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A Survey on The Cointegration Relationship and Causality between Financialization and Income Inequality in Iran: ARDL Bounds and Toda-Yamamoto Approaches

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Abstract

The present paper addresses the long-run and causal relationship between financialization and income inequality at the macroeconomic level of Iran during the period 2002-2018. By collecting required data, the causal relationship between three financialization indicators (financial value added as total economy value added, financial employment as total economy employment, and market capitalization as share of GDP) and Gini coefficient, as an indicator of income inequality, was investigated. Using ARDL bounds testing approach, co-integration analysis was performed and then causality between financialization indices and income inequality was tested using Toda-Yamamoto approach. Findings of the study showed that there exists a long-run relationship between the considered variables when income inequality variable is utilized as the dependent variable. Also, there is a unidirectional relationship from financialization indicators to income inequality.

Keywords: Financialization, Income Inequality, ARDL Bounds Tests, Gini Coefficient, Toda-Yamamoto.

JEL: C58, O15, E44, O53.

1. Introduction and literature review

The 2008-2009 global financial crisis has raised doubts about the prevailing view that financial development plays a major role in economic growth. Although, many years before the beginning of global financial crisis, some researchers have provided evidence that the financial sector is expanding very rapidly (in the US since the 1980s) and called it financialization, the use of this term became more widely noted by researchers after the crisis. A review of the literature on financialization shows that one of the research areas is the assessment of the relationship between this phenomenon and income inequality. Theories suggest that financialization affects income inequality through three channels. The first channel is by affecting on the bargaining power of the staff. Financialization has dramatically reduced the profits of non-financial corporations that covered a large number of jobs, and has subsequently widened the compensation gap across different levels of labor (Crotty, 2005). Another channel is through the liberalization and expansion of the international capital market. Globalization of the capital market encourages companies to adopt new

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strategies that benefit the financial sector of the economy by abandoning "Retaining and Reinvesting" strategy and replacing it with "Downsizing and Distributing" strategy (Lazonick and O'Sullivan 2000). Finally, the last channel is by increasing the size of the financial sector in the national economy. Expanding the size of financial markets makes it more likely for households and firms to invest their surplus resources in these markets, especially the stock market. The result is increased the shareholders' equity and commissions of the capital market employees, thereby increasing income inequality. Experimental studies have also shown a significant relationship between financialization and income inequality (Lin & Tomaskovic-Devey 2013; Dünhaupt 2014; Alvarez 2015; Golebiowski et al. 2017; Hyde et al. 2018).

The lack of homestic studies on financialization and the emphasis of Islamic principles on reducing income inequality encouraged the author to do the current research. Hence, the aim of this study was to answer the question of whether there is a long-term relationship between income inequality and financialization and, if the cointegration relationship is confirmed, what is the causal relationship between them.

2. Method

Drawing on Lin and Tomaskovic-Devey's (2013) study, the required information for the years 2002-2018 was collected through the Central Bank, Iran Statistics Center and the World Bank websites. This study employed, based on different studies, Gini coefficient for measuring income inequality and three financialization indices i.e. financial sector value added share of total economy value added, financial sector employment share of total economy employment and capital market size to GDP ratio.

In order to investigate the cointegration relationship between the variables, the bound test approach introduced by Pesaran and others (1996) was used. According to this method, if there were two variables Y_t and X_t, we need to estimate the unconditional error correction model (UECM) as follows:

$$\Delta Y_t = \beta_0 + \theta_{yy} Y_{t-1} + \theta_{xy} X_{t-1} + \sum_{i=1}^{p} \mu_i \Delta Y_{t-i} + \sum_{i=0}^{p} \tau_i \Delta X_{t-i} + \varepsilon_t \qquad (1)$$

After ensuring that none of variables is I (2) and higher degree of stationarity, the critical values of F-statistics as estimated by Pesaran et al. (2001) were computed. If the calculated F-statistic is greater than the upper bound value, the null hypothesis is rejected and if it is smaller than the lower bound, the null hypothesis is confirmed. Also, if the F-statistic is placed between two boundaries, our decision will remain inconclusive. Finally, Modified Wald (MWALD) suggested by Toda and Yamamoto (1995) was used to understand the causal relationship between the variables.

3. Results

Stationarity test of the variables using Augmented Dickey-Fuller (ADF) and Phillips-Prone (PP) showed that all of the variables were either I (0) or I (1). This result allows applying the ARDL bounds test approach. The computed F-statistic value indicates there is a long-run relationship between the model variables (Table 1).

Table 1: Critical values at 5% level (Pesaran et.al 2001)

F-Statistic Computed = 12.52 (Dependent Variable: GINI)			
6.34	Upper bound I(1)	4.28	Lower bound I(0)

Next, the modified Wald test was performed to identify causality between model variables; the results are reported in Table 2. According to the calculations, no causal relationship was found between income inequality ad the indicators of financialization. In contrast, a one-way causal relationship was observed between the two indicators of financialization (financial sector employment share, capital market size) and income inequality.

Table 2: causality test result

Causality	$\chi 2$ statistic	Probability
GINI $\longrightarrow$ FIREEM	0.92	0.34
GINI $\longrightarrow$ FIREVA	0.64	0.43
GINI $\longrightarrow$ MCAP	0.80	0.37
FIREEM $\longrightarrow$ *GINI*	12.29**	0.00
FIREVA $\longrightarrow$ GINI	0.38	0.54
MCAP $\longrightarrow$ *GINI*	3.18**	0.07

The findings of the study confirmed the results of other similar studies in this field. In order to examine the issue more closely, it is suggested that future studies focus on the impact of financialization on income inequality at the firm level and in a longer period to measure the impact of financialization indices on income inequality by estimating coefficients in the long-run and short-run models.

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