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Research Article

Testing The Expectation Hypothesis For Fragile Eight Countries

Kırılgan Sekizli Ülkelerde Beklentiler Hipotezi İçin Bir Araştırma

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Abstract

The financial crisis that occurred in the United States (USA) in 2008 and Europe in 2015 caused excessive fluctuations in all markets. It is important to estimate how the interest rates will be shaped in the long term in this situation where the investment environment comes. Understanding the relationship between interest rates of financial instruments of different term times is significant in this context for future estimates. Explanation of the maturity structure with the expectation hypothesis (EH) is a method frequently used in the literature. According to this theory, long-term interest rates are the result of short-term interest rates available in the market. In this study, it is aimed to test the EH by Kugler's (1990) Approach which is based on VAR Model, by analyzing the 3-month deposit interest and 10-year bond yield for Fragile Eight countries for various periods. According to the research findings, while the expectation hypothesis for Russia, Indonesia is not found valid; the expectation hypothesis in South Africa, Chile, Turkey, India, Brazil is seen as important.

Keywords: *expectation hypothesis, fragile eight, term structure, interest rate*

Jel Codes: *E43, E50*

Öz

2008 yılında Amerika Birleşik Devletleri (ABD) ve 2015 yılında Avrupa'da ortaya çıkan finansal kriz, tüm piyasalarda aşırı dalgalanmalara yol açmıştır. Yatırım ortamının geldiği bu durum içerisinde faiz oranlarının uzun dönemde nasıl şekilleneceğinin tahmin edilmesi önem taşımaktadır. Vade süresi farklı finansal araçların faiz oranları arasındaki ilişkinin anlaşılması bu bağlamda gelecek tahminleri için önem arz etmektedir. Vade yapısının beklentiler hipoteziyle (EH) açıklanması literatürde sıkça kullanılan bir yöntemdir. Bu teoriye göre, uzun dönem faiz oranları piyasada bulunan kısa dönem faiz oranlarının bir sonucudur. Bu çalışmada, Kırılgan Sekizli ülkeleri için 3 aylık mevduat faizi ve 10 yıllık tahvil getirisi çeşitli dönemler için ele alınarak, EH yaklaşımının, Kugler'in (1990) VAR Modeli Yaklaşımı ile test edilmesi amaçlanmıştır. Elde edilen sonuçlara göre, Rusya, Endonezya, Brezilya için beklenti hipotezinin geçerli olmadığı bulunurken, G. Afrika, Şili, Türkiye, Hindistan'da beklenti hipotezinin anlamlı olduğu görülmüştür.

Anahtar Kelimeler: *Beklentiler teorisi, kırılgan sekizli,vade yapısı, faiz oranı*

Jel Kodları: *E43, E50*

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1. Introduction

The relationship between short-term and long-term interest rates play a significant part in monetary policy. At this point, while analyzing scenarios of possible developments in domestic and foreign markets, central banks can obtain important clues about the monetary policy stance, interest rate expectations, and the course of macro variables such as inflation and growth. In this context, it is extremely important to manage interest rates and expectations from financial instruments that affect both households and investors. For example, the difference in short and long term interest rates reveals the preference to invest in different terms. However, the theory known as the "expectations hypothesis" of the choice options directed to the same investment in different maturity states that the returns of two different investment options should be equal.

The financial crisis that started in 2008 with the United States (USA) and then the crisis in Europe in 2015 caused unusual measures to be taken in monetary policy practices. Along with the monetary expansion policies, the lowering of the benchmark interest rates of central banks led to an increase in uncertainties in the market. So much so that the emergence of negative interests left a shocking effect on both economic managers and investors. In the stagnation caused by the Covid-19 outbreak that emerged in the last quarter of 2019, it pushed the markets to an even greater uncertainty. It is important to estimate how the interest rates will be shaped in the long term in this situation where the investment environment comes.

Understanding the relationship between interest rates of different financial instruments is important for both monetary authorities and investors. Various theories have been proposed in the literature to explain maturity structures. Generally speaking, “EH” appears to be a frequently used method. According to this theory, long-term interest rates are the result of short-term interest rates available in the market. In other words, long-term interest rates are shaped by market expectations and consist of short-term interest rates and a risk premium by period length (Arac & Yalta, 2015, p.42). This theory provides an important starting point, especially when generating future foresight for investors or trying to form an active policy in the long run by affecting the short-term rates for monetary authorities. The claim that the short term serves as an anchor for the long term is theoretically put forward. On the other hand, the slope of the maturity structure may also provide information about future short-term rates. EH states that long-term interest rates provide a useful benchmark for comparing short-term returns, as long-term rates are a reflection of average short-term rates over a relatively long period of time. As a result, the structure of interest rates will be an indicator of market prospects and monetary policy trends (Estrella & Mishkin, 1997). Therefore, the validity of the EH approach can play a critical role for financial markets and monetary policy makers. Different criticisms have been put forward regarding the EH approach, which provides a valid tool in theory, Shiller (1990).

Although EH may be rejected statistically in Campbell and Shiller (1987) 's prominent study, it may be the case that the movements in the expected short-term interest rates explain the majority of the movements in the long interest rates. In this case, the authors claimed that the subject should be evaluated economically, if not statistically. In addition, Hardouvelis (1994) has provided supportive evidence in this regard with his work for the G7 countries. Different results emerge from the studies conducted for developing countries.

Konstantinou (2005), Koukouritakis and Michelis (2008) found supporting evidence for the hypothesis in their studies for Poland and the new countries that joined the European Union. In addition, Wang and Ma (2017) achieved strong supporting results the EH approach in their study for the Chinese economy. On the other hand, Cooray (2003), Tabak (2009), Buigut and Rao (2010), and Tronzano (2015a; 2015b, 2018) found opposite results. Beechey et al. (2009) claims that the EH approach does not work due to high fluctuations in developing countries.

It is seen that there are different results in the literature about the EH approach. More empirical studies are needed, especially for developing countries. It is seen that there are different results in the literature about the EH approach. More empirical work needs to be done, especially for

developing countries. In this study, whether the change in long-term interest rates of the country group, which is expressed as fragile octets with low resistance to external shocks due to current account deficit and debt stock, is in line with the expectation hypothesis, It was examined by the method of Campbell and Shiller (1988). In the study, 3-month deposit interest and 10-year bond yield were used as data for each country and their frequencies are quarterly. Although there are countries that have statistically rejected the hypothesis, the long-term interest rates predicted by the hypothesis can explain the actual interest rates to an undeniable level.

On the other hand, in the motivation of the study, it was asked to test the expectations hypothesis with an interest perspective in selected countries, and an answer to the question of whether it would make a meaningful contribution to the preferences of the investor when considering this hypothesis was tried to be found. Because in the meaning of this hypothesis, the long-term interest rate will consist of the current short-term interest and short-term interest expectations, while the short and long-term interest rate differential (the slope of the yield curve) will reflect short-term interest expectations.

2. Literature Review

There are many empirical studies in academic literature that relate the validity of the theory of expectations to economic activity and interest-maturity structure. When we take a brief look at these studies;

Mankiw and Miron (1986) explore the term structure Expectations Hypothesis (EH) employing data obtained from the lower side of the maturity spectrum between 1890 and 1979, revealing that before the Federal Reserve System was established in 1915, the manner of distribution of long- and short-term rates possessed significant potential for predicting future interest rates, which subsequently declined. The study further demonstrates that the short-term rates were more or less based on the random walk hypothesis once the Federal Reserve was instituted, but not before that, which, together with a minor deviation in the term premium, would explain why the performance of the EH changed in 1915 (Mankiw & Miron, 1986).

