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THE RELATIONSHIP BETWEEN SYNDICATION LOANS AND LOANS TO THE MANUFACTURING SECTOR: THE CASE OF TÜRKİYE

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Abstract

The main function of financial markets is to bring together the economic units that have excess funds and the economic units in demand for funds. In this context, banks are one of the most basic institutions of financial markets where fund transfers necessary for the continuity of economic life. If the amount of loan to be granted by banks is high, banks apply to syndicated loans created by more than one participant. It is important for the economic units that where the funds obtained from the syndicated loans will be used. In this study aimed to determine the relationships between syndicated loans received by the Turkish banking sector and loans granted to production-oriented sectors. The results show that the effect of syndicated loans on strategic sectors in the Turkish economy varies asymmetrically and on a sectoral basis, and the relationships between syndicated loans and sectoral loans vary largely according to the financing structure of the sectors and their dependence on external resources. The study also reveals that syndicated loans received by Turkish banking sector can create different effects on a sectoral basis and loan distribution processes are shaped according to sectoral dynamics. These results emphasize the importance of syndicated loans in sectoral financing processes and point out the importance of banks taking international financing conditions into account in sectoral loan distribution policies.

Keywords: Sectoral Loans, Syndicated Loans, Asymmetric Causality Test

JEL Codes: G15, G20, G21, L60

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INTRODUCTION

The banking sector is a sector that plays a key role in the financing of economic activities and is of critical importance for the development of financial markets. Banks are one of the main actors that support economic growth in the long term through both individual consumer loans and large-scale commercial loans (Li & Zhang, 2022). However, banks' ability to fulfill their financing function and support growth depends on their ability to generate resources. Especially when internal resources are insufficient, banks have to benefit from external resources. In this context, one of the sources turned to by banks is syndicated loans. Banks' access to external financing opportunities such as syndicated loans is one of the important factors that increase their liquidity situation and lending capacity. A syndicated loan is a type of loan where more than one financial institution comes together and provides funding to a borrower in need of financing under the leadership of one of them (Türkakın, 1990, p.55). According to another definition, it is a type of loan where two or more banks come together, provide a debtor with a short-term variable interest rate and interest payments are made in a certain currency (Miller & Vanhoose, 1993, p.740). In addition to providing low-cost financing for banks, these loans allow banks to meet their liquidity needs and expand their loan portfolios. Syndicated loans are frequently preferred as a source of external financing in developing countries, and it is considered that banks will constitute an important source for banks to finance economic activities, especially in periods when the funds provided from internal sources are insufficient and capital movements are limited.

The effect of syndicated loans on loan policies of banks is closely related to how banks evaluate these funds. By using syndicated loans, banks can increase their loan volumes and manage liquidity effectively. In this context, banks generally direct the funds they obtain from syndicated loans to sectors with higher return potential and thus try to maximize their profitability. This situation shows that syndicated loans can have significant effects on sector-based loan distribution processes. Syndicated loans are an important source of funding for banks, especially for loans granted to sectors that have large-scale financing needs. These loans are also easier to liquidate, to reform or to cancel compared to many other debt securities (Altunbaş, et al., 2006, p.689). The distribution of syndicated loans by banks on a sectoral basis varies depending on factors such as the risk profiles of the sectors, their growth potential and the capital adequacy of the banks. The use of funds obtained by banks from syndicated loans is of great importance in terms of sectoral loan distributions. Syndicated loans are one of the important funding sources for the Turkish banking sector. This type of funds provided from foreign countries supports the expansion of sector-based loans and contributes to economic growth. However, the impact of syndicated loans on sectoral loan

distributions may differ depending on many factors such as sectoral dynamics, capital needs and sectoral risks.

The manufacturing sector is a sector that requires high capital and contributes to economic development by increasing production capacity (Cantore et al., 2017). The resources provided by banks from syndicated loans are of critical importance in meeting the investment needs of large-scale companies, especially in the manufacturing sector. The resources provided by banks from syndicated loans will be beneficial in meeting the financing needs of all companies and especially large-scale companies in the manufacturing sector. These loans allow companies to both meet their working capital requirements and finance their long-term investments. Thus, the manufacturing sector can realize its investments that would be limited due to lack of capital with these loan opportunities, increases its production capacity and expands its employment creation potential. Getting into foreign markets and increasing global competitiveness of the sector are closely related to access opportunities to funding sources. Especially the high cost of technology-based production and machinery and equipment investments increases the importance of large funding sources such as syndicated loans. Banks tend to direct the loans to the areas that have growth potential, and the manufacturing sector stands out as one of the priority areas. In this context, syndicated loans constitute one of the important funding sources supporting the growth of the manufacturing sector.

