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Is the honeymoon effect valid in the presence of both exchange rate and output expectations? A graphical analysis

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ABSTRACT

This paper sets up a modified Mundell-type economy embodying a New Keynesian "forward-looking" exchange-rate and output expectations, and develops a graphical exposition to explain the conflicting outcome between Krugman's (1991) prediction and the empirical observations in the regime of exchange rate target zones. We find that Krugman's (1991) honeymoon effects stem from his emphasis on exchange-rate expectations. If both exchange-rate expectations and output expectations are brought into the picture, they will then generate two conflicting effects to the realization of the nominal exchange rate, and hence the honeymoon effect may not exist.

1. Introduction

In his pioneering contribution, Krugman (1991) sets up a stochastic model and finds that, in comparison with flexible exchange rates, an announcement of exchange rate target zones tends to lower the volatility of the exchange rate (i.e., the deviations between the exchange rates and the central parity). This result now is dubbed the "honeymoon effect".

A prominent example of currency bands in the real world is the exchange rate mechanism (ERM) of the EMS (European Monetary System). Under such an arrangement, in principle the par value of each member currency is defined in terms of the European Currency Unit (ECU) currency basket in which the maximum range of fluctuation for most exchange rates is set to be 2.25% around their central parities initially.[1] However, in May 1998 the EMS was no longer a functional arrangement since its member countries fixed their mutual exchange rates when joining the euro area. In January 1999 the subsequent arrangement, namely, ERM-II, was established as a replacement for the EMS. In ERM-II, the ECU basket was discarded and the euro has since served as a single anchor currency for the participating currencies. Membership of ERM-II is voluntary and the standard fluctuation

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[1] The maximum range of fluctuation was widened to 15% around their central parities in August 1993.

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band is 15% around the central rate, although narrower bands were agreed. As is evident, once again this leads to the possibility of setting a narrower band with respect to the euro.

In fact, the implementation of exchange rate target zones is not confined to European countries. A number of Latin American countries have adopted exchange rate target zones with crawling bands, which are featured with a crawling central parity and a unilateral commitment to defend the bands. For example, Chile has implemented a crawling central parity with a bandwidth of 10%. During the period between November 1991 and December 1994, Mexico had a target zone in which the lower bound of the band was fixed and the upper bound was to rise slowly over time. In addition, some Eastern European countries, e.g., Russia and Poland, have also implemented currency bands. In May 1995 Poland adopted a crawling band with a bandwidth of 7%, and the central parity was devalued at a constant monthly rate. In January 1998 Russia replaced its crawling exchange rate band with a fixed band within which the Russian ruble was allowed to float against the US dollar.[2]

Empirical evidence from the bilateral exchange rate in the EMS and other specific countries adopting target zones points towards a strong rejection of the honeymoon effect. Flood, Rose, and Mathieson (1991), Svensson (1992), Bertola and Caballero (1992), and Kempa and Nelles (1999b) find that higher bilateral exchange rate variability seems to exist in most EMS countries with the exception of the Dutch guilder/Deutsche mark rate. However, these empirical findings that originate chiefly from the literature published during the early 1990's might be subject to less than adequate techniques used.

More recently, the empirical evidence provided by Fidrmuc and Horváth (2008) and Kočenda (1998) also indicates that the honeymoon effect does not exist in new member states (NMS) of the EU that have adopted a target zone system. More specifically, Fidrmuc and Horváth (2008) apply various GARCH-type models to examine the daily exchange rate dynamics in five new member states of the EU (the Czech Republic, Hungary, Poland, Romania, and Slovakia), and find an inverse relationship between the credibility of the exchange rate regime and exchange rate volatility. In addition, Kočenda (1998) analyzes the behavior of the Czech crown's exchange rate under a currency basket peg regime where a monetary authority is obliged to intervene to keep the exchange rate within the band. Using a conditional variance modeling technique, Kočenda (1998) finds that the volatility of the exchange rate decreases when the monetary authority widens the band.

