

Research article

Is Unconventional Monetary Policy Effective? Japan-US and Eurozone-US Cross-Country Case

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Abstract

This article examines the effects of unconventional monetary policy on the macro economy of Japan and the Eurozone by using a vector autoregression (VAR). The results show that Japanese unconventional monetary policy is effective in boosting the economy and that US monetary policy has an impact on the Japanese economy via exchange rate. On the other hand, US monetary policy does not strongly influence the Eurozone. **Copyright © IJEBF, all rights reserved.**

Keywords: Eurozone, Japan, monetary policy, quantitative easing, unconventional monetary policy

Introduction

Some central banks in developed countries have conducted unconventional monetary policy to promote the economy and to maintain financial stability. Since the 2000s, unconventional monetary policy has been adopted and has begun to be examined not only in the business world but also in the academic field in developing countries,

especially for the case of Japan and the US. However, mainly because of sample limitations, few studies have been presented to date and few studies have examined cross-country cases.

Menon and Ng (2013) showed that vulnerability of monetary policy in the Eurozone has increased following the large inflows of capital and debt and following quantitative easing in the US and Japan. Gambacorta, Hoffman, and Peersman (2014) examined the macroeconomic effects of unconventional monetary policies for cross-country cases by estimating a panel VAR model since the financial crisis. However, outside of these studies, few studies have been presented.

As huge capital flow and news has been moving all over the world. Cross-country analysis is sometimes very important to the understanding of economic and financial situations. More concretely, the recent impact of US monetary base expansion on Japan and the Eurozone merits critical attention. Examination of this impact is important when implementing domestic monetary policy for Japan and the Eurozone.

This article uses a vector autoregression (VAR) model with monthly data for Japan and the Eurozone. Cross-country analysis is employed in the empirical analyses. This article is structured as follows. Section 2 reviews recent monetary policies of the US, Japan, and the Eurozone. Section 3 presents related studies and later compares the results with this study. Section 4 provides empirical methods for the analyses and those results are analyzed in section 5. Finally, a short summary is presented in section 6.

Recent Monetary Policy in the US, the Eurozone, and Japan

This section reviews recent monetary policies of the US, Japan, and the Eurozone. In the US, the Federal Open Market Committee (FOMC) operates to fulfill its mandate from the Congress to increase employment and to maintain stable prices and moderate long-term interest rates. The FOMC seeks to explain its policy decisions to the public as thoroughly as possible. The FOMC's policy decisions reflect its longer-term goals, its medium-term outlook, and its assessments of the balance of risks, including risks to the financial system that could impede the attainment of the Committee's goals.

Since the end of 2008, the Federal Reserve has increased its holding of longer-term securities using open-market purchases with the goal of decreasing pressure on longer-term interest rates and boosting economic activity and job creation. This unconventional monetary policy was introduced following Japan.

The Bank of Japan (BOJ), as the central bank of Japan, conducts monetary policy with the aim of keeping price stability. Price stability is thought to be important because it is considered to be the foundation of economic activity. The main operating target of the BOJ changed from the uncollateralized overnight call rate (interbank interest rate) to the outstanding balance of the current account at the BOJ.

At the end of 2001, the BOJ raised the outstanding balance of the current account at the BOJ. Under this quantitative easing policy, the BOJ purchased government bonds as the main instrument to reach its target of current account balances held by financial institutions. The BOJ, because interest rates were at the lower bound of zero, set a goal to purchase government securities from the banking sector and to promote the level of cash reserves held by banks. This was called *unconventional monetary policy*. Since then, Japanese monetary policy has received much attention from the world because this unconventional monetary policy was unprecedented. However, only a few studies have examined this policy. One reason is that only a short time has passed since this unprecedented policy was adopted. This objective can be perceived from the perspective that its holding an adequate level of reserves would transmit into lending to the economy and removal of deflationary pressures.