While syndicated loans expand the lending capacity of banks by increasing their liquidity, the costs and repayment conditions of these loans may also affect loan policies. The costs of syndicated loans, especially those obtained from international financial markets, may vary depending on interest rates, exchange rate risks, capital regulations and global economic conditions. These variables can shape banks' loan distribution policies and directly affect their decisions to increase or decrease loan volumes. For example, if the costs of syndicated loans increase, banks may act more cautiously and make the lending processes difficult, or they may want to make their loan portfolios safer by turning to less risky sectors. In these cases, it is thought that syndicated loans will play an important role in sectoral credit distributions and may affect the sectoral risk management strategies of banks.

The effect of syndicated loans on sectoral loan distributions is depends on by both loan supply and loan demand. While banks increase the loan supply by using syndicated loans, the sectors' demand for these loans also stands out as a determining factor. Capital-intensive sectors will have a high impact on credit demand since they have a high need for funds obtained from syndicated loans. The effect of small and medium-sized sectors on loan demand may remain more limited since the capital requirements of these sectors are lower. For example, capital-intensive and foreign trade-related sectors such as the Manufacturing, Food, Chemical and Machinery and Equipment sectors are highly dependent on funds

provided by banks due to large-scale investments and long-term financing requirements. Therefore, syndicated loans are an important source of financing for these types of sectors, and increases in syndicated loans will allow increase in loan distribution to these sectors. However, smaller-scale and less capital-requiring sectors may be less dependent on syndicated loans, and the effect of these loans on sectoral loan distribution may remain limited. These sectors generally meet their financing needs from domestic sources and have more limited external financing needs and so, the effect of changes in syndicated loans on the loan demands of these sectors will be limited.

Syndicated loans are frequently researched in the finance literature. But, the number of studies based on syndicated loans received by the Turkish banking sector is quite limited (Kamışlı, 2020; Sakarya & Sezgin, 2015; Tekin, 2020; Yıldırım, 2005). However, the increasing loan volumes of banks due to the use of syndicated loans require managers to re-evaluate the loans they will grant. Therefore, determining the effects of syndicated loans received by the Turkish banking sector on sectoral loans will provide important information to decision makers in terms of loan distribution policy. In this context, the study aimed to determine the relationship between the syndicated loans received by the Turkish banking sector and the sectoral loans granted to manufacturing sector. For this purpose, the relationships between syndicated loans and sectoral loans were analyzed using the Hatemi-J (2012) Asymmetric Causality test and answers to the following research questions were also sought;

- Are increases or decreases in syndicated loans more related to sectoral loans?
- Loans grated to which sectors are not related to changes in syndicated loans?

LITERATURE

There are many studies in the literature that investigate both the factors affecting syndicated loans and the effects of syndicated loans. Dennis and Mullineaux (2000) examined the development of the syndicated loan market and the factors affecting these loans. Gupta et al. (2008) investigated banks' ability to price expected liquidity for the US syndicated loan market. A matched sample analysis was used in the study and results showed that loans that have higher expected liquidity significantly decreases spreads at origination. Kutlu et al. (2012) examined syndicated loans as a risk management tool and financing alternative, Altunbaş et al. (2010) investigated the debt financing preferences of the companies and found that the companies that are very large, profitable but have less growth opportunities prefer syndicated loans, while the companies with more short-term debt and having more growth opportunities prefers corporate bonds. Aldarosa & Barth (2017) analyzed the relationship between syndicated loans and CDS positions. In the European Commission report prepared by Dawkins et al. (2019), the effects of the European Union

syndicated loans on competition in credit markets were examined. Kalloub & Musabeh (2020) investigated the effect of syndicated loans on economic growth in G7 countries and determined that syndicated loans affected growth positively. In their study, that aims determine the relationship between syndicated loans used in Türkiye and foreign trade volume, real exchange rate and BIST 100 index, Gürbüz et al. (2023) revealed bidirectional causality between syndicated loans and foreign trade volume and real exchange rate. But results indicated a unidirectional causality from BIST 100 index to syndicated loans.