In order to achieve a better fit with the empirical evidence, many studies attempt to extend Krugman's (1991) model and instead propose a variety of explanations. Bertola and Caballero (1992) and Bertola and Svensson (1993) take an exogenous realignment into account and find that, if the probability of realignment exceeds 0.5, then the honeymoon effect turns into a "divorce effect," and hence the target zone destabilizes the exchange rate. Tristani (1994) and Werner (1995) further develop an endogenous realignment by stipulating that the expected realignment is an increasing function of the distance of the exchange rate from the central parity. In their framework, the exchange rate variability increases when the exchange rate is close to the central parity, since the expected rate change of the exchange rate within the band is less than the expected rate change of the central parity. However, the expected rate change of the exchange rate decreases when the exchange rate is close to the edges of the bands, since the expectation of infinitesimal interventions from the monetary authorities will become stronger. Consequently, a "steeper S" exchange rate curve appears within the target zone, and hence the honeymoon effect may not exist. Kempa and Nelles (1999a) show that, in the presence of non-fundamental foreign exchange trading, the exchange rate may exhibit excess volatility even in a perfectly credible currency band regime. In addition, Broome (2005) develops a model to show whether the honeymoon effect of an exchange rate target zone is valid or not when the stock of available reserves is limited. He finds that the honeymoon effect does not exist in the presence of a small amount of initial reserves or a large fundamental drift.

This paper continues this line of research by setting up an extended Mundell (1963)-type model, and uses it to explain the discrepancy between Krugman's prediction and the empirical observations. There are two salient characteristics of this paper. First, in departing from Krugman (1991), the model we set up includes not only exchange-rate expectations, but also output expectations. As in the so-called New IS–LM models (e.g., Clarida, Galí, & Gertler, 1999; Kerr & King, 1996; King, 1993, 2000; and McCallum & Nelson, 1999), output expectations play an important role in affecting the decisions of both the household and firm. Due to the presence of output expectations, we will show that both exchange-rate and output expectations give rise to two conflicting effects in governing the realization of the nominal exchange rate. As a result, the honeymoon effect may not be present.

Second, it is a common belief that the complexity of the stochastic process is a frequent stumbling block for new readers of the target zone literature (Svensson, 1992). To combat such a difficulty, this paper departs from the existing literature and develops a graphical exposition. By using it, we can provide an intuitive explanation for the difference between Krugman's prediction and the empirical observations.[3]

The paper is arranged as follows. The theoretical framework is outlined in Section 2. Section 3 uses a graphical exposition to analyze whether the honeymoon effect is valid in the presence of both exchange-rate expectations and output expectations. Finally, some concluding remarks are presented in Section 4.

2. The theoretical model

In order to sharpen the salient feature of exchange rate target zones, we keep the model as simple as possible. The theoretical model we shall develop can be regarded as a variant of a Mundell (1963)-type New Keynesian economy embodying both

[2] See Kempa and Nelles (1999b) and Fidrmuc and Horváth (2008) for a detailed description.

[3] Lai, Fang, and Chang (2008) propose a graphical illustration to highlight the volatility trade-off between exchange rate variability and the interest rate differential under a target zone regime. However, while their graphical analysis only involves one type of expectations (i.e., exchange-rate expectations), our graphical analysis includes two types of expectations (i.e., exchange-rate expectations and output expectations).

exchange-rate and output expectations. To be more specific, the Mundell (1963) model has two features. Firstly, as pointed out by Argy (1994, ch. 6), consistent with the short-run orientation, prices are assumed to be rigid. This implies that aggregate supply is perfectly elastic, with aggregate demand determining the actual level of output. Secondly, the public treats both domestic bonds and foreign bonds as perfectly substitutable assets.

Assuming that economic agents form their expectations rationally and the public has full confidence in the willingness of the monetary authorities to defend the exchange-rate band, we can use the following equations to represent this simple stochastic macro model:

$$y = -\eta r + \alpha E(dy)/dt + (\delta e - \theta y) + \nu; \quad \eta, \alpha, \delta, \theta > 0 \tag{1}$$

$$m = \phi y - \lambda r; \qquad \phi, \lambda > 0 \tag{2}$$

$$r = r^* + E(de)/dt; \tag{3}$$

$$dv = \sigma dZ. \tag{4}$$

With the exception of the domestic interest rate r and foreign interest rate r^*, all variables are expressed in natural logarithms. The variables are defined as follows: y= real output; e= exchange rate (number of units of domestic currency per unit of foreign currency); m= nominal money supply; and ν= random disturbances of product demand. In addition, E denotes the expectation operator, σ is the instantaneous standard deviation of the movement of ν, and dZ is the increment of a standard Wiener process.[4]