In April, 2013, the policy board of the BOJ decided to introduce quantitative and qualitative monetary easing. The BOJ decided to achieve the price target of 2% in terms of the year-on-year rate of change in the consumer price

index (CPI) at the earliest time, with a horizon of about two years. It was said that the BOJ did a new phase of monetary easing both in terms of quantity and quality. The BOJ would double the monetary base and the amounts outstanding of Japanese government bonds as well as exchange-traded funds (ETFs) in two years and would more than double the maturity of Japanese government bond purchases. To achieve quantitative monetary easing, the main target of monetary policy instruments was changed from the uncollateralized overnight call (interbank interest) rate to the monetary base as mentioned above.

European Central Bank (ECB) was established as the central bank of the Eurozone in 1999 and began to implement monetary policy decisions. Only the ECB's governing council has responsibility for monetary policy in the Eurozone. The Council decided that 11 EU countries had completed the convergence criteria and would introduce the euro on 1 January 1999. The new currency, the euro, was introduced as the single currency of the Eurozone. The ECB and national central banks made the Eurozone into the Eurosystem. The main objective of the Eurosystem is to maintain price stability. ECB leaders believe that price stability achieves good economic performance and employment, which have been important issues in the Eurozone. According to the ECB homepage, that organization emphasizes transparency, which means that the central bank provides the general public and the markets with relevant information about its strategy, assessments, and policy decisions.

The ECB's governing council has defined price stability as a year-on-year increase in the Harmonized Index of Consumer Prices (HICP) of less than 2%. Recently, HICP in the Eurozone has fallen and is now far below the ECB's target rate. This lack of demand results from the serious recession that followed the financial crisis (Illing, 2014).

Existing Studies

Unconventional monetary policy is thought to have first been introduced in Japan in 2001. Not much time has passed since then, so few studies have focused on this issue. Kurihara (2010) examined the impacts of BOJ intraday monetary policies on the macro economy. Kurihara (2012) also used daily data to examine the effectiveness of BOJ news announcements on interest rates. Ueda (2011) examined in detail the unconventional monetary policy adopted by the Bank of Japan in 1998–2006. Fukuda (2011) showed that the zero interest rate policy caused the short-term interest rate to drop to zero and found the policy somewhat effective at reducing the size of spread in the call market. Hanabusa (2009) showed that the zero interest rate policy stabilized long-term interest rates. Recently, Honda, Kuroki, and Tachibana (2013) and Kurihara (2013) also empirically examined more recent Japanese unconventional monetary policy.

The US also introduced unconventional monetary policy. Since then, many studies have been presented of the US situation compared to other countries. Coibion (2012) noted that effects of the FOMC monetary policy are larger than those shown in existing studies. Bojesteau and Gabriel (2011) employed a structural vector autoregressive (SVAR) model and long-term restrictions for some indicators in Romania. Claus and Dungey (2012) showed empirical results from the US interest rate term structure that support the hypothesis that differing term structure responses are reactions to different types of monetary policy. Mandler (2012) found that in the US, monetary policy depends on the inflation level. Anderson, Boney, and Guirguis (2012) showed that the effects of unanticipated monetary policy on real estate investment trust (REIT) are asymmetric between high and low variance. Korobilis (2013) found that impulse responses of macroeconomic indicators, GDP, investment, exchange rates, and money of the economy caused the greatest changes in the transmission of unanticipated monetary policy occurred for GDP, investment, exchange rates, and money. Mahdi (2013) found that as much as half of the variability in output was produced by monetary policy. Nadia and Shahid (2013) suggested that output responds negatively to monetary policy in Pakistan. Efrem (2013) showed that Cholesky-VARs may strongly decrease welfare costs as a result of macroeconomic fluctuations. Anil, Deborah, and Wickrmanarake (2014) showed that off-balance-sheet banking reduces the effectiveness of the bank lending process. Gertler and Karadi (2014) found shocks that occurred as

