

Agricultural Supports and Financial Development Relation: An Empirical Application

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Abstract: The purpose of this study is to examine the relationship between financial development and agricultural support for the period 1986-2015 with a new method of asymmetric causality analysis. For this purpose, the stability of the variables and the appropriate delay length were determined and Hecker- Hatemi (2006) conducted a symmetric causality analysis and as a result no causality was found. Then, the relationship between financial development and agricultural supports was examined by Hatemi-J (2012) asymmetric causality relation. As a result; one-way causality from financial supports to financial development has been found among the negative components of the variables.

Keywords: Financial Development, Agricultural Supports, Asymmetric Causality Analysis

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I. INTRODUCTION

The continuity of the state depends on its development and economic power. This is based on the productivity, efficiency and education of the population of the states. In this context, states transfer resources in various ways to increase the wealth of their citizens, provide education opportunities, develop economic activities, ensure sustainable growth, and make the country financially less vulnerable to structural problems, as evidenced by the social contract. The structure of this transfer process, the place where the transfer is made and the return from the area where the transfer was made within the predicted time, is also an indicator of how efficiently the state uses its resources. In this study, it will be examined whether the agricultural sector, one of the areas where the monetary resource is transferred, makes a meaningful contribution to financial development. In countries where the industrialization process has not been completed or where a significant portion of its resources have not been transferred to the service sector, agricultural activities are still an important economic activity. In this context, a significant asymmetric causality relationship between these two variables can show that the resources of the country can transfer in future periods, or more effective policies can be developed, since the support that Turkey transfers to the agricultural area does not find a correspondence in the field of financial development and shows the return of the transferred support.

The country's economies are developed depending on industry, agriculture, service and construction sectors. These sectors affect the unemployment rate, development and many macroeconomic dynamics in the country's Gross Domestic Product (GDP). When the agricultural sector, which is one of the main sectors for Turkey, is examined in general, the agricultural sector has decreased in proportion compared to other sectors in recent years. On the other hand, the agriculture sector continues to function as a source of raw material input to other sectors and the economy provides important contributions. Turkey possesses both important geographical location and important agricultural area in terms of its climate. In this context, the economic contribution of agriculture is presented in Table 1.

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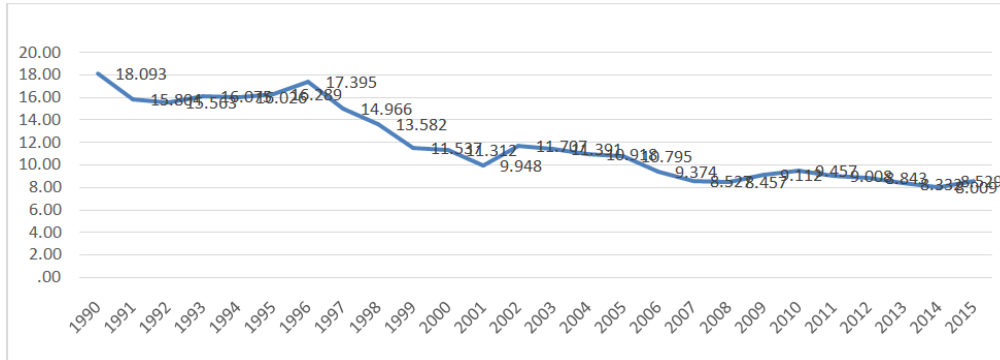
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Table 1: Classification of Employment by Branches of Economic Activity (%)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Agriculture	25.5	23.3	22.5	22.4	23.1	23.3	23.3	22.1	21.2	21.1	20.6	19.5
Industry	21.6	21.9	21.8	22.0	20.3	21.1	20.8	20.5	20.7	20.5	20.0	19.5
Build	5.6	6.0	6.1	6.0	6.3	6.6	7.2	7.2	7.2	7.4	7.2	7.3
Service	47.3	48.8	49.6	49.5	50.4	49.1	48.7	50.2	50.9	51.0	52.2	53.7

Resource: TÜİK, <http://www.tuik.gov.tr>

Graph 1: Share of Agriculture Sector in GDP



Kaynak: World Bank

When analyzed by graphical data, the share of agricultural sector gross domestic product in GDP tended to decline from 1990's to the day. The perception that the agricultural sector tends to decline proportionally as the value of services and the art sector increases proportionately compared to the agricultural sector. It is possible to say that the agricultural sector has expanded numerically, although it has declined proportionally. Risks and uncertainties that the output of the agricultural sector depends on natural conditions, and the need for farmers to support their financial needs have been accepted by many countries, and these supports have been misled by various policies (Arı, 2006). Also, like Turkey, loans have become an important tool to provide the necessary capital in developing countries, countries with limited savings opportunities and needing capital.