There are also studies on the relationship between syndicated loans and the financial sector. Haselmann & Wachtel (2009) analyzed the role of syndicated loans in financial market development in 24 European countries. Sakarya & Sezgin (2015) studied the effects of syndicated loan usage on banks' stock returns, Sarıgül (2015) investigated the effects of syndicated loan usage announcements on banks' stock returns, and Çukur et al. (2008) examined the effect of syndicated loan agreements on the stock prices of borrowing banks. Kamışlı (2020) tested the causality relationships between the syndicated loans received by the banking sector in Türkiye and the global economic uncertainty index, fear index, Libor, CDS premium, Türkiye geopolitical risk index and BIST Banking sector index, and determined that there are causality relationships between the syndicated loans and the examined indicators. Tekin (2020) analyzed the relationship between syndicated loans received by the banking sector in Türkiye and the stock market indices. The empirical findings showed that there is short- and long-term relationships between the variables. The bidirectional relationship between the banking sector index and syndicated loans is negative in the long term, while the relationship between BIST100 and syndicated loan usage is positive and bidirectional.

In addition to the mentioned studies, there are also studies investigating the effects of syndicated loans on foreign trade. Şahin & Baş (2018) examined the relationship between foreign trade and syndicated loans for the period of 2000 and 2016 and determined that syndicated loans positively affected foreign trade in Türkiye. It was also concluded that there is a long-term relationship between syndicated loans and imports and exports. Üçler (2020) tested the relationship between syndicated loans received by banks operating in Türkiye and foreign trade, and found that there is a unidirectional and positive relationship from the foreign trade balance to the syndicated loan. Caballero et al. (2018) in their study revealed that syndicated loans obtained through bank connections between two countries are important in the export of differentiated goods and reduce the risk. Atukalp (2023) examined the effect of foreign trade on syndicated loans and concluded that imports and exports have a non-linear asymmetric effect on syndicated loans in the long term, and that the effect of exports on syndicated loans is symmetrical in the short term. There are limited studies in the literature on companies and sectors that receive funds through syndicated loans. Daver (2023) analyzed the

relationship between bank loans and production sector capacity utilization rate and foun that there is no relationship between the variables considered. Yıldırım (2005) studied on the effects of syndicated loans on businesses for the Turkish market.

As can be seen from the studies examined, there are many studies examining syndicated loans from different aspects. Studies investigating the effects of syndicated loans at the sectoral level are quite limited. But there is no comprehensive study investigating the relationship between syndicated loans and sectoral loans in Türkiye. On the other hand, it will be useful to address the effects of increases and decreases, in other words, asymmetric effects of syndicated loans on sectoral loan distributions. In this context, it is aimed in the study to determine the relationships between syndicated loans received by the Turkish banking sector and sectoral loans, and so to contribute to the literature.

DATA AND METHODOLOGY

In the study, the monthly data of Syndicated Loans (SYND) received by Turkish banking sector and cash loans granted to 14 sectors (Chemical Products Industry – CHMP_IND, Electrical and Optical Instruments Industry - ELCO_IND, Food, Beverage and Tobacco Industry - FDBT_IND, Leather and Leather Products Industry - LTHP_IND, Machinery and Equipment Industry - MCHN_IND, Manufacturing Industry - MNFC_IND, Metal Basic Industry and Processed Mineral Production Industry - MTLB_IND, Other Non-Metallic Metals Industry - OBMT_IND, Paper Raw Materials and Paper Products Industry - PRMP_IND, Nuclear Fuel, Petroleum Refining and Coke Coal Production Industry - PTRC_IND, Rubber and Plastic Products Industry - RPLP_IND, Transportation Vehicles Industry - TRSV_IND, Textile and Textile Products Industry - TXTP_IND, Wood and Wood Products Industry - WODP_IND) in the manufacturing industry for the period of August 2010 – December 2024. All data were obtained from Banking Regulation and Supervision Agency monthly bulletins.

The study aims to analyze the asymmetric relations in other words, the effects of increases and decreases separately, between syndicated loans received by the Turkish banking sector and sectoral loans. Traditional causality tests do not separate asymmetric effects while testing causal relationships between variables. In their study, Granger & Yoon (2002) stated that the relationships between negative and positive shocks may be different from the relationships between variables and divided the data into positive and negative cumulative sums to analyze long-term relationships. Hatemi-J (2012) developed the "asymmetric causality test" based on the approach of Granger & Yoon (2002). In the asymmetric causality test, the cumulative form of positive and negative shocks of 2 variables such as y_{1t} and y_{2t} can be written as follows;

$$y_{1i}^{+} = \sum_{i=1}^{t} \varepsilon_{1i}^{+} \qquad y_{1i}^{-} = \sum_{i=1}^{t} \varepsilon_{1i}^{-} \qquad y_{2i}^{+} = \sum_{i=1}^{t} \varepsilon_{2i}^{+} \qquad y_{2i}^{-} = \sum_{i=1}^{t} \varepsilon_{2i}^{-} \qquad (1)$$

