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MAJOR DETERMINANTS OF FOOD PRICE VOLATILITY IN TURKEY: INFLATION SURGE AFTERMATH OF 2016

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ABSTRACT

Purpose- Food price index is a crucial indicator for the stability of overall economic conditions in emerging markets since it has a considerable weight in regular spending of households. In the last decade, Turkey experienced higher food price inflation compared to consumer price index. In this context our main purpose is to provide useful insight for policymakers and governors to manage food price inflation.
Methodology- The vector autoregressive (VAR) approach is one of the most widely applied forms of multiple time series approaches. This approach describes the dependency and interdependency of normalized data in time. This paper undertakes the analysis of volatility and volatility spillover between Turkey Food Price Index (Turkey), Dollar-TL exchange rate (USDTRY), and Turkish Food Price Index (World). The monthly data set covers the period 1 January 2000–31 December 2020. We utilized VECM-VECH models by incorporating this data set to analyze food price inflation fluctuations in Turkey.
Findings- The results indicate that the volatility spillover effect between Turkish food price index and world food price index is more significant compared to the return spillover effect. Also, our results indicate a significant volatility spillover effect between Turkish food price index, exchange rates and world food price index exist in the short run while the effect vanishes in the long run. However, in the long run the main indicator for Turkish food prices index is Production Price Index of Agricultural Products after 2016 which is the milestone for the food price index hike.
Conclusion- Food-inflation, the change in exchange rate and recent global food commodity price surge have significant and persistent impact on the level and the volatility of inflation in Turkey in this context, It is crucial to control food price inflation by controlling market pricing behavior and transforming agricultural industry to reduce costs simultaneously to reduce divergence of Turkish food price index and CPI.

Keywords: Dynamic correlation, spillover, food prices, agriculture, inflation
JEL Codes: C32, C58, E31.

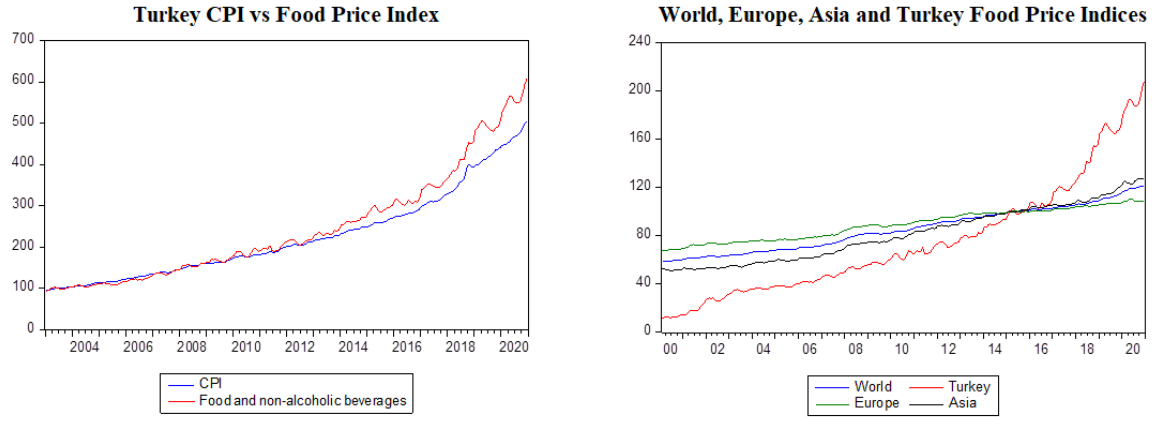
1. INTRODUCTION

Considering the epidemic, drought, climate change and the rapidly increasing world population the importance of research on food is increasing. While agricultural products are becoming more and more inadequate to meet the need due to rapid population growth, chemical inputs used to increase yield and crop yield due to decreasing cultivation areas make agricultural economy and agricultural sector analyzes increasingly necessary and complex. Especially during the pandemic period, increase in food commodity prices and the possibility of famine became an important global problem. The solutions vary according to the characteristics of the countries, even the local regions of each country, rather than a unique solution set. Moreover, food market is one of the most important signals about the behavior and expectations of consumer/markets, since its weight is highest in CPI basket which is 25.94%. According to Turkish Statistics Institute research food and non-alcohol beverages constitute 20.3% and 20.8% of total household expenditures in 2018 and 2019 respectively which shows that household budget can easily be distorted by the fluctuations and inefficient food market developments.

In this context, food price index is a crucial indicator for the stability of overall economic conditions in emerging markets since it has a considerable weight in regular spending of households. Coherently, the volatility in food prices makes it more challenging for households to arrange their budget and the gap between perceived inflation and official inflation statistics increase. In the last decade, Turkey experienced higher food price inflation compared to consumer price index (CPI). Coherently, although fueled by recent Covid-19 pandemic and drought issue in the world, food price index in Turkey increases more than world, Europe, and Asia

since 2016 (Figure 1). The co-movement between international and Turkish food price indices still exist in terms of trend however the main driver of steeper increase in Turkish food price index is exchange rate (USD-TRY) volatility. Furthermore, high volatility due to exchange rate fluctuations is built-in in food price indices while there is a persistent upward trend which is a crucial problem for policy makers and economic actors especially in emerging markets. In this paper, our main purpose is to provide useful insight for policymakers and governors to manage food price inflation. Food price shocks show greater and more volatile behavior. However, if these shocks do not show persistency, they will not have significant effect on inflation. Therefore, it is important for decision makers whether the shocks to food inflation are transmitted into general inflation.

Figure 1: Turkish Food Price Index vs Benchmark Indices



In that respect, our main goal is to investigate the dynamic spillover relationship between Turkish food prices, world food prices and exchange rates by utilizing monthly data between 1 January 2000–31 December 2020. According to the to our results we find that a significant volatility spillover effect between Turkish food price index, exchange rates and world food price index exist in the short run while the effect vanishes in the long run. The rest of the paper is organized as section 2 gives a brief information about related literature. In section 3, we introduce methodology of econometric models briefly. In section 4, introduce data set and present relevant analysis about the structure of the dataset. In Section 5 we provide empirical results and finally in Section 6, we conclude and summarize important outcomes of the paper.

2. LITERATURE REVIEW

There two main issues in Turkish food price index which are high volatility in food price and the persistency of food price volatility. Sekhar et al (2017) state that high persistency in food price volatility fuels food price inflation. Poterba and Summer (1986) highlight high volatility persistence in food prices refers to the slow decay of shocks on food prices. Distribution of relative price changes affect aggregate inflation. Inflation rises when the distribution is skewed to the right. In this context Ball and Mankiw (1995) states that large shocks to commodities have asymmetric effect on the overall price level due to firms' adjustment costs. According to their conclusion when price adjustment is costly, firms adjust to large shocks but not to small shocks. Because of this reason large shocks have asymmetric effects on the price level. Bhat et all (2017) analyzed the dynamic impact of oil and food price shocks on the macroeconomy of India, using the monthly time series data from April 1994 to May 2016 in a structural vector autoregression (SVAR) framework and observed inflation downward rigidity even in the long run.

Empirical analysis with time series data supports the possibility of volatility spillover of between countries' inflation and exchange rate fluctuations to emerging market inflation. Majority of the literature on the relationship between inflation and inflation uncertainty utilize GARCH models. Moreover, MGARCH models are used very frequently in economic literature to analyze agricultural price volatility. In this context multivariate Generalized Autoregressive Conditional Heteroskedasticity (MGARCH) models is an efficient tool to analyze such contagion relationships. For example, Rapsomanikis (2011) and Rapsomanikis and Mugera (2011) employ MGARCH models to analyze the spillover effects in rice markets. Lee and Valera (2016) use panel GARCH models to analyze price transmission and volatility spillovers in Asian rice market by extending panel data framework of Cermeno and Grier (2006), Lee (2010), and Escobari and Lee (2014). An et al (2016), Minot (2014), Rezitis and Stavropoulos (2010), Gardebroek et al. (2016) also use MGARCH models to analyze volatility and spillovers in agricultural prices.

The importance of price and volatility dynamics of agricultural commodities increase due to the population growth and the production issues all around the world. Supply chain breakdowns fueled by global incidents such as Covid-19 pandemic, drought and flood boost the impact of food price fluctuation for emerging markets, relatively low- or mid-income countries. However, spillover effect of food prices is not a newly introduced research area. Especially aftermath of 2008 global financial crisis, contagion impact across all kinds of markets and assets become the hot topic. Mensi et al (2013) investigated the relationship between agricultural commodities, beverages, metals, and crude oil in terms of conditional return and volatility. Rezitis (2015) also studied US exchange rate, crude oil, and international agricultural price relationship while Baltzer (2013) studies the same relationship for rice, maize, and wheat markets. Similarly, Diao (2017) focused on domestic and international soybean market relationship of China. Local research of Turkey also studies food prices in many aspects because of the importance of food inflation in Turkish economy. Ogunc (2010), Akçelik et al (2016) show the divergence of food prices in Turkey from both international food prices and CPI. The importance of unprocessed food in this hike is crucial as Atuk and Sevinc (2010) documented. Lopçu and Şengül (2018) investigate the impact of food price and its volatility in the overall level and volatility of inflation measured by the consumer price index employing ARDL bounds tests, VAR models and ANN. According to their results food-inflation and the change in exchange rate proxied by the US dollar have significant and lasting impact on the level and the volatility of inflation in Turkey. Recently Ertuğrul and Seven (2021) showed that exchange rate significantly increases the difference between Turkish and international food prices while oil prices reduce it.

3. DATA AND METHODOLOGY

The vector autoregressive (VAR) approach is one of the most widely applied forms of multiple time series approaches. This approach describes the dependency and interdependency of normalized data in time. The VAR model extends the univariate autoregressive (AR) to vector autoregressive (VAR) by internalizing the related variables into endogenous variables to examine the contagion and spillover effect between major financial markets.

The basic mathematical expression of the VAR model is as follows:

$$R_t = C + A_1 R_{t-1} + A_2 R_{t-2} + \cdots + A_k R_{t-k} + \varepsilon_t \quad [1]$$

$$\varepsilon_t \mid \mathrm{I}_{t-1} \sim N(0, H_t)$$

Where R_t refers to the value of endogenous variables vector at time t, C is the constant vector, matrix A is the estimated coefficients and k is the lag operator. Residual vector ε_t is assumed to be normally distributed with a zero mean and constant variance where the market information available at time t-1 denoted as $d_{t-1.}$ The lag order of *(k)* VAR structure is decided via AIC criterion.

The diagonal VECH[1] approach, called DVECH hereafter, was developed by Bollerslev et al. (1988) and represents one of the main types of the MGARCH approach. The VECH term presents the half-vectorization operator, which stacks the column of a square matrix from the diagonal downwards in a vector.

In this approach, we incorporate a three-dimensional model to examine the news spillover between different markets. Suppose that our model structure is as follows:

$$\varepsilon_{i,t} = v_{i,t}.h_{i,t}, \quad v_{i,t} \sim N(0,1) \quad [2]$$

$$h_{i.t} = c_i + a_i \varepsilon_{t-1}^2 + \beta_i h_{i,t-1} \quad [3]$$

$$H_t = C^T C + A^T \varepsilon_{t-1} \varepsilon_{t-1}^T A + B^T H_{t-1} B \quad [4]$$

Equation [2] specifies the relation between the residual term $\varepsilon_{i.t}$ and the conditional variance $h_{i.t}.v_{i.t}$ which is normally distributed with a zero mean and constant variance. α, β are the coefficients. $H_{i,t}$ represents the conditional variance-covariance matrix, C represents the lower triangular matrix, A and B are square arrays. If C^TC is positive, then it is almost positive.

$$H_t = \begin{bmatrix} h_{11,t} & h_{12,t} & h_{13,t} \\ h_{12,t} & h_{22,t} & h_{23,t} \\ h_{31,t} & h_{32,t} & h_{33,t} \end{bmatrix}$$

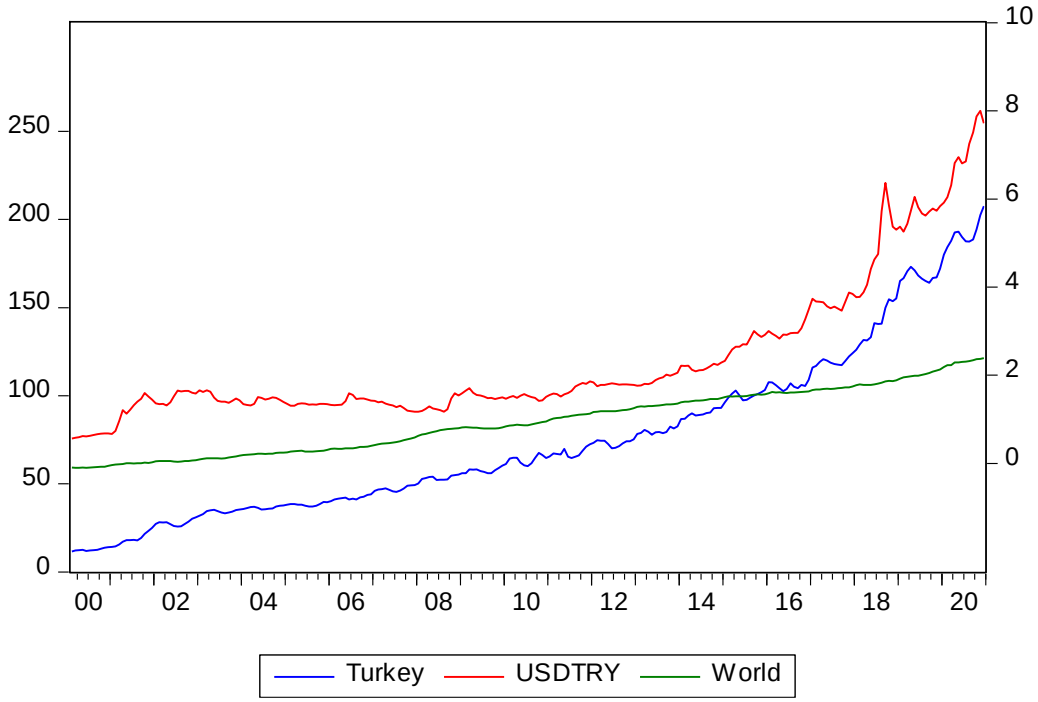
[1]Eviews does not estimate the general form of BEKK in which A and B are unrestricted. However, a common and popular form, diagonal BEKK, may be specified that restricts and to be diagonals. This Diagonal BEKK model is identical to the Diagonal VECH model where the coefficient matrices are rank one matrix. For convenience, EViews provides an option to estimate the Diagonal VECH model but display the result in Diagonal BEKK form.

$$C = \begin{bmatrix} c_{11} & c_{12} & c_{13} \\ c_{21} & c_{22} & c_{23} \\ c_{31} & c_{32} & c_{33} \end{bmatrix} \quad A = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \quad B = \begin{bmatrix} b_{11} & b_{12} & b_{13} \\ b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{bmatrix}$$

where $h_{11,t}$, $h_{22,t}$, $h_{33,t}$ in the matrix H_t represent the conditional variances. Matrix A is the ARCH coefficients of the model, a_{11},a_{22},a_{33} represent the ARCH effect while Matrix B is the GARCH coefficients of the model, b_{11},b_{22},b_{33} are the GARCH effect.

The data of this paper incorporates five variables which are utilized for three different model systems: Turkish Food Price Index (Turkey), Dollar-TL exchange rate (USDTRY), and World Food Price Index (World) for the period between for the period 1 January 2000–31 December 2020 and Turkish Producer Price Index of Agricultural (TRAGRIINP) series which are available for the period only between 2016-2020. Food price data is collected from Food and Agriculture Organization (FAO) statistics and exchange rate is collected from Central Bank of the Republic of Turkey. Producer Price Index of Agricultural is collected from Turkish Statistics Institute (TURKSTAT). We divided our analysis in to two periods between 2000-2020 and 2016-2020. Figure 2 foreshadows that the exchange rate significantly affects the growing difference between Turkish and international food price.

Figure 1: Turkish Food Index, USDTRY, and World Food Index Walk



Next, the return of each market is calculated as follows:

$$ln(P_t) - ln(P_{t-1}) \qquad [5]$$

where RTurkey, RUSDTRY, and RWorld refers to the return series of related variables.

Figure 2: Daily Returns of RTurkey, RUSDTRY, and RWorld

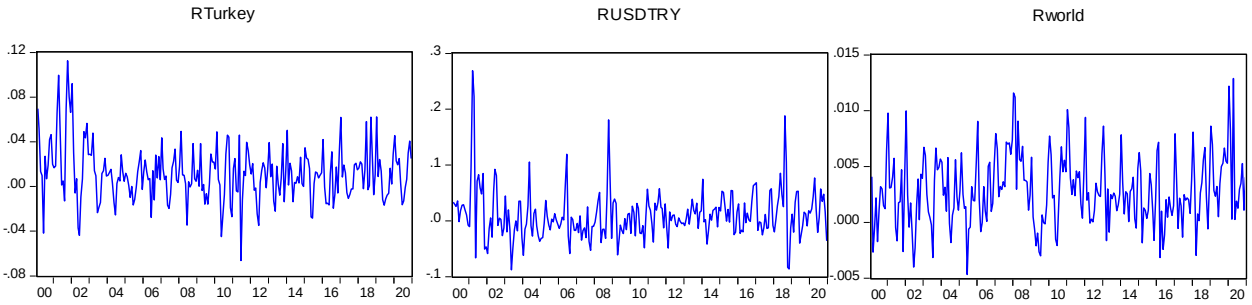


Figure 3 shows the time series of the daily returns of the markets. Table 1 exhibits the descriptive statistics for the returns. The mean values are close to zero for all the returns. The statistics of each return differ from each other, but in common the skewness of each return is not equal to zero and neither is the kurtosis, indicating that each return has typical characteristics of leptokurtosis and fat-tail. It is well known that leptokurtosis and fat-tail are the typical characteristics of financial time series. The J-B statistic of each return is significant from zero, which means none of the returns obeys the normal distribution. Further, the stationarity of the variables has been examined using the Augmented Dickey-Fuller (ADF) unit root test. The null hypothesis of the unit root is rejected for all return series.

