Evaluation of Stock Market Effects on Income Distribution in Iran (Regardless of Subsidies Payment Shock)

Siyamak Alipanah[1*] and Esmaeel Ramazanpoor[2]

[1]Department of Financial Management, Rasht Branch, Islamic Azad University, Rasht, Iran (Contact Author)
[2]Department of Management and Economics, University of Guilan, Rasht, Iran

ABSTRACT

The purpose of this study is to evaluate the relationship between Gini coefficient and income regardless of subsidies. This study is the result of Tehran stock market data considered in 2014. The studied population was the data related to all companies accepted in Tehran Stock market from 2001 to 2012. E-Views software was used to analyze the data. The statistics utilized were Stationary Test, Durbin-Watson test and Limer F-Test. The results showed that variables including financial deepening and its square, transactions value ratio to market value and its square are not significant. Gini coefficient variable and the square of market value to gross domestic product are significant with 99 percent confidence level. Per capita income variable and its square are significant with 95 percent confidence level and market value ratio to gross domestic product variable is significant with 90 percent confidence level. Variables including Gini coefficient of previous period, per capita income, the square of market value to gross domestic product, do not have positive effect on improving income distribution. While the square of per capita income and market value ratio to gross domestic product will improve income distribution. Surprisingly, financial deepening has no effect on income distribution. In addition, The low value of Durbin-Watson statistic indicates high self-correlation in the model. As can be seen Durbin-Watson statistic is very less d.w=0/71 and is also less than R2=0/94 which is an indicator of auxiliary regression. The auxiliary regression is the result of non-stationary variable, self-correlation and inadequate presentation of the model.

INTRODUCTION

In human history, Income distribution has been appeared with different concepts and various social –economic aspects. This matter has never been a purely or a prevailing economic concept. Income distribution had significant importance in economy and is one of the variables that have received significant attention by politicians. Equal income distribution is always one of the macro economic objectives of countries. In fact, despite the necessity of economic growth for increasing the welfare level of a country's residents, the income distribution created through economic growth channel to improve life level of countries residents is the sufficient condition to increase society's welfare.

Therefore, evaluating influential factors in income distribution is important. One of the factors in unequal income distribution is unequal distribution of production wealth. This wealth concentration in some groups such as society's economic and political elites, enable them to have more share of national production by expanding their own human capital and the generations after them (Jalali et.al, 2012, p160).

Currently in most developed countries, stock markets are considered as the central core of capital market and direct large amounts of money of floating invest to productive and active parts of the society. By adopting adequate policies, these markets can play crucial role in reducing inflation, increasing production and improving efficiency of

managers. Thus, by relying on rules and regulations and appropriate situation and facilities, this market can have a vital role in economic, social and cultural growth and development through assuring national and foreign investors. A country's financial system consists of various markets, tools and financial products. Therefore, financial development is a multi-dimensional concept and in addition to the development of bank section, other aspects such as non-bank financial section development, monetary section and monetary policy-making section development, regulations and bank monitoring, stock market development and, financial section and institutional environment openness (Dehmarde and Shokri, 2009, p149).

Unequal income increase is one of the main economic problems in Iran which has received significant attention recently and various researches have evaluated this phenomena and its influential factors. However, regarding the development and expansion of financial institutions and markets, none of these researches has evaluated the dynamics effects of financial development on income inequality. Thus, this research attempts to experimentally evaluate the relationship between financial market development and income inequality in Iran using seasonal data. The available theories regarding income inequality and financial development, has stated different predictions of the relationship between these two variables. For example, in Greenwood and Jovanovic model, an inverted U form relationship is predicted between financial market development and inequality. It means that first financial market development causes an increase in inequality and then when the average income increases and most families have access to intermediators and financial services, income inequality decreases (Ghanbari et.al, 2010, p3).

Most of the researches regarding financial development effect on income inequality, has focused on bank-oriented perspective and considered how bank development affects income inequality. This research attempts to evaluate the

market-oriented system and how it affects income inequality and how stock market influences income distribution. the question here is that how a country's financial system is defined. Is financial development better observed through economy's banking section or stock market and bonds or both? The bank-oriented view reflects the positive role of banks in accumulating savings, determining good projects, monitoring managers and risk management. The supporters of this view considered markets inefficient which present future information to people, discourage individual investors from finding potential investment incomes and avoid partnership control by creating high turnover and encouraging to have short term view (Mathew,2008).

The relationship between financial market development and economic growth is extensively considered in economic literature. It was first evaluated by Mc Kinon and Shaw (1973) and then by other economists. However, a few works were done regarding how financial market influences income inequality (Dehmardeh and Shokri, 2010, p148).