Based on the assumption $y_t^+ = (y_{1t}^+ + y_{2t}^+)$, the causality relationship between the variables can be tested using the p-lagged vector autoregressive model (VAR (p)) given in the 2nd equation;

$$y_t^+ = v + \emptyset_1 y_{t-1}^+ + \cdots + p y_{t-p}^+ + u_t^+ \qquad (2)$$

Here, y_t^+ is the 2x1 vector of variables, v is the 2x1 vector of constant terms, and u_t^+ is the vector of error terms. The matrix$\emptyset_r$ is 2x2 matrix of parameters with lagged r (r = (1,…p)).

In the asymmetric causality test, the null hypothesis ($H_0: C\beta = 0$) stating that there is no causality is tested with the Wald statistic given in Equation 3;

$$Wald = (C\beta)'[C((Z'Z)^{-1} \otimes S_U)C']^{-1}(C\beta) \qquad (3)$$

The presence of multiple normality and ARCH effect between variables affects the asymptotic distribution of the Wald test. Obtaining critical values through bootstrap simulations in the Hatemi-J methodology eliminates this problem and constitutes the superiority of the method. In this context, in the next step of the study, asymmetric relationships between syndicated loans and sectoral loans were analyzed with Hatemi-J (2012) asymmetric causality test.

EMPIRICAL FINDINGS

In the first stage of the analysis, descriptive statistics for syndicated loans and sector-based loans were calculated and the results are given in Table 1.

According to descriptive statistics, “Manufacturing”, “Main Metal Industry and Processed Mineral Production”, “Textile and Textile Products” and “Food, Soft Drinks and Tobacco” sectors are the sectors that most cash loans were granted among the others on average. This finding indicates the strategic importance of these sectors within the Turkish economy and reveals that that the financial support levels of these sectors are high compared to other sectors. The manufacturing industry and the main metal industry have crucial importance in Türkiye's industry and the export-based growth model. For this reason, it is an expected result that these sectors have higher access to financial resources than the other sectors. On the other hand, "Leather and Leather Products Industry", "Wood and Wood Products Industry", "Oil Refinery and Coal Production Industry" and "Paper Raw Material and Paper Products Industry" were the sectors that lowest cash loans are granted among the others on average. This can be explained by the fact that these

sectors have a more limited impact in the economy compared to other sectors and their lower capital requirements.

Table 1: Descriptive statistics

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	ARCH (10)	Q(5)	Q(10)	ADF	PP
SYND	8.00	0.66	-0.98	5.02	56.9[a]	101.6[a]	137.3[a]	137.9[a]	-3.06[b]	-4.6[a]
CHMP_IND	17.33	1.06	0.50	2.31	10.8[a]	162.7[a]	170.6[a]	170.6[a]	1.75	2.03
ELCO_IND	16.85	1.08	0.52	2.21	12.3[a]	171.4[a]	170.5[a]	170.5[a]	2.64	2.75
FDBT_IND	18.07	0.89	0.47	2.22	10.7[a]	171.3[a]	170.1[a]	170.1[a]	1.95	2.15
LTHP_IND	15.18	0.77	0.48	2.68	7.44[a]	171.1[a]	169.5[a]	171.1[a]	1.11	1.11
MCHN_IND	17.08	1.00	0.60	2.47	12.5[b]	171.4[a]	170.5[a]	171.4[a]	3.63	3.63
MNFC_IND	19.95	0.98	0.53	2.29	11.6[a]	171.5[a]	170.4[a]	170.4[a]	2.84	2.62
MTLB_IND	18.19	0.97	0.62	2.36	14.0[a]	171.3[a]	170.5[a]	170.5[a]	2.37	2.19
OBMT_IND	17.29	1.02	0.34	2.14	8.75[b]	171.0[a]	170.0[a]	170.0[a]	1.33	1.23
PRMP_IND	16.57	1.10	0.60	2.07	16.6[a]	171.3[a]	171.1[a]	171.1[a]	2.36	1.97
PTRC_IND	16.34	0.76	0.57	1.95	17.5[a]	159.9[a]	168.2[a]	168.3[a]	0.53	0.38
RPLP_IND	17.10	0.96	0.18	2.18	5.87[c]	171.2[a]	169.4[a]	169.4[a]	0.53	0.53
TRSV_IND	17.32	1.17	0.73	2.42	17.7[a]	171.5[a]	170.8[a]	170.8[a]	2.88	3.19
TXTP_IND	18.15	0.94	0.35	2.23	7.90[b]	171.3[a]	169.7[a]	169.7[a]	1.22	1.03
WODP_IND	15.92	0.98	0.59	2.58	11.1[a]	171.2[a]	169.9[a]	169.9[a]	2.45	2.36

a, b, c denote 1%, 5% and 10% level of significance, respectively.

