

The Impact of Reducing Quantitative Easing Program on Emerging Markets

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Abstract

In this study, the effect of the official statements that Fed will reduce its monthly asset purchases from \$ 85 billion to \$ 75 billion on June 19, 2013 under the third quantitative easing (QE3) program on the currencies of emerging markets is being examined by the event study approach. In this context, daily nominal exchange rate data are used for the period of 01.09.2012 - 07.04.2014 for selected countries belonging to emerging markets namely Brazil, India, Hungary, Mexico, South Africa, Philippines, Russia, Thailand and Turkey. Result of the analysis shows that a statistically significant change was detected between pre-event and post-event sample averages in all countries except Hungary. Accordingly, the Fed's announcements of reducing asset purchases has generally resulted in a depreciation of the currencies of investigated emerging markets.

Keywords: Quantitative Easing, Capital Flows, Emerging Markets, Event Study Approach.

Niceliksel Genişleme Programında Azaltmaya Gidilmesinin Yükselen Piyasalar Üzerindeki Etkisi

Özet

Bu çalışma, Fed'in üçüncü niceliksel genişleme programı altında başladığı aylık varlık satın alımlarını 85 milyar \$'dan 75 milyar \$'a azaltacağına yönelik resmi açıklamasının yükselen piyasa ekonomilerinin para birimleri üzerindeki etkilerini olay inceleme yaklaşımı ile analiz etmeyi amaçlamaktadır. Bu kapsamda yükselen piyasalar arasından seçilen Brezilya, Hindistan, Macaristan, Meksika, Güney Afrika, Filipinler, Rusya, Tayland ve Türkiye'ye ait 01.09.2012- 07.04.2014 dönemi günlük nominal döviz kuru verileri kullanılmıştır. Analiz sonucunda, Macaristan dışındaki tüm ülkelerde olay öncesi ve olay sonrası örneklem ortalamaları arasında istatistiksel olarak anlamlı bir değişim tespit edilmiştir. Buna göre, Fed'in varlık alımlarını azaltacağı duyurusunun Macaristan dışındaki ülkelerin para birimlerinde bir değer kaybına (depreciation) yol açtığı sonucuna varılmıştır.

Anahtar Kelimeler: Niceliksel genişleme, Sermaye Akımları, Yükselen Piyasalar, Olay İnceleme Yaklaşımı.

INTRODUCTION

Since the beginning of the 1980s, monetary targeting practices, which are at the basis of monetary policies, have been abandoned by many central banks since they were insufficient in the following years. The main reason for this failure is the fact that in many countries the money demand function and the rate of money circulation are unstable. Following the abandonment of monetary targeting practices, central bank focused on the strategy of setting appropriate interest rates in the context of inflation targeting. Although empirical evidence on the negative relationship between interest rates and economic growth is not very strong and consistent, an interest rate-centric approach to monetary policy practices has taken its place as a dominant strategy (Lyonnet and Werner, 2012, p.94).

The effect of interest rates on economic magnitudes in monetary transmission mechanisms is also referred to as the Keynesian standard monetary transmission mechanism. The functioning of the interest rate channel begins with a change in short-term interest rates and results in a reflection of medium and long-term interest rates through the supply and

demand mechanisms in the financial markets. Accordingly, changes in monetary authorities' short-term nominal interest rates affect short and long term real interest rates under the assumption of price rigidity. The change in real interest rates changes aggregate demand by affecting consumers' consumption decisions and producers' investment and spending decisions. If central bank cuts interest rates, deposit owners prefer consumption rather than savings. Investment spending also increases as the decline in interest rates which will in turn reduce the funding costs of companies. In both cases, it is expected that the aggregate demand increases in the economy and economic growth will gain momentum (CBRT, 2013). However, there is a possibility that lowering interest rates by central bank may not warn the total demand during periods of economic crisis. Consequently, it can be shown that the economic units continue to save without worrying about the decline in the interest rates despite the uncertain conditions during the crisis periods. In such cases, it is possible to increase the amount of money in the market and increase the aggregate demand by "quantitative easing".

Quantitative easing (QE), one of the instruments

of unconventional monetary policy, is an exercise in economies where interest rates are near zero in a way that can not be further reduced (Woodford, 2016). The basic idea is that aggregate demand can be stimulated by increasing the amount of money in the market. Central banks are aiming to restore confidence and stability in the money and credit markets by purchasing securities from market. QE, which includes asset purchase and lending programs, can be considered as unconventional policy applications that increase the monetary base. As the programs in this application are designed to improve credit conditions, there is a credit extension. If this loan expansion increases the monetary base (loans are injected into the market), QE emerges (Quantum, 2010).