The contribution of the agricultural sector to the Turkish economy can be expressed in many other indicators. In the second part of the study, the relevant literature review, the econometric methodology of the model used in the third part, and the analysis of the stationarity of the series, which is the pioneering test to examine the effect of the agricultural loans on financial development. The ADF unit root test was performed with help of Sora Hacker and Hatemi-J (2006) bootstrap and Hatemi-J (2012) asymmetric causality test to determine the relationship between these two variables.

Literature

Taivan and Nene (2016) examined the causal relationship between financial development and economic growth for 10 South African Development Societies (SADC) countries from 1994 to 2013 in the "Financial Development and Economic Growth: Evidence From Southern African Development Community Countries" study. The vector autoregression (VAR) approach was used to perform Granger causality tests to determine the direction of the causality relationship between financial growth and economic growth. Before doing the Granger causality tests, unit root tests to test the data stagnation and cointegration tests were conducted to examine the short and long term relationship between financial development and economic growth. As a result, there are three main arguments for the link between financial development and economic growth: supply-side theory (financial development leads to economic growth or positive causality); and subsequent demand (economic growth leads to financial development or reverse causality). In particular, the empirical results indicated that when used as broad money (UN) and direct credit (DC) financial development measures, the evidence was 50% and 60%, respectively, of the sample and the results were measured by BM and DC has led to an economic growth of 20% and 30%, respectively, of financial development.

Agile and Zeren (2014). The relationship between the agricultural credits and the financial development in the period between December 2005 and October 2013 in Turkey is examined by the Asymmetric Causality Test and the KPSS unit of the series is examined by the Asymmetric Causality Test of the Effect of Agricultural Credits on the Financial Development root test. The results of Hacker and Hatemi-J bootsrapt causality are also included in the study of Hatemi-J asymmetric causality test, which distinguishes

positive and negative shocks and considers the existence of asymmetric information on financial markets. As a result of using the monthly data, it was determined that there was no relation in case of negative shocks and that the positive shocks on agricultural credits were the cause of financial development and that the agricultural sector still constitutes an important place in the financial structure of Turkey.

Shahbaz et al. (2013), the relationship between agricultural growth and financial development in Pakistan is examined for the period 1971-2011. As a result of the analyzes made, financial development has been found to have a positive effect on agricultural growth.

Ahmad (2011), Pakistan for the period 1974-2008 examined the effect of loans on agricultural activities. As a result of these analyzes, a positive relationship was found between lending and agricultural loans.

Terin et al. (2014). The aim of the work "Causality Relation Between Agricultural Production and Agricultural Credit Usage in Turkey" is to determine whether there is a causal relationship between agricultural production and the use of agricultural credits. For this purpose, 18 year time series data were used between 1995 and 2012. Augmented Dicky-Fuller (ADF) unit root test, Johansen cointegration test and Granger causality test were used to test the causality between agricultural production and agricultural credit. According to Granger causality analysis results; it has been found that there is a one-way causality relation from agricultural production to agricultural credit between agricultural production and agricultural credit.

Weber and Musshoff (2013) argue that this article, which uses a unique data set of a commercial microfinance institution (MFI) in Madagascar called "Can flexible microfinance loans for credit access for farmers?", Provides that if MFIs provide flexible microfinance loans to meet agricultural income, how credit access probabilities and credit volume rational size change. In other studies, probit models for Heckman models and the likelihood of receiving a loan to estimate the magnitude of volume allocation for all microcredit applications and expenditures of MFI were estimated, differing between farmers with standard microfinance credits and farmers with flexible microfinance credits. The results show that agricultural firms with flexible microfinance credits are significantly higher than those with standard microfinance credits and non-agricultural firms and agricultural firms as well as the fact that agricultural firms with flexible microfinance credits have a stronger volume than non-agricultural firms and agricultural firms with standard microfinance credits.

