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The impact of a political shock on foreign exchange markets in a small and open economy: A dynamic modelling approach

Abstract: This paper aims to analyse the dynamics of foreign exchange markets in a country facing political uncertainty that prompt capital outflow from the country[1]. The economic environment under investigation is characterized by dual foreign exchange markets: a formal or official market for foreign exchange with insufficient and volatile foreign exchange flows, and a strong and thriving informal market, with a higher exchange rate[2]. The findings in the paper indicate a necessary condition for stabilization of the exchange rate system and that is that the return on investment should exceed the depreciation rate of domestic currency in the formal foreign exchange market. This condition implies that the return on investment should at least compensate investors for the opportunity cost of holding domestic money in their private portfolio wealth. Our findings also indicate that stability of the foreign exchange rates is more difficult to achieve under insufficient official reserves as the recovery process from a shock becomes more costly in terms of time period needed for the adjustment process to complete. The dynamic path of the foreign exchange premium shows that under massive capital outflow

[1] The current model applies to the cases of Iran and Venezuela, after the return of the American sanctions to these two counties. Since early 2018 these two countries have been facing, growing political uncertainty and dwindling foreign reserves of central banks, prompting unprecedented rise in informal market premium and increasing capital outflow.

[2] In the literature, the terms informal market, black market, and the parallel market are used interchangibly.

caused by economic sanctions, the informal market exchange rate overshoots the equilibrium stationary exchange rate, and the size of such overshooting depends on the size of available foreign exchange reserves held by the central bank.

Keywords: dynamic model, foreign exchange markets, political uncertainty, stability analysis, economic sanctions.

JEL Classification: F31; E52; E58; C32.

1. Introduction

The increasing importance of studying dual foreign exchange markets in some developing countries over the past few years is possibly due to the increasing role of the informal markets for foreign exchange in the economies of these countries despite successive attempts by some governments to curb the role of these markets in the economy. It has become apparent to many economists in recent years that a realistic foreign exchange policy should not ignore the role of these markets in the economy. To contain the role of these markets monetary authorities in these countries have resorted to more restrictive foreign exchange policies in the formal market by blacklisting some import commodities and imposing capital mobility restrictions, as well as adopting more flexible foreign exchange policies in an attempt to stabilize the divergence of the informal market rate from the official market rate (informal market premium).

The role of informal markets for foreign exchange in the economy of a country depends on the size and the structure of the informal markets, which differ from one country to another. In some countries, informal markets for foreign exchange have a large number of dealers, where the price of foreign exchange is determined according to supply and demand forces for foreign currencies. In other countries these markets are dominated by a small number of dealers who set prices on daily basis, using their knowledge of supply and demand. In general, understanding the structure of the informal markets for foreign exchange requires investigating volatility dynamic path. Dynamic modelling of currency markets in general can help detecting currency markets irregularities and volatility boundaries (Bollerslev, Engle & Nelson, 2003). The increasing sensitivity of major economic indicators in underdeveloped economies to volatility in informal markets for foreign exchange highlights the importance of modelling dynamic aspects of these markets. Conditional volatility estimates using asymmetric leptokurtic distributions is more robust for highly volatile series evidenced in a number of informal currency markets which have a higher degree of non-normality. There is increasing evidence that volatility in asset markets in some developing countries featured by irregularities and unpredictable behaviour, Onour (2018), Valeri (2016), Hannes,

Matthias, & Derya (2014), Veton, Flamur, Omer, & Kazi, (2021), Haryo (2020), Dumičić (2019).

The current paper is motivated by the need to set up a dynamic model with optimization features to capture volatility boundaries in currency markets facing internal and external shocks. The economic environment of the model can be described as follows: The foreign exchange market is characterized by dual markets for foreign exchange where one market is official and managed by the central bank and relies on the inflow and the outflow of foreign currencies via the formal sectors of the economy, while the other is an informal market depending on the inflow of foreign currencies, mainly from illegal channels like smuggling, money laundering, export under-invoicing, and import over-invoicing, to finance demand for foreign currencies that is not financed through the official channels of foreign exchange sources. As a result of political instability indicated by shortage of foreign currency reserves with the central bank, domestic and foreign investors siphon hard currencies from the country via purchase of foreign currencies from the informal market.

The contribution of the paper entails setting up a macroeconomic model of dual foreign exchange markets and combines the impact of external economic sanctions on a country with internal factors such as capital flight and political unrest to answer the following questions: Is it possible to stabilize the foreign exchange rates under such political and economic environment? Does the informal market rate approximate steady state equilibrium exchange rate? Is it possible to sustain unified single exchange rate policy? What is the economic policy that eases the adverse impact of economic sanctions?