external instruments cause responses in output and inflation consistent with those obtained from the VAR analysis with the use of high frequency data. This study also found monetary policy impacts from modest movements in short-term interest rates on macroeconomic activity. Luiggi (2014) found that the impact of monetary policy on output varied disproportionately with the size of the monetary policy shock. Thornton (2014) showed that interest rates and market-based measures of monetary policy shocks respond simultaneously to some kinds of news other than simple news about monetary policy implements. Moessner (2014) found that explicit FOMC policy rate guidance announcements at the zero lower bound caused a significant increase in US equity prices. However, van End and Willem (2014) showed that unconventional monetary policy in US becomes less effective as a result of a decreasing money multiplier in a liquidity trap condition. Sharpe and Watts (2013) showed that the macroeconomic effects of quantitative easing are inconclusive at present.

The ECB has not yet introduced quantitative monetary policy; however, it has implemented some drastic monetary policy, such as the minus interest rate. Schmidt and Nautz (2012) showed that financial market participants have systematically misperceived the ECB's monetary policy, namely the interest rate rule, and understanding of monetary policy that pertains to inflation has become more accurate. Jansen and de Hann (2014) showed that efforts to talk up the Euro have not been successful for the Euro area in general. Rosa (2013) also found no significant reaction to markets from monetary policy for the case of the ECB. Kurihara (2014) showed that ECB policy announcements significantly impact future interest rates, stock prices, and exchange rates via future interest rates. However, this study suggested that direct impacts on stock prices and exchange rates have not been significant.

Recent monetary policy also has begun to be examined in other foreign countries. Romer and Romer (2004) showed empirically that anticipated and unanticipated monetary and fiscal shocks have no significant effect on real output in Nigeria. Li, Talan, and Xu (2010) found that in Canada, the impact of stock prices on domestic contractionary monetary policy is both small and short, and, on the other hand, in the US, the impact of stock prices under a similar policy is large and relatively long. Vonnak (2010) showed that in Czech republic, Hungary, and Poland, the typical size of a risk premium shock made it almost impossible for the interest rate policy to manipulate the exchange rate with the aim of minimizing inflationary pressures. Low inflation may decrease the exchange rate pass-through, which allowed the monetary policy not to watch exchange rate shocks in those three countries. Bauer and Neely (2014) suggested that signaling effects tend to be large for countries with strong yield responses to conventional US monetary policy surprises, and portfolio balance effects move with a degree of substitutability across international bonds.

Only a few studies have included cross-country analyses. Kalyviti and Skotida (2010) found a delayed overshooting pattern for three currency exchange rates examined (sterling/yen, yen/mark, and mark/sterling) from an unexpected US monetary policy change, which in turn produced excess returns. This study found that exchange rate shocks have an important role in explaining short-run fluctuations of prices and output.

The present article focuses on the recent monetary policy of Japan and the Eurozone. The study empirically checks the effectiveness of domestic monetary policy and examines whether or not US unconventional monetary policy has an impact on the Eurozone and Japan.

Empirical Method

This study uses a VAR model. The VAR model has been employed as a tool by which to examine the economic effects of unconventional monetary policy. VAR estimates are conducted to check the effects of monetary policy on time period and direction. An unconventional monetary policy is identified as an exogenous innovation to the central bank balance sheet. It is assumed that there is only a lagged impact of shocks to the central bank balance sheet (monetary base: MBUS) and policy interest rate (central bank policy rate [EOP]; INT) on exchange rate (period average: EXC), consumer prices (Japan) or HICP (Eurozone; seasonally adjusted: CPI), industrial production

(seasonally adjusted: IND), and employment (Japan; thousands; EMPLOY), unemployment (Eurozone; thousands; UNEMPLOY). For monetary policy measures, MBUS (the US case), MB (Japan), and INT (Eurozone) are used. All of the data are logarithmic. The sample period is from 2002 to 2013 for reasons of data availability. All of the data are from IFS (International Monetary Fund).

Empirical Results

The empirical results are show in Table 1 (Japan) and Table 2 (Eurozone). Also, impulse responses based on these equations are shown in Figure 1 (Japan) and Figure 2 (Eurozone).

