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Examining the Effects of Food and Product Production Values and Production Added Value on Inflation Over the Years: Empirical Evidence for Turkey

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Abstract

In this study, it is aimed to examine the effects of food and product production values on inflation. In the study, the variables of the World Bank Country Reports between 1991-2019 Consumer Price Index, Wholesale Price Index, Food Production Index, Product Production Index and Production Value Added were used. According to the results obtained from the study, there is a statistically significant relationship between TUFİ and TOFİ and GUE, UUE and UKD variables ($p < 0.01$). According to the results of controlled correlation analysis, the effects of food and product production indexes on consumer and wholesale inflation level are not statistically significant ($p > 0.05$). The effect of UKD and GUE parameters on inflation is statistically significant ($p < 0.05$). Explanation power of both models is very high. According to the regression coefficients, UKD has a negative effect, and GUE has a positive effect. The results show that production has a positive effect on inflation, while production value added has a decreasing effect on consumer and wholesale prices. These results show that the production in our country is actually high cost and its added value is low.

Keywords: Inflation, Food, Product, Production

1. Introduction

Although the concept of inflation has a long history among the economists, the controversies about its first outlet or source still continue. While the Spanish scholastic Juan de Mariana who writes up to the ends of the 16th century, draw the mainlines of the compelling nature of inflation, the monetary writings of David Hume on the 18th century evaluated the unit changes in the monetary stock as the valuation changes affecting the unit value of the monetary assets of the other individuals (Arteta et al., 2018; Bagus et al., 2014; Blanchard et al., 2010; Garcia and Werner, 2010).

The global economy has witnessed a considerable decrease in inflation since 1970's. Inflation decreased throughout the world as the median annual national consumer prices inflation decreased by approximately 1.7 percent which is the lowest level of about half century in 2015 from about 17 percent summit which was

experienced in 1974. Among the developed economies, the median inflation similarly reduced to the lowest level as 0.3 percent from the highest 15 percent level in the same period (Ha et al., 2019).

While there is a requirement for everybody to meet their own needs in daily life, the prices of these needs change very day with the influence of the pricing mechanisms of the market as well. Sometimes their prices decrease or it could be considered whenever the purchasing power of the money increases or sometimes whenever the quantity of the things which are purchased with the same amount of money decreases. The prices should be compared with each other in order to see the growth of the economy in every period, day, week, month or year in economy and its growth remains dependent on inflation, risks, production, investments, interests or similar other reasons (Durmuş, 2019; Mumtaz and Surico, 2012; Ciccarelli and Mojon, 2010; Ihrig et al., 2010; Calvo and Reinhart, 2002; Aghion et al., 1999).

The decrease in the inflation has been broad-based among the country groups recently and it is clearly seen in the multiple inflation measurements including the headline and core consumer prices, energy and food prices, producer prices and gross domestic product (GDP) deflator (Ha et al., 2019). Although the influence of lots of macroeconomic indicators is examined relating to inflation from past to today, we did not encounter the sufficient number of studies which are mainly focused on the correlation between the food and product prices and production values. Because of this reason, in this study, it is aimed to examine the effects of the food and product production values on inflation.

2. Conceptual Framework

According to the inflation theory, the individuals with lower incomes typically bear greater inflation burdens than their colleagues with higher incomes. Because of the fact that the rich individuals are inclined to have not only knowledge but also resources, they are generally in better positions to avoid taxes. They may invest a greater part of their incomes in the assets with higher profits. Thus, they may protect their saving capabilities against a general decrease of their purchasing powers. On the other hand, the individuals with lower incomes may follow similar strategies to the extent of existence of the index funds or inflation-indexed bonds. However, because they could use smaller part of their incomes for the investment purposes, they would balance a larger part of their incomes which are negatively affected by inflation on the prices of the commodities which they purchase. While there are some financial products which are utilized in order to minimize the effects of the inflation on the investments of the individuals, it is quite difficult to implement a similar strategy in order to protect someone from the increasing prices of the consumables (Bagus et al., 2014).

Inflation could be defined as a kind of commodity and service pricing mechanism. However, we should underline here that this is not the only factor of the price and that of the purchasing power. It depends on the interests, rates, production capacity and capability, population and politics. Most of the time, on account of the shocks which occur in economy, the effects on the interests, investments and production and the quantity of the money and services existing in the market decrease and this causes the prices to go high. This increase means the raw material purchasing problems, needs of the people, less production and less employment. Under such unbalanced quotations, the investors, producers, banks and the people are afraid from spending their habits and, in turn, this influences the prices. Not only the changing prices may result from inflation but also it could create the inflation itself (Durmuş, 2019).