Table 1: Descriptive Statistics

	RTURKEY	RUSDTRY	RWORLD
Mean	0.0118	0.0106	0.0029
Median	0.0100	0.0041	0.0025
Maximum	0.1125	0.2690	0.0129
Minimum	-0.0662	-0.0878	-0.0047
Std. Dev.	0.0246	0.0437	0.0031
Skewness	0.6316	1.8213	0.4316
Kurtosis	4.7980	10.5947	3.2996
Jarque-Bera	50.5011	741.9973	8.7314
Probability	0.0000	0.0000	0.0127
ADF Test Level	-10.119	-7.764	-3.546
	[0.0000]	[0.0000]	[0.0000]

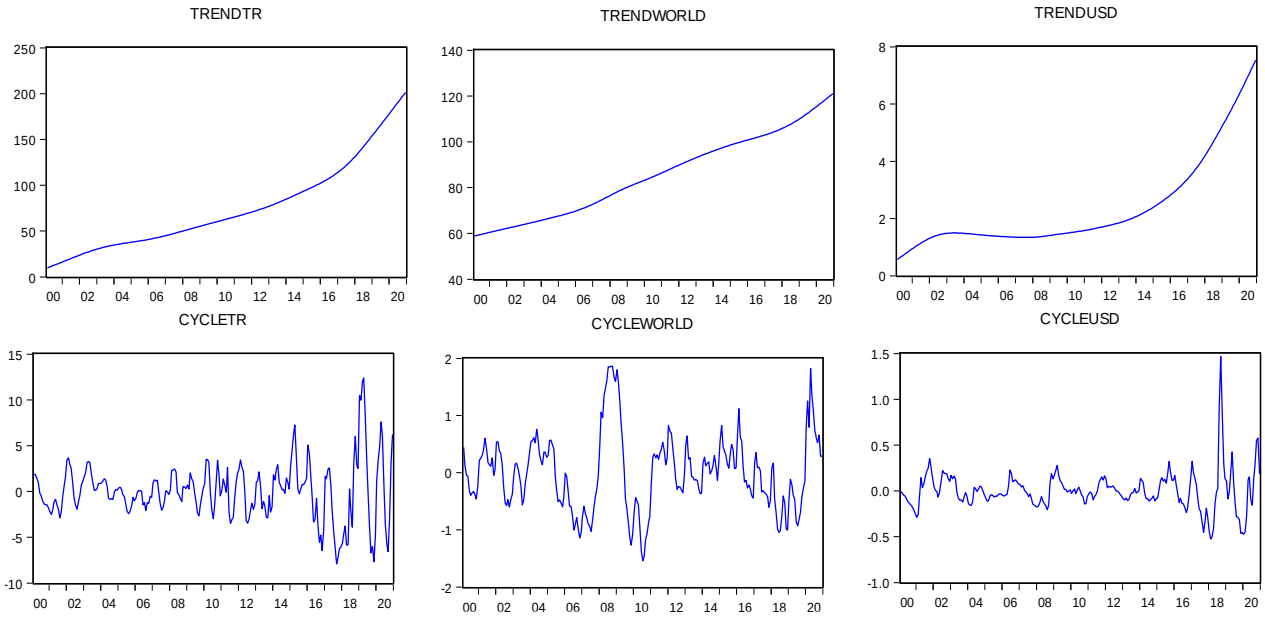
Notes: Between parenthesis: p-values.
The number of observations is 251 ADF Tests refer to Augemented Dickey Fuller test for the presence of unit

Figure 4 represents the results of a Hodrick-Prescott Filter analysis. The Hodrick-Prescott Filter is a smoothing method that is widely used among macroeconomists to obtain a smooth estimate of the long-term trend component of a series. The method was first used in a working paper by Hodrick and Prescott (1997) to analyze postwar U.S. business cycles. Briefly, the Hodrick-Prescott (HP) filter is a two-sided linear filter that computes the smoothed series ***s*** of by ***y*** minimizing the variance of ***y*** around, subject to a penalty that constrains the second difference of ***s***. That is, the HP filter chooses ***s*** to minimize:

$$\sum_{t=1}^{T}(y_t - s_t)^2 + \lambda \sum_{t=2}^{T-1}\left((s_{t+1} - s_t) - (s_t - s_{t-1})\right)^2 \quad [6]$$

The penalty parameter λ controls the smoothness of the series σ. The larger the λ, the smoother the σ. As λ=∞, ***s*** approaches a linear trend. The filter results clearly show that there is a dramatic hike in Turkish food prices index and USDTRY currency after 2016. The increase in world food prices index is much more linear compared to Turkey. These results made us divide our analysis in to two periods between 2000-2020 and 2016-2020. In Model 3 we replaced world food prices index with producer price index for agricultural products of Turkey.

Figure 3: World, Turkey and USDTRY Trend Changes



4. FINDINGS AND DISCUSSIONS

We constructed a model with VECM[2] system specification which is as exhibited in Table 2. According to the model results in Table 2, the volatility spillover effect between Turkish food price index and world food price index is more significant compared to the return spillover effect. In Panel A influence of world food price index returns and Dollar-TL returns to Turkey food price index are exhibited. Panel B exhibits the volatility relationship between these variables.

Table 2: Estimation Results of VECM-VECH (1,1) Models

Panel A: Influence of World and USDTRY to Turkey

Model 1	Coefficient		z-Statistic	P-Value
β_1	-0.04459	***	-3.03867	0.00240
β_2	-0.29387	***	-3.75141	0.00020
β_3	0.04737		1.12716	0.25970
β_4	0.37262		0.90939	0.36310
α_1	-0.00013		-0.09529	0.92410
β_5	0.30692	***	8.02297	0.00000
β_6	-0.33706	***	-4.95764	0.00000
β_7	0.25917	***	3.17676	0.00150
β_8	-0.02107		-0.02918	0.97670
α_2	-0.00029		-0.12591	0.89980
β_9	0.00238		0.82155	0.41130
β_{10}	0.00874		1.13269	0.25730
β_{11}	0.00372		0.68601	0.49270
β_{12}	-0.27003	***	-3.64580	0.00030
α_3	0.00003		0.11813	0.90600

Notes: ***, ** and * denote the rejection of null hypothesis at 1%, 5% and 10% sigificance levels respectively.
In Panel B , Turkey Food Price Index, USDTRY, and World Food Price Index are represented by 1,2 and 3.

Panel B: Transformed Variance Coefficients

Model 1	Coefficient		z-Statistic	P-Value
M(1,1)	0.00012	**	1.7062	0.0880
M(1,2)	0.00007		1.4385	0.1503
M(1,3)	0.00001		1.4944	0.1351
M(2,2)	0.00067	***	2.5273	0.0115
M(2,3)	0.00000		0.2424	0.8085
M(3,3)	0.00001	**	1.7375	0.0823
A1(1,1)	0.20987	**	2.3397	0.0193
A1(1,2)	0.26089	***	3.0695	0.0021
A1(1,3)	0.19643	**	2.2423	0.0249
A1(2,2)	0.32432	***	3.8040	0.0001
A1(2,3)	0.24418	***	2.8210	0.0048
A1(3,3)	0.18385	**	2.0651	0.0389
B1(1,1)	0.59555	***	3.6261	0.0003
B1(1,2)	0.37987		1.5239	0.1275
B1(1,3)	0.37292		1.2062	0.2277
B1(2,2)	0.24230		1.1266	0.2599
B1(2,3)	0.23787		0.8623	0.3885
B1(3,3)	0.23352		0.6862	0.4926

[2] Based on the Johansen cointegration tests, existence of cointegration between variable made us to choose VECM model.

The own conditional ARCH effects (a_{ii}) is significant for Turkish food price index and Dollar-TL exchange rate even at %1 level while it is also significant for world food price index at %5 level. These results indicate that all variables are influenced by the volatility of their own markets. Furthermore, there is significant volatility spillover over effects among Dollar-TL exchange rate, world food index and Turkish food index in the short term since a_{12}, a_{13} are statistically significant even at %1 and 5% level respectively.

Moreover, the conditional GARCH effects (b_{ii})in matrix B is significant at %1 level for Turkish food price index. Consequently, for the long-term volatility spillovers, the volatility spillover between Dollar-TL exchange rate, world food index and Turkish food price index are all insignificant even at 10% level that are b_{12}, b_{13}. As a result, we can conclude that a volatility spillover between the mentioned markets strongly exists in the short term while in the long-term same effect is not valid. Figure 5 and Figure 6 exhibits the conditional correlation and conditional covariance between Turkey, USDTRY and world. According to Figure 5, the dynamic conditional correlation between Turkish food price index and world food index along with dollar-TL exchange rate are time varying.

In Model 2 we tested the Model 1 by reducing the data range between 2016 based on the indication we got from Hodrick-Prescott Filter in Figure 4. According to the model results in Table 3 we conclude in the short period the impact world food price on Turkish food price index volatility vanishes while exchange rate impact is still valid. In this context in Model 3, we replaced world food prices index with producer price index for agricultural products of Turkey and the results showed that after 2016 the conditional GARCH effects (b_{ii})in matrix B is significant at %1 level for all variables which means in the long run PPI of agricultural product and USDTRY is strongly significant. These results support that food price inflation in Turkey is a cost-push inflation. Due to pandemic, increasing wages, rising oil and fertilizer prices and dry weather cost-push inflation occurred in Turkey 2016. Other important milestones such as the 15 July 2016 coup d'état attempt, Andrew Brunson case in 2018 and dismiss of Turkish Central Bank Governors Murat Uysal and Naci Ağbal in 2020 and 2021 respectfully, boosted the domestic currency depreciation.

Figure 4: Conditional Correlation between RTurkey and RUSDTRY, RWorld

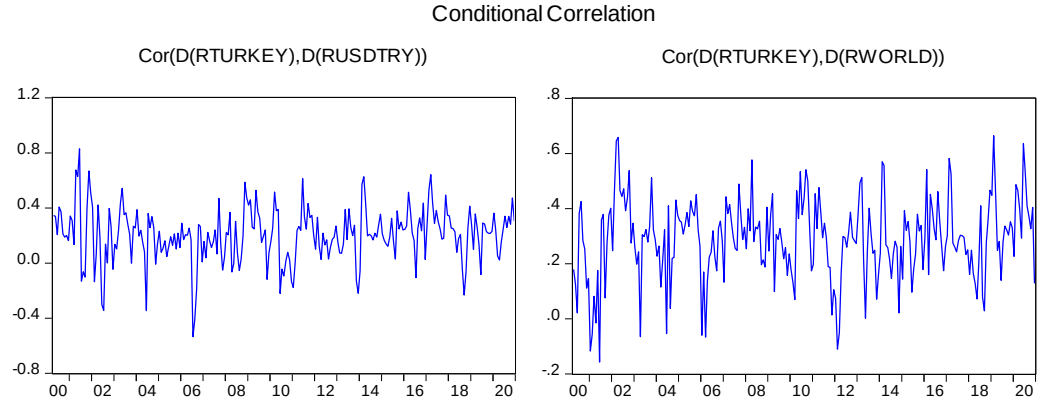


Figure 5: Conditional Covariance between RTurkey and RUSDTRY, RWorld

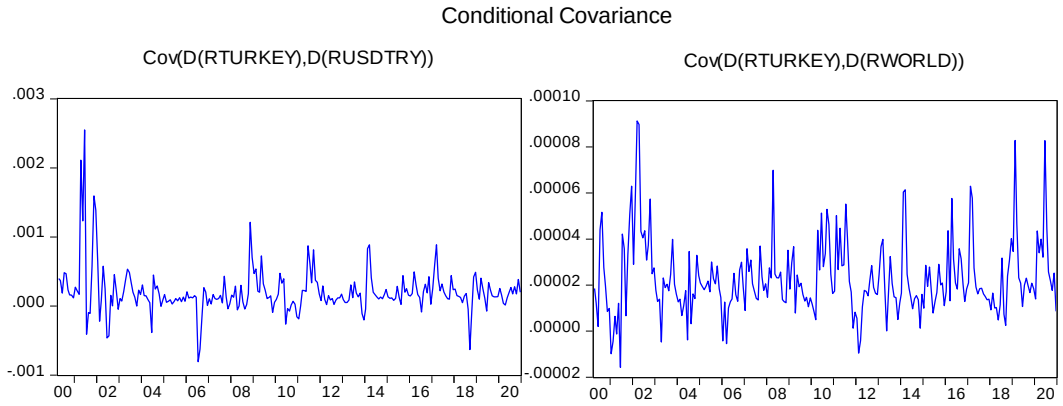


Figure 6: Conditional Correlation between RTurkey and RUSDTRY, RWorld- (2016-2020)

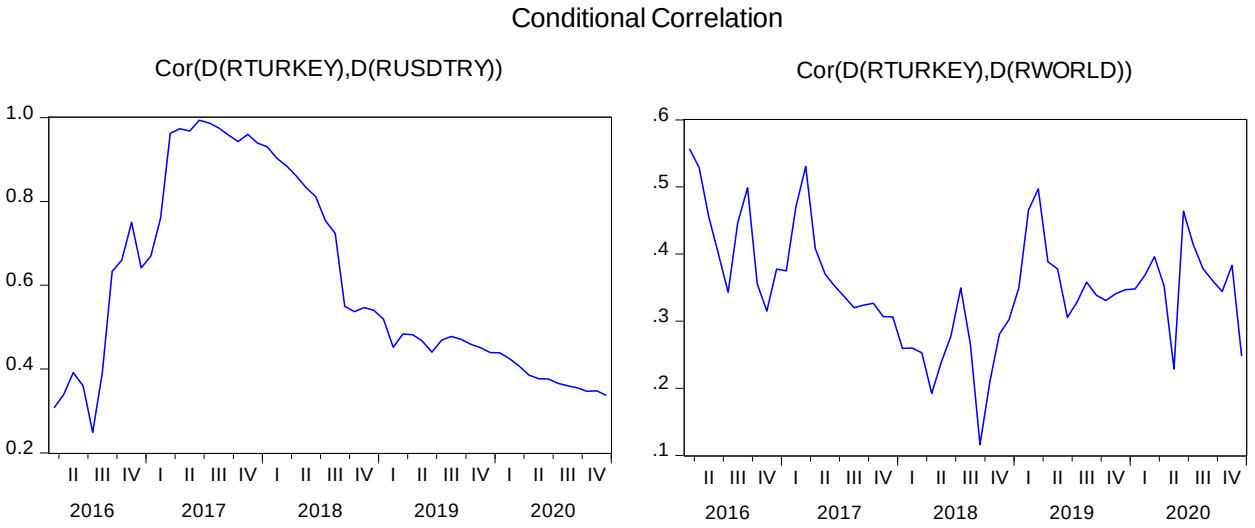


Table 3: Estimation Results of VECM-VECH (1,1) Models-(2016-2020)

Panel A: Influence of World and USDTRY to Turkey

Model 2	Coefficient	z-Statistic	P-Value
β_1	-0.20722	-0.41581	0.67750
β_2	-0.29951	-0.48242	0.62950
β_3	0.13575	0.41954	0.67480
β_4	0.16888	0.05446	0.95660
α_1	0.00352	0.35500	0.72260
β_5	0.96271	0.93443	0.35010
β_6	-0.73796	-0.51774	0.60460
β_7	0.45829	0.40829	0.68310
β_8	3.19875	0.47222	0.63680
α_2	-0.00156	-0.05514	0.95600
β_9	0.02805	0.55223	0.58080
β_{10}	0.02362	0.48038	0.63100
β_{11}	0.03318	1.38213	0.16690
β_{12}	-0.28959	-1.07729	0.28130
α_3	0.00007	0.07351	0.94140

Notes: ***, ** and * denote the rejection of null hypothesis at 1%, 5% and 10% sigificance levels respectively.
In Panel B , Turkey Food Price Index, USDTRY, and World Food Price Index are represented by 1,2 and 3.

Panel B: Transformed Variance Coefficients

Model 2	Coefficient		z-Statistic	P-Value
M(1,1)	0.00058		0.4062	0.6846
M(1,2)	0.00011		0.3632	0.7164
M(1,3)	0.00002		0.2426	0.8083
M(2,2)	0.00000		0.0028	0.9978
M(2,3)	0.00001		0.1257	0.9000
M(3,3)	0.00001		0.6124	0.5403
A1(1,1)	0.10301		0.2536	0.7998
A1(1,2)	0.34348		0.8182	0.4133
A1(1,3)	0.22762		0.1869	0.8517
A1(2,2)	0.25983		0.3552	0.7224
A1(2,3)	0.24883		0.1310	0.8957
A1(3,3)	0.27334		0.6059	0.5446
B1(1,1)	0.71995		1.0601	0.2891
B1(1,2)	0.99369	***	16.5815	0.0000
B1(1,3)	0.49025		0.2616	0.7937
B1(2,2)	1.07748	***	19.4135	0.0000
B1(2,3)	0.76256		0.4952	0.6205
B1(3,3)	0.38650		0.5135	0.6076

Figures 7 and 9 plot the patterns of the conditional correlation for Model 2 and Model 3. Figure 8 and Figure 10 display the patterns of the conditional covariances for Model 2 and Model 3.