Eq. (1) is the product market equilibrium condition, which indicates that product supply equals product demand. This expression differs from the traditional open-economy's IS curve since product demand is related to not only output, the interest rate, and the exchange rate, but also to expected future output.[5]

Two ways can be used to justify the rationale as to why expected future output will affect product demand. Firstly, as pointed out by McCallum and Nelson (1999) and Clarida et al. (1999), given that individuals prefer to smooth consumption, an expectation of higher consumption in the future (associated with higher expected output) leads them to consume more today; as a result, current output demand rises. In addition, the negative effect of the interest rate on current output, in turn, reflects the intertemporal substitution of consumption. Secondly, Kerr and King (1996) and King (1993, 2000) propose that a firm's output often crucially depends on the demand for its product. If the desired capital–output ratio is relatively constant over time, then variations in investment are also governed by anticipated changes in output. Thus, investment theory suggests the importance of including expected future output as a positive determinant of aggregate demand. King (1993) even claims that forward-looking rational expectations for an investment accelerator are a major feature of modern quantitative macroeconomic models that are left out of the traditional IS specification.[6] Eq. (1) also specifies that the trade balance account is an increasing function of the exchange rate and a decreasing function of domestic output.

Eq. (2) is the money market equilibrium condition, stating that money supply equals money demand. Eq. (3) describes the uncovered interest rate parity (UIP) as the public treats both domestic bonds and foreign bonds as perfectly substitutable assets. Eq. (4) specifies that the stochastic product demand shock ν follows a Brownian motion process without drift.

The feature of v as exhibited in Eq. (4) can be expressed in Fig. 1. Without loss of generality, the change of the product demand shock ν is assumed to follow a discrete-state random walk. To be more specific, in each step the shock ν either moves up or down by the same step-length with the same probability 1/2. As exhibited in Fig. 1, at step 1 the shock begins at a known level ν_0 and may move either up to ν_1 or down to ν_3 with the same distance (i.e., $\nu_1 - \nu_0 = -(\nu_3 - \nu_0)$), each with probability 1/2. In addition, it is assumed that the probability of ν moving up or down in each step is independent of what happened in the previous steps. By analogy, at step 2 ν_1 will move up to ν_2 with probability 1/2, and will move down to ν_0 with probability 1/2.

It is clear from Fig. 1 that at any step the mean of shock ν is its initial level. For example, at step 1 the mean of ν at ν_0 is $\nu_0(= \nu_1 \times 1/2 + \nu_3 \times 1/2)$, and at step 2 the mean of ν at ν_1 is $\nu_1(= \nu_2 \times 1/2 + \nu_0 \times 1/2)$. Accordingly, the expected change in ν at any step is zero. For example, at step 1 the expected change in ν at ν_0 is $(\nu_1 - \nu_0) \times 1/2 + (\nu_3 - \nu_0) \times 1/2 = 0$, and at step 2 the expected change in ν at ν_1 is $(\nu_2 - \nu_1) \times 1/2 + (\nu_0 - \nu_1) \times 1/2 = 0$.

A graphical presentation is used to address the stabilizing effect of exchange rate bands. For notational simplicity, in the following graphical analysis $E(dy)/dt$ and $E(de)/dt$ are denoted by ε^e and π^e, respectively. Substituting the relation $r = (\phi y - m)/\lambda$ in Eq. (2) into Eq. (1) yields

$$e = \Omega_0 y - \frac{\eta}{\lambda\delta} m - \frac{\alpha}{\delta} \varepsilon^e - \frac{1}{\delta} \nu, \tag{5}$$

[4] To save space, in this paper we only deal with product demand *shocks*. The discussion of monetary shocks and foreign exchange market shocks is available upon request from the authors.

[5] See King (1993) and McCallum and Nelson (1999) for several justifications of the IS function.

[6] This statement is adapted from footnote 11 of Kerr and King (1996).