Following the global financial crisis of 2007-2008, Fed implements QE programs to stabilize the financial market and stimulate real economic activity. Fed has adopted the strategy of lending to financial institutions and providing liquidity to credit markets by purchasing long-term treasuries (Fratzscher et al., 2016). Under the QE program, the Fed has gone on to purchase assets worth about \$ 3 trillion from November 2008 to 2013. The Fed, which implemented the first QE program (QE1) in November 2008-March 2010 period, purchased 2.1 trillion dollars of mortgage-backed securities and Treasury bonds in this period. The Fed, which announced that the second QE program (QE2) started in November 2010-June 2011 due to the instability in the financial markets following the European debt crisis, has purchased Treasury bills worth US \$ 600 billion under this program.

When the economic activity was below the desired level, Fed announced the sale of \$400 billion of short-term Treasury Bonds on September 21, 2011, and the equivalent of long-term Treasury Bonds (Agostini et al., 2016). Failure to achieve the desired level of economic growth led the Fed to implement QE3, which began in September 2012. Unlike QE1 and QE2, the end date of QE3 has not been announced. Under this program, the Fed began purchasing fixed income securities worth \$85 billion each month. When the US economy follows signs of recovery, the Fed announced that it would cut its monthly securities purchase from \$ 85 billion to \$ 75 billion. As this announcement of Fed led to an increase in bond yields, an increase in capital flows to the US was observed. Therefore, this announcement of the Fed began to a worry in emerging markets that it will lead to the capital outflow to the US. This leads to possible exchange rate changes in the countries where potential capital outflows are expressed as the externalities of QE applications on those economies (Bouraoui, 2015; Fratzscher et al., 2016).

In order to overcome the effects of recession during the economic crisis, QE programs implemented by central banks of developed countries have become widespread today. These programs are thought to indirectly affect emerging markets. (Agostini et al., 2016). It is possible that QE programs implemented by the central banks of advanced economies, lead to capital inflows to other countries, resulting in appreciation of the local currencies of the countries in which capital inflows are experienced, financial distortions and deterioration in domestic credit markets and balloon effects in asset prices (Fratzscher et al., 2016). Likewise, announcements or actions by central banks (Fed, BOJ, BOE and ECB) of advanced economies to terminate (or reduce) their QE programs are likely to have the opposite effect on other economies, especially on emerging markets.

In view of the above, the study is conducted to examine the effects of third quantitative easing (QE3) program of Fed on the currencies of emerging markets. With this objective, the remainder of this study is organized as follows. Following the introduction, the second part presents the relevant literature summary. In the third part, the data set, methods and findings are discussed. The paper ends with the fourth part, in which the results and general evaluations are studied.

LITERATURE REVIEW

A review of the literature on QE practices shows that the majority of empirical studies focus on the impact of QE on inflation and economic growth in implementing countries (Christensen and Rudebusch, 2012; Kapetanios et al., 2012; Lyonnet and Werner, 2012; Neely, 2015), some studies have focused on the macroeconomic implications of these applications, especially on emerging economies (Bouraoui, 2015; Fratzscher et al., 2016).

Considering the effects of QE1 and QE2 on Asian emerging markets, in the context of capital flows, Morgan (2011) notes that 40% and three of the increase in the US monetary base due to QE1 and QE2, respectively, outflow in the form of capital outflow. In particular, he predicted that during the first two quarters of QE2, Asia had about \$ 9 billion of private capital inflows to the emerging markets in a quarter. This data is relatively consistent with the excessive increase in the foreign exchange reserves and monetary base of the countries in question. Effect of QE programs imposed by the Fed on Asia's capital flows towards emerging markets is quite small. Therefore, these QE programs have no serious impact on foreign exchange rates and bond yields except for a few economies. The author questioned the effects of QE policy on bond yields and exchange rates using the event study approach. As a result, the greatest impacts were seen in South Korea and Indonesia. The general conclusions show that Fed's QE programs do not have a significant impact on financial markets, economic activity and inflation rates.

Bouraoui (2015) examines the effect of announcements about QE3 on 22 May 2013 and 19 June 2013, using event study approach on the basis of the effects of exchange rates on emerging markets. According to the findings, these announcements have resulted in a significant depreciation of the currencies of emerging markets. The author tested the regression analysis of whether the depreciation of the national currencies stemmed from capital flows, found that the explanatory power of foreign direct investments is stronger than portfolio flows. The general conclusions show that the Fed's reduction in asset purchases under the QE3 has led to capital flows from emerging markets into the US market and thus to a fall in the value of national currencies.