This research attempts to consider the orientation of Stock market system and how it affects income inequality. According to the explanations above, this study evaluates the relationship between stock market and income distribution and seeks to answer this question that What is the effect of stock market size or expansion and development of stock market (as a financial development evaluation index) on income distribution in Iran and does stock market development increases or decreases income inequality? Therefore, the focus of the research is to evaluate the effect of stock market on income inequality in Iran from 2001 to 2012 seasonally.

METHODOLOGY

This study is the result of Tehran stock market data evaluated in 2014. The studied population was the information related to all companies accepted in Tehran stock market from 2001 to 2012.

The following model was used to conduct this research:

Research Model

$$Gini_t = C + \beta_1 Gini_{t-1} + \beta_2 FD_t + \beta_3 FD_t^2 + \beta_4 MCAP_t + \beta_5 MCAP_t^2 + \beta_6 TVM_t + \beta_7 TVM_t^2 + \beta_8 Y_t + \beta_9 Y_t^2$$
$$+ \beta_{10} D_t + \varepsilon_t$$

Where :

C: Constant coefficient

β : explanatory variable coefficient

$Gini_{t-1}$: previous period Gini coefficient

FD : Indicator of financial deepening

FD_t^2 : Indicator of financial deepening square

$MCAP_t$: capital ratio in stock market

$MCAP_t^2$: the square of capital ratio in stock market

TVM_t : transactions value ratio to the current value of stock market

TVM_t^2 : the square of transactions value ratio to the current value of stock market

Y_t : per Capita income to fixed price

Y_t^2 : the square of Capita income to fixed price

D_t : subsidies paying shock

ε : model error value

Research variables

According to other researches practices and the research hypothesis, three groups of variables applied in this research including dependent, independent and control variables used for modeling and hypothesis test are introduced.

Independent variable

The research independent variable is financial markets and since the stock market is meant in this research and the stock market is considered as one of the subsets and classifications of financial market, therefore two criteria including Capital ratio in the Stock Market(MACP) and transactions value ratio to current market value are utilized which are explained below:

Capital ratio in stock market (MCAP): this ratio can be a scale for measuring stock market. Here there is

a significant point that stock price can easily increase by speculation and therefore the traded stock value can be priced high without any actual crash in transaction costs or/and change in actual number of transactions. Therefore, one of the methods to control this problem is considering market capitalization (MCAP). As a result if there is a significant relationship between liquidity of stock market and inequality, price volatility effect cannot only influence this relationship (Mathew,2008).

Transactions value ration to the current value of market: this ratio which is one of the indexes for evaluating financial development, indicates turn over in stock market. The above ratio is obtained through dividing the traded stock value in stock market to current value.

Control variable

Control variable are variables that are held constant to assure whether they have impact on the relationships between independent and dependent variables so that by Neutralization we make sure that their effect was not involved in the relationship between independent variable and dependent variable. The control variables used in this research are per capita income and Indicator of financial deepening.

Per capita Gross Domestic Product to fixed price (per capita income): Gross Domestic Product (GDP) is one of the measuring indicators in economy. The growth of GDP, as a criteria, indicates the economic growth of countries and economic growth is one of the most important factors in reducing income inequality (Jalali et.al, 2012).

Financial deepening index : financial deepening is considered as a synonym for financial assets deepening and is defined as " a case in which the growth of financial assets is faster than the growth of nonfinancial assets. In this case the financial assets ratio to nonfinancial assets is increasing" (Akhbari,2006). Financial deepening index is turnover (m2) to Gross Domestic Product (GDP). How this indicator is computed is as following:

Dependent variable

Dependent variable is a variable which is observed or measured to determine the effect of independent variable on it. Several criteria are used to evaluate income distribution inequality, however, researchers utilized three main indicators including: 1-Gini coefficient, 2-Tile indicator and 3-Atkinson indicator

In the present research, Gini Coefficient is specifically used as the most important and common indicator to evaluate income distribution. This indicator and its relative concepts are explained below.

Gini Coefficient

Gini Coefficient is a statistic index between zero and one where Zero corresponds with perfect equality in income distribution because individuals and families have the same income or expenses. In opposite, one corresponds with perfect inequality in income distribution or expenses because only one person has all the income. From geometric view, Gini Coefficient is defined based on Lorenz curve.