Taşkıran ve Özüdoğru (2010) "The Agricultural Credit Practices in Turkey" is the main sector in the Turkish and world economy that is an important sector for the financing of the agricultural sector. The income of the producers is not sufficient, developing countries like Turkey prefer mostly unrecorded credit sources and that such loans are loans which are mostly short-term, high-interest loans with very high paying conditions and created by the lack of organized sources of credit. This is why the low level of the agricultural sector it is necessary to make the credit transactions simple and understandable in order to increase the economy and the interest rates are reduced to the market conditions and the producers are borrowed with village grants and opportunistic high interest rates that they should be rescued, that the producers should be kept in a difficult situation by requesting reasonable collateral against the loans they need, and that the credit should be delivered to the appropriate and needed areas in time and that the appropriate use of the loan should be controlled.

Ergeç (2004) "The Causality Relation Between Financial Development and Economic Growth and the Case of Turkey: 1988-2001", the direction of the causality between the developments is debated for the Turkish economy, and the development of the financial system, which is vital for all economies, the problem is trying to explain why financial development is a cause or a consequence. The results obtained by using the Granger causality test In the case of the Turkish economy, the direction of causality has emerged in the short term toward economic development without economic development, but in the long run towards financial development without financial development. However, the hypotheses without Granger causality could be rejected at different levels of significance for short and long term, and the use of only a few indicators of financial development, but only six financial indicators showed statistically significant results. Although two-way causality hasn't been found in any of these tests and the causality relationship in the short term has been observed in some financial development indicators, the long term causality relationship has been identified in almost all financial development indicators. The model that will lead to the integration of agriculture with the industry will contribute to the problem of agriculture financing and marketing of agricultural products at the same time as the application and supply of timely and qualified raw materials to the agro-based industry.

Özçelik et al. "Agricultural Credits in Turkey: Credits from Contracted Agricultural and Producer Organizations" at the beginning of the most important problems of agriculture in Turkey, financing is coming and the developments in this area, the structural problems of agriculture and businesses are continuing, the economical structure is not sufficient due to the problems that become chronic and at the same time these structures and conditions prevent effective organization and structuring of credit. the success achieved, political and economic stability, agricultural lending activities for agriculture, the most important credit source of agriculture, parallel to the restructuring of T.C. Ziraat Bank, the favorable atmosphere in the financial markets has led to the application of "contracted credit for production", in which private sector banks are also engaged in agriculture and in this process banks, in particular limited or even individual loans, find themselves more guaranteed and secure.

II. DATA SET AND METHODOLOGY

The purpose of this study is to examine the relationship between agriculture credits and financial development through the analysis of causality between 1986-2015. In the study, financial development in study FD and agricultural support were symbolized by TD. While unrequited transfer expenditures given to farmers by the state for agricultural support data are used, the value of BIST capitalization for financial development has been taken and analyzed.

Hecker-Hatemi (2006), variables need not be stationary in order to perform symmetric causality analysis. However, in order to be able to perform the causality analysis, the stationarity of the variables was examined with ADF unit root tests and reported in Table 1 so that the levels stabilization of the variables (dmax) and the appropriate delay level (p) in the VAR model can be determined.

Table:2 ADF UnitRoot Tests

Variables	I(0)	I(1)
	Persistence	Persistence
FD	-1.54 (0.497)	-6.461(0.000)***
TD	-1.868(0.341)	-5.132(0.000)***

Note: ***, **, * indicate that the variables are stable at 1%, 5% and 10% significance level respectively.

According to the ADF unit root test results, the stationarity rank I is determined as 1, the appropriate delay length is 2, and the autocorrelation of the determined appropriate delay length and the positions of the variables in the unit root circle are examined and it is determined that the selected delay length is the appropriate delay length.

