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**NORTH-HOLLAND**

International Review of Economics and Finance  
10 (2001) 399–405

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**IREF** International  
Review of  
Economics  
& Finance

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# Even more on monetary policy in a small open economy

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Received 15 March 2000; received in revised form 14 August 2000; accepted 12 September 2000

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## Abstract

It is well known that in a small open economy with full capital mobility and a fixed exchange rate, monetary policy is ineffective in influencing real output (e.g. the works of Fleming [Int. Monetary Fund Staff Pap. 9 (1962) 369.] and Mundell [Can. J. Econ. Polit. Sci. 29 (1963) 475.]). However, Wu [Int. Rev. Econ. Finance 8 (1999) 223.] finds that when the credit channel is added to this model, monetary policy can have real effects under a fixed exchange rate system. This conclusion hinges on the assumption that open market operations have no effect on foreign exchange reserves of the central bank when evaluating how a change in monetary policy affects the loan market. This assumption is incorrect because under a fixed exchange rate regime, the quantity of foreign reserves becomes endogenous in the model. It is shown that when this assumption is relaxed, monetary policy is still ineffective in influencing output under a fixed exchange regime, even with an operative credit channel. © 2001 Elsevier Science Inc. All rights reserved.

*JEL classification:* F41; E51

*Keywords:* Monetary policy; Mundell–Fleming model; Credit channel

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## 1. Introduction

A well-known implication of the Mundell–Fleming model (e.g. Fleming, 1962; Mundell, 1963) is that monetary policy is ineffective in influencing real output under a fixed exchange rate regime. However, Wu (1999) finds that when the “credit channel” is added to the

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Mundell–Fleming model, monetary policy does have real effects.<sup>1</sup> Thus, he argues that monetary policy is not completely endogenous under a fixed exchange rate, since the credit channel affects both the money market, as well as the goods market equilibrium.

It is shown that Wu's (1999) conclusion hinges on the crucial assumption that open market operations have no effect on foreign exchange reserves of the central bank when evaluating how a change in monetary policy affects the loan market. Because of this assumption, Wu finds that the monetary base increases (decreases) with an open market purchase (sale), thereby affecting the bank loan supply schedule. However, this assumption is incorrect because under a fixed exchange rate regime, the quantity of foreign reserves becomes endogenous in the model. Once this assumption is removed, an expansion in monetary policy will not lead to the banking sector to generate more loans, rendering the credit channel ineffective, and, thus, restoring the result of monetary policy ineffectiveness under a fixed exchange rate regime.

In Section 2, the essential equations of Wu's (1999) model were presented. To make the exposition as transparent as possible, the same notation was used and the same assumptions that Wu uses in his model were kept. In the Section 2.4, an intuitive explanation as to why monetary policy is ineffective even with an operative credit channel were offered.

## 2. Model

### 2.1. Banking sector

In the banking system, the aggregate banks' balance sheet is (Eq. (1)):

$$B_b + L + R = D \quad (1)$$

where  $B_b$  stands for bonds held by banks,  $D$  for aggregate deposits,  $L$  for the volume of loans, and  $R$  for the amount of required reserves. Following Wu (1999), currency was kept out of the model for the sake of simplicity. This implies that banking system reserves,  $R$ , equals the level of high-powered money,  $H$ . Hence, the central bank's balance sheet is:

$$B_a + F = H = R \quad (2)$$

where  $B_a$  represents the bonds held by the central bank and  $F$  denotes the holdings of net foreign assets. Money can be expressed as  $H/k$ , where  $k$  is the reserve requirement ratio.

Wu (1999) also derives the following loan supply function:

$$L^s = \varepsilon(\rho, r, \dots) \frac{1-k}{k} H \quad (3)$$

<sup>1</sup> The classic reference for the "credit channel" is the model developed by Bernanke and Blinder (1988). They augment the standard IS–LM model by separating the bank loan market and the bond market, which are traditionally assumed to be perfect substitutes and, thus, grouped together as one market. They show that relaxing this perfect substitution assumption makes the IS schedule respond to changes in monetary policy.

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