Figure 7: Conditional Covariance between RTurkey and RUSDTRY, RWorld (2016-2020)

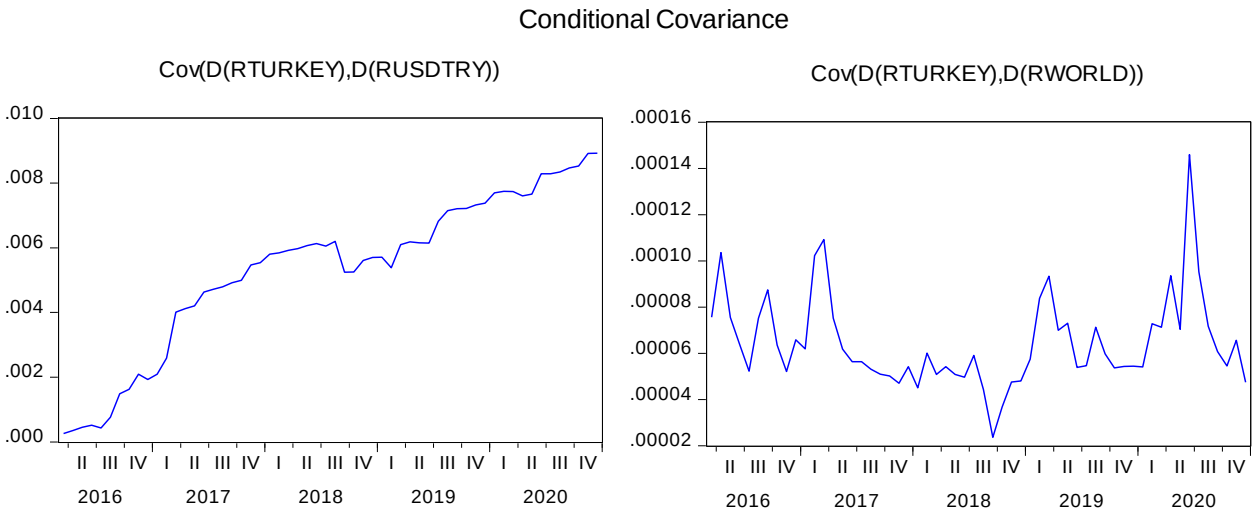


Figure 8 shows that Turkish food price index and USDTRY exchange rate covariance is testing new peaks since 2016 while the covariance between world food price index and Turkish food price index reached a record high peak in 2020. Figure 10 represents even more interesting results such as Turkish food price index and PPI of agricultural products reached a peak level after 2016 and covariance of the series experienced a sharp downfall in 2018 and reached a higher peak in 2019. The covariance between PPI of agricultural products and USDTRY exchange rate reach a peak in 2018 through Andrew Brunson case. The overall positive covariances indicate that Turkish food price index and exchange rate tend to change over time in the same direction.

Table 4: Estimation Results of VECM-VECH (1,1) Models w/ Agriculture PPI-(2016-2020)

Panel A: Influence of World and USDTRY to Turkey

Model 3	Coefficient	z-Statistic	P-Value
β_1	-0.26000	-1.22896	0.21910
β_2	-0.26040	-1.04477	0.29610
β_3	-0.56995	-0.75156	0.45230
β_4	0.11228	0.81827	0.41320
α_1	0.00171	0.44023	0.65980
β_5	-0.07505	-0.90366	0.36620
β_6	-0.00380	-0.03309	0.97360
β_7	-0.49846	-1.89554	0.05800
β_8	0.05280	0.82123	0.41150
α_2	0.00097	0.69735	0.48560
β_9	0.81527	0.79532	0.42640
β_{10}	-0.38931	-0.51391	0.60730
β_{11}	0.15889	0.05436	0.95670
β_{12}	0.49801	0.70884	0.47840
α_3	-0.00005	-0.00284	0.99770

Panel B: Transformed Variance Coefficients

Model 3	Coefficient		z-Statistic	P-Value
M(1,1)	0.00012		0.1731	0.8625
M(1,2)	0.00001		0.5954	0.5516
M(1,3)	0.00004		0.2456	0.8060
M(2,2)	0.00000		0.4307	0.6667
M(2,3)	0.00002		0.2946	0.7683
M(3,3)	(0.00005)		-0.2089	0.8345
A1(1,1)	0.01464		0.1244	0.9010
A1(1,2)	0.11358		0.6577	0.5107
A1(1,3)	0.12864		1.0297	0.3032
A1(2,2)	0.27137		0.8584	0.3906
A1(2,3)	0.07410		0.2037	0.8386
A1(3,3)	0.16221		0.6398	0.5223
B1(1,1)	0.74788		0.5378	0.5907
B1(1,2)	0.77123	**	2.1368	0.0326
B1(1,3)	0.95719	***	7.7612	0.0000
B1(2,2)	0.69175	***	2.8586	0.0043
B1(2,3)	0.92009	***	3.3004	0.0010
B1(3,3)	1.03304	***	20.5851	0.0000

Notes: ***, ** and * denote the rejection of null hypothesis at 1%, 5% and 10% sigificance levels respectively. In Panel B , Turkey Food Price Index, Producer Price Index of Agricultural Products, and USDTRY are represented by 1,2 and 3.

Figure 8: Conditional Correlation between RTurkey and Agriculture PPI, USDTRY

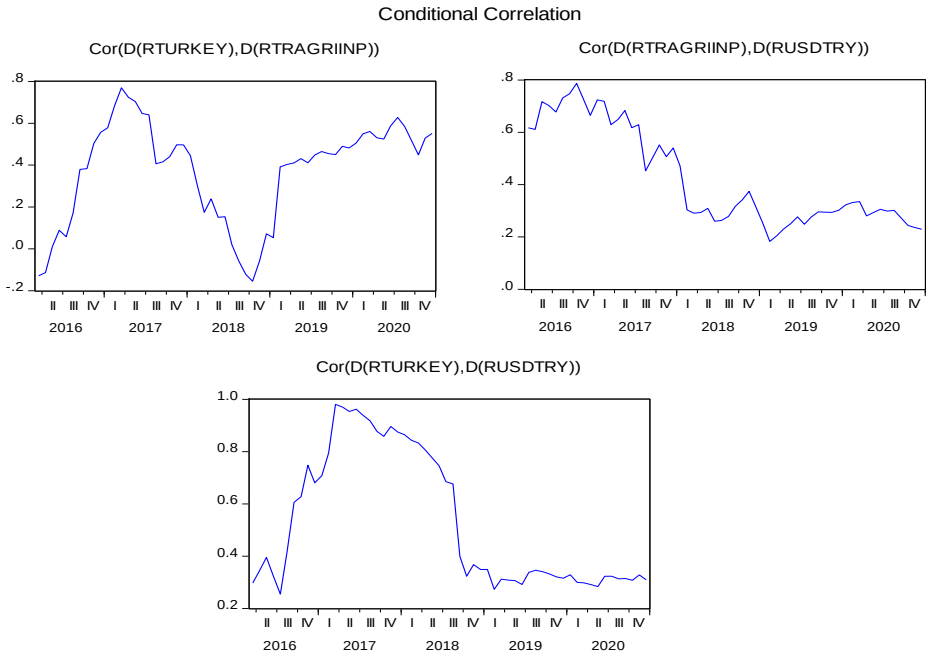
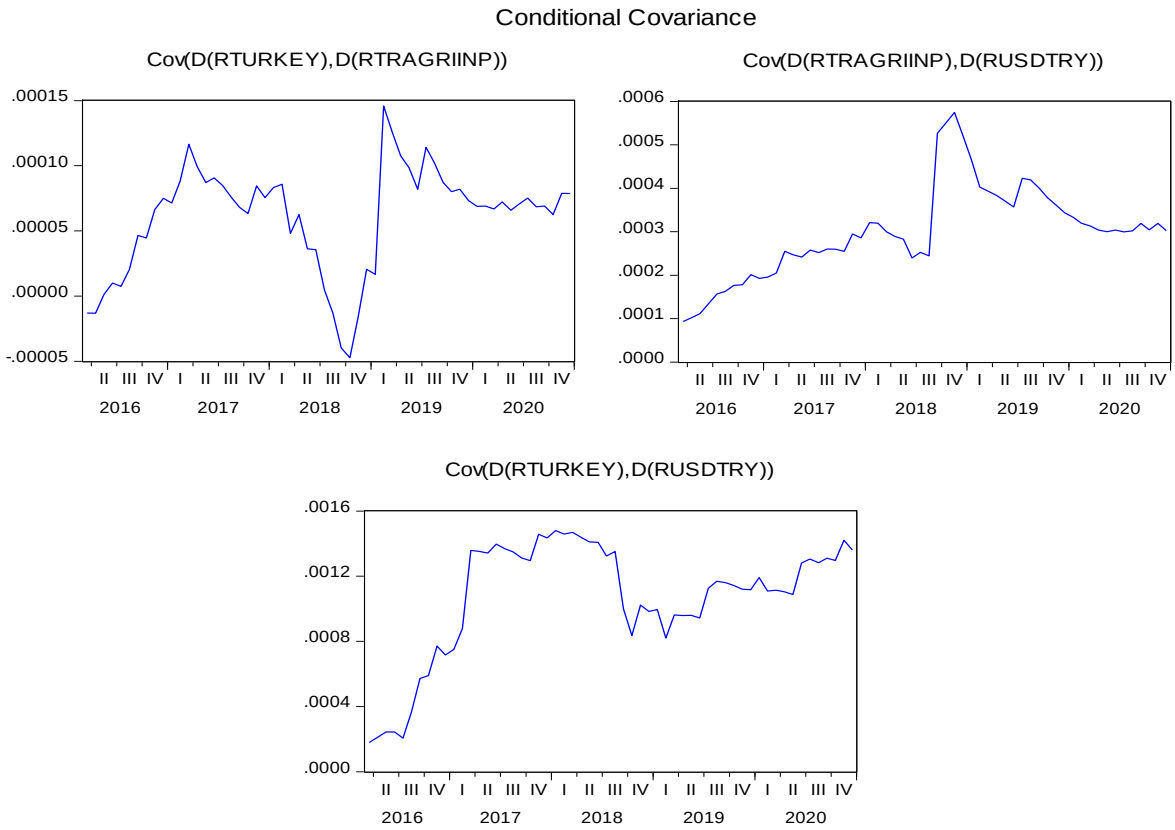


Figure 9: Conditional Covariance between RTurkey and Agriculture PPI, USDTRY



5. CONCLUSION AND IMPLICATIONS

Global incidents such as epidemic, drought, climate change and the rapidly increasing world population food prices hiked significantly which also fueled the food price index in Turkey. Moreover, the exchange rate fluctuations also increased the volatility in Turkish food price index. Before 2013 exchange rate was more durable for domestic currency however after 2013 Turkish lira became highly volatile and depreciated dramatically. Also, the increasing level of agricultural food import did not help food price index volatility to stabilize at all. Other important milestones such as the 15 July 2016 coup d'état attempt, Andrew Brunson case in 2018 and dismiss of Turkish Central Bank Governors Murat Uysal and Naci Ağbal in 2020 and 2021 respectfully, boosted the domestic currency depreciation. According to the to our results we find that a significant volatility spillover effect between Turkish food price index, exchange rates and world food price index exist in the short run while the effect vanishes in the long run. Consequently, we can also see the negative effects of commodity prices on inflation. The price in agricultural commodities which are mainly foreign exchange denominated have a negative impact on food prices.

The depreciation of the Turkish Lira against the dollar also hikes import costs in food which is another important fact. Furthermore, increasing prices in raw materials, exchange rate volatility, increasing input costs, and speculative acts are among the reasons for food price inflation in Turkey, according to sectoral professionals. In this context our findings are important to provide insight to policymakers which should guide them to promote local agricultural production, decrease import, give significant incentives to food producers to ensure sustainability and improve structural problems.

However, Turkish government established a new committee that will help to bring down inflation which gives clue about government's approach on food price index is more related with market pricing behavior rather that cost increase due to global input prices and dollarization. The Price Stability Committee, under the coordination of the Treasury and Finance Ministry, is expected to contribute to the permanent establishment and maintenance of price stability. It is crucial to run both approaches simultaneously in order to reduce divergence of Turkish food price index and CPI.

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A RESEARCH ON COMPULSORY ORGANIZATIONAL CITIZENSHIP BEHAVIOR, PSYCHOLOGICAL CAPITAL AND ORGANIZATIONAL CYNICISM IN TERMS OF DEMOGRAPHIC FACTORS

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ABSTRACT

Purpose- The aim of this research is to reveal whether the COCB, PC and OC levels of the employees, which are the important arguments of the managers for the multifaceted organizational success, differ in terms of demographic factors.

Methodology- For the research application, a staple food producer operating in Gaziantep province and included in the ISO 500 list was selected. The reasons for choosing such a business for research are various, e.g. its proximity to the Middle Eastern countries in terms of geographic location. Therefore, the export potential of Gaziantep is good because of its location to reachout imported raw material and being near by the ports of Iskenderun and Mersin. In addition, the relatively low number of researches conducted in the production sector is another reason for choosing such a business. 310 employees of the enterprise, which has a total of 1200 employees and operates in 5 main groups, were surveyed, and 305 of them were identified as valid, thus the data set was obtained. The research was carried out with a questionnaire application, and demographic variables are present at the beginning of the 33-question questionnaire form. The research model and hypotheses were tested by the SPSS-22 program.

Findings- Research results indicate that while the marital status and education level on COCB and OC, gender, age and institutional working time, age do not create any differentiation. On PC only educational level creates a differentiation among demographic factors, while age, gender, marital status and institutional working time do not reveal a differentiation.

Conclusion - In the literature, COCB has not been adequately studied in terms of demographic factors, and the effect of demographic factors on COCB, PC and OC has never been investigated collectively. For this reason, this study differentiates it from other research and fills a gap in the literature from this point of view, making a significant contribution. A research on whether Compulsory Organizational Citizenship Behavior (COCB), Psychological Capital (PC) and Organizational Cynicism (OC) differ in terms of demographic factors is included through the employees of a selected company. In the literature, the effects of demographic factors on COCB, PC and OC were discussed one by one and different results were found. Examining the impact of multiple demographic factors on COCB and collectively examining their impact on COCB, PC and OC. Hiring more educated staff for higher PC level and lower COCB and OC level. Preference for single personnel in terms of marital status factor for higher PC level and lower COCB and OC level.

Keywords: Compulsory organizational citizenship behavior, psychological capital, organaizational cynicism, demographic factors
JEL Codes: L10, L12, L13

1. INTRODUCTION

Considering that employees, namely human resources, are the most important production factors for strategic management, sustainable growth, sustainable competition and profitability in enterprises, businesses that realize the synergetic power added by human resources to the system have to use organizational behavior concepts to use it. Examining these concepts is one of the most important arguments of managers. Although the relatively high destructive effect of negative organizational behavior

concepts on organizations is mentioned, using positive organizational behavior variables as a solution is seen as a way. At this point, the concept of COCB is not rather than being a new negative organizational behavior variable on its own, the concept of OCB is considered to be a concept that is perceived as a result of some pressure, but is actually a destructive concept for the organization. The concept of PC, on the other hand, emerged with the idea of competitive advantage, and it is a concept that further diversifies traditional capital and is evaluated in a specific way as positive psychological capital. Consisting of the dimensions of hope, psychological resilience, self-efficacy and optimism, PC is becoming one of the most important arguments of businesses and organizations in gaining competitive advantage today. Finally, the concept of OC is one of the important negative organizational behavior types that can affect the profitability of businesses, especially in today's competitive working environment.

The aim of this study is to examine whether the levels of COCB, PC and OC differ in terms of demographic factors as a result of considering the synergistic power and vital role that employees add to the system in terms of enterprises. Among these concepts, COCB is a new concept and has not been sufficiently studied in terms of demographic factors in the literature. It is considered that our study will fill the deficiency in this subject. For this purpose, firstly, information is given about the concepts of COCB, PC and OC, and past studies and researches examining these concepts in terms of demographic factors are included. Then, the results of the research on the subject are presented and after the similarities and differences with the literature and theories are revealed, practical suggestions that can be used especially by business managers are given for the evaluation of the findings.

2. LITERATURE REVIEW

The conceptual definition of COCB, which is described as the dark side of OCB, which has been the subject of important studies in the literature, has been made in recent years and its dimensions have also been determined. Although the actions beyond the role definition are on a voluntary basis in OCB, these actions are not always done voluntarily and voluntarily (Bolino et al., 2004; 2010). In fact, the subject that applies to both the concepts of OCB-COCB is accepted as role behavior or job description. Because it is evaluated that role definitions in organizations cause negative perception of justice, create social and personal interpretation problems for employees and managers, and create employees who are forced to show extra role behavior despite their unwillingness. It is stated that the behaviors that are outside of the role definitions are included in the role definitions, and then they put pressure in the implementation of the role behaviors that are outside and require OCB (Vigado-Gadot, 2006). According to this way of thinking, OCB actually cause destructive and very harmful results, unlike many positive results listed in the literature. Vigado-Gadot (2007) named these acts of repression, not spontaneous, as “Compulsory Citizenship Behavior”. According to this definition, contrary to the known OCB, the origin of the actions is not free will and the fact that they occur as a result of various compulsions reveals that COCB is a negative organizational behavior, unlike the OCB, which is a positive organizational behavior type (Peng & Zhao, 2012; Zhao et al., 2013; Zhao & Peng, 2014).

Psychology has introduced the concept of "Positive Psychology", which presupposes that the science of psychology can improve the positive aspects of the individual and work in particular, instead of dealing with only the negative aspects, and can be happy and productive (Gable and Haidt, 2005). The transition from positive psychology to the concept of positive organizational behavior and its definition was made by Luthans (2002). In this definition, in order to improve the working environment positively, there is the expression of studies aimed at increasing the psychological powers of the management on human resources in a measurable way (Luthans, 2002). Positive organizational behavior as a thought system are two new concepts that emerged as a result of the development of the concept of PC and positive psychology. The concepts of positive psychology and positive organizational behavior, which are in a cause and effect relationship, are considered to be the management of the organization with a strategic perspective by developing and managing the positive aspects of employees in today's competitive environment (Luthans and Youssef, 2004). Expressing who we are and where we can develop if we develop positively is defined as PC (Luthans, Youssef, & Avolio, 2007). PC which has 4 dimensions in many sources; Optimism, hope, self-efficacy and psychological resilience are also described as components of PC.

The cynicism that is the basis of the concept of OC and described as a philosophy of life; It refers to moving away from both various pleasures and problems. In the first studies about cynicism among American employees, it is expressed as "not trusting the administrators and the rules" (Bateman et al. 1992). In many ways, attributing the foundations of the concept of OC constitute theories of expectation, social motivation, attitude, social exchange and emotional events (James, 2005). On the other hand, Andersson (1996) shows the lack of trust and hope for a person, a group, and a social environment; It defines it as a disappointing negative attitude. In another aspect, OC emerges with the effect of not meeting organizational expectations (Reichers et al. 1997). He defines OC as "negative attitude of the employee towards the company". Wilkerson et al. (2008) explains OC as "a negative attitude based on the idea that the procedures and processes of the organization the employee is in conflict with the interests of

the employees". As a result, it is stated that OC can occur due to many reasons such as the perception of violation of social contract, organizational injustice, negative working conditions, negative leadership, and lack of communication (Cartwright and Holmes, 2006). In any case, it is considered that the reasons for OC are the reasons for the employee's loss of faith in his organization. Dean et al. (1998), three dimensions were developed and these are listed as cognitive, affective and behavioral dimensions.

