company's dominance over an economic sector. One of the most important early warning against unfair competition was included in the Sherman Act(„competition law"), passed by the US Congress in 1890, defining anti-competitive activities. The spirit and the essence of this legal framework was later on internalized by most of the world states legislations in the late XX – early XXIst centuries, providing for a proper competitive environment in various sectors of the economy and setting the theoretical and legal grounds for the regulating and control bodies in the field of competition.

In order to evaluate potential non-competitive behavior of companies acting on the same market, some of the best tools are the concentration rate analysis and the calculation of Herfindahl-Hirschmann index (HHI), based on which a table of the concentration degree can be drawn. In a market with N players, we attach a S_i market share to each of the N companies, meaning that the sum of all the companies' market share equals 1. In practice, the most used concentration ratios are those pertaining to the first 4 and to the first 8 companies in terms of market share, identified as CR4 and CR8[1]. Depending on the result, if the result is between 0% and 50%, the market is labeled as having a low degree of concentration (ranging from perfect competitiveness when the result is 0% to oligopoly when the result is close to 50%). If the concentration ratio is between 50% and 80%, the concentration is medium, and between 80% and 100%, the market is concentrated (the extreme is at 100% defining a highly concentrated oligopoly).

For HHI, the formula is $HHI = \sum_{i=1}^{N} S_i^2$, where S_i is the market-share of the i's company (a percentage or absolute value, associated to the related market share of each company). When the HHI value is in the range (0,100), the market is competitive, when the value is between 100 and 1500, the market is not concentrated, between 1500 and 2500 the market is moderately concentrated, and when the value exceeds 2500, the market is highly concentrated.

In order to evaluate the market concentration degree alternative measures were applied, such as the Hall and Tideman Index [2] and the Entropy Concentration Index, defined by Jacquemin [3], each of them with advantages and disadvantages in terms of practical application.

These measures are extensively applied by the competition oversight authorities worldwide to assess the behavior of the companies acting on a specific market, in order to spot non-competitive threats. Once identified these behaviors, the authorities can enforce legal measures in order to consolidate the market and reduce the degree of concentration, either by limiting the development of the main market players or by reducing the entrance barriers thus allowing new competition to easily access the market. Based on the concentration value of the market, one can assess the possible impact of one of the dominant companies exit from the market, an essential indicator for the regulator whose job is to reduce the systemic risk [4].

One relevant use of the above mentioned indicators is for the financial market, either applied to a group of countries (the evaluation performed by the Bank of International Settlements on the credit risk) or to an individual country (an evaluation on Germany *[6]*). In the case of Romania, the Competition Council applies these methods to identify and assess economic concentration, resulting from mergers and acquisitions in various fields (oil and gas, telecom, financial sector). The assessments of the concentration degree take into

consideration indicators such as the number of active players, the degree of concentration, innovations or transparency of the sector [7].

3. Romanian capital market concentration analysis

Re-established in the early 1990s, after a 50 year break, the institutions pertaining to the Romanian capital market draw the attention of wide categories of investors, both Romanian and foreign, with different backgrounds and knowledge of the market mechanisms. The reforms in the domestic economy, marked by the beginning of the privatization of state-owned companies through various methods, such as the Mass Privatization Program, which led to the set- up of the RASDAQ market (supported by the US government). The listing of these companies on the stock exchange increased the interest of the Romanian and foreign investors for the Bucharest Stock Exchange (BVB) leading to a significant increase in the annual turnover and of the daily average turnover at the beginning of 2000.

Figure 1 Annual turnover on the Bucharest Stock Exchange (lei, 1995-2014)
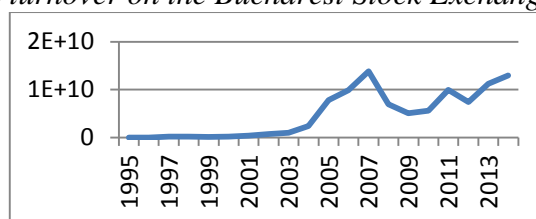
Source: www.bvb.ro

The evolution of the annual trading value shows a slow development during 1995-2000, but, with the starting of Romanian accession negotiations to the European Union and the progress achieved in this area (*that led to the accession to the European Union, beginning January 1st 2007*), the interest of the foreign investors for BVB became more pregnant, resulting in a significant increase in the total annual turnover. The turbulences on the international financial markets had a direct impact on the BVB's turnover, by a major plunge during 2008 and 2009. After 2010, we can see an increase in the total annual turnover, without attaining the maximum values registered in 2007, before the recent financial crisis. A similar pattern had also the daily average turnover, starting from a minimum of 50 lei (in 1995), to a maximum of 55,21 million lei in 2007, the highest level so far, even though - during 2011 -2014 – big companies were listed on the BVB (among which Fondul Proprietatea, the biggest closed end investment fund in Romania, with 4 billion euro under management, or the Electrica, as a result of an IPO through which shares in total of more than 400 million euro were sold).

Figure 2 Daily average turnover on the Bucharest Stock Exchange (lei, 1995-2014)
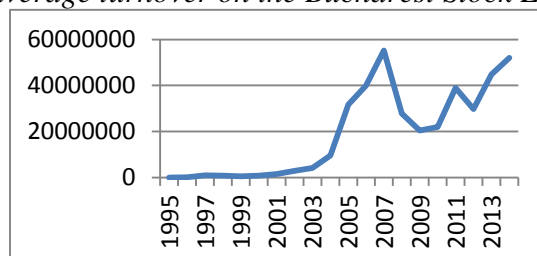
Source: www.bvb.ro

The positive sentiment generated by the re-launching of the BVB can be seen also in the number of intermediaries that were set up or entered the Romanian capital market in order

to become a player on this market. In the first year of the BVB existence the number of the intermediaries was only 28, but in the following 3 years, their number surged, to a maximum of 173 brokerage houses, while during the economic crisis occurred in Romania in 1998-2000, the number of these companies went below 100. In 2002-2008 time frame, the number of intermediaries remain relatively stable, even though this period was marked by very good trading activity (*for instance, in 2007, at the highest market activity so far, the number of intermediaries was 73*). Following the financial crisis that started in 2008, as the trading activity and daily turnover were shrinking (*that lead, implicitly, to a decrease of the intermediaries' fees*), the number of the brokerage houses decreased constantly, up to 40 companies (*at the end of 2014*), as shown by the following table:

Figure 3 Number of intermediaries on the Bucharest Stock Exchange (1995-2014)
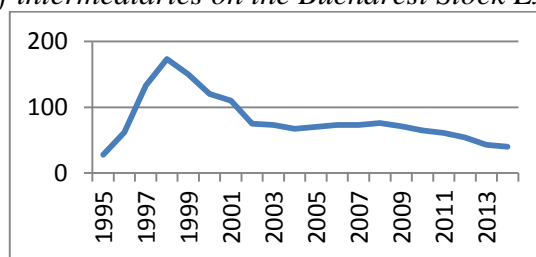
Source: www.bvb.ro

The decrease in the number of intermediaries operating on BVB resulted in a concentration of the brokerage market, fact that will be assessed using the data reflecting the activity of each intermediary, in 2007-2014. In order to analyze the concentration, we use data for the annual trading activity of each intermediary on BVB, collected from the BVB site (*www.bvb.ro*). Afterwards, we compute the concentration ratio and the Herfindahl-Hirschman index (HHI), using the market share of every intermediary in the 2007-2014 time frame. We start by calculating the concentration ratio, for the most widely used time periods, namely CR4 and CR8, representing the cumulative market share of the first 4 and respectively 8 largest intermediaries, as measured by the annual trading activity. The two calculated values are represented in the following figure:

Figure 4 Concentration ratio for the 4- and 8- most active intermediaries on the Bucharest Stock Exchange (2007-2014)
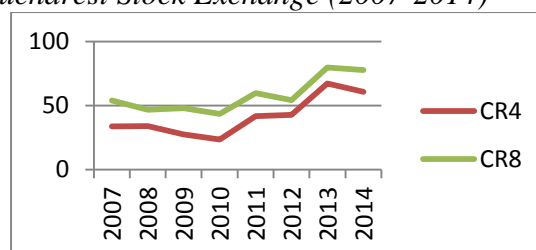
Source: www.bvb.ro, own calculation

Analyzing these 2 measures, we can observe that, during the economic crisis in 2008-2010, concentration ratio decreased, which means that the competition environment in the brokerage market improved (*as the market became less concentrated*). This evolution occurred during an era of shrinking trading activity on the BVB marked by a moderate decrease in the number of intermediaries (*with only 10.95%, from 73 at the end of 2008, to 65 at the end of 2010*). But starting 2010, a concentration process started, as can be seen by the fact that the two measures CR4 and CR8 surpassed the 50% threshold and, to the final of the

analyzed period (*in 2013*), they got close to the 80% threshold, a level at which the market is considered to be concentrated.

Similarly, using the collected data, we compute HHI index and we find that its values range from a minimum of 434.9401 (*in 2009, at the peak of the economic crisis*) and a maximum of 1407.402 (*in 2014*), as shown by the following figure:

Figure 5 HHI index for the intermediaries on the Bucharest Stock Exchange (2007-2014)
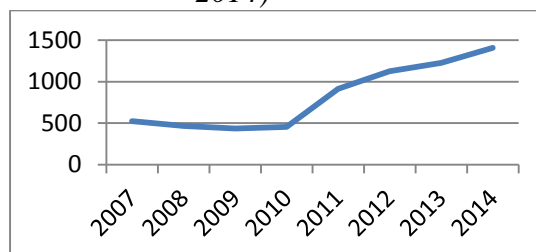
Source: www.bvb.ro, own calculation

Analyzing this figure, we can see that the brokerage market in Romania is still un-concentrated. As we can observe, the analyzed period can be divided in two sub-periods, in terms of the market concentration trends. So, during 2007-2010, the concentration in the market was weakening, mainly due to the economic crisis occurrence in the last part of the interval. During 2011-2014, as the number of intermediaries decreased up to 40 (*at the end of 2014, form a number of 65, at the end of 2010*), the market became more concentrated and entered on a path of accentuated concentration, as the maximum value of the HHI index was attained in 2014 (a value of *1407.402, close to the conventional threshold used to delineate the moderate concentration status of a market*).