Campbell and Shiller's (1987) landmark paper conducts a study on present value models, effectively dealing with issues regarding the nonstationarity of a time series and deficient data about market participants. Using data from the US, the study develops a present value relation test, applicable for variables that are stationary in first differences. The test findings threw up encouragingly new results regarding the term structure rational expectations theory, apart from certain results that were perplexing to the researchers (Campbell & Shiller, 1987). Campbell and Shiller's (1987) study also puts forward a technique for assessing "fit" of a present value model and present value models pertaining to stocks and bonds were studied by the researchers.

Given the significance of the relationship between short- and long-term interest rates in steering a country's monetary policy, Gerlach (1996) attempts to explore these rates using data from the G-10 countries of Australia, Austria, and Spain. The paper's aim was to understand whether the long-term rates were principally influenced by the expectations of market participants regarding future short-term rates, or whether the excessive volatility displayed by these rates made them ineffective indicators of expectations regarding interest rates within financial markets for the purpose of determining a country's monetary policy. While research findings have proved the rejection of the Expectations Hypothesis (EH) across quite a few countries, this study found that all countries experienced similar movements in the actual and theoretical long-term interest rates over the course of time. From the perspective of a monetary policy, this would imply that viewing long-term interest rates as being largely determined by the expectations of the participants in a financial market regarding the future trajectory of short-term interest rates would not be inaccurate. Another qualified finding of Gerlach's (1996) study was that for many countries the EH failed to be rejected statistically. Additionally, long-term interest rates in the US behaved in a similar manner to those of other countries. It also appeared that the duration of the test sample period affected the Campbell-Shiller method.

Studying numerous short-term investments' monthly data from Ireland between 1984 and 1997, Cuthbertson and Bredin (2000) have made available several tests on the term structure Expectations Hypothesis (EH), employing the Campbell – Shiller (1987, 1991) methodological approaches and cointegration techniques. The study aimed to put forward evidence on the performance of the Irish interest rates' term structure at the lower end of the maturity spectrum, in the absence of studies on the EH under the VAR method using data from Ireland (Cuthbertson & Bredin, 2000). The findings of Cuthbertson and Bredin's (2000) study were generally supportive of the EH and consistent with those of similar studies on the UK but were contrary to findings for the US.

Thornton (2006) has examined the Campbell-Shiller Paradox (CSP) evident in literature on the Expectations Hypothesis (EH) and presented an econometric solution to it. It proves that the construction of these tests of the EH could lead to outcomes that were consistent with the CSP whenever the EH failed to hold, regardless of the reason, and a Monte Carlo experiment confirmed the same (Thornton, 2006). This was significant for applied research. The findings of the study could divert attention away from the use of single equation EH tests and encourage the use of other tests of EH. Further, researchers could focus on explaining why the EH failed to hold rather than the reasons for the CSP (Thornton, 2006).

Another study by Prat and Uctum (2018) examines the forecast anchoring model from a novel dynamic perspective, offering an enlarged, dynamic version to study the behavior of a group of rational forecasters and a group of forecasters employing heuristic rules to determine if they coexisted or emerged besides each other. The model is structured as a 'state-space representation' with the help of the Kalman filter method (Prat & Uctum, 2018). The forecasts for the three-month Treasury bill rates and the ten-year Treasury bond yields for the US from CE surveys between November 1989 and May 2015 were considered and the study findings indicated that, irrespective of the maturity period, the rational expectations and learning theories were effectively abandoned for the market outlook on interest rates, and forecaster judgments were generally based on heuristics (Prat & Uctum, 2018). However, a small section of forecasts for short-term interest rates were found to be rational, attributable to the Federal Reserve's transparency policy and its post-2008 forward guidance for the zero lower limits short rate (Prat & Uctum, 2018).

Calderia and Smaniotto (2019) have discussed and tested the Expectations Hypothesis (EH), believed to be extremely significant for financial markets stakeholders as well as for monetary policy administrators, particularly in emerging markets. Monthly interest rate data of Brazilian bonds of varying maturity periods, from 3 months to 5 years, for the period between 2000 and 2017, has been employed to conduct three tests (Calderia & Smaniotto, 2019). Empirical data revealed that variations displayed by the term structure of interest rates from the EH were statistically significant and prevailed all through the Brazilian yield curve, extending from rates for a 3-month period to those for 5 years (Calderia & Smaniotto, 2019). However, Calderia and Smaniotto's (2019) study's overall findings were that the interest rates in Brazil were inconsistent with long-term connotations of EH, attributable to grounds such as violating the hypothesis of a constant risk premium being essential for EH and the excessive volatility observed in interest rates in Brazil over the past few decades (Calderia & Smaniotto, 2019).

3. Methodology and Theoretical Framework

According to the expectations hypothesis, the gap between long and short term interest rates should have the power to predict short term interest rates.

There is a linear relationship between N period long term interest return (R_t) and the short term interest rate (r_t).

$$R_t = \frac{1}{N}(r_t + r^e_{t+1} + r^e_{t+2} + \ldots\ldots + r^e_{t+N-1}) + \theta \qquad (1)$$

r_{t+j}^{e} here, it represents the information given at time t of r_{t+j} and the expected income to be obtained after j period. θ represents the constant return. The short-term interest rate:

$$r_t = r_{t+j}^{e} - \sum_{i=1}^{j} \Delta r_{t+i,}\ j = 1,2,3,\ldots,N-1 \tag{2}$$

As it can be expressed, when the expression is removed from equation (1) and necessary arrangements are made:

$$S_t = R_t - r_t = \sum_{j=1}^{N-1} \Delta r_{t+j}^{e} + \theta \tag{3}$$

obtained. This expression indicates that S_t is a linear combination of two variables and is a linear function of the change in expected future interest rates. In the VAR model that Campbell and Shiller (1988) derive from the above statement, the theory tested through ($\boldsymbol{a_p = c_p = 0}$)constraints validity by Wald test. (Kugler, P., 1990). If relative coefficients are significantly different than zero, in other works null hypothesis cannot be rejected, we can state that EH theory Holds.

$$\begin{bmatrix} \Delta r_t \\ S_t \end{bmatrix} = \begin{bmatrix} \alpha_0 \\ c_0 \end{bmatrix} + \sum_{i=1}^{p} \begin{bmatrix} a_i & b_i \\ c_i & d_i \end{bmatrix} \begin{bmatrix} \Delta r_{t-i} \\ S_{t-i} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix} \tag{4}$$

In addition to this, although it does not have a statistical meaning, the regression of the spread (S_t) with the theoretical gap (S_t^*) obtained from the VAR results, which are frequently applied in the literature and demonstrated as equation (5), will be estimated. If long-term interest rates are determined by the expected short-term interest rates in the future, the slope coefficient is expected to be close to 1, and the standard deviations of the predicted and real spread will be close to each other.

$$S_t^* = \delta + \gamma S_t + e_t \tag{5}$$

4. Findings

Two of the seven countries subject to analysis (Russia, Indonesia) reject the expectations hypothesis, while the other five countries (South Africa, Chile, Turkey, India, Brazil) did not reject. There is no common point that led to the rejection of these two countries. However, in other words, the difference between interest rates is not only mispredicting the direction of short-term changes in long-term interest rates, but also completely inadequate to explain the changes in question.

On the one hand, it may be possible to tend to attribute the EH failure to a specific cause. Among these reasons; The EH hypothesis is valid, however; factors such as (1) risk premium changes over time, (2) expectations are not rational, (3) long-term interest rates overreact to changes in short-term interest rates are hidden.