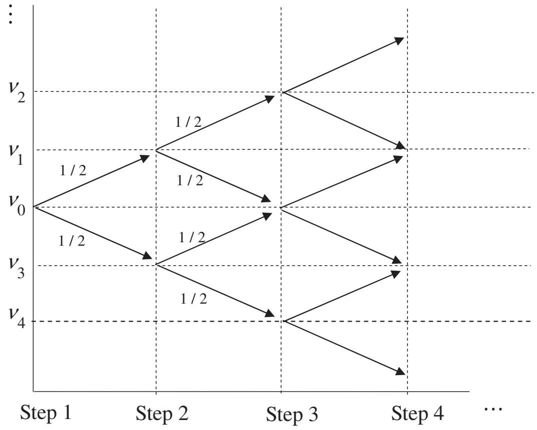

Fig. 1. The random walk of the product demand shock ν.

where $\Omega_0=[\lambda(1+\theta)+\eta\phi]/\lambda\delta>0$. From Eq. (5) we can trace the *XX* schedule, which represents the combinations of *y* and *e* that keep both the product and money markets in equilibrium. As is evident, the slope of the *XX* line is:

$$\left.\frac{\partial e}{\partial y}\right|_{XX} = \Omega_0 > 0. \tag{5a}$$

With a similar procedure, substituting the relation $r=(\varphi y-m)/\lambda$ reported in Eq. (2) into Eq. (3) yields:

$$0 = \phi y - m - \lambda(\pi^e + r*). \tag{6}$$

From Eq. (6) we can trace the *AA* schedule, which depicts the pairs of *y* and *e* that keep both the money and foreign markets in equilibrium. It is clear from Eq. (6) that the slope of the *AA* locus is:

$$\left.\frac{\partial e}{\partial y}\right|_{AA} = \infty. \tag{6a}$$

Assume that initially the money stock is m_0, the demand shock is ν_0, and the public's expectations of changes in output and the exchange rate are nil (i.e., $\varepsilon^e=\pi^e=0$). As exhibited in Fig. 2, in association with m_0, ν_0, and $\varepsilon^e=0$, we can draw a positively-sloped locus $XX(m_0,\nu_0,\varepsilon^e=0)$. In addition, in association with m_0 and $\pi^e=0$, we can portray a vertical line $AA(m_0,\pi^e=0)$. In the next

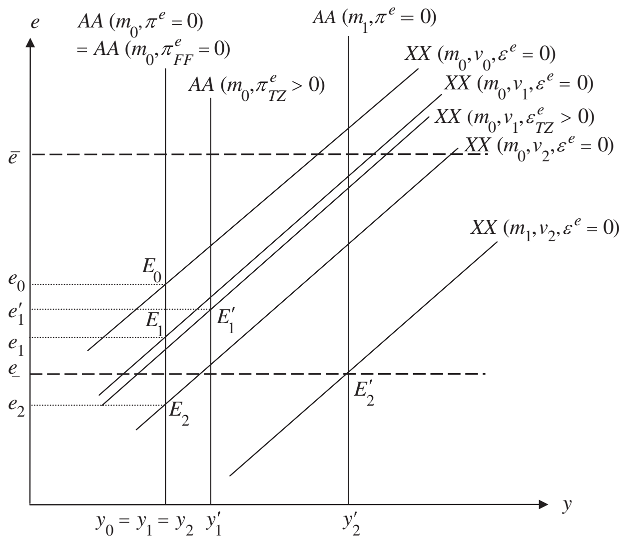

Fig. 2. The exchange-rate expectation effect outweighs the output expectation effect.

section we will utilize both the XX locus and the AA locus to illustrate whether the target zone policy conducted by the monetary authorities will stabilize or destabilize exchange rates.

3. The honeymoon effect

This section examines whether exchange rate target zones tend to stabilize or destabilize the exchange rate when the economy experiences an aggregate demand shock. Our analysis follows the basic marginal intervention rule proposed by Krugman (1991): the monetary authorities announce that they stand ready to adjust foreign reserves (money supply) when the level of the exchange rate exceeds the upper bound $\bar{e}$ or falls short of the lower bound $\underline{e}$.[7] However, the monetary authorities do not alter the money stock when the exchange rate is in the interior of the band $(\bar{e}, \underline{e})$. Before undertaking our graphical exposition, one point should be mentioned here. Due to the limitation of the graphical analysis, we need to assume that the monetary authorities engage in finite-sized interventions discretely instead of infinitesimal interventions at the target zone boundaries. However, in their frequently cited paper Flood and Garber (1991, p. 1371) point out that "[f]inite interventions may well be an important part of the story of real-world target zones." In that paper, Flood and Garber (1991) also intuitively show that the smooth pasting condition is present when the amount of discrete intervention approaches zero. This implies that our conclusion would be valid if discrete interventions were to be replaced by infinitesimal interventions.[8]