The descriptive statistics show that the sectors that have the highest standard deviations on sector-based loan distribution are “Transportation Vehicles Industry”, “Paper Raw Materials and Paper Products Industry” and “Electrical and Optical Devices Industry”, respectively. This finding reveals that there are significant fluctuations in loan distribution in these sectors and that there is high uncertainty or variability in loan distribution. The high standard deviation indicates that various factors related to growth or risk management in these sectors affect the distribution of loans. On the other hand, the sectors with the lowest standard deviation are "Oil Refinery and Coal Production Industry", "Leather and Leather Products Industry", "Food, Soft Drinks and Tobacco Industry" and "Textile and Textile Products Industry". Low standard deviation indicates that the loans grated to these sectors are more stable and predictable, and at the same time, there is less fluctuation in loan distributions. In addition, the relative stability in loan distribution in these sectors indicates that these areas are considered more economically sustainable and low-risk, or that the loan demand in these sectors has a more regular and balanced structure.

As can be seen from the descriptive statistics, syndicated loans have negative skewness and high kurtosis values. On the other hand, all sectoral loans examined have positive skewness and low kurtosis values. According to the Jarque-Bera Normality test results series are not distributed normally, and autocorrelation and ARCH tests show that there are significant ARCH effects in all series examined. As can be seen in Table 1, according to the results of the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root tests, the syndicated loan series are stationary at level values but the sectoral loan series are not stationary. In the following step of the study, unconditional correlations between syndicated loans and sectoral loans were calculated and the results are given in Table 2.

Table 2: Unconditional correlations

	Mean	Std. Dev.	Skewness
CHMP_IND	0.349 [a]	OBMT_IND [a]	0.348 [a]
ELCO_IND	0.348 [a]	PRMP_IND [a]	0.352 [a]
FDBT_IND	0.349 [a]	PTRC_IND [a]	0.288 [a]
LTHP_IND	0.356 [a]	RPLP_IND [a]	0.351 [a]
MCHN_IND	0.348 [a]	TRSV_IND [a]	0.350 [a]
MNFC_IND	0.349 [a]	TXTP_IND [a]	0.351 [a]
MTLB_IND	0.352 [a]	WODP_IND [a]	0.348 [a]

a, b, c denote 1%, 5% and 10% level of significance, respectively.

Table 2 shows that all unconditional correlations between syndicated loans and sector-based loans are significant. The results reveal positive and moderate correlations between the loans. Therefore, it can be said that sectors exhibit parallel demands and needs in loan distribution, and therefore syndicated loans create a homogeneous effect on the overall economy. In other words, the significant and homogeneous structure of the correlations reveals that syndicated loans are closely related to sectoral dynamics and that the loan demands of different sectors in the economy are largely similar. In addition, the consistency of the correlation coefficients indicates that there is a general synchronization in the loan market, and that especially industry and production-oriented sectors benefit largely from syndicated loans in loan distribution. The results confirm that syndicated loans play a critical role both for large-scale projects and for sectors with high capital requirements. The similarity of the correlation coefficients also reveals that sectoral loans are affected by the same macroeconomic factors and financial conditions as syndicated loans, and therefore different sectors may exhibit similar behaviors in loan distribution processes.

Correlation analyzes provide important data about the direction and strength of the relationship between syndicated loans and sectoral loans. However, it should be noted that correlation does not imply

causality. The existence of a strong correlation between two variables does not indicate that one of these variables directly affects the other. Therefore, in the following stage, the causality between syndicated loans and sector-based loans were tested by traditional causality tests in order to determine the direction of the relationships and the results are given in Table 3.

Table 3: Traditional causality test results

	Mean	**Std. Dev.**	**Skewness**
SYND ≠> CHMP_IND	0.592	SYND ≠> OBMT_IND	0.480
SYND ≠> ELCO_IND	0.909	SYND ≠> PRMP_IND	0.957
SYND ≠> FDBT_IND	0.692	SYND ≠> PTRC_IND	0.069
SYND ≠> LTHP_IND	0.282	SYND ≠> RPLP_IND	0.573
SYND ≠> MCHN_IND	0.693	SYND ≠> TRSV_IND	0.949
SYND ≠> MNFC_IND	0.653	SYND ≠> TXTP_IND	0.475
SYND ≠> MTLB_IND	0.628	SYND ≠> WODP_IND	0.991

a, b, c denote 1%, 5% and 10% level of significance, respectively.