If we consider the countries one by one, when we exclude the deep spread in the first years, when the period starts from 2002, Russia accepts the hypothesis. Brazil, on the other hand, rejects 0.05 meaning level, but accepts the hypothesis for 0.10. (Country charts are presented in Appendix A) EH is therefore rejected. Based on these findings, the central bank of Russia and Brazil have a poor ability to influence the long term rate through monetary policy adjustments of short term

rates.

However, Indonesia differs from these two countries by a large margin. If it is considered that Russia and Brazil accept the hypothesis, Indonesia stands out with a much lower slope coefficient compared to other countries. In the study of Gerlach (1996), the slope parameters of the countries that reject the hypothesis are low. Although it cannot form a theoretical basis for testing the hypothesis, it is obvious that the slope parameter provides a serious practical benefit.

If we examine the theoretical and actual gap deviations rates, the estimated long-term interest rates explain the variance in real long-term rates considerably, although the hypothesis is rejected. Accordingly, there is evidence that the yield spread exhibits significant explanatory over the changes in short-term rates

Table 1. Diagnostic Statistics

	S.AFRICA(VAR(2))	CHILE(VAR(3))	RUSSIA(VAR(2))	TURKEY(VAR(2))	INDONESIA(VAR(2))	BRAZIL(VAR(2))	INDIA(VAR(2))
γ	0,8840	0,933325	0,904319	0,903685	0,475116	0,87821	0,703663
σ_{S^*}	2,2500	1,563104	8,685961	2,399191	0,486225	1,609957	0,976031
σ_S	2,4280	1,642898	9,213298	2,588527	0,828158	1,651684	1,32021
σ_{S^*}/σ_S	0,9267	0,9514	0,9428	0,9269	0,5871	0,9747	0,7393
$\rho_{S*,S}$	0,9409	0,937219357	0,94682945	0,946860248	0,524707396	0,900140798	0,83910315
$\rho_{\Delta S,\Delta S*}$	0,5907	0,71089665	0,464747722	0,501707104	0,20478581	0,494738158	0,110410389
σ_{R-R^*}	0,8171	0,559421	2,964485	0,806094	0,500764	0,731033	0,63485
Wald test statistic	3,4178	6,6058	11,0909	0,8672	8,6653	4,991588	2,169508
Chi-Square (2p-1) α=0,05	7,8150	11,0700	7,8150	7,8150	7,8150	7,8150	7,8150
	EH ACCEPTED	EH ACCEPTED	EH REJECTED	EH ACCEPTED	EH REJECTED	ACCEPTED	EH ACCEPTED
	81q1-18q4	2004q3-2019q2	99q4-18q2	2010q1-2019q2	2009q3-2019q2	2010q1-2019q2	2009q3-2017q4

Notes: γ is the slope parameter in a regression of S* on S and a constant; σ_{S^*}/σ_S as is the standard deviation of the theoretical and the actual spread; $\rho_{S^*,S}$ is the correlation between S and S*; $\rho_{\Delta S^*,\Delta S}$ is the correlation between ΔS and ΔS*;σ_{R-R^*} is the standard deviation of the difference between the actual, R, and theoretical, R*, long rates; the Wald test is distributed as $x^2_{(2p)}$ where p denotes the order of the VAR.

5. Conclusion

Financial instrument returns vary depending on the maturity structure and differences in this period may affect investors' decisions. Determining whether there is a relationship between short- and long-term instruments is important for both money authorities and investors. The expectations hypothesis appears as a frequently used method for determining this relationship. According to this theory, long-term interest rates are the result of short-term interest rates available in the market. However, it is seen that there are empirically different results in the literature about this theoretical approach. More empirical studies are needed, especially for developing countries. In this study, expressed as fragile octet Russia, Indonesia, Brazil, South Africa, Chile, Turkey, it has been tested using EHR data of India.

The procedure followed by Campbell and Shiller (1988) was followed and the relationship between 3-month deposit interest and 10-year bond yield was analyzed for each country. According to the research findings, while the expectation hypothesis for Russia and Indonesia is not found valid; the expectation hypothesis in South Africa, Chile, Turkey, India, Brazil is seen as important. However, in order to convey stronger results to investors, factors such as inflation expectations, size of the term premium, risk sensitivity of investors and the level of development of the markets should be taken into consideration in countries where the expectations hypothesis is valid or not. The results obtained are not valid for all countries. Particular attention should be paid to the fact that central banks should look at their interest policies more rationally, and they maintain a realistic monetary policy by hypothetically calculating that the risk premium will change over time. It can be interpreted that the EH approach could not be empirically proved

exactly like the results in the literature. Thus, the topic should be discussed by taking specific samples in new studies.

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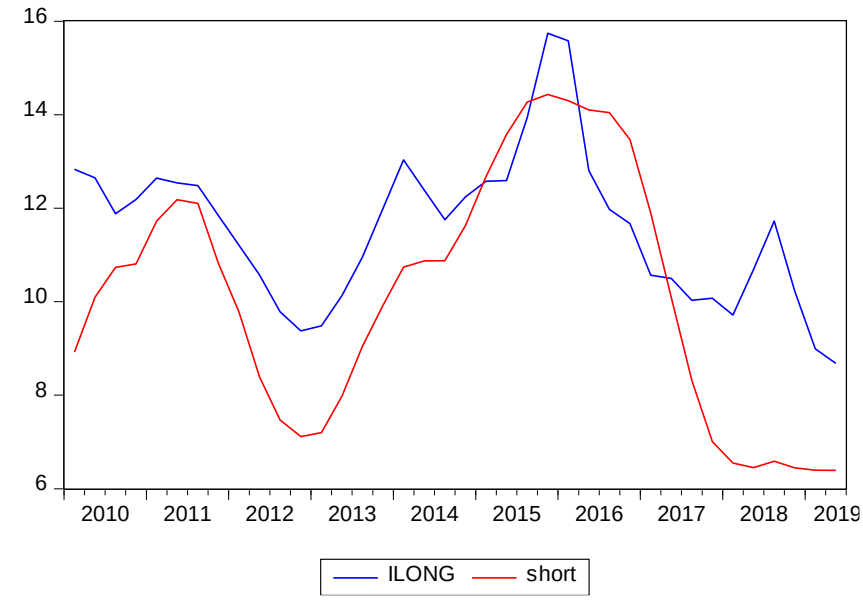
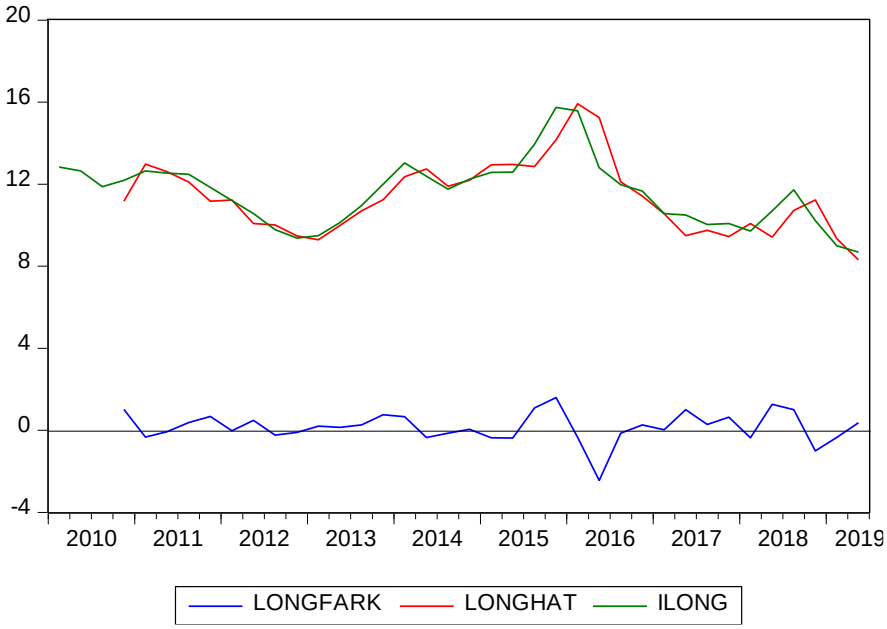
Appendix A