4. Conclusions

Using the data for the period 1995-2014, we studied the total annual turnover on the Bucharest Stock Exchange on the shares and investment units segments of the regulated markets (*the most important financial instruments traded on BVB*), the annual daily average and the number of intermediaries. Using the data for a shorter interval, 2007-2014, related to the trading activity of each intermediary as a percent of the total annual trading activity (*or market share for every brokerage house*), we computed the concentration ratio for the first 4 and 8 largest companies and the HHI index. Analyzing these indicators, we can conclude that the brokerage market is not yet concentrated, but, after 2010, a concentration trend occurred, with an accelerated pace. This trend is generated, among others, by the reduction in the number of active intermediaries at the Bucharest Stock Exchange and the lack of positive developments in the consolidation of the Romanian capital market (*characterized by a small number of attractive issuers*). These results can be useful to a wide category of users, ranging from competition and supervision authorities (*tasked to monitor the possible concentration events*) to individual investors, that want to have an insight on the Romanian capital market.

5. Acknowledgement

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The Impact of Public Spending on Imports in Algeria: Econometric Study between the Period 1990 – 2012

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Abstract: *Public expenditure is considered in Algeria as a very important tool for financial policy which essentially involved in the importation. Several studies have been conducted to study the relationship between public spending and imports. In our study we used the co-integration test, Augmented Dickey -Fuller and Johansen and Juselius test, and the error correction model on the annual reports during 1990-2012.*

Key words : Public expenditure , Import, variable stabilization Teste, Co- integration , Error Correction model .

Classification JEL: *C22, F14, H53.*

1. Introduction

Governments are responsible for the economic situation, however, employment, the elimination of unemployment, price stability, wage levels and changes in national economic growth, are now the main objectives of governments.

Governments rely on the outlook on planning as a way to achieve the desired objectives .The Government of tools used to achieve these goals are the different types of taxes , government spending , and subsidies ie , productive or economic subsidies.

The discussions on economic policies, including tax policy, are the subject of various political debates, and their primary role in the economy of the country, why this was treated.

2. Problem of the study

Financial thinking that has been the result of ideas « *John Maynard Keynes* », (*John Maynard KEYNES,1936, P.24*), focused on public spending and regarded it as the most important tools of fiscal policy, and has their effectiveness in achieving economic growth, and under the principle *"CREATES DEMAND OFFER"*. Public expenditure represents the government's request, is a very important incentive for aggregate demand, which generates a response to the supply of much higher so that the gross national product.

Algeria has adopted in this framework since 2001, public expansion policy represented in the three major programs in the heart of the period from 2001 to 2014, the additional program supports the growth from 2005 to 2009, and the program to create the 2009-2014 economic growth, the main objective of this policy is to reactivate the national economy, and expanded economic growth to improve the financial situation due to the rise of the Algerian oil prices continuously recorded during the beginning of the third millennium.

Algeria has followed the economic policies through which tried to achieve stability and promote economic growth.

Among the adopted economic policies, in our study we try to focus on public spending, and the change that can be produced on imports and emphasize its role in the fight against imbalances and achieving economic equilibrium.

Based on the above, we ask the following question:

What is the effect of the change in public spending on imports in Algeria? And what is the degree of correlation between public spending and imports in Algeria during the period *1990-2012*?

3. Effects of public spending on economic

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, (*WASMONE Bernier,1989, P.33*).

The use of public spending in particular as a tool for financial policy, and as one of the tools of the general economy, Algeria travel the economy has gone through periods of development of the functions of the state. These are the theoretical and practical developments that give importance to this tool. The principle of state policeman was in force during the period of classical point of view, so it was calls to reduce overhead expenses to a minimum, so as to reduce the role of the state and reduced activity Economic and let other forces operating in the economy, which should lead to the balance. The classic set limits on public spending, because they are useless and unproductive and the more passive role in the crowding of people to transfer their savings in unnecessary areas.

Algeria is starting with economic development from the principle of fiscal neutrality, which became responsible for the economic and social balance, this also comes with economic and social crisis in the global economy, especially the Great Depression, which required the intervention of the state and therefore increase the general expenses (*WASMONE Bernier,1989, P.33*).

This development, which ended the classical ideas was given by Professor Lerner (*A.P.Lerner*) having functional financial idea (*Functional Finance*), which eliminated a fundamental principle of classical principle is the neutrality oftool of fiscal policy, such as the neutrality of spending and taxation, and stressed the need for the use of public debt as a tool among the tools of fiscal policy (*ABEDDA Ahmed mahmoud, 1971, P.102*).

When going to the modern financial thinking, when we noticed that (*Myrdal and Lindale*) (*Two Swedish known economists*) found that public spending is a tool to consolidate growth as necessary, though they stressed the need to avoid budgetary measures that precipitated the frequency of depression problems, which was applied during the thirty years of progressive taxation.

The use of any economic policy that is due to know the effects of the economy. Therefore, we believe that fiscal policy begins its work by public spending to control the structure and volume of the economy? The policy of public expenditure in times of crisis and unemployment has created a surplus in the overall effective demand through increased public spending rate directly through the quantitative increase in public spending or indirectly by reducing taxes on consumer spending and tax cuts on profits and encourages investment, while inflation requires fiscal policy to reduce spending, or indirectly to increase tax rates on consumption and try to reduce profits tax rate to reduce expenses of the investment. From this, public spending:

· All the money spent by people in general to meet their needs, (*Al-housin khalef, 2008, P.99*).

· The amount of money out of the treasury of a corporation in order to meet its needs.

Note that from the above definitions, all economists are agreements on the following concept: public spending is primarily the amount of money, and secondly, they are issued by an authority ora public body, and thirdly, they are directed to meet the public's needs.

4. The orientation of imports in Algeria

The Algerian economy is based generally on the import of raw material manufacturers and semi-manufacturers, where there is a direct relationship between public spending and imports, which appear significantly during our analysis of the economic cycle the market, these expenses are mostly based on the collection of oil, which represents the main resource of a higher percentage *90%* of Algerian public budget revenues.

The external trade in Algeria is characterized as other Arab countries and those in developing their relationship with the developed industrial country markets, especially the markets of European countries, is it by imports or exports.

The countries of the European Union are a major supplier and a customer to Algeria, where the average imports of Algeria countries of the European union (*EU*), in the heart of the period *2001-2012* is estimated *54%*, while exports during the same period is about *61.36%*, which indicates the importance occupied European countries in external trade of Algeria.

The situation of Algerian imports did not differ from those of exports, where the European market is also one of the leading suppliers of Algeria. Industrial equipment products are also produced the most important consideration.

3. Causal relationship between the public spending and import in Algeria

Algeria has adopted the Keynesian approach to economic growth, which indicates a weak local or foreign private investment. Algeria needs to prepare a national economy to free a new phase by adopting a strategy to strengthen the infrastructure and training of human capital that is supposed to know each stage, in addition to look so General to improve public services, from the large public expenditures that have contributed to the growth of overall demand. The problem still remains in Algeria is the transformation of this demand abroad, that is to say, the increase in imports, particularly semi-products maker manufacturers and this is due to industry weakness productive (*Boudakhdakh karim and selamna mohammed,2011, P.83*), as shown in the following figure:

**Figure *01*. Evolution of public spending and importation in Algeria (*2001 - 2012)*
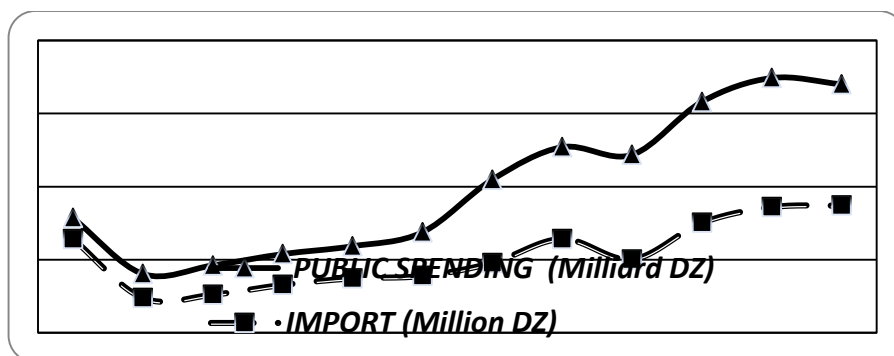
Source: customs general direction. National institute of computer science and statistics *C.N.I.S*

- ONS: Algeria in some numbers, *2001 / 2011…..*

- ONS: Evolution of the commercial balance of Algeria, period *2001 – 2012*.

Under the above conditions, namely, the existence of massive government spending and the lack of an industrial base capable of accommodating these expenses, and fails the multiplier mechanism, much spending has turned into demand for consumables that can be satisfied by foreign supply and that this reflects the increase in imports of manufacturers which is a stimulation revitalize the economies of other countries.

5. Determination of the model used in the study

Applied Economic literature includes several studies on the link between public spending (*DEP*) and imports (*IMP*) and notes that these studies reach different results inconsistent.

We will apply a ***Co-integration analysis*** and ***model error correction*** vectors on annual data for the *1990-2012* period in order to study the relationship between public spending and imports in Algeria.

But before testing the existence of a long-term equilibrium relationship between imports and public spending and the analysis of the behavior of short-term relationship, it is necessary to analyze the time series for stability over time and determine its degree of integration.

In this study, we will construct a standard model in order to know the importance of public expenditure on imports during the period *1990- 2012* using the model of new-classical growth, which consists of *5* variables and particular (*IMP*) as a coordinate variable represents imports, assuming the function of gross domestic product (*GDP*), inflation (*INF*), the price of a barrel of oil (*PBRL*) and public spending (*DEP*), which are assumed variable x-axis.

The model takes the following general mathematical formula:

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

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
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.

The model becomes the following mathematical mode.

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

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:

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

The standard approach used in the study was based on analysis of the relationship given by the time series (*1990-2012*) including *22* time observations for each variable in the model, this method of analysis is important in the effect of the nature of the relationship between public spending and imports in Algeria.

With this method, we will study the estimate the following model:

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

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

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 .

6. 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:

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

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

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.

5.1. 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 efficientestimates.