High inflation is usually correlated with the low growth and financial crisis. The increasing price levels are also dependent on the weaker investor confidence, underlining the incentives for savings and the abrasion in the balance sheets of the financial and public sectors. Moreover, the poor people may suffer from the higher inflation in a disproportional manner because poorer households are dependent on the wage proceeds more, they have less access to the interest-yielding accounts and there is a lower probability to have financial or real assets in important amounts other than cash. Because of these reasons, the low and stable inflation is correlated with the better growth and developmental results, financial stability and decreased poverty (Ha et al., 2019).

3. Method

The variables and the World Bank codes which are used in the study are given in the Table 1.

Table 1: The variables and the World Bank codes which are used in the study

Code	Description	World Bank Code
TUFE	Consumer Price Index	Consumer price index (2010 = 100)
TOFE	Wholesale Price Index	Wholesale price index (2010 = 100)
GUE	Food Production Index	Food production index (2004-2006 = 100)
UUE	Product Production Index	Crop production index (2004-2006 = 100)
UKD	Production Added Value	Manufacturing, value added (% of GDP)

The World Bank provided the TOFE data for the years 1991-2013, GUE and UUE data for the years 1991-2018 and TUFE and UKD data for the years 1991-2019. Consequently, the data range of the study is specified as between the years 1991-2019.

In the study, the measurement data are defined as the average, standard deviation, minimum and maximum values. The compatibility of the measurement data to the normality distribution is analyzed by the Kolmogorov Smirnov Test. The Pearson's Moments correlation analysis is performed for the correlation between the data conforming to the normal distribution. In addition to this, the year controlled partial correlation analysis is also performed. Before the econometric analysis, it is analyzed whether the variables contain unit root or not by means of the Augmented Dickey-Fuller unit root test (ADF). Because all of the variables are proportional and since the deflator transformation is already performed, they do not contain any unit root. The linear regression analysis has been used in the correlational scanning between the research data. All of the analyses have been realized in 95% confidence interval and 0.05 relevance level, in Eviews 7.0 for Windows and SPSS 17.0 for Windows programs

4. Findings

Identifying information of the variables which are used in the study are given in the Table-2.

Table 2: Identifying information of the variables which are used in the study (1991-2019)

	Minimum	Maximum	Average	Standard Deviation
TUFE	0,12	234,44	73,81	67,14
TOFE	0,14	123,13	48,21	44,12
GUE	62,21	107,25	79,21	14,57
UUE	70,01	108,66	86,13	11,82
UKD	15,05	22,57	18,36	2,39

In the period between the years 1991-2019, the TUFE variable is between 0.12 – 234.44, the TOFE variable is between 0.14 – 123.13, the GUE variable is between 62.21 – 107.25, the UUE variable is between 70.1 – 108.66 and the UKD variable is between 15.05 – 22.57.

The results of the Pearson's correlation and the partially controlled correlation analysis which are carried out for the correlation between the TUFE and TOFE and the research parameters are given in the Table 3.

Table 3: The results of the Pearson's correlation and the partially controlled correlation analysis which are carried out for the correlation between the TUFEE and TOFE and the research parameters

	Pearson's Correlation		Year Controlled Partial Correlation	
	r	p	r	P
TUFE				
GUE	0.972**	0.000	0.332	0.132
UUE	0.960**	0.000	0.059	0.793
UKD	-0.617**	0.000	-0.205	0.360
TOFE				
GUE	0.941**	0.000	0.271	0.222
UUE	0.933**	0.000	0.039	0.864
UKD	-0.912**	0.000	-0.196	0.382

According to the results of the correlation analysis, there is a statistically significant correlation between the variables of not only TUFEE but also TOFE and GUE, UUE and UKD ($p < 0.01$). The correlation direction is positive for GUE and UUE and negative for UKD. However, according to the controlled correlation analysis results, the effects of the food and product production indexes on the consumer and wholesale inflation level are not statistically significant ($p > 0.05$).

The Augmented Dickey Fuller (ADF) unit root test results for the research variables are given in the Table-4.

Table 4: The Augmented Dickey Fuller (ADF) unit root test results for the research variables

	t value	%1 KD	%5 KD	%10 KD	p
TUFE	2.001760	-3.711457	-2.981038	-2.629906	0.9997
TOFE	0.170849	-3.788030	-3.012363	-2.646119	0.9636
GUE	1.678444	-3.711457	-2.981038	-2.629906	0.9993
UUE	1.821768	-3.788030	-3.012363	-2.646119	0.9994
UKD	-1.669824	-3.689194	-2.971853	-2.625121	0.4350

No unit root is found in all of the variables which are used in the study and, because of this reason, no advanced unit root tests are carried out ($p < 0.05$). In addition, the autocorrelation results as performed in the study indicated that the study data are in compliance with the regression analysis. According to this, the following model has been established for TUFEE.