Considering the studies in the literature regarding whether the COCB level differs in terms of demographic factors, there is no significant difference between the COCB levels of the employees in terms of marital status factor, according to the studies of Topçu and Beğenirbaş (2017). There is a significant difference between the COCB levels of employees in terms of age, which is another demographic factor. In terms of gender factor, the dominant number of men does not make possible any differential effect on the COCB level.

Considering the studies in the literature about whether the PC level differs in terms of demographic factors, Guan et al. (2017) and Rego vd. (2010) found a differentiation in terms of education factor in the form of an increase in PC levels as the education levels of employees increased. Werner and Smith (1982-1992), Cromer (2009), Finished (2014), Guan et al. (2017), it is determined that the age factor causes a significant difference mainly on PC. A significant part of these studies are consistent within themselves, as there are studies conducted among the service sector, academicians and healthcare professionals, in which career steps increase as the age increases. Gooty vd. (2009), Hsing-Ming et al., (2017) it was found that the gender factor has no effect on PC. Tepper (2000), Norman et al. (2010), Lehoczky (2013), and Guan et al. (2017), on the other hand, it is seen that gender creates a level difference only in the self-efficacy dimension.

Considering the studies conducted to determine whether the OC level differs in terms of demographic factors, Kanter and Mirvis (1989), Bateman (1992) and James (2005) found that demographic factors make a difference on OC and generally, as the education level increases, the OC level decreases. On the contrary, Dean vd. (1998), Abraham (2000), Brandes (2008), and Çalman (2016) found in their studies that education level did not cause any difference on OC. Although there are various results of studies on whether marital status, another demographic variable, creates a difference on OC, Kanter and Mirvis (1989) and Efilti (2008) found in their studies that the marital status did not have a significant effect on OC. Finally, in Efilti (2018) investigated whether it made a difference on OC and found that gender had no statistically significant effect on OC.

3. DATA AND METHODOLOGY

3.1. Purpose and Model of the Research

The purpose of this study is to examine whether the employees' COCB, PC and OC levels differ in terms of demographic factors. The target to be reached with this research; to examine the role of demographic factors in terms of high and low COCB, PC and OC levels of employees. The main hypotheses developed within the framework of the purpose of the research are as follows.

H1: The COCB level differs according to gender.
H2: The PC level differs according to gender.
H3: The OC level differs according to gender.
H4: The COCB level differs according to marital status.
H5: The PC level differs according to marital status.
H6: The OC level differs according to marital status.
H7: The COCB level differs according to education level.
H8: The PC level differs according to education level.
H9: The OC level differs according to education level.
H10: The COCB level differs according to age.
H11: The PC level differs according to age.
H12: The OC level differs according to age.
H13: The COCB level differs according to the institution's working time.
H14: The PC level differs according to the institution's working time.
H15:The OC level differs according to the institution's working time.

For the research application, a staple food producer operating in Gaziantep province and included in the ISO 500 list was selected. The reasons for choosing such a business for research are various, but primarily due to its proximity to the Middle Eastern countries in terms of geographic location. Therefore the export both possibilities and the ease of transportation in raw material

imports thanks to the ports Iskenderun and Mersin. In addition, the relatively low number of researches conducted in the production sector is another reason for choosing such a business. 310 employees of the enterprise, which has a total of 1200 employees and operates in 5 main groups, were surveyed, and 305 of them were identified as valid, thus the data set was obtained.

3.2. Data Collection Method

The study was carried out with a questionnaire application, and demographic variables are present at the beginning of the 33-question questionnaire form. In the study, a one-dimensional five-item scale with 0.96 validity and 0.88 reliability coefficients was used for COCB, which was created by Vigoda-Gadot (2007). In order to measure the OC, it was considered to use the 3-dimension scale composed of 13 items in total, which Brandes et al. (1999) created. This scale is actually a re-analyzed version of the first scale consisting of 14 items of the OC, which was created by Brandes in 1997. Kalağan (2009) tested the construct validity in his study, reached a positive result and found the reliability high. The 3-dimensional version of this scale has been verified with confirmatory factor analyzes and has taken its place in the Turkish literature as a valid and reliable scale (Kalağan, 2009: 128). Finally, to die PC, Luthans et al. (2007b), the result is reached with 4 dimensions and 24 items. These dimensions are hope, self-efficacy, psychological resilience and optimism, and a 24-item scale was created with 6 items for each. first performed the translation of this scale into Turkish and its validity and reliability analysis.

3.3. Data Analysis Method

The data set created by the survey method was analyzed using the SPSS-22 program. Initially, internal consistency values (Cronbach Alpha coefficients) were calculated to determine the reliability of the scales. In the next step, confirmatory factor analysis was performed to test the validity of the scales and the results are presented in another study. It is known that variables that are suitable for normal distribution give healthier results as a result of statistical analysis. Therefore, normality tests of COCB, PC and OC are performed before various analyzes to be made.

Table 1: Normality test results of COCB, PC and OC

	COCB	**PC**	**OC**
Mean	2,783	3,9295	2,6159
Median	2,8345	4,1667	2,3269[a]
MOD	3,4	4,33[a]	4,54
Varience	1,242	0,699	1,316
Skewness	0,132	-1,491	0,43
Kurtosis	-0,94	1,599	-1,142
Smallest score	1	1	1
Highest score	5	5	5

Skewness and kurtosis values are used to test the normal distribution. Skewness refers to the symmetrical distribution of the observed values around the mean. Kurtosis also characterizes the distribution being sharp or extremely flattened. For this reason, kurtosis and skewness values outside certain limits endanger the health of the analysis.

While there are researchers who stated that kurtosis and skewness values should be between +1 and -1 (Hair et al., 2013), there are also researchers who say that these values should be between +1.5 and -1.5. (Tabachnick and Fidel, 2013). George and Mallery (2010), on the other hand, evaluate that even kurtosis and skewness values between +2 and -2 are sufficient.

In the light of these considerations, it is seen that the skewness and kurtosis values of COCB, PC and OC in Table 1 are between +1,5 and -1,5 and only the kurtosis value of PC is 1.59.

Considering that the sample number of the research is 305, it is thought that all our variables are suitable and conveinent for research. It has also been tested in the R.3.42 statistical program. Table 2 contains the results of the Shapiro Wilk normality test.

Table 2: Shapiro Wilk Normality Test Results of COCB, PC and OC

Variable	p Value
COCB	p<0,001
PC	p<0,001
OC	p<0,001

As a result of the examination, it was concluded that the variables were not normally distributed (p <0.05). However, since the sample size of the study is 305, it can be accepted that the variables are normally distributed according to the central limit theorem.

After it was understood that the data to be used in the study showed normal distribution, t and ANOVA tests, which are among the parametric tests, were used to analyze this differentiation. For demographic variables consisting of two separate samples, gender and marital status are demonstrated by performing a t-test in relation to the mean of the two independent variables (Nakip, 2013). ANOVA (Analysis of Variance) test, which is the combination of the words that are the combination of F test and Variance Analysis, was used to test the effects of other demographic factors on a variable of multiple factors (groups).

4. FINDINGS AND DISCUSSIONS

A significant portion of the employees of the food producing business are primary and high school graduates (Table 3). Undergraduate and graduate employees are white-collar administrators.

Table 3: Educational Status, Age, Institution Working Time, Branch Distribution of the Sample

Education	N(%)	Age	N(%)	Institution Working Time	N(%)	Branch Distribution	N(%)
Primary School	142(%46)	20-30	87(%28,5)	1,5	173(%56,7)	Forage	67(%22,0)
High School	85(%27,9)	31-40	154(%50,5)	6,10	101(%33,1)	Glucose	60(%19,7)
Associate Degree	23(%7,5)	41-50	52(%17)	11,15	22(%7,2)	Flour	73(%23,9)
Graduate	53(%17,4)	51-60	11(%3,6)	16,20	7(%2,3)	Pasta	38(%12,5)
Post Graduate	2(%0,7)	61-70	1(%0,3)	21,25	2(%0,7)	Starch	67(%22,0)

Again, when we examine Table 3, we see that employees between the ages of 31-40 make up half of the total number. Combined with 28,5% between the ages of 20-30, it would not be wrong to say that 79% of them are blue-collar workers. In the enterprise, those with a working period of 1-5 years have a significant weight, such as 56%. Those who have a working period of less than 10 years are 89,8%. At this point, it would not be wrong to say that the vast majority of employees have a working period of less than 10 years. One of the reasons for this is thought to be the new opening of starch feed and glucose units (Table 3). It is seen in Table 3 that the ratio of the number of employees of the five main fields of activity of the enterprise in the sample is approximately equal. In addition, the fact that the pasta production facilities have largely switched to automation systems explains the relatively low number of employees.

According to Table 4, we can see the weight of man employees with a rate of 89,2% regarding gender distribution. This can be considered as a relatively high rate, especially for a food production establishment where body strength is important. In addition, if we leave aside the employees between the ages of 20-30, which is 28,5%, it is seen that there are 80% of married employees.

Table 4: Gender Distribution and Marital Status Distribution of the Sample

Gender	N (%)	Marital status	N(%)
Woman	33 (%10,8)	Married	244 (%80,0)
Man	272 (%89,2)	Single	61 (%20,0)

T-test was conducted for gender and marital status demographic factors. The number of samples (N), standard deviation, mean, t and p values are important in revealing the findings of the t test. Apart from these Levene Variances Equality Test 2-part Sig. It can be meaningful or meaningless depending on its value (Nakip, 2013). The t-test results of COCB, PC and OC according to gender, which are one of the dual demographic variables, are shown in Table 5.

Table 5: T Test Results for Determining the Difference according to Gender

	Gender	N	Mean	Standard Deviation	t	p
COCB	Man	272	2,80	1,11	-1,131	0,259
	Woman	33	2,57	1,09	-1,152	0,256
PC	Man	272	3,95	0,80	-1,707	0,089
	Woman	33	3,95	1,01	-1,432	0,161
OC	Man	272	2,61	1,13	-0,077	0,939
	Woman	33	2,60	1,26	-0,070	0,944

It was found that the COCB level of the sample did not show a significant difference according to gender (t= -1,131; p=0,259>0,05) while the COCB level of employees is 2.80 (SD = 1.11) for man and 2.57 (SD = 1.09) for womans. Although the COCB level is slightly higher in man, the difference is not significant. According to this result, our hypothesis that *"H1: The COCB level differs according to gender"* was rejected. Similarly, no significant difference was found in the PC levels of the employees in terms of gender factor (t = -1.707; p = 0.161> 0.05). The mean PC levels of man and woman are the same (3,95). So our hypothesis that *"H2: The PC level differs according to gender"* was rejected. Lastly, no significant difference was found among the employees in terms of gender factor at the OC level (t = -0.077 and p = 0.939> 0.05). Man and woman average OC levels are almost the same. According to this result, our hypothesis that *"H3: The OC level differs according to gender"* was rejected.

Table 6 shows the values of COCB, PC and OC according to the marital status two-dimensional sample factor. It is seen that this status of married and single workers has a significant relationship with the COCB level (t = 2.337; p = 0.017 < 0.05). In this respect, our hypothesis that *"H4: The COCB level differs according to marital status"* was accepted. It was found that the COCB level of the married workers was 2.85 (SD = 1.09), while the COCB level of the single workers was behind with the value of 2.47 (SD = 1.14). It is considered that the reason for this is that married employees, who have a family they have to care for, feel under pressure to perform OCB and not lose their jobs.

However, it was observed that the marital status of the employees did not have a significant relationship with PC levels (t = -1.179; p = 0.239> 0.05). Therefore, the hypothesis that *"H5: The PC level differs according to marital status"* was rejected.

In OC, which is a negative organizational behavior concept, the situation is similar to COCB. There is a significant difference between single and married staff in terms of level with the values of OC t = 3,268 and p = 0,02 <0,05. In this respect, our hypothesis that *"H6: The OC level differs according to marital status"* was accepted. Similar to the COCB level, higher levels of married employees compared to singles at OC levels are considered to be a family entity that needs to be supported.

Table 6: T Test Results for Determining the Difference according to Marital Status

	Marital Status	N	Mean	Standard Deviation	t	p
COCB	Married	244	2,85	1,09	2,402	0,017
	Single	61	2,47	1,14	2,337	0,022
PC	Married	244	3,90	0,86	1,179	0,239
	Single	61	4,04	0,71	1,319	0,190
OC	Married	244	2,71	1,14	3,119	0,002
	Single	61	2,21	1,06	3,268	0,001

Whether there is a difference in the level of p <0.05 significance of COCB, PC, OC according to education levels is evaluated according to Table 7.

Table 7: Anova Test Results to Determine the Difference according to Education Level

	Education Level	N	Mean	Standard Deviation	Anova Test	
					F	P
COCB	Primary School	142	3,0634	1,09658	5,094	**0,001**
	High School	85	2,6494	1,20036		
	Associate Degree	23	2,5043	,87359		

	Graduate	53	2,4038	,93602		
	Post Graduate	2	1,8	,84853		
	Total	305	2,783	1,11460		
PC	Primary School	142	3,7412	,95762	3,956	**0,004**
	High School	85	4,173	,53639		
	Associate Degree	23	4,0254	,77267		
	Graduate	53	3,9914	,82039		
	Post Graduate	2	4,2083	,47140		
	Total	305	3,9295	,83601		
OC	Primary School	142	2,9085	1,15978	5,013	**0,001**
	High School	85	2,4362	1,10120		
	Associate Degree	23	2,1706	1,01042		
	Graduate	53	2,3498	1,08162		
	Post Graduate	2	1,6538	,38075		
	Total	305	2,6159	1,14711		

As can be seen from Table 7, it has been found that the level of COCB makes a significant difference according to the education level (F = 5.094; p = 0.001 <0.05). In this case, our hypothesis that *"H7: The COCB level differs according to education level"* was accepted. According to the education level, the highest COCB level was found among primary school graduates with 3.06 (SD = 1.09). Following this, it has been determined rhat they have 2.64 (SD = 1.20); high school graduates with 2.50 (SD = 0.84), associate degree, 2.40 (SD = 0.94), undergraduate and 1.8 (SD = 0.84), respectively, and the level of COCB decreases with increasing education level. This situation is caused by the rise from blue-collar to white-collar and from employee to manager as the level of education increases; It is considered to be understandable that blue-collar workers with a low education level are under pressure to show higher COCB.

It was observed that the PC level significantly differed according to the education levels (F = 3.956; p = 0.004 <0.05). Therefore, our hypothesis that *"H8: The PC level differs according to education level"* was accepted. The highest PC level was found to be 4.20 (SD = 0.47) among graduates and the lowest PC levels was 3.74 (SD = 0.95) among primary school graduates. PC levels of undergraduate, associate degree and high school graduates do not show a linear change, but there is no significant difference between them. In this respect, it is found that PC levels increase with the education level. The reason for this is thought to be that as the level of education increases, the hierarchical level increases, and authority and responsibility increase.

It was understood that OC levels among employees also differ with their education level (F = 5.013; p <0.05). According to these results, the hypothesis that *"H9: The OC level differs according to education level"* was accepted. It would not be wrong to conclude that education level suppresses negative organizational behavior in OC, which is a negative organizational behavior type like COCB. In fact, as the level of education increases, the rise in the hierarchical level is known as a phenomenon that is generally experienced in enterprises. In addition, as the hierarchical level rises, increasing responsibilities and power of management, in other words, authority begins to constitute the source of behaviors that cause cynical attitude. In other words, the manager is not expected to be both cynical and exhibit a management style that causes cynical attitude.

It was determined from Table 8 that the age range factor of our sample did not differ with the level of COCB (F = 0.377; p = 0.825> 0.05). For this reason, the hypothesis that *"H10: The COCB level differs according to age"* was rejected. At this point, we are faced with the fact that an increase in the age range does not mean an increase in hierarchical levels as it is in the education level.

Table 8: F Test Results regarding the Age Variable

	Age	**N**	**Mean**	**Standard Deviation**	**Anova Test**	
					F	**P**
COCB	20-30	87	2,7057	1,08856	0,377	0,825
	31-40	154	2,7870	1,13775		
	41-50	52	2,8962	1,16383		
	51-60	11	2,8727	,82109		
	61-70	1	2,0000			

	Total	305	2,7830	1,11460		
PC	20-30	87	4,0120	0,75598	0,663	0,618
	31-40	154	3,8696	0,87825		
	41-50	52	3,9135	0,91510		
	51-60	11	4,1780	0,27201		
	61-70	1	4,0833			
	Total	305	3,9295	0,83601		
OC	20-30	87	2,4757	1,12152	0,961	0,429
	31-40	154	2,6508	1,16849		
	41-50	52	2,8062	1,16326		
	51-60	11	2,4196	0,94234		
	Total	305	2,6159	1,14711		

Similarly, the age range is not significantly effective at the PC level (F = 0.663; p = 0.618> 0.05) due to its values. So the *"H11: The PC level differs according to age"* hypothesis is rejected. It was found that the age demographic variable (F = 0.96; p = 0.42> 0.05) values did not have a significant effect on OC. For this reason, the hypothesis *"H12: The OC level differs according to age"* was rejected.

In Table 9, it is determined that there is no significant difference in terms of institution's working time on COCB (F = 1.16; p = 0.32> 0.05). For this reason, the hypothesis that *"H13: The COCB level differs according to the institution's woking time"* was rejected. There is no significant difference on PC (F = 1.09; p = 0.36> 0.05 in terms of institution's working time. At this point, the hypothesis that *"H14: The PC level differs according to theinstitution's working time"* was rejected. Institution working time was found to be (F = 0.67; p = 0.61> 0.05) for OC. This situation shows that there is no significant difference in terms of institution's working time on the OC. So, the hypothesis that *"H15: The OC level differs according to the institution's working time"* was also not accepted.