5.1.1. ADF (*Augmented Dickey-Fuller*) test:

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

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

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

Table *02*. Results of the *Dickey-FullerAugmented*

-Dickey-FullerTest 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**	**Logarithm 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**	**Logarithm 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*	*-2.99* *0.1562*	*-2.36* *0.1632*	**t** **Prob**	**Level**	**Logarithm of inflation**

					(Ln INF)
-9.60	*-9.77*	*-9.70*	**AIC**		
-5.08	*-5.21*	*-5.15*	**t**		
0.0000	*0.0024*	*0.0006*	**Prob**	**1st**	
-9.66	*-9.59*	*-9.61*	**AIC**	**difference**	
2.38	*2.44*	*5.33*	**t**	**Level**	**Logarithm**
0.9937	*1.0000*	*1.0000*	**Prob**		**of public**
14.80	*14.82*	*14.78*	**AIC**		**spending**
-0.49	*-3.01*	*-1.43*	**t**	**1st**	**(Ln DEP)**
0.4897	*0.1505*	*0.5455*	**Prob**	**difference**	
14.97	*14.72*	*14.96*	**AIC**		
1.28	*-1.93*	*0.25*	**t**	**Level**	**Logarithm**
0.9447	*0.6035*	*0.9702*	**Prob**		**of price of a**
8.09	*7.97*	*8.16*	**AIC**		**crude oil**
-4.81	*-5.49*	*-5.26*	*t*	*1st*	**barrel**
0.0000	*0014*	*0.0004*	*Prob*	*difference*	**(Ln PBRL)**
8.21	*7.98*	*8.18*	*AIC*		

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

   ** - (*P = 1*).

The results given in the table above indicate that the values of (*t*) calculated (in absolute values) are internal to the critical values at *5%*, and taking first differences (*1st difference*) of the variables used in the estimate, is it becoming stable, that is to say, it does not contain a root of unity which meant the rejection of the null hypothesis of unit root, where the values of (*t*) calculated (*absolute value*) higher than the critical values at *5%* abstract (*Ln PBRL, Ln GDP*) or *1%* (*Ln INF, Ln DEP*) or *10%* (*Ln IMP*), and thereby, the variables are integrated first order and are stable, why, we proceed to the *Co-integration of the error correction model* .

The curves illustrated in Figure (*02*) shows the time series path of the general level and that to the trajectory of the same series after taking the first differences

Figure 02: Temporal chains in levels and first differences according to ADF test
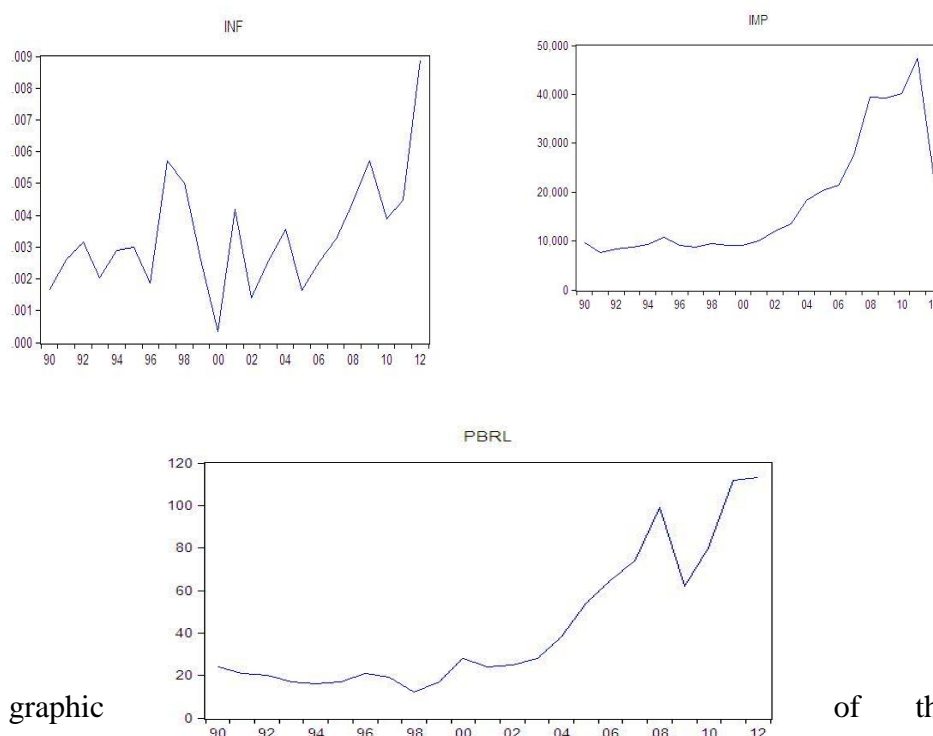
The graphic   of   the   test

(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.

5.2. 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**) (*ELKADIRE khaled ben hamed ben abdellah, 2005, P.110*).

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*	*0.796*	$*r = 0$
27.68	*47.85*	*32.71*	*54.68*	*28.93*	*57.00*	*0.747*	$r \leq 1$
21.13	*29.79*	*25.86*	*35.45*	*18.29*	*28.07*	*0.581*	$r \leq 2$
14.26	*15.49*	*18.52*	*19.93*	*6.75*	*9.78*	*0.275*	$r \leq 3$
3.84	*3.84*	*6.63*	*6.63*	*3.02*	*3.02*	*0.134*	$r \leq 4$

It appears clear from the results of the impact test and self-value in the table above, reject the null hypothesis (*r = 0*) that there is no co-integration among variables at **5%** or **1%**, where the calculated value of the test of impact (*λ trace*) and (*90.44*) higher than the two critical values (*77.81*) and (*69.71*) at *1%* and *5%*, respectively, while for the following value is (*57.00*), lower the critical values of (*54.68*) and (*47.85*), therefore, the test of the great possibility refuses to reject the null hypothesis that is defined by the existence of a single vector to the maximum for the Co-integration. In addition, the self test value (*λ max*) for the same results.

It also appears that (*IMP*) representing imports in Algeria, is a co-*integration* with public spending (*DEP), the (PIB), inflation (INF) and oil prices (PBRL).This means that the results obtained is a sta*tic linear combination between imports (*IMP*) and the variables (*PIB, INF, PBRL, DEP*) despite that these variables are not static, and finally, this result confirms long-term equilibrium relationship among these variables, which means that these variables behave the same way.

The Common co-integration equation can be expressed by the following equation:

$$LnIMP_t = -1.324 - 0.182 LnPIB_t - 0.556 LnINF_t - 0.378 LnPBRL_t + 0.0062 LnDEP_t$$

(0.19141)   (0.4386)   (0.69)   (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*).

5.3. 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***) [*3]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.

Table *04*. Estimating error correction vectors model

t-statistic	Std.Errors	Coefficients	variabls
4.131	*0.00134*	*0.0555*	*C*

---

[*] - **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(t₁)* and *N(t₂)*taken at different moments *t₁*and *t₂* of time are not correlated **- i.e.** the correlation coefficient *r(N(t₁),N(t₂))* is equal to null.

-1.51440	0.015265	-0.023	Ec_{t-1}
0.64	0.031250	0.0202	$\Delta Ln\ IMP_{t-1}$
-4.272	0.00698	-0.029	$\Delta Ln\ PIB_{t-1}$
0.197	39865.0	7864.23	$\Delta Ln\ INF_{t-1}$
3.081	13.30	40.99	$\Delta Ln\ PBRL_{t-1}$
0.331	0.175	0.0583	$\Delta Ln\ DEP_{t-1}$
		0.84	R2
		0.028	S.E
		12.20	F - Statistic
		-136.87	Log Likelihood

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*) [♣♣4]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.

7. 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 static variables tests (*Augmented Dicker Fuller*) showed that all variables of the economic study contain a root of unity that is to say, it is not static *(unstable)* in level while becoming stable in the first differences, which means that it is a first-order integration.

2- The Co-integration test how (*Johansen and Jusellus*) showed that there is a vector of co-integration among the variables, indicating the existence of a long-term relationship between public spending andimports.

3- Estimation of the model error correction vectors showed that public spending contributes to imports, but is low in the short term, this is due to the weakness of the rationalization of public expenditures in Algeria, whilethat the result obtained by determining the correction model error was rejected (*or refused*), where it was found that public spending is statistically abstract, while the same model showed that other model coefficients are abstract and influential waypositive in the short-term imports, which is consistent with 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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*-Mackinnon (1996) one-sided P-values.

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

The Impact of Capital Structure on Stock Returns: International Evidence

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Abstract: *This study examines the relationship between capital structure and stock returns of firms in the following eight countries in the Asia Pacific regionfor a period of 22 years from 1990 to 2012. The methodology is Panel Regression. The results indicate that the effect of capital structure depends on the nature of industry as well as market. In Australia, China, and Korea, return of companies in the Basic Material industry have negative relationship with debt to common equity. Long term debt to common equity positively affects the return of firms in Australia and Korea in the Basic Material industry.*

1. Introduction

Capital structure of a firm is one of the major concerns for managers. Theories in finance consider debt as one of the factors for financial risk. Thus, level of debt can alters risk and return of a company. Researchers studied several areas around capital structure for example the impact of capital structure on stocks return, value of companies, performance of firms, etc (Onaolapo and Kajola, 2010, Gemmill, 2001). Some scholars examined the impacts of other factors on capital structure and the determinants of capital structure (Bevan and Danbolt, 2002, Chang et al., 2009). Several researchers examined the role of industry classification on capital structure (Arend, 2009, Barclay et al., 1995, Campello, 2003).

Modigliani and Miller (1958a) introduced the capital structure irrelevance theory, which stated that the amount of debt does not affect market value of a firm. The MM irrelevance theory stimulated other researchers to provide evidences against the MM irrelevance theory. Therefore, two major capital structure theories have developed after the MM irrelevance theory including trade-off and pecking order theories of capital structure.The research by Frank and Goyal (2007)has shown that the MM capital structure irrelevance theory fails under a variety of circumstances such as taxes, transaction costs, bankruptcy costs, agency conflicts, adverse selection, etc. They reviewed the trade-off and pecking order capital structure theories and found that transaction and bankruptcy costs play crucial roles in a firm's financing decisions. They identified the differences among private firms, small and large public firms. They concluded that private firms use retained earnings and bank debt. Small public firms use equity financing and large public firms use retained earnings and corporate bonds.

Kraus & Litzenberger (1973) introduced the classical trade-off capital structure theory, which refers to the idea that a firm trade off the benefits and drawbacks of both debt and equity. Hence, managers try to find a balance between costs and benefits of leverage. Furthermore, agency costs (Jensen and Meckling, 1976) play an important role in deciding about the balance. Myers (1984) declared that firms have target leverage ratio and during time they move toward this ratio. Several scholars provided discussions about aspects of Myers' definition. Therefore, Myers's definition about target leverage ratio was broken into two parts including static and dynamic (target adjustment) trade-off theories. If a firm's leverage ratio is identified by single period trade-off, it was called static trade-off theory. A firm is said to exhibit dynamic (target adjustment) behavior if the firm has a target level of leverage and if deviations from that target are gradually removed over time (Frank and Goyal, 2007). Moreover, several scholars studies the tax effect on leverage (Dhaliwal et al., 2006, Graham, 2000, Martin and Sloane, 1980, Miller, 1977).