According to traditional causality test results, there is no causality from syndicated loans and to any of the sectoral loans examined. This finding indicates that syndicated loans do not have a direct causal effect on sectoral loans. In other words, the findings obtained from the traditional causality test show that syndicated loans are not a fundamental factor explaining or guiding sectoral loans. On the other hand, the relationships between financial and economic variables are often asymmetrical and traditional causality tests have limited capacity to capture such asymmetric effects. The effects of shocks and changes in market conditions, especially in loan markets, may occur in different magnitudes and directions in different periods. At this point, asymmetric causality tests offer the opportunity to examine the different effects of positive and negative shocks. Asymmetric causality tests may give the opportunity of determining whether increases in syndicated loans have the same effect on the increase in sectoral loans or whether decreases in the amount of loans have a different causal effect. In this context, in the last stage of the analysis, asymmetric causality test was applied to determine the asymmetric relationships between syndicated loans and sector-based loans and the results are shown in Table 4.

Table 4: Asymmetric causality test results

	Test Stat.	Bootsrap Critical Values				Test Stat.	Bootsrap Critical Values		
		%1	%5	%10			%1	%5	%10
$SYND^{+} \not\Rightarrow CHMP\_IND^{+}$	**3.50**	7.64	3.91	2.77	$SYND^{+} \not\Rightarrow OBMT\_IND^{+}$	0.01	7.34	3.82	2.66
$SYND^{-} \not\Rightarrow CHMP\_IND^{-}$	0.79	11.6	4.52	2.49	$SYND^{-} \not\Rightarrow OBMT\_IND^{-}$	0.07	9.89	3.81	2.37
$SYND^{+} \not\Rightarrow ELCO\_IND^{+}$	2.57	8.03	3.93	2.59	$SYND^{+} \not\Rightarrow PRMP\_IND^{+}$	0.35	6.94	3.81	2.59
$SYND^{-} \not\Rightarrow ELCO\_IND^{-}$	0.04	9.41	3.83	2.51	$SYND^{-} \not\Rightarrow PRMP\_IND^{-}$	2.03	11.1	5.21	2.79
$SYND^{+} \not\Rightarrow FDBT\_IND^{+}$	**3.41**	6.96	3.85	2.65	$SYND^{+} \not\Rightarrow PTRC\_IND^{+}$	**4.48**	8.22	3.97	2.55
$SYND^{-} \not\Rightarrow FDBT\_IND^{-}$	0.45	8.79	4.37	2.72	$SYND^{-} \not\Rightarrow PTRC\_IND^{-}$	0.45	8.59	3.76	2.53
$SYND^{+} \not\Rightarrow LTHP\_IND^{+}$	0.34	6.49	3.76	2.70	$SYND^{+} \not\Rightarrow RPLP\_IND^{+}$	0.15	7.39	3.82	2.53
$SYND^{-} \not\Rightarrow LTHP\_IND^{-}$	0.20	10.33	4.28	2.65	$SYND^{-} \not\Rightarrow RPLP\_IND^{-}$	**5.16**	9.53	3.83	2.48
$SYND^{+} \not\Rightarrow MCHN\_IND^{+}$	**3.30**	6.65	3.94	2.79	$SYND^{+} \not\Rightarrow TRSV\_IND^{+}$	1.43	7.68	4.15	2.96
$SYND^{-} \not\Rightarrow MCHN\_IND^{-}$	0.26	9.39	2.55	1.60	$SYND^{-} \not\Rightarrow TRSV\_IND^{-}$	**2.71**	14.1	5.11	2.70
$SYND^{+} \not\Rightarrow MNFC\_IND^{+}$	**4.85**	7.43	3.92	2.67	$SYND^{+} \not\Rightarrow TXTP\_IND^{+}$	0.65	6.78	4.00	2.65
$SYND^{-} \not\Rightarrow MNFC\_IND^{-}$	0.17	13.3	5.54	2.88	$SYND^{-} \not\Rightarrow TXTP\_IND^{-}$	0.08	11.1	4.31	2.48
$SYND^{+} \not\Rightarrow MTLB\_IND^{+}$	**5.19**	7.22	3.98	2.87	$SYND^{+} \not\Rightarrow WODP\_IND^{+}$	1.66	8.04	4.14	2.91
$SYND^{-} \not\Rightarrow MTLB\_IND^{-}$	0.18	10.2	4.63	2.68	$SYND^{-} \not\Rightarrow WODP\_IND^{-}$	0.08	8.69	4.16	2.55