Table 9: F Test Results Related to the Variables of the Institution's Working Time

	Institution's Working Time	**N**	**Mean**	**Standard Deviation**	**Anova Test**	
					F	**P**
COCB	1-5	173	2,7156	1,15941	1,162	0,328
	6-10	101	2,9129	1,03939		
	11-15	22	2,5364	1,08036		
	16-20	7	3,1429	1,12969		
	21-25	2	3,5000	0,70711		
	Total	305	2,7830	1,11460		
PC	1-5	173	3,9217	0,82793	1,092	0,361
	6-10	101	3,8775	0,88884		
	11-15	22	4,0152	0,75237		
	16-20	7	4,5179	0,30605		
	21-25	2	4,2292	0,26517		
	Total	305	3,9295	0,83601		
OC	1-5	173	2,5598	1,15514	0,675	0,61
	6-10	101	2,7449	1,15359		
	11-15	22	2,4126	1,16407		
	16-20	7	2,6484	0,81512		
	21-25	2	3,0769	1,19664		
	Total	305	2,6159	1,14711		

As a result, the summary of the analysis results regarding whether the levels of COCB, PC and OC differ according to demographic factors are shown collectively in Table 10.

Table 10: Relationship of Demographic Factors with Variables

DEMOGRAPHIC FACTORS OF THE EMPLOYEES	Acceptance/Rejection
H1: The COCB Level Differs According to Gender	*Rejection*
H2: The PC Level Differs According to Gender	*Rejection*
H3: The OC Level Differs According to Gender	*Rejection*
H4: The COCB Level Differs According to Marital Status	*Acceptance*
H5: The PC Level Differs According to Marital Status	*Rejection*
H6: The OC Level Differs According to Marital Status	*Acceptance*
H7: The COCB Level Differs According to Education Level	*Acceptance*
H8: The PC Level Differs According to Education Level	*Acceptance*
H9: The OC Level Differs According to Education Level	*Acceptance*
H10: The COCB Level Differs According to Age	*Rejection*
H11: The PC Level Differs According to Age	*Rejection*
H12: The OC Level Differs According to Age	*Rejection*
H13: The COCB Level Differ According to the Institution's Working Time	*Rejection*
H14: The PC Level Differs According to the Institution's Working Time	*Rejection*
H15: The OC Level Differs According to the Institution's Working Time	*Rejection*

Accordingly, gender and marital status factors were analyzed with the t-test, education status, age and institutional working time with the F test. Of these, a statistically significant correlation was found between the educational status of COCB, PC and OC, while a significant relationship was observed between the marital status factor on COCB and OC, while no statistically significant relationship was found on PC. In addition, there are no statistically significant relationships between gender, age, and institutional working time on COCB, PC and OC. The marital status factor does not show a statistically significant relationship with PC, which is a positive organizational behavior variable. On the contrary, in the negative organizational behavior variable COCB and OC, a higher level is observed in married couples compared to singles. Its relevance to literature and theories is made in the discussion section.

5. CONCLUSION

While there is no significant effect of institution working duration, age and gender factors on COCB level, there is a significant effect of marital status and educational status factors. It has been found that there is a significant difference between the levels of COCB according to marital status. This result we have obtained is not compatible with the literature. However, it is evaluated that married employees may feel under pressure due to the fear of job loss in the cyclically increasing unemployment environment. It has been determined that there is a significant difference between the COCB levels of the employees according to their education level. This result is in accordance with the literature. This situation is caused by the rise from blue collar to white collar and from employee to manager as the level of education increases; It is considered that it is understandable that blue-collar workers with low education levels are under pressure to show higher COCB. In the study performed, it was determined by the F test that the level of COCB was not affected by the age demographic factor. This result is compatible with the literature. In the examination, it is seen that the age groups are homogeneously distributed on the factors that we previously determined to have an effect on the level of COCB, such as the level of education. This explains the fact that the age factor does not have a difference in the effect of the COCB level. There was no difference in the level of COCB according to the duration of the institution. When the agency working time frequencies are controlled, it is seen that a very high group has a high labor turnover rate. Therefore, this group determines the COCB level. According to the gender factor, no significant difference was found in the COCB levels of employees. The dominant number of males, with a significant proportion, does not make any differential effect on the level of COCB. This result is compatible with the literature (Topçu and Beğenirbaş, 2017).

In our study, only the education level was effective on the PC level among the demographic factors; It was found that there was no effect of age, institution working time, gender and marital status. It is seen that these results are substantially confirmed when compared with various studies in the literature. According to our analysis results, the level of education has a significant effect on the PC level of the employees. Accordingly, as the education level increases, an increase is observed in the PC level. This result is highly consistent with various studies in the literature. Studies that detect differences in PC levels according to education levels find that PC levels increase as the education level increases (Guan et al., 2017). In our study, the first demographic variable that has no effect on PC level among employees is age. There are studies with findings in this direction in the literature. However,

there is predominantly a relationship between age and PS level (Guan et al., 2017: 6; Werner and Smith, 1982: 1992). A significant part of these studies are consistent within themselves, as there are studies conducted among the service sector, academicians, and healthcare professionals in which career steps increase as the age increases.

Our findings, which determined that there is no effect of the working time of the institution on the PC level, are in parallel with some of the other studies in the literature (Luthans et al., 2007a; Luthans et al., 2008). In some studies, the duration of working in the institution is effective in some of the PC and its sub-dimensions (Guan et al., 2017; Hsing-Ming et al., 2017). Considering these results, the fact that there is no result of the working time of the institution for the PC level, which is our analysis result, is in parallel with some of the literature. The fact that our sample is in the production sector and the numerical excess of blue-collar workers prevents the increase as the working time in the institution increases. This result is actually similar to the age factor and is consistent within itself. It is among the findings of our study that gender, another demographic factor, has no effect on PC level. This result shows parallelism with most of the studies in the literature. In some studies, it is seen that gender only creates a level difference in the dimension of self-efficacy (Guan et al., 2017; Lehoczky, 2013; Norman et al.,2010). The majority of our sample, which is in the manufacturing sector, consists of male employees, and numerical superiority is considered to be determinant. Another demographic factor whose effect on PC-related level could not be determined is marital status. At this point, when the relevant literature is examined, similarly, a relationship between PC level and marital status factor cannot be found in some studies. However, in some studies, it is evaluated that marital status affects the level of PC and the institution of marriage is effective in getting away from stress (Guan et al., 2017). In our study, it is considered that this factor has lost its distinctiveness because the rate of married people is very high and there are predominantly married employees.

When we look at the effect of demographic factors on OC, which we examined as a dependent variable, our first and important finding is that we have access to the findings in OC as a whole. While OC is detected at different levels according to educational status and marital status, it is determined by our analysis results that age, working time in the institution and gender do not have any effect on OC level. The OC level differs according to the education level. Similar to COCB, the higher the education level, the lower the OC level. It is seen that this result is compatible with other studies in the literature (Bateman, 1992; James, 2005; Kanter and Mirvis, 1989). In our study, it is thought that the positive effects of education level suppress the level of OC, which is a negative organizational behavior variable. According to our research findings, OC level is affected statistically significantly according to marital status factor. In addition, it is observed that the OC level is higher in married workers. In addition, it should be taken into account that a large proportion of our sample is married. In the examination and comparison made in the literature, it is seen that there are various results regarding the effect of marital status on OC. Some of the researchers find that marital status affects OC. However, it should be noted that these studies have determined that single people have higher OC levels (Kanter and Mirvis, 1989). As a result, there is a significant difference between the findings of our study and the literature. It is considered that the most important factor in this is that our work is done in the production sector, although most of the studies in the literature have been done in sectors such as service, tourism, health, education and security.

Our finding that the age groups of the employees do not have a statistically significant effect on OC is in great agreement with the literature. In addition, there are studies that found that OC and its sub-dimensions vary according to the demographic factor of age. In our study, it is considered that it would be more accurate to explain the ineffectiveness of the age factor on OC with the internal dynamics of the business. It is thought that the presence of employees from every group in every department, duty and branch, as in many of the production enterprises, prevents clustering at the OC level. Our finding that the duration of working in the institution does not have any effect on OC is compatible with a significant part of the studies in the literature. In addition, there are also studies that have found statistically significant relationships between the working hours of the institution and OC. A very significant part of the employees have a working time of 10 years or less. It is therefore self-consistent that the working year is not a distinguishing factor. It is considered that this issue arises from the high labor turnover rate in the production sector. According to our analysis results, it is evaluated that gender does not have any effect on OC levels, similar to COCB and PC. When the compatibility of this with the literature is checked, it is seen that similar findings are obtained in many studies (Efilti, 2008). However, there are also studies that found that gender has a statistically significant effect on OC reduces discrimination (Lobnikar & Pagon, 2004; Mirvis & Kanter, 1991). The relative density of male workers in the production sector is considered as an antecedent of this.

It is a known fact that negative organizational behavior concepts from a management point of view cause more harm than positive organizational behavior concepts contribute to organizations. Therefore, the focus should be on increasing the PC level in order to reduce the COCB and OC levels. As a solution for higher PS level and lower COCB and OC level, it can be recommended to prefer more educated and single personnel in terms of marital status factor. Considering the educational demographic factor, which has statistically significant relationships with the variables, it is generally concluded that the higher the education level, the higher the

PC level, the lower the COCB and OC levels. In other words, high level of education positively affects the variables of organizational behavior; It also decreases the level of negative organizational behavior variables. At this point, rather than dealing with COCB, PC and OC separately, it is considered that taking the necessary approaches to all of them at the same time will have a synergetic effect. In the light of all these results, it is clear that business managers should ensure development and innovation by using many disciplines together.

As a result of the results of this study, future research anda few suggestions can be made for applications. In this context, the study can be carried out by enriching it with different demographic variables, or it can be handled in more detail, including the sample in which different participants are handled, occupational groups and regional differences. In addition, demographic variables in this study its direct effects on COCB, PC and OC have been demonstrated. It can be suggested that researchers working in this field should analyze the direct and indirect relationships between the variables and work on a holistic model that will determine the mediating or regulatory roles of the variables.

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INVESTORS' BEHAVIOR IN REGARD TO EARNINGS ANNOUNCEMENT DURING THE COVID-19 PANDEMIC: EVIDENCE FROM CAMBODIA

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ABSTRACT

Purpose - The study investigates the reaction of investors to annual earnings releases as reflected in the share price movements of common stocks and volume of trade during the COVID-19 pandemic. The main gap this study aims to fill is whether earnings announcements possess informational value for investors during macroeconomic uncertainty in the wake of a pandemic.

Methodology - Event methodology is employed, and the returns in an event window, defined conventionally as the days before to days after a firm-specific public earnings announcement, are not abnormal.

Findings- We provide an apparent example where investors did not react to firm-specific positive and negative earnings announcements in the wake of the global pandemic. This could be influenced by the government response to COVID-19 as we have seen governments and central banks worldwide quickly enacted sweeping and sizable fiscal and monetary stimulus measures to limit the human and economic impact of the COVID-19 pandemic. These types of government actions during economic downturns or crises have proved to helped stabilized the economy and increase confidence in the market in the short term and alleviate long-term consequences.

Conclusion- The study intended to contribute to the existing literature on earnings announcements by analyzing the information content of earnings announcements in a small Cambodian stock market during the COVID-19 pandemic period. Even though it was expected that positive or negative earnings announcements during a recession or economic downturn would result in significant price reactions from investors, the study has indicated that the information content of earnings announced by companies listed on CSX was beyond investors' interest. The puzzling price pattern following positive and negative earnings announcements on the Cambodian stock market could also be explained by behavioral principles, an issue to be addressed in further research. Cultural dimensions and their disparity between countries can also be reflected differently on pricing models.

Keywords: Event study, information and market efficiency, corporate earnings announcement, COVID-19, Cambodia market
JEL Codes: G12, G14, C12

1. INTRODUCTION

Financial information about listed companies including takeover announcements, shareholder details, periodic earnings reports, asset acquisitions and disposals, dividend announcements, stock splits, company administrations, insider dealings to mention a few, are crucial while forecasting future performance and valuation of a company's equity. Investors consider this financial information when making investment decisions. Share prices of a company can rise and fall based on a company's financial information such as earnings performance. This is because earnings information reveals the financial health of a business. Earnings represent the measure of a firm's profits or loss from business activities and events during a stipulated period. Long-term investors may not be persuaded by one quarter of disappointing earnings, but some investors think more immediately and favor short-term

profits. Earnings are not the only development investors focus on, but they are relevant during and before earnings season. Dividend and earnings announcements are commonly the two most important financial information used by the investors for deciding whether or not to buy or sell a particular company's share (Syed & Bajwa, 2018; Ma'aji & Abdullahi, 2014). Therefore, an announcement on a company's earnings is used in the stock market as a yardstick to assess the profitability and financial strength of any firm. Additionally, as the earnings news about a company is normally unpredictable, the stock market prior to the disclosure of the announcements, creates expectations and speculations about the announcements.

Investors in the market react differently to unexpected announcements of a firm's earnings if they differ from the market expectations. However, this reaction will entirely depend on whether the market is efficient or not. For the market to be considered efficient according to Fama (1991), financial markets are termed informationally efficient if security prices react to the announcement of new unanticipated information immediately, accurately, and in the right direction with no subsequent price trends. These timely and accurate adjustments to the share price indicate that the prices neither overreact nor underreact to any specific information announced. Therefore, investors cannot beat the market based on any set of new information, whether it is historical, publicly available information or private information (Fama, 1969). However, empirical studies have suggested that stock prices do not always accurately reflect available information. Stock markets under-react to information in some cases, while over-reacting in others (Barker & Imam, 2008; Bloomfield, Libby, & Nelson, 2002; Cready & Gurun, 2010; Louhichi, 2008).

Furthermore, there is extensive literature that investigates the reflection of earnings announcements on the stock prices. During the last decades the information content of news and the capital market efficiency was tested by focusing on how the market reacts to earnings announcements. However, it must be noted that the main emphasis in respective researches is being put on the categories of earnings announcements (annual, semi-annual, quarterly, monthly, forecasts of earnings, analysts' ratings among others – as the most popular category), the types of earning announcement (commonly classify the announcements as "good" and "bad") as well as investor's overreaction for both good and bad earnings information (Piccoli et al., 2017; Spyrou et al., 2007; Piccoli & Chaudhury, 2018). However, the reaction to investors earnings announcements on share prices during macroeconomic-uncertainty in the wake of a financial difficulties or a pandemic is being analyzed only by a few authors (Angelovska, 2017a; Johnson & Zhao, 2012; Salminen, 2008). Angelovska, (2017b) found that investors in Macedonia did not react to companies' positive earnings news during economic uncertainty. The findings do not coincide with Salminen (2008), who found that the abnormal returns during the recession were positively slightly higher than during the boom, and Johnson (1999), who found that investors during a recessionary period of the business cycle will be more interested in assessing the information nature of earnings announcements by observing the share price movement around the public announcement of earnings.

This study aims to investigate investor's reaction to earnings announcements on share prices during macroeconomic-uncertainty in the wake of COVID-19 pandemic by employing an event study methodology to observe the share price movement across listed companies on Cambodia Securities Exchange (CSX). The main gap this study aims to fill is whether earnings announcements possess informational value for investors during macroeconomic-uncertainty in the wake of a pandemic. Therefore, the specific objectives are to investigate the behavior of the share prices after the event day and if the volume is usual within the event window.

2. LITERATURE REVIEW

2.1. COVID-19 and Government Stimulus

The novel coronavirus (COVID-19) pandemic has caused a crisis for the global economy and markets. As a consequence of the COVID-19 no business, industry, or economy has been spared from the devastating effects of the pandemic as it shut down many countries' economies for a number of months in order to control the spread of the infectious disease. This has disrupted different macroeconomic or industry factors in the economy such as supply chains across international boundaries, demand for goods and services domestically and overseas, and in the labor force supply. However, despite these challenges, some industries have naturally taken the impact much harder than others, such as airlines, financial institutions, oil and gas, restaurants, live event companies, tourist companies, movie theaters, and many more. But these are hardly not the only one's suffering. Each industry is experiencing its own unique set of challenges that are threatening to undermine a thriving and booming business environment. This can largely be attributed to decreased consumer confidence as consumers globally continue to experience a decrease in income and expect a longer-lasting impact on their routines and finances as a result of the COVID-19 (Mckinsey, 2020). Therefore, these changed business conditions in light of the COVID-19 pandemic will affect corporate earnings and consequently will cause companies to review their dividend policies. Chief financial officers (CFOs) of many organizations are becoming increasingly pessimistic about the impact COVID-19 will have on their top and bottom lines, according to a new survey from

PricewaterhouseCoopers (PwC). The result of the survey indicates that about 80 percent of the CFOs and other finance leaders expect COVID-19 to decrease revenue and/or profits in 2020 (PwC, 2020).

Furthermore, in response to this crisis, governments and central banks worldwide quickly enacted sweeping and sizable fiscal and monetary stimulus measures to limit the human and economic impact of the COVID-19 pandemic. The hope is to avoid a long-term economic recession due to coronavirus lockdowns. Previous studies have shown that government actions during economic downturn or crisis have helped to stabilized the economy and increase confidence in the market (Agnello, & Sousa, 2011; Al-Eyd & Barrell, 2005; Checherita, Nickel & Rother, 2009; Hemming, Kell & Mahfouz, 2002; Ma'aji, Rahima & Hadi, 2014; Somani, 2015). Decreasing the federal funds rate appears to be the most practical way for the government to change expectations, increase confidence in the market and thereby increase stock prices (Somani, 2015). Fiscal policy actions can have significant multiplier effects when undertaken in the outcome of severe housing busts, therefore, suggesting the importance of the implementation of fiscal stimulus packages (Agnello & Sousa, 2011). Moreover, increases in government spending during financial crisis is likely to be more effective in supporting the economy than tax reductions, while tax cuts seem to work better in the longer run but their effectiveness fades away in the medium to long run (Al-Eyd & Barrell, 2005; Hemming, Kell & Mahfouz, 2002). Higher social transfers usually have a quick positive impact if well targeted to credit-constrained households, but if persistent, they tend to be detrimental to long-term growth by creating distortions in the allocation of resources and impending labour mobility (Checherita, Nickel & Rother, 2009).