Myers (1984) argued that firms prefer internal compared to external financing. Based on pecking order capital structure theory, managers choose retained earnings first, then debt and finally equity financing. The motivation for the pecking order theory is adverse selection developed by Myers and Majluf (1984)and Myers (1984).

The remainder of the paper is organized as follows. Section 2 provides a summary of the literature review. Section 3 presents the data and industry classifications, followed by the methodology in section 4, empirical results in section 5, implications for managers in section 6, and concluding remarks in section 7.

2. Literature review

DeAngelo and DeAngelo (2006)provided evidence against Miller and Modigliani (1961). They found that payout policy is not irrelevant and investment policy of a firm is not the only determinant of value, even in frictionless capital markets. They declared that when one relaxes the assumptions of Miller and Modigliani to allow retention, pay out policy comes into effect in exactly the same way that investment policy does.

The second proposition of Miller and Modigliani (1958b, 1963) stated that increasing in financial leverage would lead to increase in expected stock returns. Nevertheless, several scholars provide results contradicted to this proposition. Korteweg (2004) used time series approach and Fama French 3 factor model and found evidences against the MM Proposition 2 that stock returns decline when gearing increases.

There are increasing researches that capital structure affects stock returns and the results are mixed(Dimitrov and Jain, 2008, Hamada, 1972, Korteweg, 2010, Masulis, 1983, Bhandari, 1988). Fama and French (1992) and Strong and Xu (1997)used size and book-to-market equity to examine the cross sectional variation in stock returns. They found that market and book gearing are positively and negatively related to stock returns respectively. Masulis (1983)found that two of the major factors that explain stock returns are leverage multiplied by senior security claims outstanding and variation in debt tax shields.

Most of researches tested the relationship between capital structure and stock returns only for one way causality; either capital structure affects stock returns or vice versa. Yang, Lee, Gu, and Lee (2010)considered two way causalities and as a result they treated the capital structure and stock returns as endogenous variables by utilizing simultaneous equations. They extended Titman and Wessels (1988) study that used a single equation model to find out the capital structure determinants. They concluded that the main factors affecting stock returns are leverage, expected growth, profitability, value, and liquidity.

Therefore, some researchers examined the impacts of stocks return on capital structure (Baker and Wurgler, 2002a, Lucas and McDonald, 1990, Welch, 2004). M. Baker and J. Wurgler (2002b)stated that companies issue new equity when the market values are relatively

high, and repurchase equity when the market values are low. They concluded that capital structure heavily depends on the past market values.Welch (2004)tested the impact of stock price on capital structure and found that firms in the United States (U.S.) neither issue nor repurchase debt or equity to counteract the effects of stock returns on their debt equity ratios. Moreover, he concluded that stock returns explain around 40 percent of debt ratio changes.

Some scholars found positive relationship between capital structure and stock returns (Bhandari, 1988, Hamada, 1972, Dhaliwal et al., 2006). Bhandari (1988)asserted that there is a positive relationship between capital structure and stock returns. He found that this relationship neither is sensitive to variations in the market proxy nor estimation technique.

Conversely, several researchers found that capital structure negatively affects the stock returns (Dimitrov and Jain, 2008, Korteweg, 2010, Muradoglu and Sivaprasad, 2009, Penman et al., 2007).Dimitrov and Jain (2008)argued that variations in financial leverage can provide better information about economic performance of a firm compared to the information from earnings and cash flows. Thus, they did not view financial leverage as measure of risk. They documented on how changes in gearing ratios affect the stock returns. They found that changes in financial leverage and growth in assets are value relevant beyond the information in accounting earnings, operating cash flows, and accruals. They focused on contemporaneous stock returns and argued that there is a negative relationship between financial leverage and risk-adjusted stock returns.

Korteweg (2010)studied the net benefits to leverage that identified from market values and betas of a firm's debt and equity for a panel data from 1994 to 2004. He found that the net benefit to leverage for median firm is up to 5.5% of firm value. The results about small and profitable companies to have high optimal leverage ratios are not consistent with theory. He concluded that firms are on average marginally under levered compared to the optimal leverage ratio. In addition, Penman, et al.(2007)decomposed book-to-price ratio into two components including enterprise and leverage, which explains operating and financing risks respectively. They found that the enterprise part is positively related to stock returns. For the leverage component, they controlled for size, estimated beta, return volatility, momentum, and default risk. Unlike the enterprise component, the leverage part is adversely related to stock returns.

Furthermore, there are several studies examined the relationship between financial leverage and stocks return. Hovakimian, Opler, and Titman (2001)proclaimed that firms encounter barriers for setting their target debt ratios. Furthermore, target debt ratio may changes during time since the profitability and stock price of a firm change.Garlappi and Yan (2011) considered equity valuation model to study the relationship between financial distress and asset returns. They found that leverage for firms with high level of financial distress can explain the changes in stock returns.

Strong and Xu (1997)examined the relationship between expected returns for the United Kingdom (U.K.) equities and several exogenous variables for the period of 1973 to 1992. They found that expected returns are positively affected by beta, book-to-market equity, and market leverage. Nevertheless, their results indicated that expected returns of the U.K. firms are adversely related to market value and book leverage. They used several combinations for exogenous variables and found that either market-to-book equity or the leverage factors cause market value to become insignificant. They concluded that either book leverage and market leverage or book-to-market equity are the only consistently exogenous variables for the average expected returns. Conversely, the explanatory power of any combination of exogenous variables for average returns is low.

Ho, Strange, and Piesse (2006) provided evidence asserting conditional pricing effects of beta, size, and book-to-market equity in the Hong Kong market. They improved their earlier work by adding another factor, namely financial leverage with regard to market

situation meaning that market trend is upward or downward (Ho et al., 2008). Their results indicated that market leverage shows conditional pricing relationship with returns. Their findings on a non-U.S. market are consistent with results of Pettengill, Sundaram, and Mathur (1995, Pettengill et al., 2002) for the U.S. market.

Gomes and Schmid (2010)studied the relationship between financial leverage and stock returns and found that the relationship is more complex compared to the one in static textbook. They declared that the relation between leverage and stock returns depends on the investment opportunities available to the firm. They stated that when financial market imperfections exists, financial leverage and investment opportunities are correlated meaning that firms with high leverage are also mature firms with more book assets and fewer growth opportunities. Moreover, they found that book gearing does not significantly affect the stock returns. However, stock returns positively impacted by market gearing. George and Hwang (2010)stated that companies with high level of cost consider low leverage to avoid financial distress; however, they still expose to the systematic risk of bearing such costs in low states. Moreover, firms with low gearing suffer more than firms with gearing in the case of financial distress. They found that returns are adversely associated with financial distress and leverage.

Several researches referred to the role of industry on capital structure since the optimum of capital structure heavily depends on industry that a firm operates. Thus, industry characteristics is one of the major factors that change the capital structure (Arend, 2009, Barclay et al., 1995, Bradley et al., 1984, Campello, 2003). Hence, this study inspects the relationship between capital structure and stock returns separately for each industry. The relationship between gearing and abnormal return is negative for companies in non-regulated industries (Muradoğlu and Sivaprasad, 2012). MacKay and Phillips (2005)studied the importance of industry to financial aspect of firms. They expressed that financial leverage is higher in concentrated industries. Furthermore, Hou and Robinson (2006) found that firms in highly concentrated industries earn lowerreturns.

Miao (2005)examined the equilibrium model of capital structure and industry dynamics. He declared that high growth industries have lower level of leverage. Campello (2003)studied firm and industry level impacts on capital structure. He found that leverage adversely affects the sales growth in industries that competitors are relatively unlevered during bearish market, but not bullish trend. Hull (1999) studied the stock value by how a firm changes the capital structure in relation to industry leverage ratio norm. He found that stock returns for firms moving away from industry norm is significantly more negative than returns for companies moving closer to industry norms. Hence, there is an adverse relationship between gearing and stock returns.

This research contributes to the literature on capital structure and stock returns in two major ways. First, by considering eight markets in the Asia Pacific region, that there is lack of study on this area. Second, this study examines the relationship between capital structure and stock returns separately for industrial sectors in each market. Thus, results can be helpful for managers and investors in each industrial sector.

3. Data collection and industry classification

This study examines the relationship between capital structures and returns of the firms in the following eight countries in the Asia Pacific region: Australia, China, Hong Kong, Japan, Malaysia, Singapore, South Korea, and Taiwan.The sample in this study comprises 1082 firms for a period of 22 years from 1990 to 2012 on an annually basis. The total number of observation for the whole sample is 24,222. All the data were collected from Datastream database. In each country, industrial sectors were different based on the availability of data. Table 1demonstrates the number of sample for each industrial sector.

Table 1- Number of samples for each market and industrial sector

Australia		China		Hong Kong		Japan	
Sectors	Sample	Sectors	Sample	Sectors	Sample	Sectors	Sample
Basic Material	30	Basic Material	56	Consumer Goods	12	Basic Material	84
Consumer Service	18	Consumer Goods	84	Ind. Gds and Svs	14	Consumer Goods	136
Ind. Gds and Svs*	21	Consumer Service	17			Consumer Service	127
Oil and Gas	10	Health Care	25			Health Care	52
		Ind. Gds and Svs	45			Ind. Gds and Svs	141
		Technology	10			Technology	59
		Utilities	13				

Malaysia		Singapore		South Korea		Taiwan	
Sectors	Sample	Sectors	Sample	Sectors	Sample	Sectors	Sample
Consumer Goods	16	Consumer Goods	10	Basic Material	10	Ind. Gds and Svs	10
Consumer Service	16	Ind. Gds and Svs	13	Consumer Goods	13	Technology	15
				Ind. Gds and Svs	25		

*Industrial Goods and Services

The endogenous variable in this study is the return of a company:

$$R_{it} = Ln\left(\frac{SP_{it}}{SP_{i(t-1)}}\right)$$

Where R is the return and SP denotes the Stock Price of company i at time t.

The regressors in this study are Market Value (MV), Long Term Debt to Capital (LDC), Debt to Capital (DC), Debt to Asset (DA), Debt to Common Equity (DCE), and Long Term Debt to Common Equity (LDCE).