$$TUFEE = \beta_0 + \beta_1 x (GUE) + \beta_2 x (UUE) + \beta_3 x (UKD)$$

Table 5: The results of the regression analysis for the TUFEE model

Variable	Beta	Std. Error	t-Statistic	p
UKD	-3.829011	1.586484	-2.413519	0.0238
GUE	4.481884	1.034177	4.333770	0.0002
UUE	-1.047372	1.371749	-0.763530	0.4526
C	-126.3974	65.98056	-1.915676	0.0674
R-squared	0.956593	Mean dependent exists		68.07747
Adjusted R-squared	0.951168	S.D. dependent exists		60.70343
S.E. of regression	13.41427	Akaike info criterion		8.162079
Sum squared resid	4318.624	Schwarz criterion		8.352394
Log likelihood	-110.2691	Hannan-Quinn criter.		8.220260
F-statistic	176.3040	Durbin-Watson stat		0.941068
Prob(F-statistic)	0.000000			

According to the regression model results, the effect of the UKD and GUE parameters on the inflation is statistically significant ($p < 0.05$). The explanatory power of the model has a considerably higher value (R^2 : 0.956593). According to the regression coefficients, the UKD has negative effect and the GUE has positive effect. The GUE has a greater effect as a coefficient.

The following model has been established for TOFE.

$$\text{TOFE} = \beta_0 + \beta_1 \times (\text{GUE}) + \beta_2 \times (\text{UUE}) + \beta_3 \times (\text{UKD})$$

Table 6: Regression analysis results for the TOFE model

Variable	Beta	Std. Error	t-Statistic	p
UKD	-8.673161	1.366118	-6.348764	0.0000
UUE	-2.047019	1.138670	-1.797729	0.0881
GUE	4.094102	0.929639	4.403968	0.0003
C	74.67508	59.05911	1.264413	0.2214
R-squared	0.964582	Mean dependent ex.		48.21492
Adjusted R-squared	0.958989	S.D. dependent ex.		44.12317
S.E. of regression	8.935415	Akaike info criterion		7.374693
Sum squared resid	1516.991	Schwarz criterion		7.572170
Log likelihood	-80.80897	Hannan-Quinn criter.		7.424358
F-statistic	172.4823	Durbin-Watson stat		1.112645
Prob(F-statistic)	0.000000			

Similar to the TUE model results, the effect of the UKD and GUE parameters on inflation is statistically significant ($p < 0.05$). The explanatory power of the model has a considerably higher value (R^2 : 0.964582). According to the regression coefficients, the UKD has negative effect and the GUE has positive effect. The GUE has a greater effect as a coefficient.

5. Discussion

In this study carried out, it is aimed to examine the effects of the food and product production values and the production indexes on the inflation. In this framework, in the study, the analysis is performed on the production and inflation indicators of Turkey between the years 1991 to 2019 and then the correlation between the production and inflation is revealed.

In general, the studies which are carried out in the literature concluded not only the inflation is dependent on the increase of the demand in comparison with the supply but also the excessive production shall decrease the demand and the excessive supply shall cause the inflation to decrease. Setting out from this point, actually the production is expected to have an effect of decreasing and reducing the inflation. With a simple financial approach, as the amount of a specific product or service is abundant in a market, its price shall decrease proportionally and consequently the inflation or the price increase shall be more limited as well. (Alex, 2021; Brito and Bystedt, 2010; Kremer et al., 2009; Ahmad and Mortaza, 2005; Anoruo, 2003; Bruno and Easterly, 1998; Abizadeh et al., 1996; Barro, 1996; Dornbusch and Fischer, 1993).

According to the values obtained in the study, the inflation in the wholesale and consumer prices is in a changing but generally in an increasing trend within the years. Similarly, the product and food production has been in an increase. However, whenever it is compared with the production indexes, the increase in the inflation indexes is higher and more variable. As a matter of fact, although the increase in the production is expected to show an effect of reducing the prices and consequently decreasing the inflation, on the other hand, the cost, unit price and

benefit analyses of the products produced change this situation. In other words, they should be produced within a certain plan and consciously to have an effect on the inflation, but not merely the production of the products or services. At this point, the production planning is commissioned. In this framework concerning the years in which the study is carried out, it could be expressed that the production planning is not performed at the sufficient level.

In the correlation analysis in which the close correlations are shown, the product and food productions are increasing the inflation. While it has many reasons, in general, it could be expressed that the higher service input in the production process of the products or foods produced is higher. On the other hand, whenever the production added value is calculated, the expected correlation is seen and as the production added value increases, the inflation decreases. However, at this point, these effects lose their significance in the year controlled correlation analysis of the variables. This situation further puts forward the rather capital-intensive market of our country as well.

