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# Black market exchange rate, currency substitution and the demand for money in LDCs

Mohsen Bahmani-Oskooee *, Altin Tanku

*Center for Research on International Economics, Department of Economics, University of Wisconsin-Milwaukee, Milwaukee, WI 53201, United States*

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**Abstract**

Mundell's conjecture in 1963 that the demand for money could depend on the exchange rate in addition to income and interest rate has received some attention in the literature by including the official exchange rate and estimating the money demand in a few developed countries. In less developed countries, since there is a black market for foreign exchange, it has been suggested that the black market exchange rate rather than the official rate should be the determinant of the demand for money in LDCs. This proposition is tested by estimating the demand for money for 25 LDCs using the bounds testing approach to cointegration. The main conclusion is that while in some LDCs, the black market rate enters into the formulation of the demand for money, in some others the official rate is the determinant. The black market premium also played a role in some countries.



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## 1. Introduction

In 1963, the Nobel laureate Mundell (1963) was the first to argue that the demand for money could depend on the exchange rate in addition to income and interest rate. Since this was only a conjecture which was not supported by any empirical analysis, not much attention was paid to Mundell's idea. Arango and Nadiri (1981) picked up the issue (with no attribution to Mundell) and empirically demonstrated that the exchange rate is a significant determinant of the demand

* Corresponding author. Tel.: +1 414 229 4334; fax: +1 414 229 3860.
*E-mail address:* bahmani@uwm.edu (M. Bahmani-Oskooee).

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for money. They argued that when domestic currency depreciates or foreign currency appreciates, the domestic currency value of foreign assets held by domestic residents increases. If this increase is perceived as an increase in wealth, the demand for money could increase. On the other hand, Bahmani-Oskooee and Pourheydarian (1990), who were, perhaps, the first to recognize Mundell's conjecture, argued and empirically demonstrated that currency depreciation could also result in a decrease in the demand for money. They argued that when a currency depreciates, market participants could expect additional depreciation and may try to hold less of domestic currency. They demonstrated their proposition by using data from a few developed countries. Bahmani-Oskooee and Malixi (1991) later on tested the exchange rate sensitivity of the demand for money in LDCs and showed that, indeed, in some LDCs currency depreciation results in a reduced demand for domestic currency.

One major deficiency of the studies mentioned above is that they did not consider the integrating properties of each variable in the money demand function, nor the cointegrating properties of all variables together to establish the long-run relationship among them. Thus, more recent studies which included the exchange rate in their formulation of the demand for money employed cointegration analysis to determine whether narrow money measured by $M_1$ or broader measure of money, $M_2$, form a long-run relationship with income, interest rate and the exchange rate. McNown and Wallace (1992), for example, showed that in the U.S. there is no cointegration between $M_2$, income and interest rate unless we add the effective exchange rate of the dollar to cointegrating space. Similar results are reported for Thailand by Bahmani-Oskooee and Techaratanachai (2001), for Korea by Bahmani-Oskooee and Rhee (1994), Lee and Chung (1995) and Bahmani-Oskooee and Shin (2002), for Russia by Bahmani-Oskooee and Barry (2000), for Japan by Bahmani-Oskooee and Shabsigh (1996) and Miyao (1996), for Spain by Bahmani-Oskooee et al. (1998), for a group of developed countries by Bahmani-Oskooee and Chomsisengphet (2002), and for a group of Asian countries by Bahmani-Oskooee and Rehman (2005).[1]

Studies reviewed above included the official exchange rate in their formulation of the demand for money. However, Bahmani-Oskooee (1996), who considered the money demand in Iran, showed that in a country like Iran, where there is a black market for foreign exchange, it is the black market rate that is cointegrated with money, income and inflation rate and not the official exchange rate. He showed this by using exclusion tests introduced by Johansen (1988) within the Johansen and Juselius (1990) cointegration framework. Could this finding be extended to other developing countries?

In this paper we extend the literature by empirically investigating whether it is the official exchange rate or the black market rate that should enter into the formulation of the money demand function in LDCs. Furthermore, in countries where there is enough flexibility in the official rate and yet the black market rate does exist, perhaps both rates have implications for the money demand. This later notion will be captured by including the black market premium in the money demand formulation. Additionally, unlike many of the previous studies which interpreted their finding of cointegration as a sign of money demand stability, in this paper, once cointegration is established, we will apply a formal test of stability to determine whether the long-run coefficient estimates are stable. To this end, in Section 2 we introduce the demand for money and the methodology which is based on the bounds testing approach to cointegration and error-

[1] A few other studies on money demand in LDCs are Chowdhury (1997), Khalid (1999), Rao and Shalabh (1995), and Tan (1997).