4. Methodology

Panel regression carried out to examine the relationship between the variables. This study controlled for the size of firms, which was measured by market value of a company. For statistical tests, Levin-Lin-Chu unit root test conducted to control for stationarity of data. Multicollinearity test carried out and variables with Variance Inflation Factor (VIF) higher than 10 were removed from regression analysis. Moreover, heteroskedasticity and serial correlation of the error term in regression equation were controlled. A regression equation with all the regressors is as follows:

$$R_{it} = \alpha + \beta_1 MV_{it} + \beta_2 LDC_{it} + \beta_3 DC_{it} + \beta_4 DA_{it} + \beta_5 DCE_{it} + \beta_6 LDCE_{it} + \varepsilon_t$$

Where R is Return, MV demonstrates Market Value, LDC denotes Long Term Debt to Capital, Debt to Capital presented by DC, DA is Debt to Asset, DCE presents Debt to Common Equity, and LDCE shows Long Term Debt to Common Equity for company i at time t.

5. Results and discussion

This study considers five capital structure ratios that either debt or long term debt is nominator and either capital, asset, or common equity is denominator. For example, the debt to common equity ratio indicates what portion of debt and common equity a company is using. A high debt to common equity ratio indicates that a firm uses debt financing and generally, the risk of bankruptcy increases. However, debt to common equity ratio and other capital structure ratios should be compared with the average industry that a company operates. Thus, the mean of these ratios in each industry can be very useful for managers. For example,

capital intensive industries, such as the Oil and Gas, are more leveraged compared to other industries.

5.1 Empirical results of Australia

Tables 2 to 5 present the regression results for Australia. In Australia, four industrial sectors were considered including Basic Material, Consumer Service, Industrial Goods and Services, and Oil and Gas. The lowest and highest R-squared values are approximately 7% and 33% for the Basic Material and Oil and Gas sectors respectively. The total number of observations for Australia is 1,738.

Table 2 illustrates the regression results for the Basic Material sector in Australia. The total number of observation is 630. Unlike debt to common equity, market value and long term debt to common equity positively influence the return of firms.

Table 2- Regression results for Basic Material sector in Australia

F-stat	13.49	No. of obs	630	
P-Value	0.00	R-squared	0.068	
Return	Coef.	Std. Err.	t	P-Value
D.MV	3.01E-05	6.44E-06	4.68	0.000
LDC	-0.06357	0.0987372	-0.64	0.520
DC	0.024876	0.0212668	1.17	0.243
DA	-0.11714	0.1099261	-1.07	0.287
DCE	-0.03852	0.0113043	-3.41	0.001
LDCE	0.057761	0.0284837	2.03	0.043
Constant	0.100957	0.0319351	3.16	0.002

* "D." indicates the first differenced of a variable throughout the paper.

Table 3 indicates the regression outcome for the Consumer Service sector. Market value and debt to asset affect the return of companies significantly at 5% and 10% significance level respectively. Debt to asset negatively influences the return.

Table 3- Regression results for Consumer Service sector in Australia

F-stat	24.39	No. of obs	378	
P-Value	0.00	R-squared	0.2469	
Return	Coef.	Std. Err.	t	P-Value
D.MV	9.17E-05	8.53E-06	10.76	0.000
LDC	0.027182	0.1955099	0.14	0.890
DC	0.147853	0.1496754	0.99	0.324
DA	-0.53174	0.3069797	-1.73	0.084
LDCE	0.026139	0.0425577	0.61	0.539
Constant	0.070207	0.0327373	2.14	0.033

For Industrial Goods and Services, only market value significantly affects the return. In Oil and Gas sector, four variables significantly influence the return including market value, debt to capital, debt to asset, and long term debt to common equity. Debt to capital and debt to asset negatively affect the return of firms.

Table 4- Regression results for Industrial Goods and Services sector in Australia

F-stat	29.06	No. of obs	441	
P-Value	0.00	R-squared	0.2504	
Return	Coef.	Std. Err.	t	P-Value
D.MV	0.000138	1.16E-05	11.89	0.000
LDC	-0.07798	0.1148739	-0.68	0.498
DC	0.055582	0.072056	0.77	0.441
DA	-0.20664	0.1402418	-1.47	0.141
LDCE	0.018672	0.0225527	0.83	0.408
Constant	0.094994	0.0276651	3.43	0.001

Table 5- Regression results for Oil and Gas sector in Australia

F-stat	25.26	No. of obs	210	
P-Value	0.00	R-squared	0.3272	
Return	Coef.	Std. Err.	t	P-Value
D.MV	8.98E-05	2.04E-05	4.39	0.000
DC	-0.34241	0.1421921	-2.41	0.017
DA	-0.16214	0.0188077	-8.62	0.000
LDCE	0.105897	0.0509047	2.08	0.039
D.LDC	-0.13865	0.3949978	-0.35	0.726
Constant	0.144462	0.0444962	3.25	0.001

Table 6 shows the summary of results for Australia. Managers and investors in Australia will find the results of this study useful because it enables adjusting portfolios. In all of the industrial sectors, market values of companies positively affect the returns. In Basic Material sector, debt to common equity and long term debt to common equity affects the return negatively and positively respectively. For Oil and Gas sector, debt to capital and debt to asset have negative relationship with the return. Conversely, long term debt to common equity was shown to have positive relationship with the return.

Table 6- Summary of Regression results for Australia

Basic material	Sign
D.MV	+
DCE	-
LDCE	+
Consumer Service	**Sign**
D.MV	+
DA	-
Industrial Goods and Services	**Sign**
D.MV	+
Oil and Gas	**Sign**
D.MV	+
DC	-
DA	-
LDCE	+

5.2 Empirical results of China

Tables 7 to 13 show the regression outcomes for China. Lowest to highest R-squared values are approximately 7%, 31%, 38%, 43%, 45%, 49%, and 54% for the following sectors Basic Material, Consumer Goods, Utilities, Industrial Goods and Services, Technology, Healthcare, and Consumer Service respectively. The total number of observations for China is 5,500.

In the Basic Material sector, the returns of firms are negatively impacted by long term debt to capital and debt to common equity. On the other hand, market value has a positive relationship with the return.

Table 7- Regression results for Basic Material sector in China

F-stat	303.29	No. of obs	1176	
P-Value	0.00	R-squared	0.0685	
Return	Coef.	Std. Err.	t	P-Value
MV	6.86E-06	2.67E-06	2.57	0.013
LDC	-0.41494	0.1813189	-2.29	0.026
DC	0.000362	0.0002255	1.6	0.115
DA	-0.0807	0.0715922	-1.13	0.265
D.DCE	-0.00315	0.0002675	-11.77	0.000
LDCE	0.124986	0.089016	1.4	0.166
Constant	0.029311	0.0212215	1.38	0.173

In the Consumer Goods sector, market value and debt to capital positively influence the returns of the companies. Alternatively, long term debt to common equity negatively affects the return. In healthcare industry, increase in market value will lead to increase in the return, while debt to capital has an adverse relationship with the return.

Table 8- Regression results for Consumer Goods sector in China

F-stat	211.89	No. of obs	1764	
P-Value	0.00	R-squared	0.3096	
Return	Coef.	Std. Err.	t	P-Value
D.MV	1.96E-05	1.96E-06	10.04	0.000
DC	0.029275	0.0013631	21.48	0.000
DA	-0.02506	0.0790579	-0.32	0.751
LDCE	-0.09577	0.0478994	-2	0.046
Constant	0.052414	0.0156199	3.36	0.001

Table 9- Regression results for Healthcare sector in China

F-stat	18.88	No. of obs	525	
P-Value	0.00	R-squared	0.4906	
Return	Coef.	Std. Err.	t	P-Value
D.MV	6.94E-05	8.47E-06	8.2	0.000
D.DA	0.180494	0.2624055	0.69	0.492
DC	-0.00336	0.0020062	-1.68	0.094
LDCE	-0.07555	0.0465901	-1.62	0.105
Constant	0.046777	0.0148938	3.14	0.002

For the Industrial Goods and Services, unlike market value, debt to asset negatively affects the return. In the Technology sector, market value and debt to asset positively affect the return. Conversely, debt to common equity has shown a negative relationship with the return.

Table 10- Regression results for Industrial Goods and Services sector in China

F-stat	8.85	No. of obs	945	
P-Value	0.00	R-squared	0.4295	
Return	Coef.	Std. Err.	t	P-Value
D.MV	2.86E-05	4.76E-06	5.99	0.000
LDC	0.032216	0.0318596	1.01	0.312
DC	-0.00172	0.0032921	-0.52	0.601
DA	-0.12227	0.0680984	-1.8	0.073
D.LDCE	-0.06732	0.0629787	-1.07	0.285
Constant	0.070804	0.0198022	3.58	0.000

Table 11- Regression results for Technology sector in China

F-stat	12.03	No. of obs	210	
P-Value	0.00	R-squared	0.4507	
Return	Coef.	Std. Err.	t	P-Value
D.MV	5.27E-05	9.64E-06	5.47	0.000
D.LDC	0.831028	0.7744738	1.07	0.285
D.DCE	-0.8734	0.3742766	-2.33	0.021
D.DA	1.989671	0.8997981	2.21	0.028
Constant	0.034851	0.0235421	1.48	0.140

In the Consumer Service and Utilities sectors, the only factor that affects the return is market value, which has a positive relationship with the return.

Table 12- Regression results for Consumer Services sector in China

F-stat	39.66	No. of obs	357	
P-Value	0.00	R-squared	0.5432	
Return	Coef.	Std. Err.	t	P-Value
D.MV	3.07E-05	2.82E-06	10.86	0.000
DCE	-0.01118	0.0082715	-1.35	0.177
DA	-0.11189	0.126179	-0.89	0.376
DC	0.00849	0.018582	0.46	0.648
D.LDC	-0.38567	0.2925891	-1.32	0.188
D.LDCE	0.0073	0.009636	0.76	0.449
Constant	0.093962	0.0414191	2.27	0.024

Table 13- Regression results for Utilities sector in China

F-stat	33.12	No. of obs	273	
P-Value	0.00	R-squared	0.3828	
Return	Coef.	Std. Err.	t	P-Value
D.MV	0.000022	1.73E-06	12.68	0.000
D.DCE	-0.01356	0.0641792	-0.21	0.833

D.DC	-0.19866	0.3311025	-0.6	0.549
D.LDC	-0.02639	0.529828	-0.05	0.960
D.DA	0.60161	0.7947113	0.76	0.450
Constant	0.010821	0.0216329	0.5	0.617

Managers in China, consider market values of firms to have positive relationship with the return regardless of the industrial sector. In the Basic Material sector, long term debt to capital and debt to common equity negatively affect the return. In the Consumer Goods, debt to capital and long term debt to common equity have shown positive and negative relationship with the return. For the Healthcare sector, debt to capital adversely affects the returns of firms. While it positively affects the returns of companies in the Consumer Goods sector. Debt to common equity and debt to asset affect the returns of firms in the Technology sector negatively and positively respectively. In the Industrial Goods and Services, debt to asset ratio has negative relationship with the returns of firms, while it indicates positive relationship with the return in the Technology sector.