Table 1. VAR estimates (Japan)

	MBUS	MB	EXC	CPI	IND	EMPLOY
MBUS(-1)	1.120 (12.792)	0.027 (3.826)	-0.006 (-1.980)	0.0002 (0.764)	-0.001 (-0.143)	0.0001 (0.753)
MBUS(-2)	-0.103 (-1.139)	-0.024 (-3.292)	0.005 (1.628)	-0.0002 (-0.689)	0.002 (0.268)	-0.0002 (-0.959)
MB(-1)	-0.173 (-0.158)	0.689 (7.768)	0.070 (1.717)	0.001 (0.327)	-0.362 (-3.232)	-0.011 (-3.692)
MB(-2)	0.575 (0.488)	0.222 (2.329)	-0.025 (-0.568)	0.003 (0.767)	0.225 (1.861)	0.007 (2.227)
EXC(-1)	1.653 (0.721)	0.248 (1.335)	1.408 (12.153)	0.022 (2.349)	0.189 (0.807)	-0.003 (-0.572)
EXC(-2)	-1.847 (-0.795)	-0.065 (-0.348)	-0.102 (-1.171)	-0.024 (-2.510)	0.090 (0.378)	0.005 (0.849)
CPI(-1)	3.742 (0.186)	-2.672 (-1.640)	-0.034 (-0.044)	1.013 (12.108)	1.299 (0.631)	0.020 (0.356)
CPI(-2)	25.743 (1.276)	2.522 (1.540)	-0.537 (-0.707)	-0.214 (-2.553)	-0.550 (-0.265)	-0.006 (-0.105)
IND(-1)	-0.607 (-0.653)	-0.088 (-1.176)	-0.025 (-0.733)	0.006 (1.720)	0.468 (4.914)	0.008 (3.215)
IND(-2)	0.550 (0.634)	-0.021 (-0.299)	-0.002 (-0.072)	0.0005 (0.160)	0.002 (0.025)	0.002 (1.087)
EMPLOY(-1)	-3.178 (-0.101)	1.504 (0.592)	1.413 (1.199)	0.084 (0.650)	5.667 (1.765)	0.882 (9.858)
EMPLOY(-2)	2.350 (0.080)	-2.256 (-0.954)	-1.210 (-1.103)	0.020 (0.164)	-7.521 (-2.516)	0.015 (0.182)
c	-2890.710 (-2.946)	87.958 (1.104)	41.532 (1.123)	8.534 (2.085)	146.591 (1.456)	8.022 (2.859)
Adj.R2	0.995	0.947	0.977	0.888	0.532	0.993
F-statistic	2518.192	215.145	462.434	85.902	12.263	1541.677
Akaike AIC	11.178	6.155	4.620	0.219	6.624	-0.535

Note. Parentheses are t-statistics

Figure 1. Impulse response function (Japan)