Fratzscher et al. (2016) investigated the effects of the Fed's QE1 and QE2 on a global basis, reported that QE1 and QE2 had different effects on US and foreign markets. The results are as follows: QE1 has played an extremely active role in the increase of bond and stock prices, especially in the US, and appreciation of the US dollar. QE2 has led to the depreciation of the US dollar by increasing stock prices around the world. QE1 caused capital flows from EMs to US, causing QE2 to move in the opposite direction of capital flows. The impact of the Fed's announcement on QE on its portfolio and asset prices was much smaller than the Fed's actual implementation of QE. The authors noted that the EMs could not follow protective policies against the externalities created by the Fed's QE program. Countries with high levels

of institutionalization and more active monetary policy have been relatively successful among countries trying to isolate themselves from the possible externalities that QE applications would create through foreign exchange market intervention and capital controls, while relatively closed economies with fixed exchange rate regimes have failed. Although the general conclusions indicate that QE programs create externalities on EMs, there is no clear evidence that this externality is positive or negative.

DATA SET, METHODOLOGY AND FINDINGS

Unlike QE1 and QE2, the Fed has begun purchasing fixed income securities worth \$ 85 billion per month under QE3, where the end date is not announced beforehand. When the US economy signaled recovery signals, the Fed announced that it would cut its monthly asset purchases, which began in the context of QE3, from \$ 85 billion to \$ 75 billion. Following this announcement, capital movements from the EMs to the US have been observed. There is a concern that this capital outflow in EMs may have potential effects on parameters such as asset prices, interest rates and exchange rate. With this motive, the official announcement that the Fed will reduce the purchase of assets on June 19, 2013 under QE3, which the Fed began implementing in September 2012, is questioning the possible exchange rate effects on the EMs. In this context, the effects of the announcement that the Fed will reduce the purchase of assets on exchange rates will be investigated using daily nominal exchange rate data for the period 01.09.2012 - 07.04.2014 for countries belonging to emerging markets namely Brazil, India, Hungary, Mexico, South Africa, Philippines and Russia. Exchange rates are derived from the International Monetary Fund (IMF) database. In the selection of the working period, the date on which QE3 announced its start date and asset purchasing reduction was decisive. In the course of country selection, these countries have had a free exchange rate regime and a recent upsurge in charts of portfolio investments have been taken into account. Portfolio investments after the 2007-2008 global financial crisis displayed a very unstable picture. Since portfolio investments are much more sensitive to financial market developments relative to foreign direct investments, it is expected that such capital flows will play a major role in the possible impact of monetary policy on exchange rates.

The event study approach is used to test the effect of the Fed's announcement of asset purchase on EMs' exchange rates. This approach determines the immediate effect of policy announcements on financial variables, overcoming the problem of internalisability and distinguishing the determinants. Therefore, this approach only captures the effects of the observed event on the specified variable(s). By using the event study approach, the type, quality, and quantity of information in the announcements made by the CB are examined and the result of the announcement is expressed as being effective if it brings about changes in various parameters. The most important advantage of this method of analysis is that it captures sudden market behavior (responses) to specific financial events (Agostini et al., 2016, p.15).

In the implementation of the event study approach, an analysis procedure such as defining the events, defining the event window and defining the successful event is followed. Some financial events are repeated once or several times over

time. Each of these events is described as an independent event (Fatum and Hutchison, 2003). For example, a merger of two companies or a business of a company can only be defined as a single event because it is repeated only once over time. In the frame of the event study approach, the processes that have been carried out within a certain period of time for the same purpose are treated as a single event. Since 2008, the Fed has put in place a series of QE programs. This study is based on the June 19, 2013 date of the announcement by the Fed to reduce asset purchases in the context of identifying events. Event window includes pre-event and post-event periods of an event. In order to measure the response of financial markets to the announcements of both the start and end of QE programs, the definition of the boundaries of the defined event window is important in terms of the robustness of the results. A narrow event window may fail to capture the reaction of financial markets to the announcements of the CB, and a very wide window of events may involve other possible determinants of the variables being examined. At this point, it is important that the effect of QE on the parameters is investigated. While a narrow window of events is sufficient to see the impact of the QE programs on the financial markets of the implementing country, a larger window of events is needed to see the effects of other countries on the economic variables (Agostini et al., 2016). In order to define the event window, the study covers the period from 1 September 2012 to 7 March 2014 around the date of event 19 June 2013. Thus, the nominal exchange rate data of 193 days before and after the event are compared. The event window was determined by the date the Fed announced its launch of QE3 (September 2012) and its announcement that it will reduce monthly program of asset purchase (June 19, 2013).