Brazil





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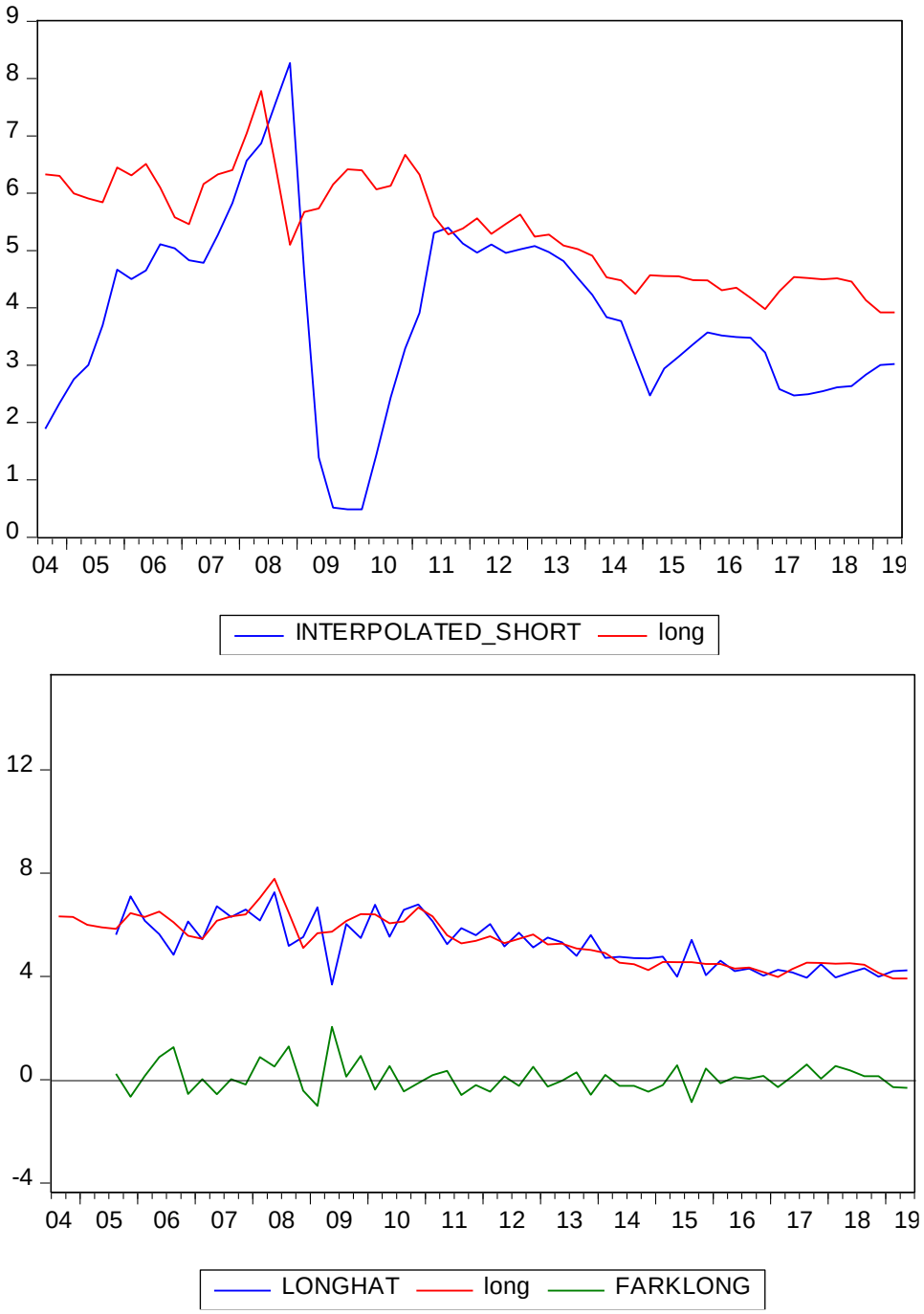
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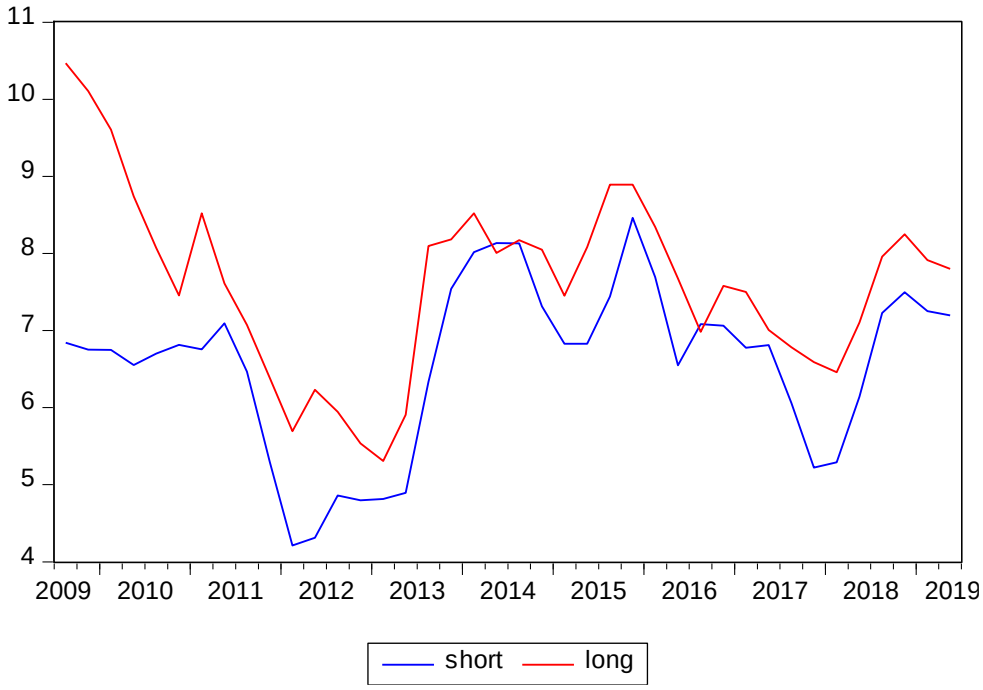
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