Table 14- Summary of Regression results for China

Basic Material	Sign
MV	+
LDC	-
D.DCE	-
Consumer Goods	**Sign**
D.MV	+
DC	+
LDCE	-
Consumer Service	**Sign**
D.MV	+
Healthcare	**Sign**
D.MV	+
DC	-
Industrial Goods and Services	**Sign**
MV	+
DA	-
Technology	**Sign**
MV	+
DCE	-
DA	+
Utilities	**Sign**
MV	+

5.3 Empirical results of Hong Kong

In Hong Kong, the R-squared values are approximately 28% and 27% for the Consumer Goods and the Industrial Goods and Services sectors respectively. The total number of observations for Hong Kong is 572. In the Consumer Goods sector, market value and long term debt to capital positively affect the return. On the other hand, debt to capital and debt to asset negatively affect the returns of the firms. In the Industrial Goods and Services sector, the only variable that influences the return is market value.

Table 15- Regression results for Consumer Goods sector in Hong Kong

F-stat	7.93	No. of obs	252	
P-Value	0.00	R-squared	0.282	
Return	Coef.	Std. Err.	t	P-Value
D.MV	2.35E-05	4.20E-06	5.59	0.000
LDC	0.492743	0.2661205	1.85	0.065
DC	-0.2104	0.1071879	-1.96	0.051
D.DA	-0.86852	0.5242975	-1.66	0.099
LDCE	-0.00374	0.0030641	-1.22	0.224
Constant	0.052254	0.0501547	1.04	0.299

Table 16- Regression results for Industrial Goods and Services sector in Hong Kong

F-stat	7.85	No. of obs	294	
P-Value	0.00	R-squared	0.2666	
Return	Coef.	Std. Err.	t	P-Value
D.MV	8.84E-06	1.87E-06	4.71	0.000
DC	-0.35087	0.3727529	-0.94	0.347
LDCE	0.148046	0.2322499	0.64	0.524
Constant	0.101964	0.0468378	2.18	0.030

In Hong Kong, an increase in market value of a firm will lead the return to rise. In Consumer Goods sector, long term to capital positively affects the returns of companies; however, debt to capital and debt to asset have shown negative relationship with the return.

Table 17- Summary of Regression results for Hong Kong

Consumer Goods	Sign
D.MV	+
LDC	+
DC	-
D.DA	-
Industrial Goods and Services	**Sign**
D.MV	+

5.4 Empirical results of Japan

Tables 18 to 23 show the regression outcomes for Japan. The R-squared values for the following three sectors are approximately 2%: Basic Material, Consumer Goods, and Technology. Furthermore, the R-squared values for the Consumer Service and Healthcare

sectors are roughly 1%. Industrial Goods and Services have shown the highest R-squared value for about 3%. The total number of observations for Japan is 13,178.

Table 18 indicates the regression results for theBasic Material sector in Japan. Unlike market value, debt to asset and long term debt to common equity ratios adversely influence the return of firms. Moreover, the returns of firms have most affected debt to asset ratio.

Table 18- Regression results for Basic Material sector in Japan

F-stat	7.11	No. of obs	1764	
P-Value	0.00	R-squared	0.0198	
Return	Coef.	Std. Err.	t	P-Value
MV	1.07E-07	2.49E-08	4.28	0.000
LDC	0.81906	0.1010513	0.81	0.418
DC	0.008888	302493945	0.36	0.716
DA	-0.24587	0.1207748	-2.04	0.042
LDCE	-0.00631	0.0026578	-2.37	0.018
Constant	0.0079	0.0174901	0.45	0.652

In the Consumer Goods sector, four factors of capital structure significantly affect the return of companies including market value, debt to capital equity, long term debt to capital, and debt to capital. The two former variables have shown positive relationship with the return, while the later ones negatively affect the return of firms. Among these four factors, long term debt to capital ratio affects the return the most.

Table 19- Regression results for Consumer Goods sector in Japan

F-stat	43.42	No. of obs	2992	
P-Value	0.00	R-squared	0.0173	
Return	Coef.	Std. Err.	t	P-Value
MV	1.85E-08	7.89E-09	2.34	0.021
LDC	-0.08401	0.0491749	-1.71	0.090
DC	-0.02858	0.0109232	-2.62	0.010
DA	-0.0697	0.0565032	-1.23	0.220
DCE	0.002214	0.0004409	5.02	0.000
LDCE	-0.00597	0.0055891	-1.07	0.287
Constant	0.009197	0.0067312	1.37	0.174

In the Consumer Service and Healthcare sectors, debt to asset and long term debt to common equity ratios affect the return of firms negatively respectively. However, in both sectors, market value positively related with the return of companies.

Table 20- Regression results for Consumer Services sector in Japan

F-stat	10.38	No. of obs	2667	
P-Value	0.00	R-squared	0.0102	
Return	Coef.	Std. Err.	t	P-Value
MV	9.06E-08	2.68E-08	3.39	0.001
DC	0.002383	0.0021634	1.1	0.273
DA	-0.07606	0.0317659	-2.39	0.018
DCE	-0.00025	0.0018297	-0.14	0.892
LDCE	-0.0063	0.0072802	-0.87	0.388

DLDC	-0.01895	0.0174091	-1.09	0.279
Constant	0.003375	0.0095882	0.35	0.725

Table 21- Regression results for Healthcare sector in Japan

F-stat	2.87	No. of obs	1144	
P-Value	0.0321	R-squared	0.0102	
Return	Coef.	Std. Err.	t	P-Value
MV	2.41E-08	1.08E-08	2.22	0.031
LDC	1.29E-01	1.00E-01	1.29	0.204
DC	-0.03807	0.0370441	-1.03	0.309
LDCE	-0.05654	0.0287097	-1.97	0.054
Constant	-0.00667	0.009168	-0.73	0.471

In Industrial Goods and Services sector, market value and debt to capital equity affect the return of firms positively. On the other hand, long term debt to capital equity and debt to asset ratios adversely influence the return. Among these four factors, debt to asset affects the returns of firms the most. For the Technology sector, market value is the only variable that significantly affects the return.

Table 22- Regression results for Industrial Goods and Services sector in Japan

F-stat	203.42	No. of obs	3102	
P-Value	0.00	R-squared	0.0308	
Return	Coef.	Std. Err.	t	P-Value
MV	9.58E-08	1.53E-08	6.26	0.000
DC	-0.00011	0.0003723	-0.29	0.770
DA	-0.21803	0.0216144	-10.09	0.000
DCE	0.002679	0.000264	10.15	0.000
LDCE	-0.00252	0.0011514	-2.19	0.030
Constant	-0.02258	0.0082929	-2.72	0.007

Table 23- Regression results for Technology sector in Japan

F-stat	2.67	No. of obs	1298	
P-Value	0.0308	R-squared	0.0191	
Return	Coef.	Std. Err.	t	P-Value
MV	6.90E-08	2.20E-08	3.13	0.003
LDC	-1.21E-01	1.12E-01	-1.07	0.288
DC	0.006634	0.0132559	0.5	0.619
DA	0.033986	0.1202404	0.28	0.778
LDCE	-0.00329	0.0138144	-0.25	0.813
Constant	-0.04494	0.0150162	-2.99	0.004

Table 24 shows the summary of results for Japan. Debt to common equity positively affects the return of firms in the Consumer Goods and Industrial Goods and Services sectors. Conversely, long term debt to common equity adversely influences the return of firms in three industrial sectors namely the Basic Material, Healthcare, and Industrial Goods and Services. Market value positively affects the return of firms in all the industrial sectors. Nevertheless,

debt to asset adversely affects the return of companies in the following three industrial sectors Basic Materials, Consumer Service, and Industrial Goods and Services.

Table 24- Summary of Regression results for Japan

Basic Material	Sign
MV	+
DA	-
LDCE	-
Consumer Goods	**Sign**
MV	+
DCE	+
LDC	-
DC	-
Consumer Service	**Sign**
MV	+
DA	-
Healthcare	**Sign**
MV	+
LDCE	-
Industrial Goods and Services	**Sign**
MV	+
DCE	+
DA	-
LDCE	-
Technology	**Sign**
MV	+

5.5 Empirical results of Korea

In Korea, the R-squared values are approximately 22%, 26%, and 30% for the Basic Material, Consumer Goods, and the Industrial Goods and Services sectors respectively. The total number of observations for Korea is 1,056.

In the Basic Material sector, market value and long term debt to common equity positively affect the return. Alternatively, long term debt to capital and debt to common equity were shown negative relationship with the return.

Table 25- Regression results for Basic Material sector in Korea

F-stat	9.65	No. of obs	210	
P-Value	0.00	R-squared	0.2219	
Return	Coef.	Std. Err.	t	P-Value
DMV	5.10E-05	1.08E-08	5048	0.000
LDC	-3.24E-01	9.09E-02	-3.56	0.000
DDA	-0.51825	0.4122339	-1.26	0.210

DCE	-0.10607	0.0355487	-2.98	0.003
DDC	0.044859	0.0305764	1.47	0.144
LDCE	0.211084	0.0800168	2.64	0.009
Constant	0.190223	0.0529762	3.59	0.000

In the Industrial Goods and Services sector, market value and debt to capital ratio positively affect the return. Debt to asset ratio affects the return the most with a negative sign for the coefficient. In the Consumer Goods sector, only market value significantly affects the return of firms.