2.1. Earnings Announcements

The section reviewed the empirical studies around earnings announcements. Investors' reaction to earnings announcements has gained a lot of attention in modem finance literature. This is because share prices of a company can rise and fall based on a company's earnings performance. Earnings information reveals the financial health of a business and its future prospects. However, the findings on investors' reaction to earnings announcements are contradictory. Additionally, Brown (1979) examined the adjustment of stock prices to earning per share (EPS) information and results suggested that statistically significant cumulative abnormal returns appeared from day 15 to day 45. This indicated that the market failed to adjust instantaneously to the new EPS information and provided an opportunity to earn excess returns on the EPS information after 45 days of announcement. Bernard and Thomas (1990) found statistically significant abnormal returns after quarterly earnings announcements. A higher-than-expected earnings announcement is found to have a positive cumulative average abnormal return (CAAR) and tend to move the share price higher (Cready & Gurun, 2010). Similarly, Barker and Imam (2008) found that investors viewed companies with higher earnings more favorably than a company with low earnings. Hussin et al. (2010) found that lower earnings lead to negative market reaction. Earnings announcements usually contain information which is not publicly available to investors, thus the reaction (Ball & Kothari, 1991; Jegadeesh & Livnat, 2006). Accordingly, managers take actions to avoid announcing lower than expected earnings or earnings surprises, as managers believe that such announcements would lead to large negative price reactions and negative publicity (Burgstahler & Eames, 2006). CEOs are even willing to forgo positive net-present-value projects just to add to the earnings per share (EPS) to meet market expectations (Graham et al., 2005).

Furthermore, studies have recently examined how investors react to earnings announcements during macro-economic uncertainty. During economic uncertainty, investors tend to lose confidence in the market and become more concerned about corporate earnings due to increased future uncertainty (Todorov, 2010). Investors react little less to earnings announcements during economic uncertainty where they attribute bad (good) performance to bad (good) luck rather than to less (more) managerial effort and/or ability during uncertain periods (Stein & Wang, 2016). Furthermore, based on investors' aversion to uncertainty, studies found that there is a larger investors reaction to bad news compared to good news following increased macro-uncertainty (Williams, 2015; Bird & Yeung, 2012). Investors react more to negative earnings announcements (bad news) than a positive earnings announcement (good news) with increased economic uncertainty. Uncertainty-averse investors take a conservative approach and place more weight on negative news than on positive news following an increase in uncertainty. However, Angelovska (2017) finds that investors in Macedonia did not react to companies' positive earnings news during economic uncertainty. Additionally, Ball and Shivakumar (2008) report that earnings announcements provide a modest but not overwhelming amount of information in relation to the market. During the financial crisis, investors were exposed to an unusually high volume of dramatic and unexpected news (Dzielinski 2011). Receiving (too) much information can result in information overload which stimulates status-quo bias, thus potentially reducing individual investors' trading activity during the crisis (Agnew & Szykman 2005). Glaser and Weber (2005), for example, find an increase in the standard deviation of individual investors' return and volatility forecasts directly after September 11 and the subsequent stock-market turmoil.

On the other hand, individual investors earn a significantly weak positive excess return after the day of the earnings announcement while institutional investors do not earn excess return before or after the announcement (Dey & Radhakrishna, 2008). New earnings information exerts its full influence on the stock price within an hour of announcement (Bernard & Thomas, 1990). The abnormal market performance occurred prior to the release of the earnings report. This suggests that although earnings are meaningful measures of a firm's financial performance, by the time they are published they are no longer news and have little or no impact on the market (Davis, Piger, & Sedor, 2012). Das, Pattanayak, and Pathak (2008) found no evidence of significant abnormal returns around quarterly earnings announcements and it could not be established whether the share price drifts are positive in the case of good announcements or negative in the case of bad announcements. Similarly, Hawaldar (2018) conclude that there is no significant difference between the number of positive and negative average abnormal returns (AARs) and based on the CAAR, investors who bought shares either before or after the announcement of quarterly financial results and held them would have earned abnormal returns that are not attributable to market factors. Therefore, the study concludes that the reaction of Indian stock market to the announcement of quarterly financial results is very slow. The finding is consistent with the study by Iqbal and Mallikarjunappa (2011), Iqbal (2014) and Hawaldar (2016). An event study methodology is employed to test the following hypotheses:

Ho: Expected abnormal return is zero for each stock for each day t in the event window.

H1: Expected abnormal return is different from zero for each stock for each day t in the event window.

3. DATA AND METHODOLOGY

The study adopts an event study methodology to analyze investors reactions to earnings announcements and the impact of the announcement share price around the event period. Event study methodology has been used extensively in finance, economics and political economy literature to empirically estimate market reactions to specific events by studying the reactions of relevant variables around the event window. The methodology is based on the assumption that capital markets are efficient and the effects of an event will be reflected immediately in the stock price. Normal rate of return means the expected rate of return of the testing period if the event did not occur. An event study analysis could determine whether there is an 'abnormal' return associated with an unanticipated event. The event of interest is the public announcement of earnings, and the event date is the first day on which such an announcement is made.

The market model which provides a linear specification of the return of the given stock to the return of the market portfolio is applied to help gauge the expected returns and to illustrate abnormal returns around the event date. The abnormal return is the difference between the realized return observed from the market and the benchmark return. The benchmark return is supposed to be the return of the stock if there is no event. This model is adopted because it reduces the variance of abnormal returns by removing the portion of the stock return that is related to variation in the market return. The abnormal return is determined as the residual of the market model expressed in (1).

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_i \quad (1)$$

Where R_{it} is the return of stock i,
R_{mt} is the return of market index,
β_i is systematic risk of stock i,
ε_i is the error term.

The empirical model can be stated as follows: when an event occurs, market participants revise their beliefs causing a shift in the firm's return-generating process. Ordinary least squares (OLS) regression is performed to estimate the coefficients of the market model separately for each event using the non-event return data. The estimated coefficients, α_i and β_i are used to form predictions of R_{it} during the event period. Thus, the abnormal return for security i on event day t AR_{it}, is calculated as:

$$\varepsilon_{it} = AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \quad (2)$$

We test each firm in our sample for abnormal returns for every day in the event window, using the methodology proposed by Brown and Warner (1985). Abnormal returns or excess returns were computed by subtracting the normal return of the security from actual return of any security over the event window. In this paper, the estimation period is defined as 70 days before the event window and a 21-day event window (observation period) is used to calculate the abnormal returns of the security and 21 days' event window consists of 10 trading days before (anticipation days) and 10 trading days after the event (adjustment days) (Ball and Kothari, 1991; Capstaff et al., 2004; Hussin et al., 2010). A t-statistic for each firm for each day in the event window

(defined as 10 days, i.e., –10 to -1, before the announcement day to 10 days after the announcement day, i.e., +1 to +10) is calculated. Our null hypothesis is that excess returns for each day are equal to zero.

The mean abnormal return across event observations on day t denoted as $\overline{AR}$t, is the sum of individual abnormal returns on day t divided by the number of events (N),

$$\overline{AR}\text{t} = \frac{1}{N} \sum_{i=1}^{n} AR_{i,t} \quad (3)$$

These $\overline{AR}$t were average for all the five stocks in the analysis summed over the event window to calculate the cumulative average abnormal return (CAAR) as follows:

$$CAAR_k = \sum_k \overline{AR}_{i,t} \quad (4)$$

where: k = -10, ... , 0.0, ... , +10. The CAAR is a useful statistical analysis in addition to the AR because it helps us get a sense of the aggregate effect of the abnormal returns. Particularly if the influence of the event during the event window is not exclusively on the event date itself, the CAAR can prove very useful.

To find out if the volume is unusual during corporate earnings announcements, the average standardized volume was calculated. First, an individual share's daily volume (Vi) in a particular day t is divided by the average daily volume ($\bar{V}$ie) for that share in the event period (e = –80 to +10).

$$\bar{V}_{it} = \frac{V_i}{\bar{V}_{ie}} \quad (5)$$

This gives us a normalized measure that is independent of firm size. Second, the normalized volume for each share is averaged across all shares for each day.

$$\bar{V}_{it} = \frac{1}{N} \sum_{i=1}^{n} \bar{V}_{it} \quad (6)$$

Table 1: Company Earnings Announcement in Cambodia (2020-2021)

Company Ticker	Event window	Event date	Earning (million KHR)	Year-on-year change
GTI	17/12/2019 - 28/04/2020	09/04/2020	5,545	-4.22%
PAS	09/12/2019 - 22/04/2020	01/04/2020	43,463	-3.77%
PPAP	09/12/2019 - 22/04/2020	01/04/2020	46,806	42.84%
PPSP	23/01/2020 - 09/06/2020	26/05/2020	61,636	699.24%
PWSA	21/02/2020 - 10/07/2020	26/06/2020	33,292	-54.77%

Note: Grand Twins International (Cambodia) Plc (GTI), Sihanoukville Autonomous Port (PAS), Phnom Penh Autonomous Port (PPAP), Phnom Penh SEZ Plc (PPSP), Phnom Penh Water Supply Authority (PWSA). Date format (dd/mm/yy).

Furthermore, the study is based upon listed companies on Cambodia Securities Exchange (CSX) that released their annual financial reports released, during 2019–2021. The daily returns of all the seven stocks listed on the CSX Index, published by CSX, are used for analyses. The daily closing prices and the daily volumes of trade are extracted from the official website of the CSX. The daily returns are computed based on the closing price of each trading day. Event day is defined as a day when any company made the annual financial report announcement and the company's share was traded on that day (t = 0). For each event in the sample, a maximum of 91 daily returns are hand-collected. Given the limitations of the data-collecting process, we chose to limit the period under study within the period when COVID-19 was first announced as a global pandemic 2019–2020. The dates and times of the company news announcements have been listed in Table 1; it is taken to be the day on which the news was first reported on CSX. Despite COVID-19, some Cambodian companies reported good earnings that should be rejoice by the investors as shown in Table 1.

4. FINDINGS AND DISCUSSIONS

The market model using equation (1) is calculated by each year, and estimated coefficients are shown in Table 2. These are coefficients that explicate the relationship between the stock and the market. Beta is the stock's sensitivity to market return (the slope coefficient) and measures the sensitivity of a particular stock to general market movements or returns. It measures the

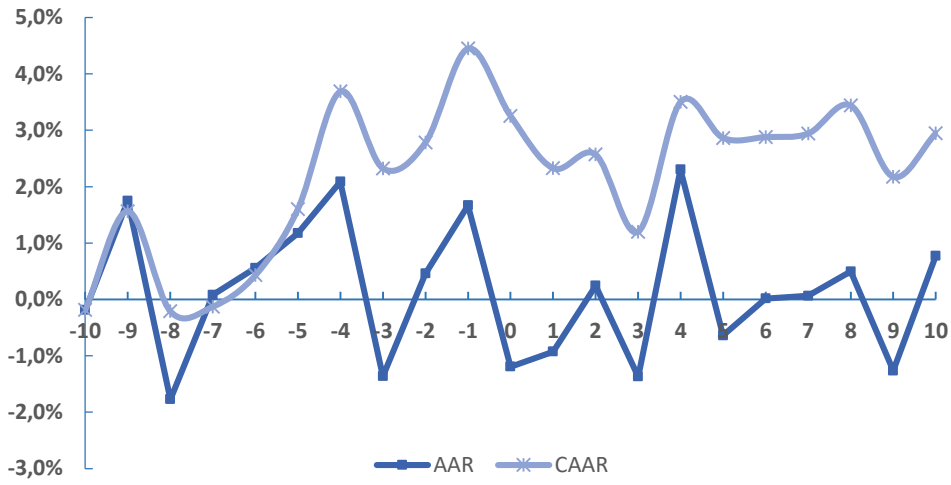
systematic risk based on how returns co-move with the overall market. The level of sensitivity is between 0.12% and 1.61%. The coefficients are significant at 10% (GTI, PPSP and PWSA), 5% (PPAP) and 1% level (PAS).

Table 2: OLS Coefficients Estimate Using Equation (1)

Company Ticker	$intercept\ (\alpha_i)$	$Beta\ (\beta_i)$	R^2
GTI	-0.00166	0.35327*	0.04357
PAS	0.00064	1.61157***	0.96337
PPAP	-0.00181	0.24702**	0.08508
PPSP	-0.00058	0.19698*	0.02458
PWSA	-0.00104	0.11718*	0.04230

Note: *, **, *** indicates significance at 10%, 5% and 1% level respectively. Grand Twins International (Cambodia) Plc (GTI), Sihanoukville Autonomous Port (PAS), Phnom Penh Autonomous Port (PPAP), Phnom Penh SEZ Plc (PPSP), Phnom Penh Water Supply Authority (PWSA).

Figure 1: AAR and CAAR Across All 5 Stocks over the Estimation Window



As indicated in Figure 1, the CAAR plot show that to some extent the market gradually learns about the forthcoming announcement. The average CAAR gradually drifts up in Day 3 before the announcements most probably due to anticipation of the announcements. In the days after the announcement, the CAAR is relatively volatile, as would be expected. Furthermore, the CAAR start moving upward 7 days before the event, and it reaches a peak 4 days before the earnings announcements are made. Additionally, the CAAR start moving upward again 2 days before the earnings announcements and surprisingly, it becomes negative a day prior to announcements, and it stays negative until the third day after the announcement is made. It comes to positive range from Day 5 onward after the event. The AR also behaves in the same manner, except it again touches back the positive value at the fourth day after the announcement.

As discussed in methodology, we apply t-statistics to test the statistical significance of aforementioned AR and CAR for each stock. Appendix 1 present the results of the t-statistics within the event window (–10 to +10 days) for AR of each stock. It is evident from the results that the absolute value of AR is greater in the case of the GTI and PPSP compared to PAS, PPAP and PWSA. This observation is true for the anticipation window, adjustment window and day of the event. This specifies that compared to PAS, PPAP and PWSA, market reacts more strongly in GTI and PPSP sample.

The results of the t-statistics within the event window (–10 to +10 days) for AR shows few significant abnormal returns before and after the earnings announcement for each stock. The AR for GTI where only found to be significant for Day 1, 4, 8 and 9 before the announcement while the rest of the days in the event window especially after the announcement were found not to be significant. Additionally, the AR for PAS where only significant for Day 4 and 5 before the announcement and Day 2, 5 and 8 after the announcement while the rest of the days are insignificant. For PWSA, the significant days appeared to be immediately after

the announcement (Day 1, 2 and 3) while for PPAP and PPSP only one day appeared to be significant throughout the event window. Moreover, in all the five stocks analyze, the event has not created significant impact on the share price on the announcement day. The movement of share prices is not influenced by the announcement. Sharma (2020) shows that COVID-19 has a statistically significant effect on stock volatility, but the impact actually varies with countries involved, with the markets in higher-income countries overreacting in the beginning and bouncing back more rapidly than lower-income countries.

Furthermore, the none responses and reaction by Cambodian investors to the companies' earnings announcement as empirically evidence could be influence by the government in response to COVID-19. We have seen governments and central banks worldwide quickly enacted sweeping and sizable fiscal and monetary stimulus measures to limit the human and economic impact of the COVID-19 pandemic. The hope is to instill confidence in the short- term and avoid a long-term economic recession due to coronavirus lockdowns. Previous studies have shown that government actions during economic downturn or crisis have helped to stabilized the economy and increase confidence in the market (Agnello, & Sousa, 2011; Al-Eyd & Barrell, 2005; Checherita, Nickel & Rother, 2009; Hemming, Kell & Mahfouz, 2002; Somani, 2015).

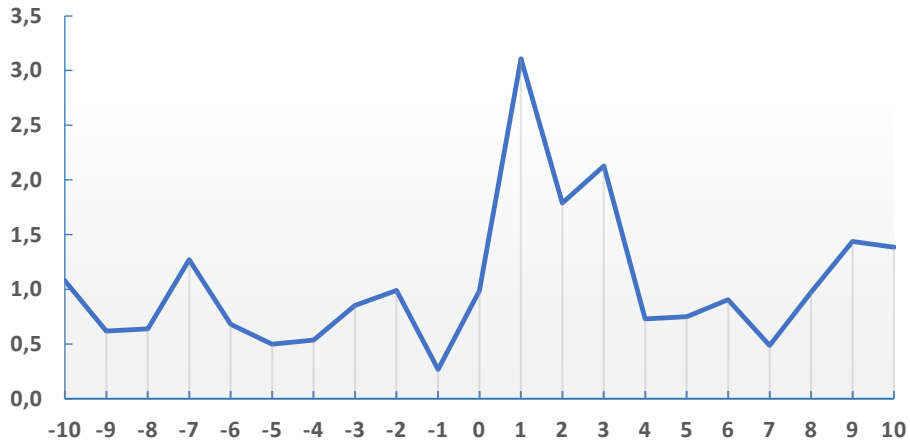
Table 4: CAAR T-Statistics for Combined Days in Window

Windows	Number days	CAAR	t-stat	p-value
(-1, +1)	3	-0.455%	-0.12029	0.905
(-2, +2)	5	0.245%	0.05023	0.960
(-3, +3)	7	-2.488%	-0.43086	0.668
(-4, +4)	9	-3.138%	-0.47927	0.633
(-5, +5)	11	2.434%	0.33626	0.738
(-6, +6)	13	3.009%	0.38229	0.703
(-7, +7)	15	3.151%	0.37274	0.710
(-8, +8)	17	1.876%	0.20839	0.836
(-9, +9)	19	2.362%	0.24824	0.805
(-10, +10)	21	2.945%	0.29442	0.769

Note: *, **, *** indicates significance at 10%, 5% and 1% level respectively. CAAR is the cumulative average deviation of actual returns of a security from expected returns of all the five stocks in the analysis.

Therefore, to obtain robust results, we developed the CAR by aggregating AR to test the significance of return in combined days in the event window (such as -1, +1; -2, +2; -4, +4; etc.). These results as shown in table 4 for CAR t-statistics indicate that the reaction of the stock returns in the selected windows do not appears to be statistically significant. Therefore, if the corporate announcement has an effect on stock prices, we would expect to see rejections of the null hypothesis on each day in the event window. Rejections in the event window are not found. This suggests that corporate announcements in our sample have no impact on returns. If the corporate announcement has an effect on stock prices, we would expect to see rejections. The findings are not consistent with Salminen (2008), who found that the abnormal returns during the recession were positively slightly higher than during the boom, and Johnson (1999), who found that investors during a recessionary period of the business cycle will be more interested in assessing the information nature of earnings announcements by observing the share price movement around the public announcement of earnings.

Figure 2: Average Standardized Volumes over the Estimation Window



To find out if the volume is unusual during the event window period, the standardized average across the stocks volume is calculated. Figures 2 plot this daily volume figure in the event period (–10 to +10). As can be seen, there is sharp increase on Day 1 before the announcement, on the announcement day and then a sharp decrease in the standardized average volume back to the usual volume observed in the event window. In the market microstructure literature, high volumes are associated with information arrivals (Kyle, 1985). In general, we could observe that there is no unusual volume in the event window.