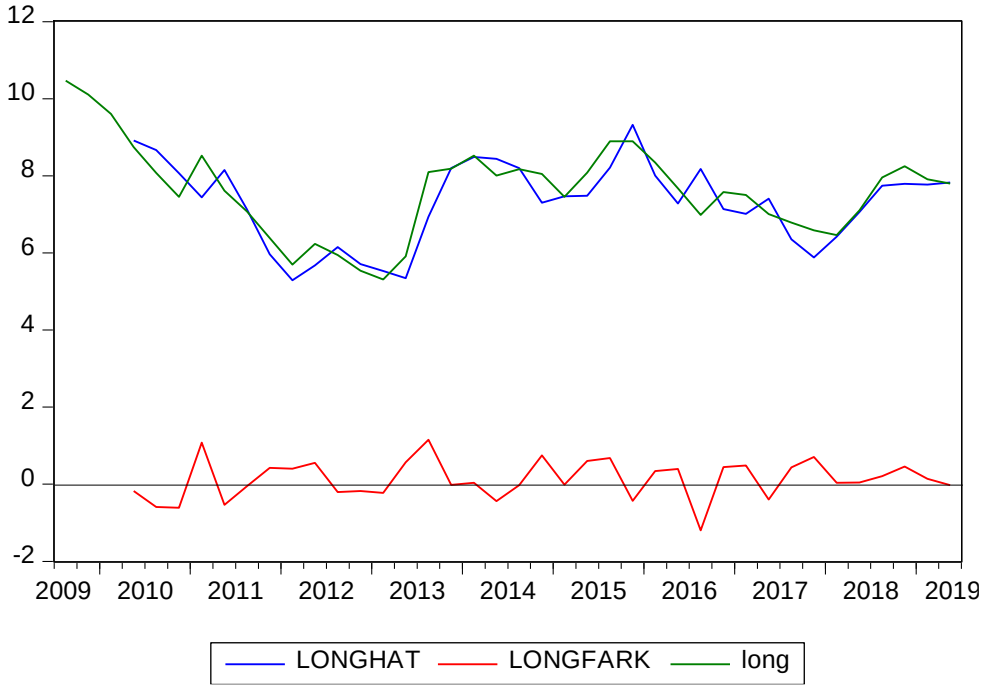
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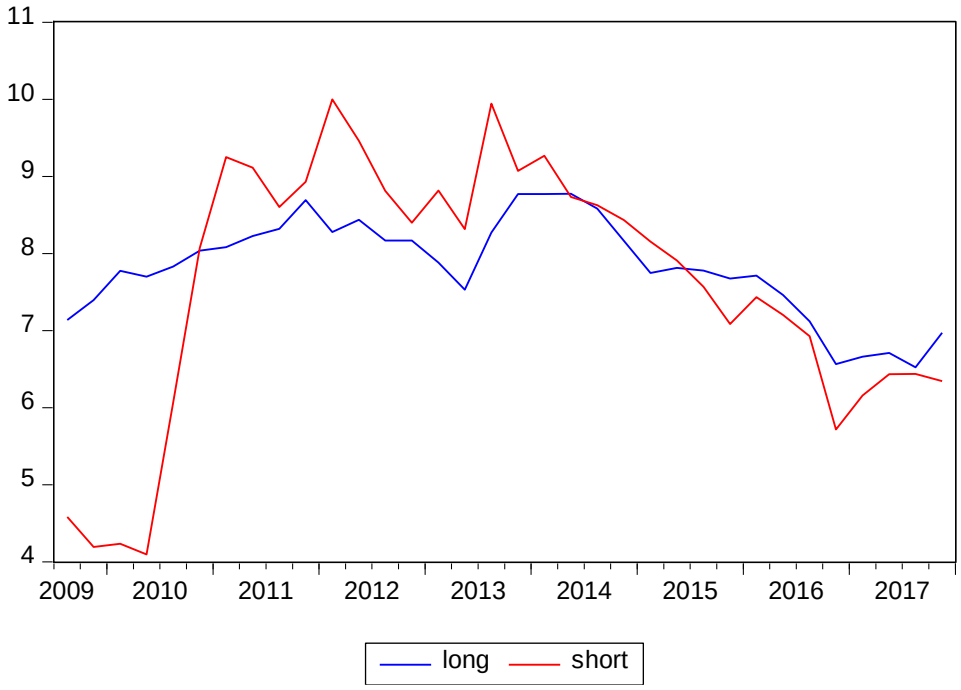
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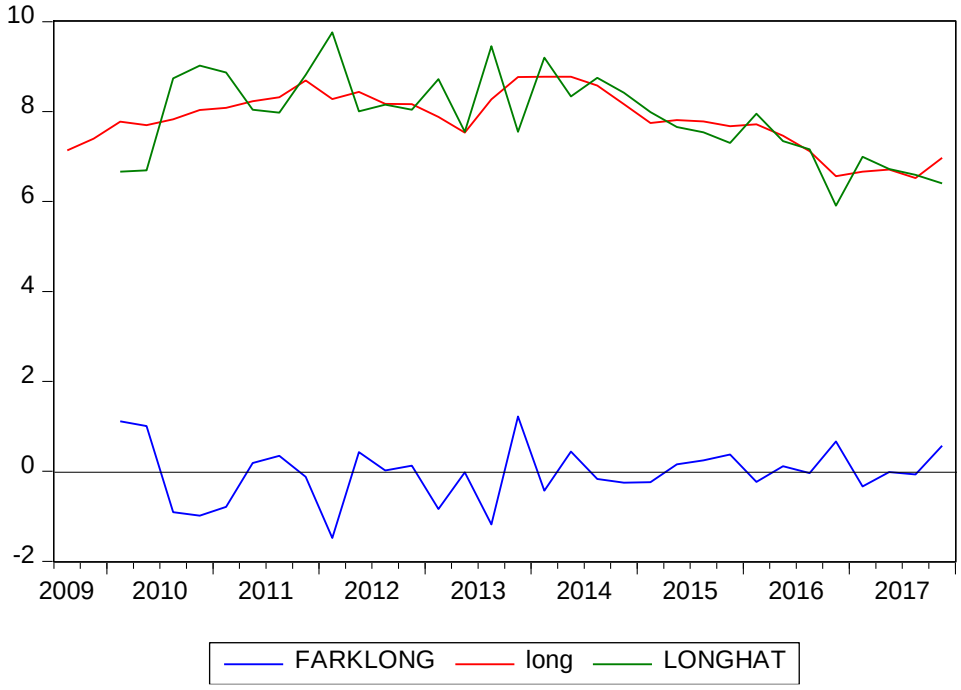