Whenever the regression analysis and the variables are evaluated together with regard to their effects, the effects of the production added value and food productions on inflation are statistically significant. In both models (for the consumer and wholesale prices) the production has decreasing effect for the inflation and the food production values have increasing effect on the inflation. Consequently, it could be expressed that the production costs are above the sustainable level.

6. Conclusion

According to the results which are obtained in this study, it is seen that the production has positive, namely increasing, and the production added value has decreasing effect on the inflation over the consumer and wholesale prices. These results indicate that the production in our country is actually high-cost and its added value is also lower. Indeed, from the agricultural production to the food production, the expenditures such as transportation, energy and taxes etc. among the fundamental inputs have been recently higher than the fundamental production raw material expenditures of the product. Because of this reason, it could be expressed that there are some important missing points in the production planning. In order to eliminate such deficiencies, it is necessary to produce the products with the unit prices having higher added values, to plan the production processes of these productions and to perform the market or trade researches accordingly.

In this regard, it is useful to perform the crosswise studies in which the variables and contributing factors are extended for the advanced researches. With regard to the area application, the study findings point out that it would be beneficial to perform the production master plans and, if any, to specify the missing points of the existing plans and to support the national plans rather than local plans accordingly.

References

- Abizadeh, S, Benarroch M and Yousefi M. (1996). "A Multilevel Government Model of Deficits and Inflation," *Atlantic Economic Journal*, Vol. 24, No. 2, June, pp. 118-130.
- Aghion, P., E. Caroli and C. Garcia-Penalosa (1999), "Inequality and economic growth: The perspective of the new growth theories," *Journal of Economic Literature* 37: 1615–1660.
- Ahmed, S. ve Mortaza, M. G. (2005). 'Inflation and growth in Bangladesh: 1981-2005.' Bangladesh Bank Policy Analysis Unit. Working Paper Series, 0604.
- Alex D. (2021). Anchoring of inflation expectations in large emerging economies. *The Journal of Economic Asymmetries*, 23(1), e00202.
- Anoruo, E C. (2003). "An Empirical Investigation into the Budget Deficits-inflation Nexus in South Africa," *The South African Journal of Economics*, 71(2), 282-296
- Arteta, C., M. A. Kose, M. Stocker, and T. Taskin. (2018). "Implications of Negative Interest Rate Policies: An Early Assessment." *Pacific Economic Review* 23 (1): 8-26.
- Bagus, P, Howden, D. and Amadeus G. (2014). Causes and Consequences of Inflation. *Business and Society Review*. 119. 10.1111/basr.12043.
- Barro, R J. (1996), "Inflation and Growth," *Federal Reserve Bank of St. Louis Review*, 78(3), 153- 169.

- Blanchard, O. J., G. Dell’Ariccia, and P. Mauro. (2010). “Rethinking Macroeconomic Policy.” *Journal of Money, Credit, and Banking* 42 (s1): 199-215.
- Brito, R. and Bystedt, B. (2010). ‘Inflation targeting and emerging economies: panel evidence.’ *Journal of Development Economics*, 91: 198-210.
- Bruno, M. and Easterly, W. (1998). ‘Inflation crises and long-run growth’. *Journal of Monetary Economics*, 41: 3–26.
- Calvo, G., and C. Reinhart. (2002). “Fear of Floating.” *Quarterly Journal of Economics* 107 (2): 379-408.
- Ciccarelli, M., and B. Mojon. (2010). “Global Inflation.” *Review of Economics and Statistics* 92 (3): 524-35.
- Dornbusch, R. and Fischer, S. (1993). ‘Moderate inflation.’ *World Bank Economic Review*, 7: 1- 44.
- Durmuş, A. (2019). High Inflation Risk and Growth Rate. *International Journal of Social Science Research*, 8 (1), 20-28.
- García, J. A. and Werner, T. (2010). Inflation risks and inflation risk premia, European Central Bank, Working Paper, No. 1162.
- Ha J, Kose MA, Ohnsorge FL. (2019). Understanding Inflation in Emerging and Developing Economies. *Macroeconomics, Trade and Investment Global Practice, Policy Research Working Paper* 8761.
- Ihrig, J., S. B. Kamin, D. Lindner, and J. Marquez. (2010). “Some Simple Tests of the Globalization and Inflation Hypothesis.” *International Finance* 13 (3): 343-75.
- Kremer, S., Bick, A. and Nautz, D. (2009). ‘Inflation and Growth: New Evidence from a Dynamic Panel Threshold Analysis.’ *Economic Risk*, SFB 649, Discussion Paper 036.
- Mumtaz, H., and P. Surico. 2012. “Evolving International Inflation Dynamics: World and Country-Specific Factors.” *Journal of the European Economic Association* 10 (4): 716-34.