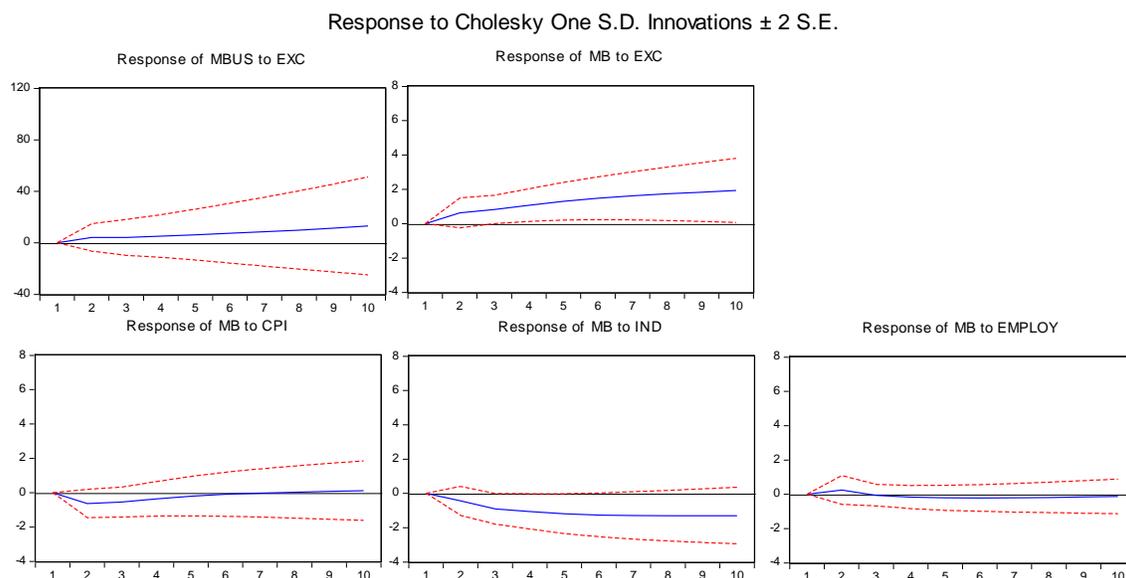
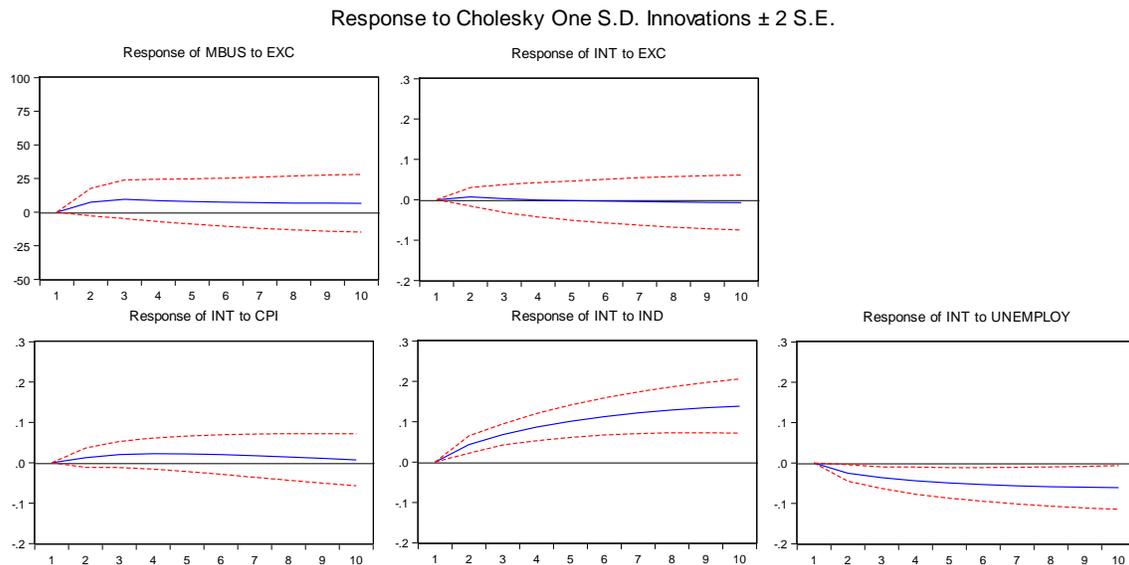


Table 2. VAR estimates (Eurozone)