Asymmetric causality test results reveal that increases in the syndicated loans are related to loan distribution in certain sectors. It is seen that the positive changes in syndicated loans lead to an increase in the loans granted to critical sectors such as "Manufacturing Industry", "Food, Soft Drinks and Tobacco Industry", "Chemical Products Industry", "Machinery and Equipment Industry", "Main Metal Industry and Processed Mineral Production Industry" and "Nuclear Fuel, Petroleum Refinery and Coke Production Industry". This finding indicates that syndicated loans play an important role in the loans distributed to these sectors and that syndicated loans are an effective source in meeting the growth, development and financing needs of these sectors. The manufacturing industry is one of the fundamental sectors and the driving force of the Turkish economy and directly affects general production capacity and employment. According to the asymmetric causality test, it is seen that the increases in syndicated loans lead to an increase in the loans granted to the manufacturing sector. This relationship between the manufacturing sector and syndicated loans seems quite significant, considering the high capital needs of the manufacturing industry and its structure requiring constant investment. The Food, Soft Drinks and Tobacco Industry sector is a sector that produces basic consumer products, maintains its strategic importance even in times of economic crisis, has a wide supply chain, and is stable and requires high capital. The relationship between the sector and the syndicated loans shows the dependency of the sector to the external sources in financing large-scale investments. "Chemical Products Industry" and "Machinery and Equipment Industry" are sectors that technology is used intensively, need innovation investments and require continuous development and

modernization. The loan needs of these sectors are quite high due to high technological investments and large-scale projects. Asymmetric causality test results show that increases in syndicated loans have positive effect of on the loans granted to these sectors. This finding reveals that modernization projects in the sector are largely based on such loans and are directly affected by developments in international loan markets. Similarly, “Main Metal Industry and Processed Mineral Production Industry” is a capital-intensive sector with projects that require large infrastructure investments. The sector needs large financing sources in order to grow and to increase the production capacity. The relationship determined between the increases in the syndicated loans and the increases in the loans granted to the sector indicates that increases in syndicated loans plays a critical role in the financing of large investments and infrastructure projects in the sector. Lastly, Nuclear Fuel, Oil Refinery and Coke Production Industry is an industry that has strategic importance for the energy sector. This sector has long-term and capital-intensive projects. The relation of the sector with the syndicated loans reveals the dependence of the sector on external financing and that projects in this sector are largely financed by syndicated loans.

Asymmetric causality test results indicate that the decreases in syndicated loans are related only with the decreases in the "Rubber and Plastic Products Industry" and "Transportation Vehicles Industry" loans out of the 14 sectors considered. This finding reveals that negative shocks in loans have a greater effect in certain sectors and that the sensitivity of the financing processes of these sectors to changes in syndicated loans is higher than the other sectors. Rubber and Plastic Products Industry is one of the important production sectors with its flexible production structure and wide usage area. In the rubber and plastic products sector, critical intermediate goods are produced for automotive, construction, agriculture, white goods and many other industries. The sector needs large-scale external financing sources due to its energy-intensive production process and dependency on raw materials. The fact that the decrease in syndicated loans also leads to a decrease in the loans granted to this sector proves the dependency of the sector on external financing sources for large-scale investments and production projects. When the results are evaluated, it is understood that the contractions in global loan markets and the decrease in syndicated loans have a direct negative effect on the production capacity and investment activities in the sector. This relationship indicates that the rubber and plastic industry has a capital structure that is related to syndicated loans and the negative developments in the loan markets create pressure on the investments in the sector. Similarly, the Transportation Vehicles Industry is one of Turkey's strategically important sectors in terms of both domestic market and exports. This industry, which includes sub-sectors such as automotive, shipbuilding, railway and aviation, is a capital-intensive sector that needs large-scale investment projects. The production of transportation vehicles creates large financing needs, as part of global supply chains, and is largely financed foreign loans. The finding that the decrease in syndicated loans also led to a decrease in

loans given to the sector shows how dependent the sector is on syndicated loans received from external sources for large projects. In particular, export-oriented sub-sectors such as the automotive industry need external financing opportunities for large investments and production capacity increase. Since the transportation vehicles industry is a sector that international competition is intense, increases in financing costs and contractions in credit supply may negatively affect the sector and limit production capacity. When considered in this context, the impact of negative shocks in syndicated loans on the sector can be more easily understood.