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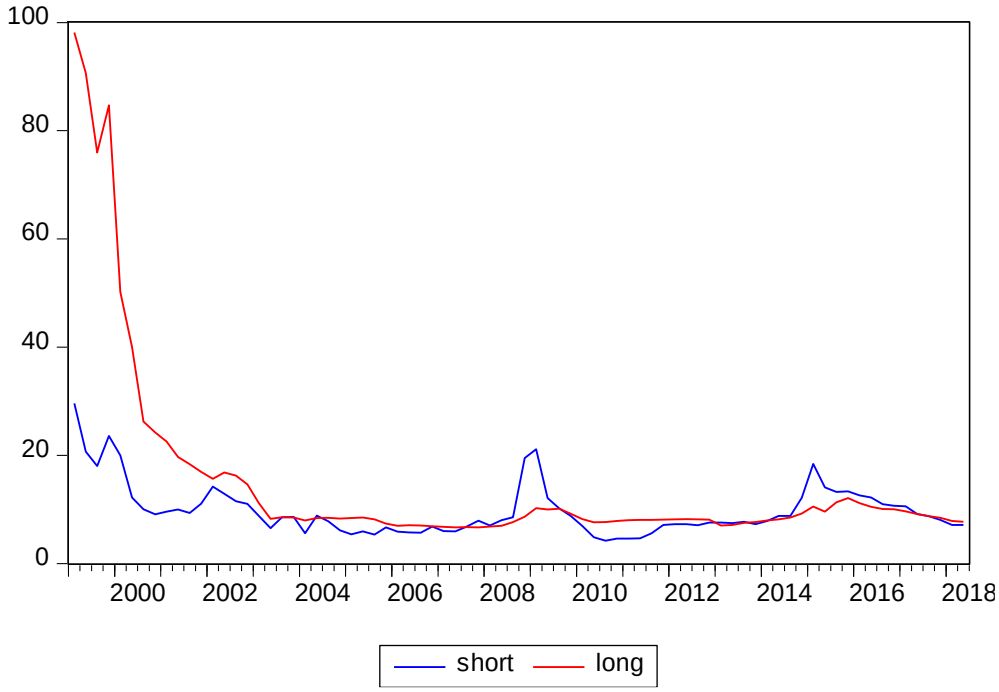
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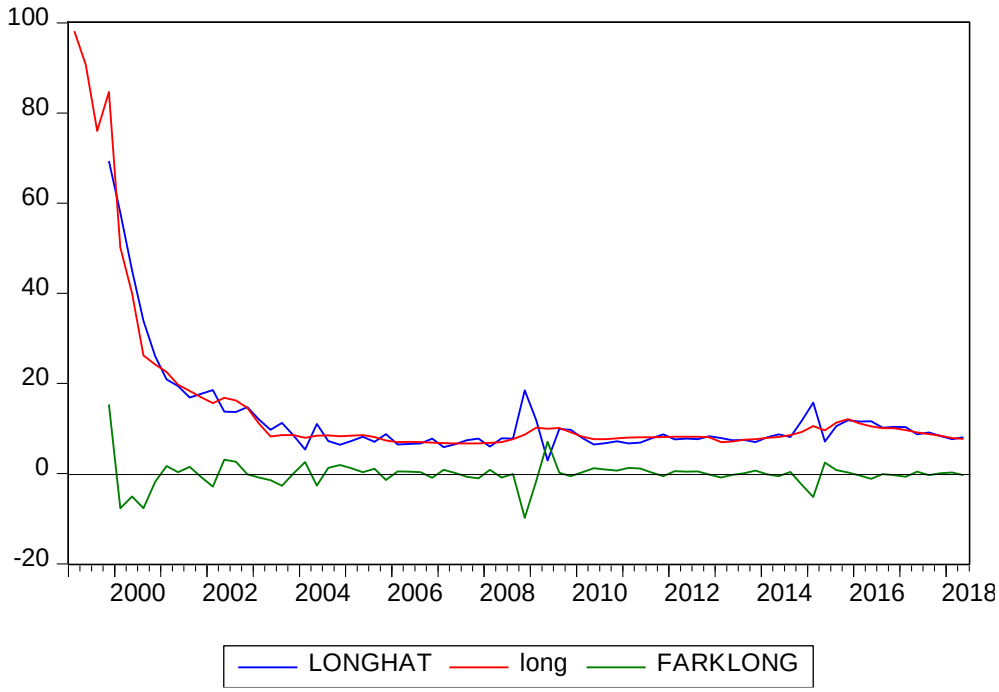
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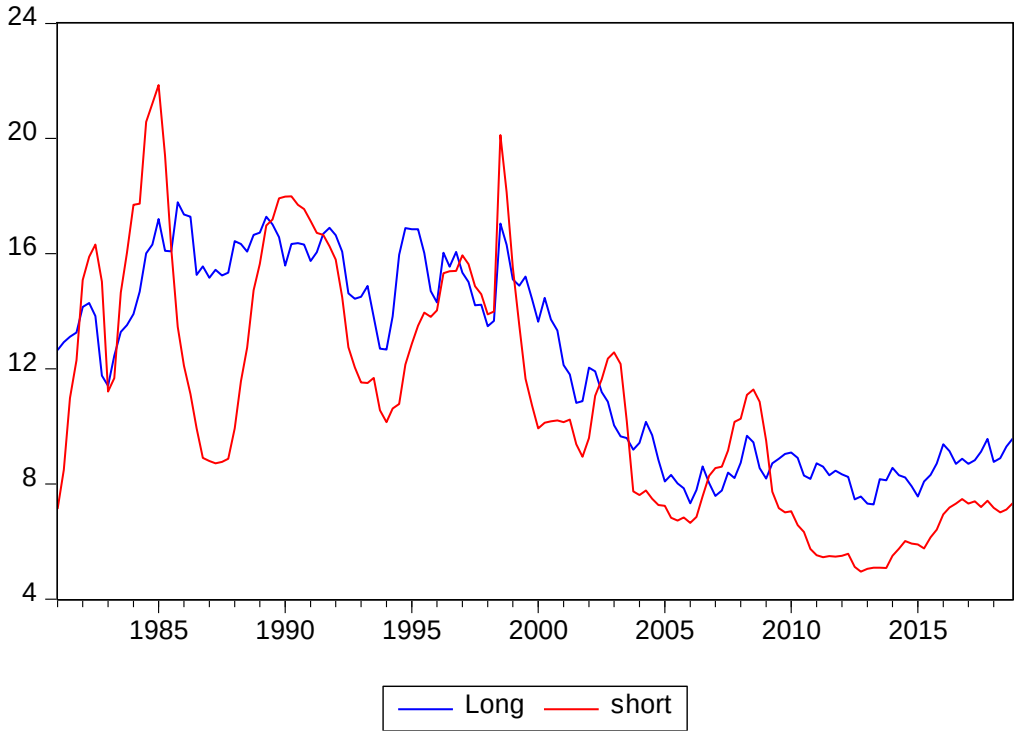