5. CONCLUSION

In this study, we compute abnormal return for individual stocks and the cumulative average abnormal return around earnings announcements to measure the information efficiency of earnings announcements on the Cambodian Securities Exchange (CSX). To investigate the announcements' effects, we used event study approach to probe investor's reaction to corporate earnings announcements made by the listed companies on CSX. First, we estimated normal returns, using market model; subsequently, these returns were used to calculate abnormal returns for the share price. This study aimed at investigates investor's reaction to the announcement in the wake of COVID-19 pandemic on CSX, scrutinizing the impact of information efficacy in earnings announcement and existence of abnormal returns. Empirical evidence demonstrates that the Cambodian investors did not react to the companies' earnings announcement. The null hypothesis could not be rejected in favor of the alternate hypothesis. The none responses and reaction by Cambodian investors to the companies' earnings announcement as empirically evidence could be influence by the government in response to COVID-19. We have seen governments and central banks worldwide quickly enacted sweeping and sizable fiscal and monetary stimulus measures to limit the human and economic impact of the COVID-19 pandemic. The hope is to instill confidence in the short- term and avoid a long-term economic recession due to coronavirus lockdowns.

The study intended to contribute to the existing literature on earnings announcements by analyzing the information content of earnings announcements in a small Cambodian stock market during the COVID-19 pandemic period. Even though it was expected that positive or negative earnings announcements during recession or economic downturn would result in significant price reaction from investors, the study has indicated that the information content of earnings announced by companies listed on CSX was beyond investors' interest. The puzzling price pattern following positive and negative earnings announcement on the Cambodian stock market could also be explained by behavioral principles, an issue to be addressed in further research. Cultural dimensions and their disparity between countries can also be reflected differently on pricing models. Further research on corporate stock prices' reactions requires the direction of corporate events and investors' behavior towards these events and the information they get indicators that enable them to evaluate their performance and determine their value in the financial market.

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Appendix 1: Results of the test statistics for ARs and corresponding p-values in 21 days' event window for each company

	GTI		PAS		PPAP		PPSP		PWSA	
Day	AR	p-value	AR	p-value	AR	p-value	AR	p-value	AR	p-value
-10	-0.14%	0.97	-0.85%	0.17	1.76%	0.28	-1.05%	0.72	-0.65%	0.66
-9	7.92%	0.02**	-0.11%	0.86	-0.68%	0.67	1.46%	0.61	0.16%	0.92
-8	-9.66%	0.00***	-0.14%	0.83	2.20%	0.17	-0.13%	0.96	-1.13%	0.44
-7	0.22%	0.95	-0.33%	0.60	0.20%	0.90	0.10%	0.97	0.21%	0.89
-6	2.46%	0.46	0.31%	0.62	0.45%	0.78	-0.71%	0.81	0.28%	0.85
-5	0.20%	0.95	-1.32%	0.04**	5.28%	0.00***	0.06%	0.98	1.64%	0.27
-4	9.71%	0.00***	1.15%	0.07*	-0.95%	0.56	0.57%	0.84	-0.05%	0.97
-3	-4.35%	0.19	-0.32%	0.61	-2.08%	0.20	0.09%	0.97	-0.17%	0.91
-2	0.15%	0.96	0.98%	0.12	0.92%	0.57	0.18%	0.95	0.06%	0.97
-1	9.42%	0.01***	-0.09%	0.89	-0.72%	0.65	0.08%	0.98	-0.36%	0.81
0	-1.62%	0.63	-0.12%	0.84	-2.61%	0.11	-1.70%	0.56	0.08%	0.95
1	-2.11%	0.52	-0.05%	0.94	-0.78%	0.63	-4.78%	0.10*	3.09%	0.04**
2	0.07%	0.98	-1.30%	0.04**	0.32%	0.84	-0.88%	0.76	3.00%	0.04**
3	-0.32%	0.92	0.92%	0.14	0.14%	0.93	-4.32%	0.14	-3.27%	0.03**
4	1.19%	0.72	0.36%	0.57	2.29%	0.16	7.62%	0.01**	0.07%	0.96
5	-1.77%	0.59	-3.12%	0.00***	0.40%	0.80	0.77%	0.79	0.51%	0.73
6	-0.19%	0.95	0.98%	0.12	-0.51%	0.75	0.05%	0.99	-0.25%	0.87
7	0.04%	0.99	0.36%	0.57	0.08%	0.96	0.76%	0.79	-0.93%	0.53
8	-1.06%	0.75	1.06%	0.09*	0.09%	0.95	2.21%	0.44	0.17%	0.91
9	-4.14%	0.21	-0.57%	0.36	0.02%	0.99	-1.74%	0.55	0.11%	0.94
10	1.86%	0.57	-0.15%	0.81	1.54%	0.34	0.14%	0.96	0.46%	0.76

Note: *, **, *** indicates significance at 10%, 5% and 1% level respectively. Grand Twins International (Cambodia) Plc (GTI), Sihanoukville Autonomous Port (PAS), Phnom Penh Autonomous Port (PPAP), Phnom Penh SEZ Plc (PPSP), Phnom Penh Water Supply Authority (PWSA). First column (Days) shows 21 days' event window. -10 to -1 are 10 days before event, 0 is the event day and 1 to 10 days are 10 days after event day. AR is the deviation of actual returns of a security from expected returns.

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THE SECTORAL EMPLOYMENT EFFECTS OF INTERNATIONAL TRADE AND PRODUCTIVITY IN THE MANUFACTURING INDUSTRY OF TURKEY

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ABSTRACT

Purpose-Turkish international trade mainly consists of the sectors of manufacturing industry and also determines the dynamics in this industry. Therefore, export demand, import competition and technological changes (productivity) are very important topics for the sectors of Turkish manufacturing industry. Besides the direct employment effects of international trade, trade variables influence productivity and therefore indirectly affect employment. This study empirically analyzes the direct and indirect effects of international trade on sectoral employment in the Turkish manufacturing industry.

Methodology-The data used in this study includes 22 sectors of the Turkish manufacturing industry for the period of 2009 – 2017. The panel data techniques are employed. Industry classification is NACE Rev. 2 (2-digit).

Findings-The estimations show that international trade is effective on sectoral employment in the Turkish manufacturing industry. Both export demand and import penetration have a significant impact on sectoral employment in Turkey. While the increase in export demand leads to an increase in labour demand, the increase in import penetration reduces it. However, the relationship between productivity and international trade makes a negative effect on sectoral employment. The strong negative relationship between import competition and productivity, measured by value added per worker, suggests that firms, when faced with international competition, can not adjust the level of employment to decreased demand. On the other hand, the main determinant of productivity in the Turkish manufacturing industry seems to be investment expenditures.

Conclusion- According to our findings, international trade is an important determinant of sectoral employment in the Turkish manufacturing industry. There is a positive relationship between export demand and employment while the relationship is negative for import competition. However, export demand is not a significant factor for productivity while import competition and productivity is negatively related. On the other hand, the main determinant of productivity in the Turkish manufacturing industry is *investment expenditures*. The productivity equation shows that this variable is positive and statistically significant.

Keywords: International Trade, Export Demand, Import Competition, Productivity, Employment.
JEL Codes: F14, F16, L60

1. INTRODUCTION

Turkey experienced a major structural change in the 1980s by shifting from an import substituting industrialization strategy to an export-oriented growth model via implementing an orthodox structural adjustment program. Turkey has also gone through a substantial process of liberalization at the national as well as international level in the 2000s and it is seen as a successsful example of integration to the world economy.

Turkish international trade mainly consists of the sectors of manufacturing industry and also determines the dynamics in this industry. Therefore, export demand, import competition and technological changes (productivity) are very important topics for the sectors of the Turkish manufacturing industry. Turkish export flows consist mainly of manufactures. And foreign demand is a crucial determinant of the demand for manufacturing output.

This study empirically analyzes the effects of international trade and productivity on employment in the Turkish manufacturing industry. It investigates the employment effects of trade within the framework of the Heckscher – Ohlin - Samuelson (HOS) theory. There is a positive relationship between an expansion in export demand and the demand for labour. On the other hand, imports have adverse effects on sectoral employment. In addition to the direct employment effects of trade, trade variables influence productivity and therefore indirectly affect employment. This relationship leads to the productivity effect of international trade on employment.

According to the reasoning behind this relationship: (i) exports and / or import competition affect technology (measured by productivity) and (ii) this increase in productivity affects employment. The effect of international trade on productivity can work in both directions. On the one hand, domestic firms that can not cope with foreign competition are faced with falling productivity. Large hiring and firing costs which are present in the European economies may prevent domestic companies facing decline in sales from internal restructuring in the form of lay-offs. On the other hand, international trade can increase productivity if it can induce firms to successfully introduce productivity-enhancing technologies (Abraham and Brock, 2003: 224).

The second section of the study is a survey of the literature on the relationship between trade, productivity and employment. The third section explains the data and methodology used in this study and the fourth section explains the empirical results on the relationship between trade and sectoral employment, trade and productivity and finally productivity and sectoral employment in the manufacturing industry of Turkey. The last section includes concluding remarks. Some descriptive statistics regarding the Turkish manufacturing industry and import shares by industries are given in the Appendix.

2. LITERATURE REVIEW

Revenga (1992) investigates the effect of increased import competition on employment and wages in the U.S. manufacturing industry using panel data method over the 1977-1987 period. Revenga finds that changes in import prices have a statistically significant but small effect on sectoral employment.

Revenga (1995) studies the employment and wage effects of trade liberalization on the Mexican manufacturing industry using a panel data set of firms for the 1984-90 period. Mexico initiated a radical liberalization of its external sector in 1985, after decades of an import-substitution industrial strategy.

The paper finds that reductions in quota coverage and in tariff levels lead to only small reductions in firm-level employment. According to the empirical results, a 10 point decrease in tariff levels, such as that experienced by Mexico between 1985 and 1990, is associated with a 2-3% reduction in employment.

Neven and Wyplosz (1999) focus also on the import competition effect on labour markets for German, French, Italian and UK manufacturing industries for the period 1976–90. Neven and Wyplosz can not find a strong support for the Heckscher-Ohlin-Samuelson effect of import competition on employment. But they do observe a substantial and diverse restructuring in unskilled labour intensive industries.

Larre (1995) investigates the possible relationships between foreign trade, employment and relative wages using data for 21 industries in 12 OECD countries, over the period 1970-89. The findings of this time-series analysis indicate that the impact of trade on labour market conditions seems to be significant but generally small relative to other factors and the most significant relationships are observed in the high-skill industries.

Dutt, Mitra and Ranjan (2009) present a model of trade and unemployment for 92 countries over the period 1985–2004 for panel analysis, where trade results from Heckscher–Ohlin comparative advantage based on international differences in relative factor endowments and/or Ricardian comparative advantage based on relative technological differences.

The results of cross-sectional analysis, which present fairly strong and robust evidence for the Ricardian prediction show that unemployment and trade openness are negatively related. This effect dominates the positive Heckscher–Ohlin effect of trade openness on unemployment for capital abundant countries, which turns negative for labour-abundant countries. The results of panel data analysis show that trade liberalization increases unemployment in the short-run, but reduces in the long-run.

Castro, Olarreaga ve Saslavsky (2007) attempt to estimate the effects of trade with China and India on Argentina's industrial employment between 1991 and 2003 during which industrial employment declined by 31 percent. They use a dynamic econometric model and industry level data to estimate the effects of trade with China and India on the level of employment in Argentina's manufacturing sector.

The empirical results suggest that import competition from China and India only had a small negative effect on industrial employment, even during the fast trade liberalization of the 1990s. On the other hand, exports do not seem to contribute to the employment in the manufacturing industry of Argentina.

Bernard and Jensen (1999) analyze the interaction between exporting and firm performance for the USA over the 1984-1992 period. They ask two key questions:

"do good firms become exporters and do exporters outperform non-exporters" (Bernard and Jensen, 1999: 2).

The answer for the first question is clear but they can not find any positive evidence for the second question (Bernard and Jensen, 1999: 23-24) :

…we conclude that there is substantial evidence that success and new products lead to exporting, and that exporting is associated with growth in plant size. However, the lack of productivity gains suggest that firms entering the export market are unlikely to substantially raise their productivity, even if they export continuously.

Bernard and Jensen (2001) also examines the relationship between productivity and exporting in the U.S. manufacturing sector for the 1983-1992 period. They can not find again any evidence for a positive impact of exports on productivity:

…Building on previous research, we have found no evidence that exporting per se is associated with faster productivity growth rates at individual plants. The positive correlation between exporting and productivity levels appears to come from the fact that high productivity plants are more likely to enter foreign markets (Bernard and Jensen, 2001: 17).

Then, "…causality goes in the other direction: more productive firms become better exporters" (Abraham and Brock, 2003: 225).

Abraham and Brock (2003) estimate the direct and productivity related indirect effects of international trade on sectoral employment in 10 industralized European countries for the period of 1978-1994.

They have found significant effects from both international trade directly and productivity indirectly towards sectoral employment in Europe. They find support **''…**for the hypothesis that international trade induces adjustments in technology''**.**

Lawrence (2000), explores the effect of international competition on technological change empirically for the USA during the period 1978-89. Technological change is measured by changes in total factor productivity and the skill ratio in U.S. manufacturing.

In this study, the empirical results confirm that import competition has a positive effect on US total factor productivity. The results of Lawrence also show the importance of differentiating between imports from developed and developing countries. In particular, total factor productivity growth is relatively faster in industries with a relatively large share of imports from developing countries.

…Since such industries also employ relatively higher shares of workers with a high school education or less, this implies that international competition has led to relatively faster productivity growth in unskilled-labour intensive sectors (Lawrence, 2000: 216).

The studies analyzing the relationship between trade and employment in Turkey are mostly focused on the direct affect of trade or trade liberalization (globalization) on employment.

Gül And Kamacı (2012), examines the effects of international trade on employment using a panel data analysis for developed and developing countries (including Turkey) in the periods of 1980-2010 and 1993-2010, respectively. As a result of their empirical tests, it has been concluded that there is not any influences of unemployment on import and export in both developed and developing countries. On the other hand, they have found a causality relationship from import and export to unemployment in both developed and developing countries.

Erlat (2000) investigates the impact of export and import flows on the change in employment of the manufacturing industry of Turkey. The analysis covers the periods before 1980 when Turkey switched from a regime of import-substitution based growth to one of export-orientation and after 1980. In this study, manufacturing industry is categorized as net exporting, import competing and noncompeting sectors. The results show that the impact of trade on employment change is more significant in the post-1980 periods and that this is observed more in the net exporting and noncompeting categories rather than the import competing category. The expansion in exports after 1980 has contributed to the increase in employment of Turkish manufacturing industry.

Ayaş and Çeştepe (2010) study the effects of foreign trade on employment in the Turkish manufacturing industry for the period of 1998-2002. These effects are examined according to input-output and factor intensity models by using 1998 and 2002 input-output tables. Their calculations reveal that the effects of foreign trade on employment change from sector to sector; while trade increases employment in some sectors, it reduces in some other sectors. But the total effect of foreign trade on employment in the Turkish manufacturing industry is positive.

According to the empirical results, the sectors with the highest employment increase, such as chemicals, chemical products, rubber and plastic products and basic metal sectors, have also the highest increase in import. This result shows that the employment effect in the manufacturing industry is based on the increases in import. Therefore, this study supports the idea that production and employment in the Turkish manufacturing industry depend substantially on imported inputs.

There are few studies analyzing the effect of trade on both employment and productivity in the manufacturing industry of Turkey.

Turco and Maggioni (2013) investigates the impact of trade on the firm employment level and composition by providing evidence for the Turkish manufacturing industry over the period 2003-2008. Authors evaluate Turkey as an interesting case within this framework as it has undergone a continuous and growing integration process in the global economy since 1980s. According to their empirical evidence, productivity gains are associated with the internationalisation of Turkish firms. They also study the effect of the firm trade integration strategies on its employment composition in terms of the ratio of R&D to non R&D workers.

The empirical findings show that entering the export and the import markets at the same time gives the highest employment growth in the entry and the following years by the existence of complementarity effects between the two strategies. The

investigation of the trade intensity reveals that although labour demand is positively affected, regardless of the firm degree of involvement in foreign markets, firms entering both export and import markets with a high intensity experience higher employment growth. Finally, the share of R&D employees increases only by high intensity exporting and such trade activity is the driver of innovation.

Their results do not support decreases in employment due to existing international integration process. On the contrary, the firm trade activity positively affects the evolution of manufacturing employment within the stagnant Turkish labour market. More importantly, they show that entry in both the import and the export markets, relevantly increases the firm scale of operations. Therefore, internationalisation provides firms with higher growth prospects and represents a significant channel for employment creation.

In conclusion, the evidence of this paper on Turkey suggests that policy makers in emerging economies should be concerned about enhancing the firm involvement in foreign markets, as it represents a powerful tool to foster firm growth (Turco and Maggioni, 2013: 18).

On the other hand, Meschi, Taymaz and Vivarelli (2008, 2011) analyses the relationship between trade openness, technology adoption and relative demand for skilled labour in the Turkish manufacturing industry using firm-level data over the period 1980-2001. They estimate the impact of trade openness on labour demand by using a unique database of 17,462 firms. This data set covers all manufacturing firms employing 10 or more people and represents about 90% of manufacturing output.

The analysis reveals that in Turkey the relative demand for skills increased substantially over the 1980-2001 period, when Turkey underwent radical policy changes favouring trade liberalisation. According to empirical results, the mutual influence between trade openness and technology adoption was the central factor in shifting the demand for labour towards more skilled workers within each firm. Technology related variables (domestic R&D expenditures and technological transfer from abroad) are positively and significantly related to skill upgrading.

The sectoral analysis shows that increasing export towards more industrialised countries (mainly the E.U.) tends to shift the production toward less skill-intensive activities. This result is consistent with the Heckscher-Ohlin's theorem and in its Stolper-Samuelson corollary (HOSS theorem); on the other hand, import penetration from more developed countries promotes the adoption of new technologies embodied in capital and intermediate goods. Therefore, it switchs the production for more skill-intensive technologies.