According to the asymmetric causality test results, there is no asymmetric causality relationship between the syndicated loans and the "Wood and Wood Products Industry", "Leather and Leather Products Industry", "Other Non-Metal Minerals Industry", "Electrical and Optical Devices Industry", "Paper Raw Material and Paper Products Industry" and "Textile and Textile Products Industry". This result shows that changes in syndicated loans do not create any asymmetric causality on some of the sectors, and that the financing structures of these sectors consist mostly of domestic resources or they prefer less risky investments. The results also reveal that the relevant sectors are more resistant to increases or decreases in syndicated loans and the dependence of their financing structures on external credit sources is low. The findings obtained from the study show that sectoral loan distributions processes differ in line with sector-specific dynamics and financing needs, and that each sector is affected at different levels by large-scale external financing instruments such as syndicated loans.

CONCLUSION

The study aimed to determine the relationships between syndicated loans received by the Turkish banking sector and loans given to various sectors. For this purpose, the effects of changes in syndicated loans on sectoral loan distributions were analyzed and this relationship was investigated in detail with both traditional and asymmetric causality tests. According to the results of traditional causality tests applied in the study, there is no significant causality relationship between syndicated loans and any sectoral loan. This finding indicates that the banking sector generally does not use syndicated loans as a determining factor in sector-based loan distribution. However, these results do not mean that there are no asymmetric relationships between syndicated loans and sector-based loans. For this reason, after traditional causality tests, asymmetric causality tests were applied in the study, which allow the detection of asymmetric relationships between variables.

It was revealed by the asymmetric causality tests applied in the study that syndicated loans have asymmetric effects on sectors that can be considered strategic for the Turkish economy and that these effects

vary on sector-based. In particular, it has been determined that the increases in loans given to the "Manufacturing Industry, Food, Soft Drinks and Tobacco Industry", "Chemical Products Industry", "Machine and Equipment Industry", "Main Metal Industry and Processed Mineral Production Industry" and "Nuclear Fuel, Petroleum Refinery and Coke Production Industry" are related to the increases in syndicated loans. This result shows that these sectors, where loans play a critical role in growth and investment processes, are highly dependent on external financing sources. Due to their capital-intensive and foreign trade-related structures, they are rapidly affected by changes in large-scale international financing instruments such as syndicated loans and improvements in financing conditions. On the other hand, it was determined that the decrease in syndicated loans had negative effect only on the loan distribution processes to the "Rubber and Plastic Products Industry" and the "Transportation Vehicles Industry". These sectors are among the sectors with high capital and external resource requirements and are they are highly sensitive to negative changes in syndicated loans. It is seen that the decreases in financial resources limit loan distributions in these sectors and may therefore negatively affect sectoral activities. However, the limited effect of the decrease in syndicated loans on loan distribution processes in other sectors and their low dependences on syndicated loans may enable banks to create alternative financing sources for the two mentioned sectors. The empirical findings also indicate that changes in syndicated loans in the "Wood and Wood Products Industry", "Leather and Leather Products Industry", "Other Non-Metal Minerals Industry", "Electrical and Optical Devices Industry", "Paper Raw Material and Paper Products Industry" and "Textile and Textile Products Industry" sectors do not create any asymmetric causality on sectoral loan distributions. These findings can be explained by the fact that these sectors have more independent and resistant structure against changes in syndicated loans because they benefit from more internal resources in their financing processes or turn to alternative financing methods. These sectors, where small and medium-sized enterprises are dominant, are not affected by fluctuations in syndicated loans and can maintain their financial structures independently of external sources.

As a result of the study, it is revealed that the relations between syndicated loans and sectoral loans vary greatly depending on the financing structure of the sectors and their dependence on external resources. While capital-intensive and foreign trade-related sectors are more sensitive to changes in syndicated loans, sectors where small and medium-sized enterprises are concentrated are less related with syndicated loans. These results emphasize the importance of syndicated loans in sectoral financing processes and point out the importance of banks taking international financing conditions into account in sectoral loan distributions. On the other hand, it would be useful for companies, which operates in sectors that are sensitive to changes in syndicated loans and frequently receive bank loans for their financing needs, to follow the changes in syndicated loans. Expanding alternative financing opportunities for such companies will prevent them from

experiencing financial difficulties and disruptions in their activities during periods of decreases in syndicated loans.

The study examined the effects of syndicated loans on the production sector in Türkiye for the period August 2010 - December 2024. It is thought that studies conducted on different sectors and markets with a different data set and method will contribute to the field.

AUTHOR STATEMENT

Researcher declared that all contributions to the article were his own. Researcher have not declared any conflict of interest.

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