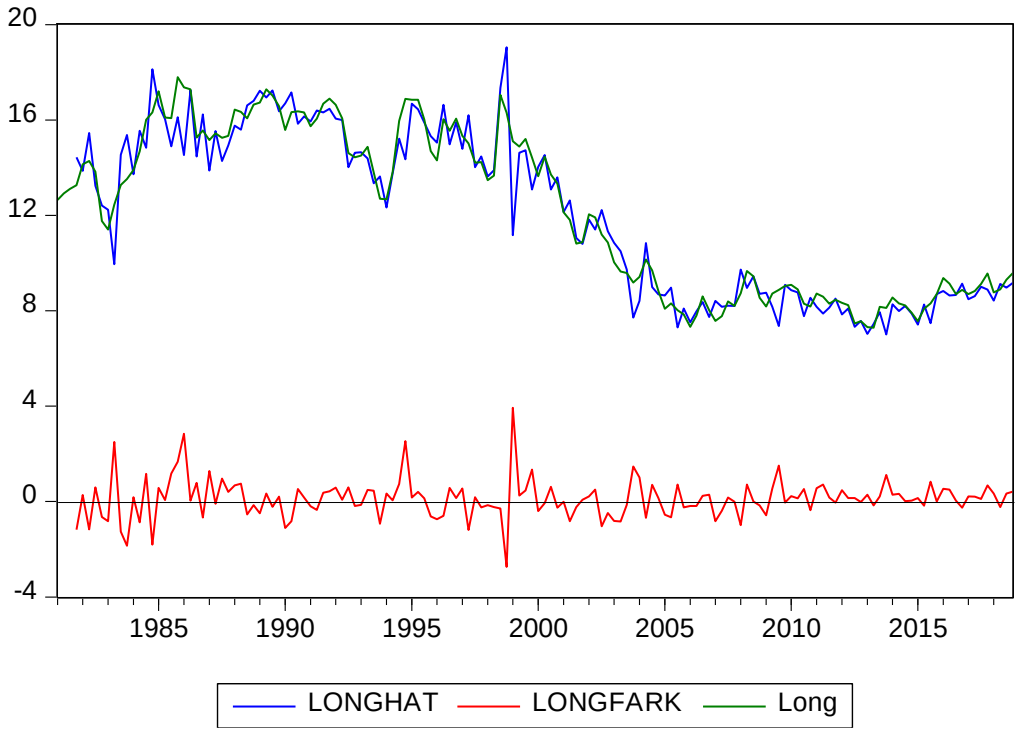

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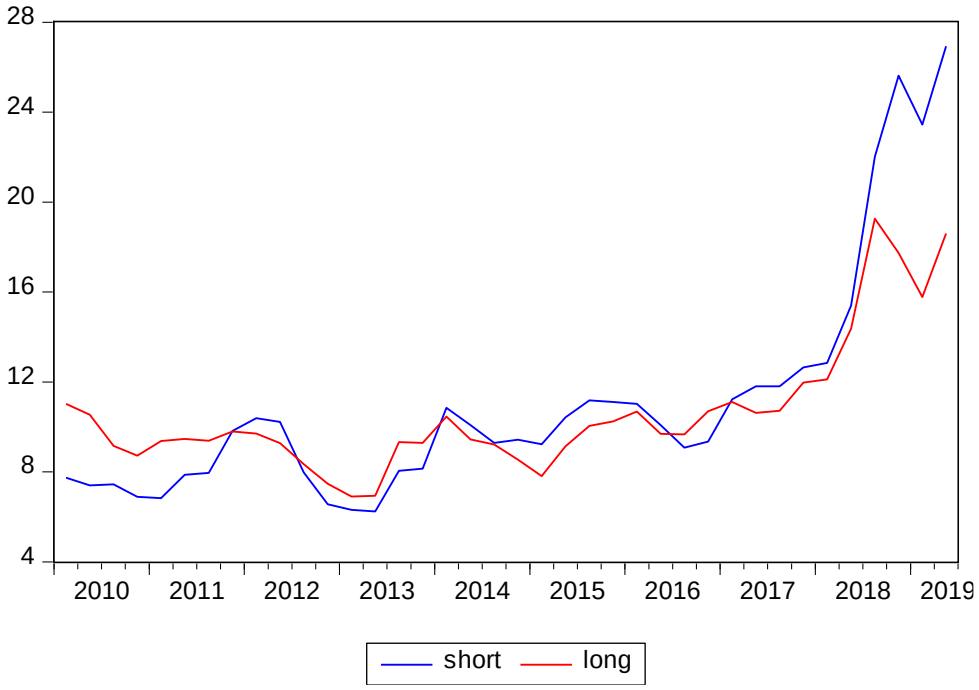
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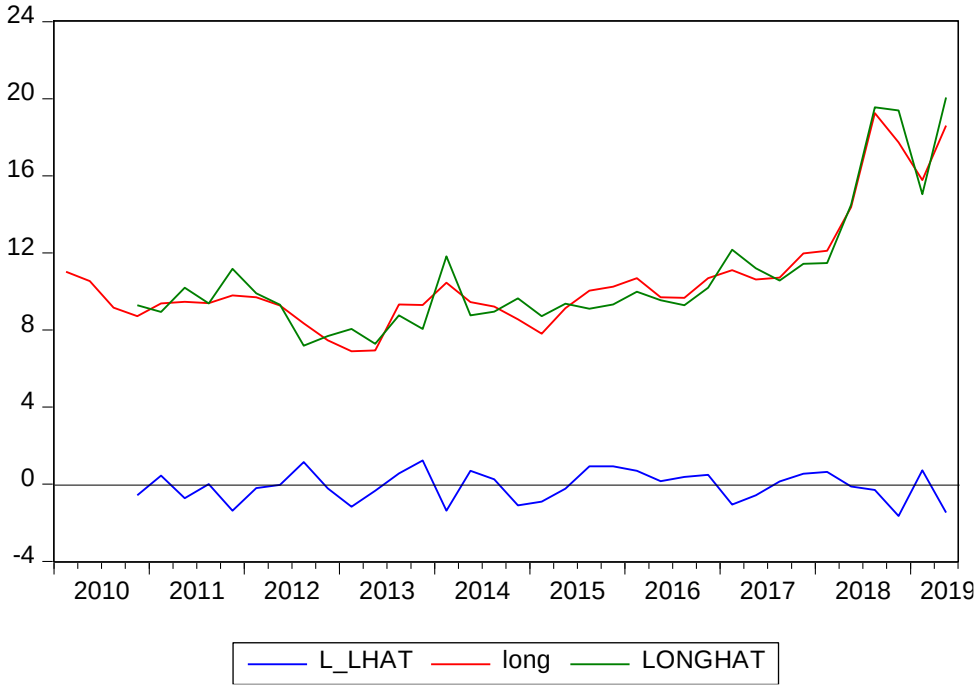
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Araştırma Makalesi

Testing the expectation hypothesis for Fragile Eight Countries

Kırılgan Sekizli Ülkelerde Beklentiler Hipotezi İçin Bir Araştırma

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Genişletilmiş Özet

Giriş

2008 yılında Amerika Birleşik Devletleri (ABD) merkezli başlayan finansal kriz ve ardından 2015 yılında Avrupa'da ortaya çıkan kriz para politikası uygulamalarında alışılmadık önlemlerin alınmasına neden olmuştur. Parasal genişleme politikalarıyla birlikte merkez bankalarının gösterge faizlerini düşürmeleri piyasada belirsizliklerin de artmasına neden olmuştur. Öyle ki negatif faizlerin ortaya çıkması hem ekonomi yöneticileri hem de yatırımcılarda şok etkisi bırakmıştır. 2019 yılından son çeyreğinde ortaya çıkan Covid-19 salgınının neden olduğu durgunlukta piyasaları daha da büyük bir belirsizliğe itmiştir. Yatırım ortamının geldiği bu durum içerisinde faiz oranlarının uzun dönemde nasıl şekilleneceğinin tahmin edilmesi önem taşımaktadır.

Vade süresi farklı finansal araçların faiz oranları arasındaki ilişkinin anlaşılması hem para otoriteleri hem de yatırımcılar açısından önem taşımaktadır. Literatürde vade yapılarının açıklanması için çeşitli teoriler ortaya atılmıştır. Genel olarak bakıldığında Beklentiler teorisi (EH) sıkça kullanılan yöntem olarak karşımıza çıkmaktadır. Bu teoriye göre, uzun dönem faiz oranları piyasada bulunan kısa dönem faiz oranlarının bir sonucudur. Diğer bir ifadeyle, uzun dönem faiz oranları piyasa beklentisiyle şekillenmekte ve kısa dönem faiz oranları ve dönem uzunluğuna göre bir risk priminden oluşmaktadır (Araç & Yalta, 2015, p.42). Bu teori özellikle yatırımcıların gelecek öngörülerini oluştururken veya para otoritelerinin kısa dönem oranları etkileyerek uzun dönemde aktif bir politika oluşturmaya çalışken önemli bir çıkış noktası sağlamaktadır. Kısa dönemin uzun dönem için bir çıpa vazifesi gördüğü iddiası teorik olarak ortaya atılmaktadır. Diğer taraftan da, vade yapısının eğimi gelecekteki kısa dönem oranlar hakkında da bilgi verebilecektir. EH, uzun vadeli faiz oranlarının, kısa vadeli getirilerin karşılaştırılması için faydalı bir kriter sağladığını belirtmektedir, çünkü uzun vadeli oranlar, nispeten uzun bir zaman zarfında ortalama alınan kısa vadeli oranların bir yansımasıdır. Sonuç olarak, faiz oranlarının yapısı piyasa beklentileri ve para politikası gidişatı hakkında bir gösterge olacaktır (Estrella & Mishkin, 1997). Bu sebeple EH yaklaşımının geçerliliği finans piyasaları ve

para politika yapıcıları için kritik bir rol oynayabilir. Teoride geçerli bir araç sağlayan EH yaklaşımına dair farklı eleştiriler ileri sürülmüştür Shiller (1990).

Yöntem ve Metodoloji

Beklentiler hipotezine göre uzun ile kısa dönem faiz oranları arasındaki makasın kısa dönem faiz oranlarını tahmin etme gücü olması gerekir.