We now use a graphical presentation to address whether the stabilizing effect of exchange rate target zones proposed by Krugman (1991) is valid. As mentioned earlier, assume that initially the money stock is m_0, the demand shock is ν_0, and for the ease of analysis the public's expectations of changes in output and the exchange rate are nil (i.e., $\varepsilon^e=\pi^e=0$). In Fig. 2, the initial equilibrium is established at point E_0, which is the intersection of the curves $XX(m_0,\nu_0,\varepsilon^e=0)$ and $AA(m_0,\pi^e=0)$. The initial output and exchange rate are y_0 and e_0, respectively, and to simplify the analysis, we depict that e_0 is the central level of the band. In response to a rise in the demand shock from ν_0 to ν_1, the $XX(m_0,\nu_0,\varepsilon^e=0)$ curve shifts rightward to $XX(m_0,\nu_1,\varepsilon^e=0)$. If the public does not change its expectations (i.e., $\varepsilon^e=0$ and $\pi^e=0$), then $XX(m_0,\nu_1,\varepsilon^e=0)$ intersects $AA(m_0,\pi^e=0)$ at point E_1, with y and e being y_1 and e_1, respectively.

Fig. 1 illustrates that two states may occur at the level of random walk ν_1. First, with a probability of 1/2, ν_1 will decrease back to ν_0. Second, with a probability of 1/2, ν_1 will increase to ν_2. As indicated in Fig. 2, when ν_1 decreases back to ν_0, the exchange rate will then rise from e_1 to e_0. However, when ν_1 increases to ν_2, the $XX(m_0,\nu_1,\varepsilon^e=0)$ schedule shifts rightward to the $XX(m_0,\nu_2,\varepsilon^e=0)$ schedule. The $XX(m_0,\nu_2,\varepsilon^e=0)$ curve intersects $AA(m_0,\pi^e=0)$ at point E_2, with y and e being y_2 and e_2, respectively. Given that e_2 falls short of the lower bound $\underline{e}$, the monetary authorities will buy foreign reserves to defend the target band. The authorities' intervention activity will lead the money stock to increase from m_0 to m_1, and hence the XX line will shift rightward from $XX(m_0,\nu_2,\varepsilon^e=0)$ to $XX(m_1,\nu_2,\varepsilon^e=0)$ and the AA line will move rightward from $AA(m_0,\pi^e=0)$ to $AA(m_1,\pi^e=0)$. The $XX(m_1,\nu_2,\varepsilon^e=0)$ locus intersects the $AA(m_1,\pi^e=0)$ schedule at point E'_2, where the output is y'_2 and the exchange rate is $\underline{e}$. Accordingly, when ν_1 increases to ν_2, the exchange rate will fall from e_1 to the lower edge of the band $\underline{e}$ rather than e_2, and output will increase from y_1 to y'_2 rather than y_2.

The above statement indicates that, when the shock is ν_1, the public's expectations of changes in both the exchange rate and output under an exchange rate target zone (TZ) are given by $\pi^e_{TZ} = (\underline{e}-e_1)/2 + (e_0-e_1)/2$ and $\varepsilon^e_{TZ}=(y'_2-y_1)/2+(y_0-y_1)/2$, respectively. Given that $(e_0-e_1)>-(\underline{e}-e_1)$ and $0=(y_0-y_1)<(y'_2-y_1)$, both $\pi^e_{TZ}>0$ and $\varepsilon^e_{TZ}>0$ are then true. The change in expectations from $\pi^e=0$ to $\pi^e_{TZ}>0$ and $\varepsilon^e=0$ to $\varepsilon^e_{TZ}>0$ will lead to a rightward shift in both the $AA(m_0,\pi^e=0)$ and $XX(m_0,\nu_1,\varepsilon^e=0)$ curves. Given the fact that the rightward distance of the AA curve may be either greater or less than that of the XX curve, we thus have to consider the following two possible cases.