In this graph, the horizontal axis is population cumulative share which is ordered ascendingly based on income or expenses and the vertical axis shows income share. The perfect equality is stated through the diametric line (45degree). According to the definition, Gini coefficient is the ratio between Lorenz curve and 45 degree line to the whole area under the 45 degree line. If the area between Lorenz curve and 45 degree line is considered A and the area below the Lorenz curve is considered B, Gini coefficient is the ratio of A area to A+B area. In this case, Gini coefficient is

$$G = \frac{A}{A+B} = 2A = 1 - 2B$$

Therefore, Gini coefficient can be computed from

$$G = 1 - \frac{1}{n}\sum_{i=1}^{n}(y_i + y_{i+1})$$

For classified observations. In this equation, y_i is the income cumulative percent of families and n is the number of income groups (Jalali, 2008, p28).

Finally, EViews software was used to analyze data. The statistic utilized were stationary test, Durbin-Watson test and Limer Test-F.

RESULTS AND DISCUSSION

As can be seen the results of model estimation are presented in table 5-4. Financial deepening and its square, transactions value ratio to market value and its square are not significant.

Gini Coefficient variable and the square of market value to gross domestic product are significant with 99 percent of confidence level. Per capita income and its square are significant with 95 percent of confidence level and market value ratio to gross

domestic product is significant with 90 percent confidence level.

The variables including Gini coefficient of the previous period, per capita income, the square of market value to gross domestic product do not have positive effect on improving income distribution. while, the square of per capita income and market value ratio to gross domestic product cause improvement in income distribution. surprisingly,

financial deepening has no effect on income distribution. in addition, The low value of Durbin-Watson statistic indicates high self-correlation in the model. As can be seen, Durbin-Watson statistic is very low d.w=o/71 and is less than R2=0/94 which is an indicator of auxiliary regression. The auxiliary regression is the result of non-stationary variable, self-correlation and inadequate presentation of the model.

Table 6-4 The results of estimating model No2(regardless of subsidies)

Significance level	T statistic	Standard deviation(SD)	coefficient	variable
0	17.90775	0.076215	1.364845	Interrupted Gini Coefficient) $Gini_{t-1}$(
0.0473	2.055964	6.01E-05	0.000124	Per capita income)Y(
0.0219	-2.39898	1.66E-08	-3.98E-08	Per capita income square)Y^2(
0.0957	-1.71221	1.85E-08	-3.17E-08	Market value to gross domestic product)MCAP(
0.0004	3.874468	7.41E-15	2.87E-14	Market value to gross domestic product square) $MCAP^2$(
0.2124	-1.27027	0.031145	-0.039562	Financial deepening (FD)
0.1817	1.362587	0.007024	0.009571	Final deepening square(FD^2)
0.3898	-0.87085	0.095182	-0.082889	Transactions value to market value (TVM)
0.3158	1.017805	0.532721	0.542207	Transactions value to market value square(TVM^2)
0.0123	-2.6403	0.076185	-0.201151	Y-intercept)C(
0.9902	0.012418	0.201325	0.0025	AR
0.413905		Mean dependent var	0.959197	R-squared
0.022764		S.D. dependent var	0.947539	Adjusted R-squared
-7.470029		Akaike info criterion	0.005214	S.E. of regression
-7.032746		Schwarz criterion	0.000951	Sum squared resid
-7.30622		Hannan-Quinn criter.	182.8107	Log likelihood
0.71278		Durbin-Watson stat	82.27833	F-statistic
			0	Prob(F-statistic)
			0	Inverted AR Roots

Variable stationary is very vital in using LOS method. Because variables stationary can lead to auxiliary regression and OLS method can be used only when the estimation remainder is an invariant time series. In other words, variables should be cointegrated . in the present study, some variables are non-stationary. Table 1 shows the results of generalized Dickey- Flour test.

Table1-4- the results of generalized Dickey Fouler test on model variables

status	Reliability significance level	Computed Dickey Fouler statistic	Level(per cent)	Critical value of Dickey Fouler statistic	Variable
Non-stationary		-1.799708	10	-2.603944	Per capita income to fixed price(Y)
Non-stationary		-1.815898	10	-2.603944	Per capita income to fixed price square (Y^2)
stationary	1	-4.023186	1	-3.588509	Gini Coefficient
Non-stationary		2.24217	10	-2.604867	Market value to GDP
Non-stationary		2.39574	10	-2.609066	Market value to GDP square
Non-stationary		-0.711758	10	-2.603944	Financial Deepening (FD)
Non-stationary		-1.117342	10	-2.603944	Financial Deepening Square (FD^2)
stationary	1	-5.892085	1	-3.577723	Transactions value to market value
stationary	1	-6.589159	1	-3.577723	Transactions value to market value square

Variable including Gini coefficient, transactions value to market value and the square of transaction values to market value are stationary while variables such as per capita income to fixed price (Y), the square of per capita income to fixed price (Y2), market value to gross domestic product, the square of market value to gross domestic product, financial deepening and the square of financial deepening are non-stationary. Therefore, only if the time series of estimation remainder are stationary, the results of OLS method will be valid.