Table 26- Regression results for Industrial Goods and Services sector in Korea

F-stat	16.16	No. of obs	525	
P-Value	0.00	R-squared	0.2992	
Return	Coef.	Std. Err.	t	P-Value
DMV	1.19E-07	2.44E-08	4.88	0.000
DC	9.03E-03	2.25E-03	4.01	0.000
DA	-0.51532	0.1025111	-5.03	0.000
DCE	0.000453	0.0199441	0.02	0.982
LDCE	-0.00161	0.045725	-0.04	0.972
Constant	0.202142	0.0399496	5.06	0.000

Table 27- Regression results for Consumer Goods sector in Korea

F-stat	15.93	No. of obs	273	
P-Value	0.00	R-squared	0.2643	
Return	Coef.	Std. Err.	t	P-Value
DMV	8.53E-08	9.84E-09	8.66	0.000
DC	1.49E-01	9.89E-02	1.5	0.134
DA	-0.41443	0.2547432	-1.63	0.105
DLDCE	0.030758	0.0446301	0.69	0.491
DCE	-0.02125	0.0352822	-0.6	0.548
LDC	-0.16639	0.2374908	-0.7	0.484
Constant	0.159273	0.0440766	3.61	0.000

Table 28 demonstrates the summary of results for Korea.

Table 28- Summary of Regression results for Korea

Basic Material	Sign
D.MV	+
LDCE	+
LDC	-
DCE	-
Consumer Goods	**Sign**
D.MV	+
Industrial Goods and Services	**Sign**
D.MV	+

DC		+
DA		-

5.6 Empirical results of Malaysia

In Malaysia, the R-squared values are 16% and 33% for the Consumer Goods and Consumer Service sectors accordingly. The total number of observations for Malaysia is 704. In the Consumer Goods sector, the only variable that influences the return is market value and the relationship is positive. In the Consumer Service sector, unlike market value, debt to capital negatively affects the returns of firms.

Table 29- Regression results for Consumer Goods sector in Malaysia

F-stat	3.99	No. of obs	336	
P-Value	0.0016	R-squared	0.162	
Return	Coef.	Std. Err.	t	P-Value
D.MV	0.000069	1.68E-05	4.11	0.000
D.DC	-0.13111	0.1508461	-0.87	0.385
LDCE	0.005981	0.0707925	0.08	0.933
DA	-0.01451	0.12732	-0.11	0.909
D.DCE	0.049161	0.0829088	0.59	0.554
Constant	0.067112	0.0231958	2.89	0.004

Table 30- Regression results for Consumer Service sector in Malaysia

F-stat	33.68	No. of obs	336	
P-Value	0.00	R-squared	0.3379	
Return	Coef.	Std. Err.	t	P-Value
D.MV	0.00011	8.94E-06	12.35	0.000
LDC	-0.08925	0.1891995	-0.47	0.637
DC	-0.28954	0.1261232	-2.3	0.022
DA	0.395608	0.328599	1.2	0.229
DCE	-0.00366	0.004579	-0.8	0.425
Constant	0.0712	0.0365053	1.95	0.052

Table 31 illustrates the summary of results for Malaysia.

Table 31- Summary of Regression results for Malaysia

Consumer Goods	**Sign**
D.MV	+
Consumer Service	**Sign**
D.MV	+
DC	-

5.7 Empirical results of Singapore

In the Singapore market, the R-squared values are approximately 36% and 43% for the Consumer Goods and the Industrial Goods and Services sectors respectively. The total number of observations for Singapore is 506.

Market value is the only capital structure factor that significantly influence the return. In Industrial Goods and Services, long term debt to common equity and debt to asset ratios adversely affect the return, while market value have shown positive relationship with the return.

Table 32- Regression results for Consumer Goods sector in Singapore

F-stat	21.38	No. of obs	200	
P-Value	0.00	R-squared	0.3553	
Return	Coef.	Std. Err.	t	P-Value
DMV	3.04E-04	2.96E-05	10.27	0.000
DDC	-9.35E-03	2.25E-01	-0.04	0.967
LDCE	-0.06681	0.0782969	-0.85	0.395
DDA	0.21417	0.6094231	0.35	0.726
DDCE	-0.00969	0.131193	-0.07	0.941
Constant	0.038262	0.0365994	1.05	0.297

Table 33- Regression results for Industrial Goods and Services sector in Singapore

F-stat	33.75	No. of obs	273	
P-Value	0.00	R-squared	0.4322	
Return	Coef.	Std. Err.	t	P-Value
DMV	1.36E-04	9.95E-06	13.67	0.000
DDC	2.59E-01	2.96E-01	0.88	0.381
LDCE	-0.04033	0.0221863	-1.82	0.070
DDA	-1.56299	0.8435915	-1.85	0.065
DDCE	0.01062	0.0247721	0.43	0.668
DLDC	0.57478	0.3917169	1.47	0.143
Constant	0.043076	0.0227718	1.89	0.060

Table 34 shows the summary of results for Singapore.

Table 34- Summary of Regression results for Singapore

Consumer Goods	Sign
D.MV	+
Industrial Goods and Services	**Sign**
D.MV	+
LDCE	-
D.DA	-

5.8 Empirical results of Taiwan

In Taiwan, the R-squared values are approximately 21% and 36% for the Industrial Goods and Services and Technology sectors respectively. The total number of observations for Taiwan is 550. In the both sectors, market value is the only capital structure factor that significantly affect the return.

Table 35- Regression results for Industrial Goods and Services sector in Taiwan

F-stat	13.87	No. of obs	210
P-Value	0.00	R-squared	0.213

Return	Coef.	Std. Err.	t	P-Value
DMV	1.98E-06	2.71E-07	7.31	0.000
DC	-2.11E-01	3.12E-01	-0.68	0.498
DA	0.22533	0.6188552	0.36	0.716
LDCE	-0.09763	0.1528073	-0.64	0.524
Constant	0.115199	0.0537692	2.14	0.033

Table 36- Regression results for Technology sector in Singapore

F-stat	34.09	No. of obs	315	
P-Value	0.00	R-squared	0.3555	
Return	Coef.	Std. Err.	t	P-Value
DMV	2.15E-06	1.65E-07	13.02	0.000
DDC	1.32E-01	4.09E-01	0.32	0.748
DDA	-0.27594	0.8230885	-0.34	0.738
DDCE	-0.03763	0.2210036	-0.17	0.865
LDC	-0.02965	0.1860979	-0.16	0.874
Constant	0.046291	0.0274644	1.69	0.093

Table 37 indicates the summary of results for Taiwan.

Table 37- Summary of Regression results for Taiwan

Industrial Goods and Services	Sign
D.MV	+
Technology	**Sign**
D.MV	+

6. Implication for managers

This section provides the implication for managers separately for each industrial sector. In all markets and all industrial sectors, market value positively affects the return of firms.

6.1 Basic Material

Managers that their companies operate in the Basic Material industry consider the negative relationship between debt to common equity and the return of firms in Australia, China, and Korea. Long term debt to common equity positively affect the return of firms in Australia and Korea; however, the relationship is opposite in Japan. The return of firms negatively impacted by long term debt to capital in China and Korea.

Table 38- Summary of results for the Basic Material sector

Australia	Sign	China	Sign	Japan	Sign	Korea	Sign
DCE	-	LDC	-	DA	-	LDCE	+
LDCE	+	D.DCE	-	LDCE	-	LDC	-
						DCE	-

6.2 Consumer Service

Managers in the Consumer Service sector might know that debt to asset negatively affects the return of firms in Australia and Japan. Malaysian managers consider debt to capital ratio, which has an opposite relationship with the return.

Table 39- Summary of results for the Consumer Service sector

Australia	Sign	Japan	Sign	Malaysia	Sign
DA	-	DA	-	DC	-

6.3 Industrial Goods and Services

Managers in the Industrial Goods and Services sector could be aware that the return of their firms negatively impacted by debt to asset ratio in Korea, China, Japan, and Singapore. Moreover, long term debt to common equity adversely affects the return of companies in the Industrial Goods and Services in Japan and Singapore.

Table 40- Summary of results for the Industrial Goods and Services sector

Korea	Sign	China	Sign	Japan	Sign	Singapore	Sign
DC	+	DA	-	DCE	+	LDCE	-
DA	-			DA	-	D.DA	-
				LDCE	-		

6.1. Consumer Goods

Managers that their firms operate in the Consumer Goods sector might know that debt to capital negatively affects the return in Hong Kong and Japan. Alternatively, return of firms positively impacted by debt to capital ratio. Long term debt to common equity and debt to asset adversely affect the return of firms in China and Hong Kong respectively.

Table 41- Summary of results for the Consumer Goods sector

China	Sign	Hong Kong	Sign	Japan	Sign
DC	+	LDC	+	DCE	+
LDCE	-	DC	-	LDC	-
		D.DA	-	DC	-

6.2. Oil and Gas

In this study, the only Oil and Gas sector is in Australia. Return of firms in this sector negatively impacted by debt to capital and debt to asset. On the other hand, long term debt to common equity positively affects the return of firms.

Table 42- Summary of results for the Oil and Gas sector

Australia	Sign
DC	-
DA	-
LDCE	+

6.4 Healthcare

Debt to capital and long term debt to common equity adversely affect the return of firms in the Healthcare industry in China and Japan.

Table 43- Summary of results for the Healthcare sector

China	Sign	Japan	Sign
DC	-	LDCE	-

6.5 Technology

Return of firms in the Technology industry negatively and positively impacted by debt to common equity and debt to asset respectively in China. Market value is the only factor that significantly affects the return of firms in this sector in Japan and Taiwan.

Table 44- Summary of results for the Technology sector

China	Sign
DCE	-
DA	+

6.6 Utilities

In this study, the only Utilities sector is in China. Market value is the only factor that significantly affects the return of firms in this sector in China.

7. Conclusion

This study examines the relationship between capital structure ratios and returns of firms in the following countries Australia, China, Hong Kong, Japan, South Korea, Malaysia, Singapore, and Taiwan from 1990 to 2012. The results of this study differ for the countries as well as the industrial sectors.

In Australia, in the Basic Material industry, adverse relationship between debt to common equity and the return of a firm was observed. Furthermore, debt to capital of companies in the Oil and Gas industry has shown a negative relationship with the return. Debt to asset in the both Consumer Service and Oil and Gas industries negatively affects the return of firms. Thus, an increase in the value of these ratios would decline the return of a firm. Conversely, in the both Basic Material and Oil and Gas industries, the return of firms positively affected by long term debt to common equity. In the Basic Material industry, debt to common equity and long term debt to common equity negatively and positively affect the return of firms respectively. Therefore, managers may consider the positive effect of long term debt on the return of firms.