The first case is that the rightward movement of the AA locus is greater than that of the XX curve. As exhibited in Fig. 2, in response to a change in exchange-rate expectations from $\pi^e=0$ to $\pi^e_{TZ}>0$, $AA(m_0,\pi^e=0)$ will move rightward to $AA(m_0,\pi^e_{TZ}>0)$, while in response to a change in output expectations from $\varepsilon^e=0$ to $\varepsilon^e_{TZ}>0$, $XX(m_0,\nu_1,\varepsilon^e=0)$ will move rightward to $XX(m_0,\nu_1,\varepsilon^e_{TZ}>0)$. Accordingly, under an exchange target zone, the equilibrium in association with the level of random walk ν_1 is established at point E'_1, where both $XX(m_0,\nu_1,\varepsilon^e_{TZ}>0)$ and $AA(m_0,\pi^e_{TZ}>0)$ intersect. The equilibrium level of output and the exchange rate are thus y'_1 and e'_1, respectively.

The second case, as exhibited in Fig. 3, is that the rightward movement of the AA locus falls short of that of the XX curve. Under such a situation, the equilibrium in association with the level of random walk ν_1 is established at point E'_1, where both $XX(m_0,\nu_1,\varepsilon^e_{TZ}>0)$ and $AA(m_0,\pi^e_{TZ}>0)$ intersect. Accordingly, under an exchange target zone, the corresponding equilibrium level of output and the exchange rate associated with ν_1 are y'_1 and e'_1, respectively.

We next deal with the situation where the monetary authorities do not set a specific target zone and allow the exchange rate to adjust freely, with a probability of 1/2 that the exchange rate will rise from e_1 to e_0 when ν_1 decreases back to v_0. With a probability of 1/2, the exchange rate will fall from e_1 to e_2 when ν_1 increases to ν_2. Given $(e_0-e_1)=-(e_2-e_1)$, under a floating-exchange rate (FF) regime the public on average expects no change in the exchange rate (i.e., $\pi^e_{FF}=(e_0-e_1)/2+(e_2-e_1)/2=0$). Similar to the inference that the public expects changes in the output, $\varepsilon^e_{FF}=(y_0-y_1)/2+(y_2-y_1)/2=0$ is true as well. In both Fig. 2 and Fig. 3, point E_1 (the intersection of both the $XX(m_0,\nu_1,\varepsilon^e=0)$ locus and the $AA(m_0,\pi^e_{FF}=0)$ locus) is accordingly the equilibrium

[7] For simplicity, this paper only considers the situation where the official target zone is fully credible.

[8] The detailed mathematical derivation for infinitesimal interventions is available upon request from the authors.

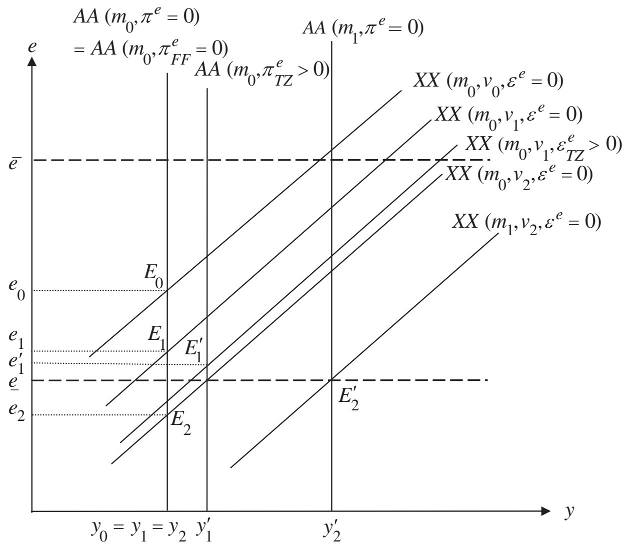

Fig. 3. The output expectation effect outweighs the exchange-rate expectation effect.

under a floating-exchange rate regime. As a result, under a floating-exchange rate regime, the equilibrium level of output and the exchange rate associated with ν_1 are y_1 and e_1, respectively.