In this study, a matched sample test was used to determine the successful event. This test is very useful in comparing the first sample observations (pre-event) and the second sample observations (post event). This test verifies whether there is a significant shift in the exchange rate change between the pre- and the post-event periods. Since it is straightforward to match the observations of one sample (before) with the observations of the second sample (after), the matched sample test can be applied to the event study set-up. For each observation of the first sample, the associated or matched value of the second sample is obtained and the difference, D_i , is calculated. The sample mean, D , and standard deviation, SD , are calculated as usual. Assuming that values (exchange rate changes) from both samples are normally distributed, the test statistic is t-distributed with $n-1$ degrees of freedom, where n is the number of paired observations (Fatum and Hutchison, 2003). The test statistic is then given by:

$$\frac{D - \mu_D}{S_D} \sim t(n-1) \quad (1)$$

Where μ_D shows the mean value of the difference between matched observations that allow testing to see if there is a significant change between two sample averages as the H_0 hypothesis. Hypotheses are:

$$H_0: \mu_D = 0$$

$$H_1: \mu_D \neq 0$$

In our study, exchange rate data covering 193 days

Table 1. The Results of Mached Sample Test

Countries	p*	t	df	S _D	μ _D	%95 Confidence Interval
Brazil	0.0001**	4.1530	192	0.040	-0.1664	-0.2455≤μ≤-0.0874
India	0.0001**	4.1312	192	1.705	-7.0433	-10.4061≤μ≤-3.6805
Hungary	0.5934	0.5348	192	4.374	-2.3392	-10.9659≤μ≤-6.2875
Mexico	0.0011**	3.3085	192	0.366	-1.2107	1.9326≤μ≤-0.4889
South Africa	0.0001**	8.1910	192	0.183	-1.4971	-1.8577≤μ≤-1.1366
Philippines	0.0478**	1.9915	192	1.022	-2.0348	-4.0502≤μ≤-0.0195
Russia	0.0001**	3.9460	192	0.593	-2.3403	-3.5101≤μ≤-1.1705
Thailand	0.0065**	2.7493	192	0.612	-1.6836	-2.8915≤μ≤-0.4757
Turkey	0.0001**	2.6806	192	0.012	-0.2801	-0.3045≤μ≤-0.2558

Note: ** 5%; indicates significance of test statistics at significance level. df; degrees of freedom, μD; the difference between the averages of sample 1 and sample 2 and SD; the standard deviation of the difference.

before and after the defined event is compared by using the matched sample test for the selected EMs and it is examined whether there exists an effect that is statistically significant. According to the results obtained, the successful event (rejection of the hypothesis H₀) is defined as one that can make a statistically significant change in the exchange rates when the pre-event and post-event averages are compared. Table 1 shows the results of the matched sample test applied in the framework of the event study approach.

The results of the matched sample test indicates that there is a statistically significant change between the pre-event and post-event sample averages in all countries except Hungary. Accordingly, Fed's official announcement of reducing its monthly asset purchases from \$ 85 billion to \$ 75 billion under QEP3 on June 19, 2013 led to a depreciation of the local currencies of Brazil, India, Mexico, South Africa, the Philippines, Russia, Thailand and Turkey. Results obtained from the analysis are similar to that of the results found by Bouraoui (2015) and Fratzscher et al. (2016).

CONCLUSIONS

QE is aimed at securing confidence and stability in the money and credit markets by resuming the purchase of large-scale assets from market by the CBs and avoiding the environment of economic stagnation. The announcements and actions of QE policies implemented by the CBs of developed countries, in particular of Fed, were expected to have potential impacts (externalities) on other countries' economies which has recently gained broad acceptance.

The possible exchange rate effects of the official announcement that the Fed will reduce the purchase of assets on June 19, 2013 under QE3, which the Fed began implementing in September 2012, is investigated for the EMs. In this context, the effects of the announcement that the Fed will reduce the purchase of assets on exchange rates have been researched using daily nominal exchange rate data for the period 01.09.2012 - 07.04.2014 for countries belonging to emerging markets namely Brazil, India, Hungary, Mexico, South Africa, Philippines and Russia with the help of event study methodology. A statistically significant change is found between the pre-event and post-event sample averages in all countries except Hungary from the results of the mached sample test applied separately for the countries considered in the study. Accordingly, the Fed's announcement that it will reduce its monthly asset purchases, which began in QE3, from \$ 85 billion to \$ 75

billion by an official announcement dated June 19, 2013, is expected to cause depreciation of the local currencies of Brazil, India, Mexico, South Africa, Philippines, Russia, Thailand and Turkey.

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