	MBUS	INT	EXC	CPI	IND	UNEMPLOY
MBUS(-1)	1.106 (13.252)	-0.0003 (-1.985)	-1.14E-05 (-0.429)	0.001 (2.120)	-0.002 (-2.220)	-9.37E-05 (-0.992)
MBUS(-2)	-0.143 (-1.652)	0.0003 (1.801)	1.34E-05 (0.481)	-0.0009 (-1.510)	0.003 (2.204)	0.0001 (1.382)
INT(-1)	83.610 (2.069)	1.007 (11.412)	0.002 (0.165)	0.002 (0.007)	1.805 (2.504)	-0.037 (-0.811)
INT(-2)	-46.813 (-1.191)	-0.105 (-1.225)	-0.105 (-1.225)	-0.197 (-0.683)	-1.980 (-3.175)	0.061 (1.393)
EXC(-1)	331.047 (262.563)	0.555 (0.968)	1.111 (13.266)	1.087 (1.933)	-6.415 (-1.539)	0.146 (0.491)
EXC(-2)	-349.018 (-1.365)	-0.338 (-0.606)	-0.243 (-2.989)	-1.205 (-0.640)	6.563 (1.618)	-0.123 (-0.426)
CPI(-1)	-29.215 (-2.476)	0.024 (0.939)	-0.002 (-0.704)	1.024 (11.779)	0.112 (0.599)	0.004 (0.339)
CPI(-2)	35.064 (2.981)	-0.020 (-0.811)	0.001 (0.342)	-0.006 (-0.704)	-0.117 (-0.629)	-0.002 (-0.159)
IND(-1)	-10.100 (-1.828)	0.041 (3.429)	0.0001 (0.068)	0.070 (1.731)	0.821 (9.370)	-0.039 (-6.257)
IND(-2)	4.677 (0.836)	-0.030 (-2.462)	-0.0006 (-0.371)	-0.034 (-0.831)	0.130 (1.472)	0.029 (4.665)
EMPLOY(-1)	-103.366 (-1.414)	-0.397 (-2.488)	0.008 (0.356)	0.607 (1.129)	-4.022 (-3.468)	1.071 (12.958)
EMPLOY(-2)	125.850 (1.743)	0.360 (2.283)	0.002 (0.089)	-0.749 (-1.409)	3.798 (3.315)	-0.098 (-1.201)
c	-235.636 (-0.630)	-1.157 (-1.417)	0.188 (1.576)	1.982 (0.719)	7.727 (1.301)	0.867 (2.048)
Adj.R2	0.995	0.984	0.960	0.996	0.965	0.997
F-statistic	2782.632	758.521	286.059	3390.983	332.321	4534.087
Akaike AIC	11.079	-1.173	-5.021	1.257	2.793	-2.488

Note. Figures in parentheses are t-statistics

Figure 2. Impulse response function (Eurozone)



The results show that the Japanese unconventional monetary policy is effective in boosting the economy. The policy promotes exchange rate depreciation and rising prices. However, the impact of employment seems to be limited. Also, the effect on industrial production is negative. Moreover, the US unconventional monetary policy also has an impact on the Japanese economy via the exchange rate. However, this situation causes depreciation of the Japanese yen, so the impact of the Japanese unconventional monetary policy is large and effective at present and has many side effects.

On the other hand, US monetary policy does not influence the Eurozone. Also, the ECB's traditional interest rate policy in Eurozone did not effectively boost the economy. On the other hand, unemployment was decreased by the decreasing interest rate. Unemployment has been a serious problem to solve, so monetary policy has been judged successful on this point. It cannot be concluded that the ECB's policy has been implemented wrongly. There is some possibility that the policy could have avoided financial instability and contributed to boosting the economy. The reason alternatively may be that the Eurozone's economic condition has been too serious to be influenced effectively by monetary policy.

The most important thing that this study confers is that other countries' monetary policies, typically the US, influence domestic economy. In this study, the impact of the US monetary policy on the Eurozone is not found; however, US policy influences the Japanese economy by impacting the exchange rate.

Conclusion

This article empirically examined the effects of unconventional monetary of Japan and the Eurozone on the macro economy. Differentiating from most existing studies, the impact of unconventional monetary policy of the US on Japan and Eurozone was analyzed. The results show that Japanese unconventional monetary policy is effective in boosting the economy, and moreover, the US unconventional monetary policy has also an impact on the Japanese economy via exchange rate. On the other hand, US monetary policy has not influenced the Eurozone. Also, the ECB's traditional monetary policy in the Eurozone was not effective in promoting the economy.

Since unconventional monetary policy was introduced, not much time has passed. Other cases that include the effects from other countries should be examined. Further study is needed.

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