Besides, firms belonging to those sectors that most raised their imported inputs from more developed countries also increased their demand for skilled workers. The idea behind this finding is that imports by a middle income country from industrialised countries imply a transfer of new technologies that are more skill-intensive than those previously in use in domestic markets and lead to a higher demand for skilled labour.

The papers on Turkey show that international trade usually affects employment in a positive manner in the manufacturing industry. On the other hand, international trade stimulates innovation and firms may engage in innovative efforts and endow themselves with skilled workforce. The mutual influence between trade openness and technology adoption is the key factor in shifting the demand for labour towards more skilled workers within each firm.

3. DATA AND METHODOLOGY

The current study analyzes the effects of international trade and productivity on the sectoral employment in the manufacturing industry of Turkey. For this purpose, two regression equations are estimated.

Employment Equation:

$$EMP_{it} = \alpha_{i1} + \beta_1(EXP_{it}) + \chi_1(IMP_{it}) + \eta_1(WAGE_{it}) + \lambda_1(PROD_{it}) + u_{1it} \quad (1)$$

Productivity Equation:

$$PROD_{it} = \alpha_{i2} + \beta_2(EXP_{it}) + \chi_2(IMP_{it}) + \phi_2(INV_{it}) + \delta_2(RD_{it}) + u_{2it} \quad (2)$$

While in the first equation, the effects of international trade (export and import) and productivity on sectoral employment are investigated, the second equation estimates the effects of international trade on productivity. This equation also includes investment and research-development expenditures, which show the impact of technological innovations on productivity.

In this model, employment (or labour demand) is explained by export demand, import penetration, wage per person employed and productivity that is measured by value added per person employed (Equation 1). Employment equation estimates the direct impact of export demand (β_1) and import competition (χ_1) on the sectoral employment in Turkish Manufacturing industry. This regression equation also estimates the effect of productivity (λ_1) on employment which is one aspect of the productivity effect of international trade on employment.

On the other hand, productivity is explained by export demand, import penetration, investment expenditures per person employed and research&development expenditures per person employed (Equation 2). The important point here is the impact of trade integration on productivity which is the other aspect of the productivity effect of international trade on employment. The other variables in the productivity equation are for measuring the effect of the changes in investment

expenditures that affects capital stock finally, and of research and development expenditures on productivity. Whether companies adopt labour-saving or labour-augmenting technologies as a result of international trade is important for the sign of productivity parameter in the employment equation. If λ_1 parameter is positive, increases in productivity are labour-augmenting; when λ_1 is negative, increases in productivity are labour-saving.

The data used in this study is described as below:

EMP = Number of persons employed in the sectors of the manufacturing industry
(i and t refer respectively to industry and time).

EXP = Sectoral exports which shows the export demand effect.

IMP = Import penetration ratio which is defined as imports divided by the difference between sectoral production and sectoral net exports:

(Import / Production – Net Exports)

Import competition is measured by import penetration.

WAGE = Wages -Salaries and social security payments per person employed in the manufacturing industry.

PROD = Labour productivity which is measured by value added at factor cost per person employed in the related sector of the manufacturing industry.

INV = Fixed capital investment expenditures per person employed in the manufacturing industry.

RD = Research and Development Expenditures per person employed in the manufacturing industry.

Data Source: Turkish Statistical Institute (TUIK) Databases for Annual Industry And Service Statistics and Foreign Trade Statistics. All variables are expressed in dollars and all variables except import penetration ratio are shown in logarithms. Data set covers 22 sectors in the Turkish manufacturing industry.

Classification : "Statistical Classification of Economic Activities in the European Community" (NACE), Revision 2 (2-digit).

Time Period: 2009-2017. Due to the difficulties of finding regular data for all sectors, the study was constrained to include the period 2009-2017.

Some descriptive statistics for the 22 sectors of the Turkish Manufacturing Industry and import shares for these sectors are given in the Appendix.

4. EMPIRICAL RESULTS

The employment and productivity equations (Equation 1 and 2) are estimated by using panel data econometrics. The empirical analysis of the 22 sectors of the Turkish manufacturing industry during 2009 to 2017 constitutes 198 observations. Two stage least squares approach is used in order to capture in the employment equation only the productivity changes that are explained by export demand, import penetration and other productivity variables. The fitted values of the productivity variable obtained by the estimation of Equation 2 are substituted into Equation 1.

4.1. Trade and Employment

The estimation results for Equation 1 are presented in Table 1. The regression coefficients for export demand (β_1), import penetration (χ_1) and productivity (λ_1) are 0.47, -0.33 and -1.31respectively. While the export demand affects employment positively, import competition makes a negative effect on it.

$$EMP_{it} = \alpha_{i1} + \beta_1(EXP_{it}) + \chi_1(IMP_{it}) + \eta_1(WAGE_{it}) + \lambda_1(PROD_{it}) + u_{1it} \quad (1)$$

The productivity variable in the employment equation is obtained from the second equation. After productivity equation is estimated, employment equation (Equation 1) is estimated where the productivity variable is instrumented by using the fitted values from the productivity regression.

The impact of productivity on employment is one aspect of the productivity effect of international trade on employment. However, productivity variable, which is measured by value added per person employed in this study, makes a statistically significant negative effect on sectoral employment in the Turkish manufacturing industry.

Table 1: The Regression Results of the Employment Equation

Dependent Variable: EMP Method: Random - effects GLS regression Sample: 2009-2017 Period included: 9 Cross-sections included: 22 Total panel (balanced) observations: 198 Overall R - Squared: 0.7903				
Variable	**Coefficient**	**Drisc. / Kraay Std. Error**	**t- Value**	**p - Value**
Constant	14.648***	3.134	4.67	0.002
EXP	0.473***	0.079	5.98	0.000
IMP	-0.334***	0.043	-7.73	0.000
WAGE	0.005	0.003	1.51	0.169
PROD	-1.314***	0.126	-10.43	0.000

Note : *** Significance at 1 % percent.

4.2. Trade And Productivity

The estimation results for Equation 2 are presented in Table 2**.** While the impact of productivity on employment is one aspect of the productivity effect of international trade on employment, the other aspect of this effect concerns the effect of trade integration on productivity.

$$PROD_{it} = \alpha_{i2} + \beta_2 (EXP_{it}) + \chi_2 (IMP_{it}) + \phi_2 (INV_{it}) + \delta_2(RD_{it}) + u_{2it} \quad (2)$$

Export demand is not a statistically significant source of productivity in the manufacturing industry of Turkey. The increases in export demand do not make a positive contribution to labour productivity (value added per person employed) in Turkish manufacturing industry.

The negative coefficient before import competition variable suggests that increased import competition causes a loss in productivity in the Turkey's manufacturing industry. This supports the view that restructuring is a difficult process in Turkey as well as in Europe. "Companies going through rising foreign competition that reduces their sales are unable to scale down their factor use at the same rate" (Abraham and Brock, 2003: 229).

However, it is not found a statistically significant relationship between export demand and productivity. These findings support the estimations of the productivity equation. According to Bernard and Jensen (1999, 2001), the causality between these two variables work in the other direction: "more productive firms become better exporters but there is no evidence that exporting increases the productivity growth rates of firms."

Investment expenditures per worker have positive impact on the productivity of the Turkish manufacturing industry. In the light of these estimations, it is possible to conclude that the main contributors of productivity in the manufacturing industry of Turkey are new investments realized in the related sectors.

Table 2: The Regression Results of the Productivity Equation

Dependent Variable: PROD Method: Fixed - effects regression Sample: 2009-2017 Period included: 9 Cross-sections included: 22 Total panel (balanced) observations: 198 Within R - Squared: 0.0590				
Variable	**Coefficient**	**Drisc. / Kraay Std. Error**	**t- Value**	**p - Value**
Constant	8.393	1.548	5.42	0.001
EXP	- 0.002	0.034	-0.06	0.956
IMP	- 0.103**	0.036	-2.85	0.021
INV	0.140**	0.055	2.54	0.034
RD	0.011	0.027	0.40	0.700

Note : ** Significance at 5 % percent.

4.3. PrroductIvIty Related And Total Effects of InternatIonal Trade on Employment

Combining *two aspects* of this model produces the productivity effects of international trade on employment. When we substitute productivity equation into employment equation.

$EMP_{it} = \alpha_i + \beta\,(EXP_{it}) + \chi\,(IMP_{it}) + \eta\,(WAGE_{it}) + \phi\,(INV_{it}) + \delta\,(RD_{it}) + u_{it}$ (3)

$\alpha_i = \alpha_{i1} + \lambda_1 \alpha_{i2}$; $\beta = \beta_1 + \lambda_1 \beta_2$; $\chi = \chi_1 + \lambda_1 \chi_2$; $\eta = \eta_1$; $\phi = \lambda_1 \phi_2$; $\delta = \lambda_1 \delta_2$; $u_{it} = u_{1it} + u_{2it}$.

The estimation results for Equation 3 are presented in Table 3.

Table 3: The Regression Results of the Employment Equation

Dependent Variable: EMP Method: Fixed - effects regression Sample: 2009-2017 Period included: 9 Cross-sections included: 22 Total panel (balanced) observations: 198 ; Within R - Squared : 0.6118				
Variable	**Coefficient**	**Drisc. / Kraay Std. Error**	**t- Value**	**p - Value**
Constant	4.630	3.611	1.28	0.236
EXP	0.488***	0.113	4.31	0.003
IMP	- 0.182*	0.087	-2.09	0.070
WAGE	0.006	0.004	1.39	0.201
INV	-0.292**	0.125	-2.34	0.048
RD	0.004	0.024	0.15	0.886

Note : *** Significance at 1 % percent ; ** Significance at 5 % percent; * Significance at 10 % percent.

In the Tables 4 and 5 below, direct and productivity related employment effects of export demand and import competition are calculated by the aid of the parameter coefficients produced by employment and productivity equations.

Total Impact of export demand: $\beta = \beta_1 + \lambda_1 \beta_2$

The total impact of export demand on employment is measured by the β coefficient which is the sum of the direct effect of export demand on employment (β_1) and the effect of an increase in export demand on employment that occurs via an increase in productivity ($\lambda_1\beta_2$).

Table 4 gives the direct and indirect effects of export demand on employment. Since there is not a significant relationship between export demand and productivity (β_2 parameter) in Turkish manufacturing industry according to our estimations, productivity related effects of exports on employment are ignorable ($\lambda_1\beta_2$ parameter).

Actually, total effect in the table below is mainly the result of the direct effect of export demand on employment, which is positive and statistically significant (β_1 parameter).

Total Impact of import competition: $\chi = \chi_1 + \lambda_1 \chi_2$

Similarly, χ refers to the total impact of import competition on employment and consists of the direct (χ_1) and the productivity induced effects ($\lambda_1 \chi_2$) of import competition on sectoral employment.

Table 5 gives the direct and indirect effects of import competition on employment. The productivity related effect of import penetration on employment is statistically significant and negative ($\lambda_1\chi_2$ parameter).

Increasing import competition results in decreasing jobs in the manufacturing industry of Turkey when we take into consideration the direct employment and productivity effects of import competition ($\chi_1$and χ_2 parameters).

Table 4: The Productivity Related and Total Effects of Export Demand on Employment

$\beta = \beta_1 + \lambda_1 \beta_2$		
Export Demand Effect (β_1)	**Productivity Related Effect ($\lambda_1 \beta_2$)**	**Total Effect (β)**
0.473	0.003	0.476

Note: Created using Tables 3 and 4.

Table 5: The Productivity Related and Total Effects of Import Competition on Employment

$\chi = \chi_1 + \lambda_1 \chi_2$		
Import Competition Effect (χ_1)	**Productivity Related Effect ($\lambda_1 \chi_2$)**	**Total Effect (χ)**
-0.334	0.135	-0.199

Note: Created using Tables 3 and 4.

The coefficient values displaying the *total effects of export and import* calculated by using the estimated coefficients of Equation 1 and 2 are in harmony with those estimated by Equation 3.

The calculated coefficient for export in Table 4 is 0.476 whereas the estimated value for it in Table 3 is 0.488. The calculated coefficient for import is -0.199 in Table 5 but the estimated value for it in Table 3 is -0.182. The results are rather close.

5. CONCLUSION

This paper investigates the sectoral employment effects of international trade and productivity in the manufacturing industry of Turkey. There are several important conclusions of this study.

First of all, international trade is effective on sectoral employment in the Turkish manufacturing industry. Both export demand and import penetration have a significant impact on sectoral employment in Turkey. While the increase in export demand leads to an increase in labour demand, the increase in import penetration reduces it.

Secondly, the relationship between productivity and international trade makes a negative effect to sectoral employment. Export demand is not a statistically significant source of productivity in the manufacturing industry of Turkey. The increases in export demand do not make a positive contribution to labour productivity (measured by value added per person employed) in the Turkish manufacturing industry. International trade can increase productivity if it can induce firms to successfully introduce productivity-enhancing technologies. According to Bernard and Jensen (1999, 2001), the causality between these two variables work in the other direction: "more productive firms become better exporters but there is no evidence that exporting increases the productivity growth rates of firms."

Therefore, total effect of export demand on employment in the manufacturing industry of Turkey is mainly the result of the direct effect of it, which is positive and statistically significant. Since there is not a significant relationship between export demand and productivity in the manufacturing industry according to our estimations, productivity related (indirect) effects of exports on employment are ignorable.

The strong negative relationship between import competition and productivity suggests that increased import competition causes a loss in productivity in the Turkey's manufacturing industry. This supports the view that restructuring is a difficult process in Turkey as well as in Europe. "Companies going through rising foreign competition that reduces their sales are unable to scale down their factor use at the same rate" (Abraham and Brock, 2003: 229). More clearly, the domestic firms that can not cope with foreign competition are faced with falling productivity. Large hiring and firing costs which are present in the Turkish economy as well as in European economies may prevent domestic companies facing decline in sales from internal restructuring in the form of lay-offs.

As a result, the overall impact of import competition on employment results from both direct and productivity-related (indirect) effects of import competition on sectoral employment in the Turkish manufacturing industry. Increasing import competition results in decreasing jobs in the manufacturing industry of Turkey when we take into consideration the direct employment and productivity effects of import competition. Because the productivity related effect of import penetration on employment is statistically significant and negative.

Third, the main determinant of productivity in Turkish manufacturing industry is investment expenditures. The productivity equation shows that this variable is positive and statistically significant.

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Appendix 1: Descriptive Statistics For Turkish Manufacturing Industry (2009-2017)

Sectors In Manufacturing Industry (NACE Rev.2)	Employment (Number of Persons)	Exports (Million Dollars)	Imports (Million Dollars)	Net Exports (Million Dollars)	Import Penetration Ratio	Personnel Cost Per Employee (Dollar)	Productivity - Value Added Per Employee (Dollar)	Investment Expenditures Per Employee (Thousand Dollars)	Research and Development Expenditures Per Employee (Dollar)
Food (10)	432 012	10299	4944	5354	8.92	11040	21210	111	119
Beverages (11)	14 753	230	325	-94	0	0	56267	3 237	74
Textiles (13)	401 120	10585	5210	5375	18.03	9252	19075	120	109
Wearing Apparel (14)	500 448	14413	2674	11739	21.47	7276	10381	96	18
Leather (15)	66 268	964	1398	-435	31.60	7193	11466	721	23
Wood, Wood Products and Cork (16)	81 162	710	1206	-497	0	6453	15611	586	19
Paper and Paper Products (17)	58 027	1693	3501	-1808	31.14	14395	32720	836	72
Printing and Reproduction of Recorded Media (18)	54 972	19	46	-27	1.16	9222	15839	863	49
Coke and Refined Petroleum Products (19)	8 054	4920	14652	-9732	53.78	40776	159578	5 891	1337
Chemicals and Chemical Products (20)	75 761	6135	25894	-19759	65.51	18408	55592	629	1490

Basic Pharmaceutical Products and Pharmaceutical Materials (21)	31 709	750	4621	-3871	0	32011	53832	1 501	2799
Rubber and Plastic Products (22)	189 448	6221	4455	1766	22.31	11582	24830	255	242
Other Non-Metallic Mineral Products (23)	229 747	3972	1782	2190	8.54	11661	26578	208	172
Basic Metals (24)	129 401	18259	25156	-6897	47.60	18274	48815	369	229
Fabricated Metal Products (25)	333 089	6753	4529	2224	20.65	9253	17020	144	331
Computer, Electronic and Optical Products (26)	32 368	2571	13904	-11333	81.88	21205	43721	1 486	7420
Electrical Equipment (27)	144 558	9132	8894	238	41.34	15104	31270	334	1300
Machinery and Equipment n.e.c (28)	197 263	6868	18548	-11680	0	12513	24839	245	773
Motor Vehicles (29)	149 201	18651	18539	112	58.68	17841	39060	323	3299
Other Transport Equipment (30)	29 830	2384	5188	-2804	0	22346	41051	1 617	6981
Furniture (31)	176 684	1736	670	1067	9.08	7320	10964	277	54
Other Manu.(32)	71.637	3822	3605	217	65.32	7640	13335	672	238
Total	**3 407 512**	**131 086**	**169 740**	**- 38 654**	**26.68**	**14126**	**35139**	**933**	**1234**
					Aver.	**Aver.**	**Aver.**	**Aver.**	**Aver.**

Appendix 2: Import Shares By Industries (2009-2017)

High Import Share	**Medium Import Share**	**Low Import Share**
Leather (15)	Beverages (11)	Food (10)
Paper and Paper Products (17)	Textiles (13)	Wearing Apparel (14)
Coke and Refined Petroleum Products (19)	Wood and Wood Products and Cork (16)	Printing and Reproduction of Recorded Media (18)
Chemicals and Pharmaceutical Products (20+21)	Rubber and Plastic Products (22)	Other Non-Metallic Mineral Products (23)
Basic Metals (24)	Fabricated Metal Products (25)	Furniture (31)
Computer, Electronic and Optical Products (26)		
Electrical Equipment (27)		
Machinery and Equipment n.e.c (28)		
Motor Vehicles (29)		
Other Transport Equipment (30)		
Other Manufacturing **(32)**		

Notes: Import share is defined as imports / (domestic output + imports). High import share industries are defined to be those in which imports comprised at least 20 percent of total new supply for 2009-2017 period. Medium import share industries have import shares of 10 to 20 percent. Low import share industries have import shares of less than 10 percent. Most of the sectors of the Turkish manufacturing industry (12 out of 22) are included in the high import share category.