N periyotluk uzun dönem faiz getirisi (R_t) kısa dönem faiz oranı (r_t) ile lineer bir ilişki içerisindedir.

$$R_t = \frac{1}{N}(r_t + r_{t+1}^e + r_{t+2}^e + ... + r_{t+N-1}^e) + \theta \qquad <1>$$

r_{t+j}^e burada r_{t+j} 'nin t anında verili bilgi ile j dönem sonra elde edilecek beklenen geliri, θ ise sabit getiriyi temsil etmektedir. Kısa dönem faiz oranı ise,

$$r_t = r_{t+j}^e - \sum_{i=1}^{j} \Delta r_{t+i}^e, \qquad j = 1, 2, \ldots, N-1$$

olarak ifade edilebildiğine göre denklem <1> den bu ifade çıkarılıp gerekli düzenlemeler yapılınca,

$$S_t = R_t - r_t = \sum_{j=1}^{N-1} \frac{N-j}{N} \Delta r_{t+j}^e + \theta.$$

elde edilir. Bu ifade S_t nin iki değişkenin lineer bir birleşimi olduğunu ve ileride beklenen faiz oranlarındaki değişimin lineer bir fonksiyonu olduğunu göstermektedir. Campbell ve Shiller'ın (1988) yukarıdaki ifadeden yola çıkarak türettikleri VAR modelinde $a_p = c_p = 0$ kısıtının geçerliliği test edilerek rasyonel beklentiler teorisinin sınaması yapılmaktadır (Kugler, P., 1990).

$$\begin{bmatrix} \Delta r_t \\ S_t \end{bmatrix} = \begin{bmatrix} a_0 \\ c_0 \end{bmatrix} + \sum_{i=1}^{p} \begin{bmatrix} a_i & b_i \\ c_i & d_i \end{bmatrix} \begin{bmatrix} \Delta r_{t-i} \\ S_{t-i} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix}$$

Bunlara ek, her ne kadar istatistiki bir anlam ifade etmiyor olsa da literatürde sıkça uygulanan, VAR sonuçlarından elde edilen teorik makas (S_t^*) ile gerçekleşen makas'ın (S_t) birlikte nasıl hareket görebilmek adına $S_t^* = \delta + \gamma S_t + e_t$ regresyonu tahmin edilecektir. Eğer uzun dönem faiz oranları, gelecekte beklenen kısa dönem faiz oranları tarafından belirleniyorsa eğim katsayısının 1'e yakın olması, tahmin edilen ve gerçek makasın standart sapmalarının da birbirine yakın olması beklenir.

Bulgular

Analize konu 7 ülkeden üçü (Rusya, Endonezya, Brezilya) beklenti hipotezini ret ederken diğer 4 ülke (G. Afrika, Şili, Türkiye, Hindistan) ret edememiştir. Bu üç ülkenin reddetmesine sebep olan ortak bir nokta görünmemektedir. Ülkeleri tek tek ele alırsak, ilk yıllardaki derin makası dışladığımızda, dönem 2002'den başladığında Rusya hipotezi kabul etmektedir. Brezilya ise 0,05 anlam düzeyinde reddetse de 0,10 için hipotezi kabul etmektedir.[1]

Fakat Endonezya büyük bir farkla bu iki ülkeden ayrılmaktadır. Eğer Rusya'nın ve Brezilya'nın hipotezi kabul ettiğini düşünülürse, Endonezya diğer ülkelere nazaran çok daha düşük bir eğim katsayısı ile öne çıkmaktadır. Gerlach'ın (1996) çalışmasında da hipotezi reddeden ülkelerin eğim parametreleri düşük çıkmaktadır. Hipotezi test etmek için teorik bir taban oluşturamasa da, eğim parametresinin ciddi bir pratik fayda sağladığı ortadadır.

Teorik ile gerçek makasın sapmalarının oranlılarını incelersek hipotez reddedilmesine rağmen tahmin edilen uzun dönem faiz oranları, gerçek uzun dönem oranlarındaki varyansı kayda değer bir şekilde açıklamaktadır.

Tartışma

Campbell and Shiller (1987)'in öne çıkan çalışmasında istatistiksel olarak EH reddedilebilse de gelecekte beklenen kısa dönem faiz oranlarındaki hareketlerin uzun faiz oranlarındaki hareketlerin büyük bir bölümünü açıkladığı durum söz konusu olabilir. Yazarlar bu durumda, istatistik açıdan olmasa da iktisadi açıdan konunun değerlendirilmesini gerektiğini iddia etmişlerdir. Ayrıca, Hardouvelis (1994), G7 ülkeleri için yapmış olduğu çalışmayla bu konuda destekleyici kanıtlar sunmuştur. Gelişmekte olan ülkeler için yapılan çalışmalarda ise farklı sonuçlar ortaya çıkmaktadır. Konstantinou (2005) and Koukouritakis and Michelis (2008) Polonya ve Avrupa Birliği'ne yeni katılan ülkeler için yaptıkları çalışmalarda hipotezi destekleyici kanıtlara ulaşmışlardır. Ayrıca Wang ve Ma (2017) Çin ekonomisi için yaptıkları çalışmada EH yaklaşımını güçlü bir şekilde destekleyici sonuçlara ulaşmışladır. Diğer taraftan, Cooray (2003) , Tabak (2009), Buigut and Rao (2010), ve Tronzano (2015a; 2015b, 2018) ise karşı sonuçlar bulmuşlardır. Beechey et al. (2009) gelişmekte olan ülkelerdeki yüksek dalgalanmalar nedeniyle EH yaklaşımının çalışmadığını iddia etmektedir.

Sonuç

Finansal araç getirileri vade yapısına göre değişmekte ve bu dönem farklılıkları yatırımcıların kararlarını etkileyebilmektedir. Kısa ve uzun vadeli araçların arasındaki ilişkinin var olup olmadığının tespiti ise hem para otoriteleri hem de yatırımcılar açısından önem taşımaktadır. Beklentiler hipotezi bu ilişkinin tespiti için sıkça kullanılan bir yöntem olarak karşımıza çıkmaktadır. Bu teoriye göre, uzun dönem faiz oranları piyasada bulunan kısa dönem faiz oranlarının bir sonucudur. Ancak, teorik olarak ortaya atılan bu yaklaşım hakkında literatürde ampirik olarak farklı sonuçların yer aldığı görülmektedir. Özellikle gelişmekte olan ülkeler için daha fazla ampirik çalışmanın yapılması gerekmektedir. Bu çalışmada, kırılgan sekizli olarak ifade edilen Rusya, Endonezya, Brezilya, G. Afrika, Şili, Türkiye, Hindistan ait veriler kullanılarak EH test edilmiştir. Campbell ve Shiller (1988)'in takip ettiği prosedür uygulanmış ve her ülke için

[1] Ülkelere ait grafikler appendix'de sunulmuştur.

3 aylık mevduat faizi ve 10 yıllık tahvil getirisi arasındaki ilişki analiz edilmiştir. Araştırma sonuçlarına göre, Rusya, Endonezya, Brezilya için beklenti hipotezinin geçerli olmadığı bulunurken, G. Afrika, Şili, Türkiye, Hindistan'da beklenti hipotezinin anlamlı olduğu görülmektedir. Elde edilen sonuçların tüm ülkeler için geçerli olmaması EH yaklaşımının literatürdeki sonuçlara benzer şekilde ampirik olarak kesin olarak ispat edilemediği şeklinde yorumlanabilir. Bundan dolayı farklı örneklemler alınarak yeni araştırmalarda konu ele alınmalıdır.