Table: 3 LM- Autocorrelation Test

Lags	LM-Stat	Prob
1	1.832366	0.7666
2	1.085685	0.8965
3	3.300972	0.5088
4	1.004785	0.9091
5	3.545400	0.4710
6	9.666831	0.0664
7	1.194468	0.8790
8	2.393886	0.6637
9	10.10897	0.0586
10	3.895187	0.4204
11	2.418112	0.6594
12	1.808419	0.7709

Inverse Roots of AR Characteristic Polynomial

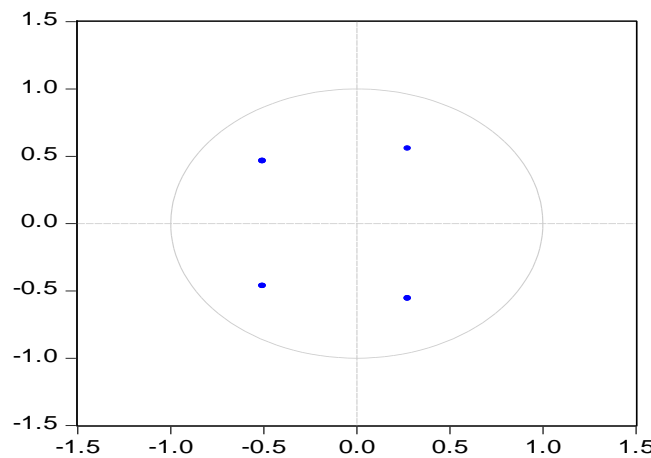


Figure-1: AR, Unit Circle Position of Inverse Roots of Characteristic Polynomial

In order to be able to perform the causality analysis, the appropriate delay length was determined as 2 and the stationarity rank I of the variables was determined as I (1), followed by causality analysis and the results are reported in Table 3.

Table: 4 Hacker-Hatemi-J (2006) Symmetric Causality Analysis Results

Direction of Causality	Test Statistic	Critical Values		
		%1	%5	%10
Agricultural Supports> Financial Development	6.239	14.069	9.423	6.998
Financial Development> Agricultural Support	4.052	16.344	9.025	6.994

As a result of the analysis, no causality between agricultural support and financial development was found, ie the Ho hypothesis, which argues for causality between variables, was rejected and the alternative hypothesis was accepted.

In the Hacker and Hatemi-J (2006) causality test, the Toda-Yamamoto causality test (1995) is applied to determine the causality between variables, but the critical values are obtained by bootstrap Monte Carlo simulation in spite of the possible normal non-distribution risk. The lack of this model, however, is that it can not distinguish between positive and negative shocks. In this context, the results of this test may be misleading because asymmetric causality test developed by Hatemi-J (2012) shows the existence of asymmetric information on financial markets and the market participants are heterogeneous, respondents do not respond to the same magnitude of positive and negative shocks. In this context, Hatemi-J asymmetric causality test (2012) is the separated form of positive and negative shocks of Hacker and Hatemi-J (2006) causality test. In other words, this method is very suitable for studies where financial time series are used.

Table: 5 Hatemi-J Asymmetric Causality Analysis

Direction of Causality	Test Statistic	Critical Values		
		%1	%5	%10
Agricultural Supports> Financial Development (+)	0.086	9.626	5.036	3.282
Agricultural Supports> Financial Development (-)	5.601**	7.638	3.843	2.607
Financial Development> Agricultural Supports (+)	0.000	10.215	4.819	3.008
Financial Development> Agricultural Supports (-)	2.850	8.563	4.386	2.966

Note: The ** sign indicates the level of significance at 5%.

As a result of the causality analysis, only one negative causality from financial supports to financial development was identified among the negative components.

III. RESULT

The economic and financial impact of agricultural activities, an important economic factor for Turkey, is inevitable. In this context, the delay length of the model and the stability rank of the variables I (1) are examined for the relationship between agricultural supports and financial development. For this purpose, the ADF unit root test was used for stationarity analysis, the VAR model was used for the appropriate delay length, and the position of the autocorrelation and roots in the circle was determined. As a result of these processes, it is determined that the model is not a problem in autocorrelation and circulation of roots.

After making the necessary analysis about the model, the analysis of causality was started. First, Hecker-Hatemi (2006) conducted a symmetric causality analysis and found that there is no causality relationship between variables. Then, the relationship between Hatemi-J (2012) asymmetric causality relation which examines the causality relation between the positive and negative components of the variables and the relation between financial development and agricultural supports is examined. As a result, one-way causality from financial supports to financial development, among the negative components of the variables, has been determined. The results obtained in the study are; Cevik and Zeren, 2014; Shahbaz et al. (2013).

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