As is obvious in Fig. 2, in response to a rise in the product demand shock from ν_0 to ν_1, the change in the exchange rate under a target zone $(e_0 - e_1')$ is less than that under a floating exchange rate regime $(e_0 - e_1)$. This outcome reveals the fact that an announcement of exchange rate target zones tends to lower the volatility of the exchange rate, and hence the honeymoon effect is valid. However, as indicated in Fig. 3, following a rise in the demand shock from ν_0 to ν_1, the change in the exchange rate under a target zone $(e_0 - e_1')$ is greater than that under a floating exchange rate regime $(e_0 - e_1)$. This outcome tells us that an announcement of exchange rate target zones tends to raise the volatility of the exchange rate, and hence the honeymoon effect is invalid.

The results can be interpreted intuitively as follows. It is well known that in the Mundell (1963) model that, given perfect capital mobility, fiscal expansion is totally ineffective in changing output under flexible exchange rates. This result stems from the fact that an expansion in government spending will induce an incipient capital inflow, and hence leads to an appreciation of the domestic currency. The induced contractionary effects of the domestic currency appreciation just exactly offset the expansionary effects of fiscal expansion, leaving output intact. Given that a rise in the demand shock from ν_0 to ν_1 is similar to a rise in government spending, if the exchange rate is flexible, then the currency appreciation will not affect the public's expectations; $(e_0 - e_1)$ is thus the volatility of the exchange rate.

As the monetary authorities restrict e in the interior of the band $(\bar{e}, \underline{e})$, as mentioned above, the public agents will increase their expectations for the changes in e and y (i.e., $\pi^e > 0$ and $\varepsilon^e > 0$), and these will give rise to two opposing effects in governing e. First, $\pi^e > 0$ will increase r from the UIP in Eq. (3). A higher level of r will decrease the aggregate demand and hence will prompt e to rise. The effect of the exchange rate expectations will thus generate Krugman's honeymoon effect by decreasing the volatility of e. Second, $\varepsilon^e > 0$ will increase the aggregate demand. To keep the economy in equilibrium, a higher aggregate demand will cause the domestic currency to appreciate (i.e., e decreases). We refer to this as the output expectation effect. Obviously, once the output expectation effect outweighs the exchange rate expectation effect, the exchange rate target zones will be destabilize.[9]

It is clear from our analysis that the output expectation effect is a crucial factor for the validity of the honeymoon effect. In view of this result, a question naturally arises: Does the existing empirical evidence support the output expectation effect? Some studies provide empirical evidence regarding the output expectation effect. By using UK quarterly data during the period 1957–2002 and Australian quarterly data during the period 1962–2002, Kara and Nelson (2004) estimate the so-called "optimizing output equation", which is similar to Eq. (1). Their result suggests that the forward-looking expectation for output is an important component that affects output. In addition, by using quarterly data from 1966 to 2000, Fuhrer and Rudebusch (2004) use the generalized method of moments (GMM) method to examine the empirical importance of the output expectation effect. Their research finds that the weight of forward-looking output expectations in determining current output is significantly different from zero, although GMM estimators may suffer from small-sample bias. An empirical assessment of Kara and Nelson (2004) and Fuhrer and Rudebusch (2004) could be treated as the supporting evidence for our theoretical analysis. Equipped with these empirical findings, it may be fair to say that the output expectation effect is an indispensable factor for determining the behavior of relevant macro variables.

9 Our result concerning the validity of the honeymoon effect is robust in the presence of imperfect credibility of the monetary authorities.

4. Concluding remarks

The prediction of Krugman's (1991) exchange rate target zone model and the observations of existing empirical studies reveal a conflicting outcome of exchange rate variability. A large number of studies have attempted to solve this puzzle. In addition, from some international empirical evidence on magnitudes of the output expectations effect versus the exchange rate expectations effect, we can find that the "forward-looking" New Keynesian output equations are more empirically stable than those of the backward-looking alternative. Therefore, this paper first sets up a modified Mundell (1963)-type economy embodying New Keynesian "forward-looking" exchange-rate and output expectations, and then develops a graphical exposition to explain the conflicting outcome between Krugman's prediction and the empirical observations.

Based on the theoretical model in this paper, we show that Krugman's (1991) honeymoon effects stem from his emphasis on a single exchange-rate expectation. If both exchange-rate expectations and output expectations are brought into the picture, then they will generate two conflicting effects on the realization of the nominal exchange rate, and hence the honeymoon effect may not exist.

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