In China, debt to common equity in the both Basic Material and Technology industries adversely affect the return of firms. In addition, long term debt to capital and long term debt to common equity negatively affect the return of companies in the Basic Material and the Consumer Goods industries respectively. In the Consumer Goods industry, debt to capital positively affects the return. Alternatively, return of firms in the Healthcare industry adversely affected by debt to capital. Furthermore, debt to asset has negative impacts on the return of firms in the Industrial Goods and Services industry. On the other hand, debt to asset positively affects the return of companies in the Technology industry.

In Hong Kong, long term debt to capital and debt to capital positively and negatively affect the return of firms respectively. Hence, managers may consider the positive effect of long term debt on the return of firms.

In Japan, debt to asset and long term debt to common equity adversely affect the return of firms in the both Basic Material and Industrial Goods and Services industries. In addition, the return of companies in the Consumer Service and the Healthcare industries negatively impacted by debt to asset and long term debt to common equity respectively. Debt to common equity positively affects the return of firms in the both Consumer Goods and Industrial Goods

and Services industries. Conversely, the return of companies in the Consumer Goods industry negatively impacted by long term debt to capital and debt to capital ratios.

In Korea, in the Basic Material industry, the return of firms negatively impacted by long term debt to common equity, debt to common equity, and long term debt to capital. In the Industrial Goods and Services sector, debt to capital and debt to asset affect the return of companies positively and negatively respectively.

In Singapore, both long term debt to common equity and debt to asset adversely affect the return of firms in the Industrial Goods and Services sector.

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TERRORIST PHENOMENON'S IMPACT ON THE WORLD ECONOMY

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Abstract: *"How much does terrorism cost?" is a question which will not be answered in a near future (short and medium term) in a relevant, practical and sweeping manner, because any estimation at this moment would cover only in a small measure the spent amounts and the inflicted costs of the phenomenon. These statistics are not precise, of course; they might be argued or even invalidated, because it is difficult to elaborate an objective situation regarding the real value of the attack expenditures or of the damage done. They are purely informative, highlighting a cruel reality: with a very small budget, huge damage may be done, and even a whole society might be paralyzed.*

Key words: terrorism, terrorist attack, attack cost
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Introduction

The modern, generalized and ubiquitous terrorism is a product of the modern society. It has always existed and has been following, as fair, society's evolution, but on the other side of the barricade.

Terrorism is part of those permanent, flexible, miscellaneous, surprising, and hard to anticipate, survey, and control and mostly to combat asymmetric threats, which create and maintain a continuous status of fear, uncertainty and alert. It is one of the most serious challenges in the beginning of this century and is growing like a "cancer" of intolerance, extremism, violence and absurd.

This phenomenon is a very dangerous threat. Its gravity comprises in the ability of the terrorist organizations and networks to surprise, through the difficulty to evaluate terrorism, through the wave of uncertainties ant fears which accompany this phenomenon, hard to understand and to explain. No matter how important and deep unfairness generating issues should be, they cannot justify the "terrorist" phenomenon.

How much does the terrorism cost?

Even if the question "How much does the terrorism cost?" might be considered inadequate through its elusory simplicity, the answer is actually a very difficult one. Finding a defining equation to calculate the cost of terrorism inflicts a multi-face approach of a complex phenomenon, which involves a wide range of perspectives and variables that make it difficult to count or to contain in a determining balance of quantity-quality/cost-benefit.

"How much does terrorism cost?" is a question which will not be answered in a near future (short and medium term) in a relevant, practical and sweeping manner, because any estimation at this moment would cover only in a small measure the spent amounts and the inflicted costs of the phenomenon. So, defining terrorism under the cost point of view means a multilateral approach form the perspective of:

❖ The terrorist (regarding the needed costs to prepare and carry out an attack – necessary materials and equipment, transport expenditures, locations rental, training, etc.);

❖ The competent authorities with tasks in prevention and combating terrorism (from the perspective of budgets allocated to intelligence gathering, surveillance and investigating activities, but also for related measures enforcement);

❖ The political segment (through the budgets allocated for *post incident* expenditures – e.g. buildings reconstruction, wounded people's medical insurances, certain population categories compensation, etc.);

❖ The administrative and functional elements of the society – economy, infrastructure, tourism, etc. (losses in these areas might be huge, an example given in this sense being the negative consequences which country's loss of image capital should have against the economy and tourism – lack of interest for investors and tourists);

❖ The civil society (regarding the spending which certain persons should burden individually, but also the difficulties that families with a wounded/deceased member in a terrorist attack should confront).

Global financial crisis has not visibly affected terrorism preventing and combating national systems, but certain budgetary re-evaluations, re-allocations and re-prioritizations have undoubtedly been done. Nobody denied their necessity and utility; arguments came up, generally, when the public opinion flagged major disparities between the terrorist threat, considered to be low, and the allocated budgets, thought to be too "generous". Critics have as well been risen in the situations when, investing in terrorism preventing and combating systems did not meet the expected effect, attacks being carried out or, to the best, failed (which, however, means a minimum effort from the authorities side).

A terrorist is, in its essence, a result of a frustrations and social, cultural and political complexes sum, and, mostly, of the inability of a structure to diplomatically acquire its goals, without infliction of extreme, violent means. From this perspective, phenomenon's evolution has been a linear one, which has not rambled from the assumed principle: *to draw attention to the goal, through terror spreading*. Without getting into details, there must be mentioned that terrorism's manifesting forms have constantly been evolving and adapting to the authorities' measures (that are tending towards improvement and globalization), to the carried "mission's" specificity, and mostly to the spectators' habitualness, more and more used to the ludicrous of such a "show". Thus, if, at its beginning, the terrorist attack was aiming mostly airplanes hijacking, afterwards, it focused on hostage taking, bombs placement (regardless of the location), use of biological weapons or suicide bombers (which struck panic to the world because of their fanaticism and the danger that the mobility and efficiency of a "human bomb" represented), and, in the end, to carry out attacks by as cheap, accessible, spectacular and ingenious as possible means.

Also, the range of chosen targets has continuously diversified, reaching the point where, big terrorist organizations (as Al-Qaeda and its franchises) to focus on symbolic targets (e.g. 9/11) or with a strong economic impact (the attacks carried out by Al-Qaeda in the Arabic Isle against cargo air carriers).

From this perspective, terrorists seem to take less and less into calculation human victims (regardless they are military or civilian), and more to affect important segments of national economies. Focusing on administrative, civilian or political facilities, the goal is not any more to spread a punctual psychic terror, but a permanent one, by the disparagement and demythization of authorities, structures and system, which, through their existence, should be hermetic in front of such threats. Also, by the mean of these targets, paralyzing critical infrastructure is wanted, binding some of its essential components.

More and more strict and efficient cooperation and control of security and law enforcement agencies have limited, in time, the easiness of producing complex and modern devices. The nowadays trend is to identify simple (with a low necessary experience level),

reliable (with a high producing probability) and cheap (a *sine qua non* condition for quick construction) solutions.

These days, the costs of a terrorist attack are less and less expensive, regardless of its complexity, especially if we report to its destructive effects (cost-benefit). A few representative examples are:

1. The portable explosive device (so called the "shahid's belt") used by the suicide bombers costs between $ 80 and 150;

2. Terrorist attacks against US Embassies in Kenya and Tanzania, in 1998, cost approximately $ 50,000, but the damages have been at an amount of a few million dollars;

3. 2004 Madrid attacks (13 blasts in only one day) cost about € 11,000;

4. London attacks, during 2005 summer, cost a few hundred £. Material damage (beside the 52 dead victims) are difficult to estimate, taking into account that London road infrastructure and public transportation have been seriously affected;

5. In an interview for the *Washington Post*, one of the Hamas leaders stated that an attack in Palestinian territories and Israel costs between $ 3,500 and 50,000;

6. Terrorist attacks in Chechnya are very cheap for the organizers, due to the high unemployment rate. "Terrorist services" are often provided for amounts no larger than 50 rubles. An average amount for organizing a terrorist attack is $ 500;

7. 9/11 cost between $ 500,000 (according to the US intelligence services) and $ 1 mil. (according to the Germans). Even if it seems very high, the damages are without comparison: $ 135 billion, to which there should be added $ 7 billion governmental refunds (individual compensations between $ 250,000 and 7 million);

8. The attacks with trap-packages in 2010, organized by AQPA, cost only $ 4,200: two mobile phones, two printers and shipping fees.

Without being cynical, we can tell that the balance between cost and benefit regarding a terrorist attack is much more profitable these days than in the past. Calculating an average there could be told that, with a small amount of $ 150, 12 people might be killed – so, life, from a terrorist perspective, costs only $ 12.5. On the other hand, the generated fear and terror are impossible to count. From an economic point of view, the average report between preparation of attack expenditures and its effects is, according to some unofficial estimation, 1:1,270,000.

These statistics are not precise, of course; they might be argued or even invalidated, because it is difficult to elaborate an objective situation regarding the real value of the attack expenditures or of the damage done. They are purely informative, highlighting a cruel reality: *with a very small budget, huge damage may be done, and even a whole society might be paralyzed.*

A collateral effect of the terrorist attacks (not taken before into consideration) is the allocation of budgets by the authorities, with the goal of preventing and combating terrorist phenomenon – supplementary spending added to the damage cost. Preventive measures taken by the authorities make terrorists look for alternatives and gaps in the security of other new objectives/targets. Thus, a vicious circle is created.

Another effect is the "thickening" of institutions involved in the fight against terrorism. During an ample journalistic investigation, *Washington Post* succeeded in 2010 to reveal the existence of a large network of governmental agencies and private security companies. According to the journalists, "the secret America" has become, especially after 9/11, so wide and secret that nobody is able to estimate allocated budgets, employed personnel or either the number of structures. As a pure estimation, *Washington Post* believes

that there are 1,271 governmental agencies and 1,931 private companies, with a total of 850,000 people employed, which main activity is preventing and combating terrorism. The logistics is impressive: over 10,000 locations, but the budget remain a huge unknown, being though yearly estimated to a few billion dollars.

Conclusions

Measures adopted by western countries, with the price of impressive budget allocations, and still growing, determined the enlargement of security policies outside national boundaries, a necessary decision to "hunt" terrorist at their homes. This endeavor is only possible by raising the amounts needed for preventive actions. On a short term, such measures might prove their efficiency, but, on a medium and long term, they should be permanently updated (including from a financial perspective), because terrorists manage to identify and apply new action methods.

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