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Exchange-Rate Interventions

Exchange-rate interventions, also referred to as foreign exchange (forex) interventions, are operations by the central bank performed in the foreign currency market(s) with the aim of affecting (or "managing") the exchange rate of the national currency. By definition, such transactions consist in purchases or sales of assets denominated in foreign currency and are undertaken continuously under fixed (or pegged) exchange-rate regimes to maintain the peg at the announced level. Yet forex interventions may also frequently occur under flexible (or floating) exchange-rate arrangements, to smooth out potentially abrupt exchange-rate adjustment especially when forex volatility is higher than usual.

To understand better the mechanism of forex interventions, it is instructive to look at an aggregate (and simplified) version of a standard balance sheet for a (hypothetical) central bank (Table 4). As for other corporations, the balance sheet records the assets and liabilities (plus capital) of a central bank at a given point in time. The assets include the central bank's portfolio of monetary gold and Special Drawing Rights (SDRs) at the International Monetary Fund (IMF) (item A1 in Table 4), foreign assets (A2) and domestic credit (A3). The central bank's liabilities include the currency in circulation outside banks (L1), the reserves held by all other banks on accounts with the central bank or as cash in their vaults (L2) and, by convention, the capital of the central bank, or its net worth (L3). The monetary gold and the liquid part of foreign assets comprise the gross international (or official) reserves the central bank can use for the purpose of

forex interventions, sales or purchases. The domestic government bonds can, in turn, be used for the purpose of open market operations, sales or purchases. The loans to domestic banks are also called (bank) refinancing (operations or policy) in Europe, or discount loans (or policy) in the United States. The sum of the currency in circulation and the reserves of banks forms the monetary base, also known as the M0 monetary aggregate or high-powered (or central-bank) money.

Table *4 Simplified balance sheet of a hypothetical central bank, in billions of national currency units at a given point of time*

Assets		Liabilities	
A1. Monetary gold and SDRs at IMF	5	L1. Currency in circulation	80
A2. Foreign assets	25	L1a. Notes	75
A2a. Foreign government bonds	15	L1b. Coins	5
A2b. Foreign currency deposits	10	L2. Bank reserves	10
A3. Domestic credit	70	L2a. Required minimum	5
A3a. Domestic government bonds	25	L2b. Held in excess	2
A3b. Loans to domestic banking system	45	L2c. Vault cash	3
		L3. Capital	10
Total	100	Total	100

Source: Author's elaboration.

One can see the difference between non-sterilized and sterilized forex interventions by comparing their respective effect on the balance sheet of the central bank (Krugman et

al., 2012, pp. 493–533). Abstracting from valuation adjustments (whose effects would not be large for a shorter time lapse), and assuming that the net worth of the central bank stays constant (which, indeed, is a realistic hypothesis), then any change in the assets side between two dates should be matched by a corresponding change in the liabilities side. A purchase of any asset by the central bank has to be paid for with currency or a check from the central bank, both of which are denominated in domestic currency, thus increasing the supply of money in circulation. A sale of any asset by the central bank will have to be paid for with currency or a check given to the central bank, both of which are denominated in domestic currency. The central bank retains the currency into its vault or reduces the amount of bank reserves by the amount of the check, hence causing the supply of money in circulation to shrink.

Central banks trade foreign government bonds and foreign currency deposits, which are substitutes to a high degree as both are very liquid assets denominated in foreign currency, in the foreign exchange markets. Quantities of both foreign currency deposits and foreign government bonds that are bought and sold influence the exchange rate. Because buying and selling of foreign bonds or foreign currency on deposits in the foreign exchange market affects the domestic money supply, a central bank may want to offset this effect. This offsetting effect is called sterilization, or a sterilized (forex) intervention. For example, if the central bank sells foreign bonds in the foreign exchange market (say, –1 billion units of national currency recorded in item A2a), it can buy domestic government bonds in bond markets in the same amount (recorded as +1 billion units of national currency in item A3a) so as to leave the amount of money in circulation unchanged.

As Sarno and Taylor (2002, pp. 208–44) argue, the rationale for engaging in official exchange-rate interventions can be explained by four main arguments: (i) the wrong-rate argument under float states that an inefficient forex market may tend to generate the "wrong" exchange rate, which implies *ex-ante* abnormal returns, rather than the "correct" rate, defined as corresponding to economic fundamentals; (ii) the information-set-mismatch argument maintains that some information used by market participants may be inaccurate or misleading in comparison to the information set of the authorities; (iii) the argument of offsetting temporary disturbances applies to cases of exchange rate overshooting or cross-country policy interdependence; and (iv) the adjustment-smoothing argument invokes smoothing the adjustment process of exchange rates from short-run values to long-run values.

According to their types, forex interventions are usually distinguished in terms of: (i) non-sterilized versus sterilized ones; (ii) public (announced) versus secret ones; and (iii) internationally coordinated (concerted) versus non-coordinated ones.

A strong consensus exists that non-sterilized forex intervention acts like monetary expansion or contraction, and that it is rather effective in inducing changes in the monetary base, hence in the broader monetary aggregates and interest rates, and ultimately in market expectations and the exchange rate. The effectiveness of sterilized interventions is, by contrast, controversial and the empirical evidence is mixed. Their effect may arise if private agents change their exchange-rate expectations because they

change their view either of the likely future actions of the central bank or of the impact of certain actions of the central bank.

Research on forex interventions has been focused on developed economies and has been impaired by data secrecy – at the relevant intraday frequencies, in particular – and by the resulting indirect approaches to uncover their key effects, themselves differing for various exchange rate pairs and horizons. Correcting for such deficiencies in the data coverage and availability and in the related econometric methodologies has recently revealed the influences of intervention timings and information spillovers (see Domingues, 2003, for G3 currency pairs) or the differences typical for emerging market economies (Menkhoff, 2013) and has produced more than twice stronger (see Chen et al., 2012, for the US dollar–yen rate) or asymmetric (see Fatum et al., 2013, for the Danish krone–euro rate) effects of interventions. Further criticisms to this literature have argued that the central bank may intervene to exert an impact on the exchange rate but with a number of drawbacks, such as inflating a real-estate bubble and/or increasing financial instability. Moreover, as was the case of the Bank of England in the pre-crisis period of the European Exchange Rate Mechanism (early 1990s), forex interventions may do little to fix the underlying problems related to the business cycle, the economic structure, policy coordination, and/or market expectations.

ALEXANDER MIHAILOV

See also:

Cash; Central bank money; Financial instability; High-powered money; Housing bubble; International Monetary Fund; International reserves; Monetary aggregates; Open-market operations; Sterilization.

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