After estimating the model, the results indicate that estimation remainder is stationary. Thus, variable are cointegrated and using OLS method is valid.

Table 4, Test Manayy

status	Reliability significance level	Computed Dickey Fouler statistic	Level(percent)	Critical value of Dickey Fouler statistic	Variable
stationary	1	-3.59246	1	-4.284114	Estimation remainder

CONCLUSION AND SUGGESTIONS

According to the results obtained from hypothesis tests, it can be concluded that development and expansion of market size will cause Gini coefficient reduction. Evaluations confirm that the relationship between expanding stock market size and Gini coefficient is negative and significant. This hypothesis evaluates the effect of market value ratio to gross domestic product on Gini Coefficient and indicates that there is a significant relationship between them.

Furthermore, it indicates that increasing the current value of stock in stock market has considerable effect on reducing income inequality and Gini coefficient. It verifies Greenwood and Jovanovic hypothesis.

According to the objectives explained in part one the following suggestion are presented:

• Since the stock market capitalization ratio was studied in this research and the results indicate that increasing this ratio ,which is an indicator of market size expansion, will cause improvement in income distribution and Gini coefficient. Therefore it is suggested to provide the background for entering and accepting more companies in Tehran Stock Market.

• It is suggested to provide equal social opportunities for learning and accessibility to financial and physical capitals through financial markets especially stock market.

REFERENCES

Abunuri,Abbasali, Mofateh,Somayeh, Parhizi gashti, Hadi. (2010). "Analysis of Inflation effect on income distribution in Iran (Comparative analysis of Iran urban and rural regions)". Journal of Economic Sciences. No.13. 77-96.

Akhbari, Mohammad. (2006). A review on Iran Financial depth status. Ravand Journal". No.48.155-198.

Arestis,plilips and demetriades,panicos o, luintel, kulb,"financial development and economic growth: the role of stock markets,journal of money,credit and banking, vol.33, no.1(feb.,2001),pp.16-41

Arsalan bad,Mohammadreze. (2004). "Income distribution changes in Iran's rural and urban regions". Journal of agricultural economics and development. No.45.

Asari Arani, Abbas, Agheli Kohne Shahri, Lotfali, Shafiei, Saeid, Rasoulmir, Meisam. (2011). "Evaluating the effect of financial policies on income distribution in Iran". Journal of Economics. No.1. 31-48.

Banerjee,abhijit and Andrew newman,(1991) ,"risk-bearing and the theory of income distribution" ,the review of economic stuies,58(2) ,211-235

beck,thorsten,asli demirguc-kunt and ross levine,(2007) ,"finance, inequality and the poor,"journal of banking and finance,28,423-442.

clarke,george,lixin colin xu and heng-fu zou,(2006) ,"finance and income inequality: what do the data tlee us? ,"southern economic journal,72,578-596

da,mitali,mohapatra,sanket,(2003) ,"income inequality:the aftermath of stock market liberalization in emerging markets,"journal of empirical finance ,10,217-248

Dehmardeh, Nazar, Safdari, Mehdi, Shahikitash, Mahim. (2010). "The effects of mega indexes on income distribution in Iran(1974-2007)". Journal of commerce. No.54. 25-55.

Dehmardeh, Nazar, Shokri, Zeinab. (2010). "The effects of Financial development on income distribution in Iran."Journal of economic researches and policies. No.54. 147-164.

Delli gatti,domenico and galle gati,Mauro,"fananceial instability,income distribution,and the stock market",journal of post keynesioan economics,vol.12,no.3(spring,1990),pp.356-374

demirguc-kunt,asli and ross levine,(2001) , "financial structure and economic growth: a cross-country comparison of banks,markets,and development" ,MIT press,cambridge,ma

favilukis, j. (2007) ,"inequality,stock market participation and the equity premium,"financial markets group at the London school of economics,FMG discussion papers.

Ghanbari, Ali, Aghayi, Majid, Reza Gholizadeh, Mahdieh. (2011). " Evaluating the effect of

financial development on income distribution in Iran". Journal of Economics. No.1. 1-29.

Ghazi, Faezeh, Houshmand, Mahmud. (2008). "Evaluating the interaction of income distribution and growth in Iran's economy". The First Conference on Islamic Economics and Development. Mashhad.

greenwood ,Jeremy and bojan jovanovic ,(1990),"financial development, growth, and the distribution of income,"journal of political economy 98, 1076-1107

Jalali Esfandabadi,Abdulmajid, Ghaseminejad, Amin, Rostamin, Hanar, Soleimani, Farkhonde. (2012). "Evaluating and predicting income distribution in Iran's rural and urban regions in 1404 vision". Journal of Economic Startegy. No.2. 159-180.

Jalali,Mohsen. (2006). "Analysis of Gini Coefficient and income elasticity in Iran". Ravand Journal. No.48.. 25-48

Jalali,Mohsen. (2008). "Evaluating and estimating Gini Coefficient in Iran". Journal of Iran economic researches. No.36. 115-136.

Karimi,Samad. (2006). "The Structure, Strategies and policies of Iran's financial market development" Journal of Economic researches Trend. No.48. 105-154.

Khaledi, Kouhsar, Sadroleshrafi, Mahriar. (2005)." Evaluating the interrelation of agriculture section economic growth and income distribution in rural regions in Iran". Journal of Agricultural Sciences. 25-39.

Khodadakashi, farhad, Heidari, Khalil. (2009). "Evaluating income distribution in Iran (Application of Tile, Atkinson and Gini Coefficient indexes)". Journal of Economics. No.4. 151-179.

Levine,ross,zervos,sara,(1996) ,"stock market development and long-run growth". Eorld bank economic review 10(2) ,323-339

Mandegani, Sajad, Afghah, Morteza, Namvar, Ehsan. (2012). "Assessing the effects of macroeconomics variables on income distribution inequality in Iran". Social Welfare Quarterly. No.46.

Manoel Bittencourt, 2010."Financial development and inequality:Brazil 1985–1994," Economic Change and Restructuring,Springer,vol. 43(2),pages 113-130, May.

Mathew,Elizabeth,(2008),"stock markets and income inequality: a cross country study"master thesis ,Singapore management university

Mehregan, Nader, Musayi, Meisam, Keihani Hekmat, Reza, (2008). " Economic growth and income distribution in Iran". Social Welfare Quarterly. No.28. 57-77.

Momeni, Mansour, Faal Ghayumi, Ali, (2012). "Statistical analysis using SPSS". Tehran, Author publication.

Nezhad Abdolah, Masoume, Mohtashami Barzedaran, Gholamreza, Yaghoubi aval Riabi, Mehdi, (2013). "Income distribution indicators in Iran". Journal of Economic. No.9 and 10. 49-64

Nezhad Abdolah, Masoume, Mohtashami Barzedaran, Gholamreza, Yaghoubi aval Riabi, Mehdi, (2013). "Income distribution indicators in Iran". Journal of Economic. No.9 and 10. 49-64

Pajuhian, J,ashid, Vaezi, Vida. (2010). "The relationship between income distribution index and health index in Iran". Economics Bulletin, No.36. 115-134.

Research Management, development and Islamic Studies. (1997). "Function of Stock Exchange and its status in financial markets."Statistical center of Iran, (2014). "Income distribution in rural, urban and country's families (2002-2013)". 1-28.

Sadeghi, Kamal, Ebrahimi, Saeid. (2013). "The effect of financial development, gross Domestic Product and energy Consumption on environmental pollution in Iran (ARDEL approach)". Journal of Iran Energy Economics. No.7. 43-73.

Salem, Aliasghar, Arabyar Mohammadi, Javad. (2011). "Evaluating the relationship between financial development and income distribution in Iran's economics". Journal of Economic researches trend. No.58. 127-151.

Shakeri, Abbas, Jahangard, Isfandiar, Aghlami, Somayeh. (2014). "The non-linear effect of inflation on income inequality in Iran". Journal of Economic Researches (Sustainable development and growth). No.4. 27-53.

Vaezi, Vida, Zare, Hossein. (2011). " The relationship of income distribution (Gini Coefficient selected index) and health economics (Mortality selected index and causes of death) in Iran". Social Welfare Quarterly. No.42. 281-313.

Vanek,jaroslav and jovicic,milena,"the capital maket and income distribution in Yugoslavia: a theoretical and empirical amalysis", the quarterly journal of economics,vol.89,no.3(aug.,1975),pp.432-443

Zibaei, Hassan. (2004). "Evaluating the share of determining factors on inequality and income distribution in Iran". Journal of Planning and Budget. No.91. 29-67.

zietz,j. ,& zhao,x. ,(2008), "the short-run impact of the stock market appreciation of the 1980s and 1990s on u.s. income inequality,"the quarterly review of economics and finance,doi:10.1016/j.qref.2007.06.003

Zietz,Joachim,zhao,xiaolin,2007."the short-run impact of the stock market appreciation of the1980s and1990s on u.s. income inequality, Elsevier, the quarterly review of economics and finance 49(2009) 42-53