The remaining parts of the paper are structured as follows. Section two includes literature review. Section three explains the model specification. Section four includes the analysis, and the final section concludes the study.

2. Literature review

The literature on informal markets for foreign exchange takes two approaches: the first approach adopts specification of determinants of informal market rate premium. A partial list of research in this tradition includes Dornbusch, Pechman, Rocha & Simoes (1983), the model that indicates the level of the informal foreign exchange rate premium associated with depreciation-adjusted interest differential as key determinant, as well as seasonal factors associated with tourism. They also indicated that expectations of future exchange rate changes,

under rational expectations hypothesis, affect the current level of the informal foreign exchange premium. While the model constitutes analytical framework to discuss the determinants of the premium in the informal market for dollars in Brazil, the structure of the model is quite general and suitable for application to informal markets for currency elsewhere. Fishelson (1988) modified the Dornbusch, Pechman, Rocha & Simoes model for the determination of the informal market foreign exchange premium and then estimated for 19 countries for various periods during 1970–1979. The outstanding result indicated conformity with Dornbusch, Pechman, Rocha & Simoes` results. Culbertson (1989) / develops a theoretical specification of informal market for foreign exchange in partial equilibrium framework to indicate that the informal market premium depends upon the level of the formal exchange rate, unobserved equilibrium exchange rate, and government reserve-level policies. Phylaktis (1992) presented empirical evidence supporting the purchasing power parity (PPP) hypothesis for three bilateral informal foreign exchange rates involving Greece and East European countries using cointegration analysis. The speed at which long-run PPP was reached following a shock was 50 per cent per month, confirming the results of other studies of PPP and explaining the supportive evidence for long-run PPP even though data over a short period were used. Shachmurove (1999) examined the determinants of the informal foreign exchange premiums using monthly data for 17 developing countries. The premium is hypothesized to be positively influenced by the formal exchange rate, depreciation-adjusted interest rate differential, and dollar value of domestic assets. It is hypothesized to be negatively influenced by the formal real exchange rate, exports earnings, and a seasonal factor associated with tourism. The findings of the paper indicate that the interest rate differential positively influence the premiums, as expected, while the official real exchange rate is found to negatively influence the premiums.

The second approach in modelling currency exchange rates focuses on dynamic adjustment of the informal market rate premium in search for stability conditions. A list of research in this direction includes Samuel and Enrique (2008), who presented a theoretical model in the stock-flow tradition of Dornbusch, Pechman, Rocha & Simoes (1983), and evaluate the performance of the model against past models from the literature. Results indicate a significant role for the lagged premium, the rate of depreciation of the informal market rate, and changes in foreign reserves. Onour (2013) analyses the impact of a political shock on the foreign exchange premium in Sudan to predict that expanding budget deficit and declining official reserves eventually force the government to abandon fixed exchange rate system in favour of more flexible one, resulting in further acceleration of both the domestic inflation rate and the domestic money growth rate. In a similar finding, Kula, Aslan & Öztürk, (2014), Edwards (1989), Kharas and

Pinto (1989) also indicate that inflationary implications of switching to floats as a means of unifying formal and informal market rates are very high if growth in money supply is not under control, as inflation rate becomes equal to growth of money supply and inflation could rise substantially if the lost revenues from exports are replaced with a higher tax on money. Jadgeep and Vegh (1990) present an optimizing model of dual exchange markets that are incompletely separated owing to the presence of fraudulent transactions. The model is used to examine the implications of unanticipated and permanent changes in the formal market for foreign exchange and government spending. It is shown that these disturbances generate non-monotonic responses in both the spread between the formal and the informal (black) rates and in capital flows. These results are then contrasted with those obtained under complete market separation.

The current paper differs from the above mentioned literature in its approach and in the questions of the research as it adopts a partial equilibrium dynamic modelling approach embracing optimum control theory to assess adverse impact of economic sanctions on small and open economy facing political instability that prompt capital outflow from the country.

3. The model

Since the only source of foreign exchange in the foreign exchange markets is the export revenues, and the informal market rate, b, is higher than the formal market rate, e, private firms convert a portion $0< \varphi <1$, of their export proceeds at the informal rate b, and the remaining part at the formal rate, e . Thus, the revenue side of the income statement of domestic firms consist of revenue from goods from export, and the expenditure side includes imported capital goods.

As a result, firms' decision rules for all the choices above are found by maximizing their profit function. Households choose between domestic and foreign assets, a portfolio allocation decision. Households' nominal financial asset portfolio is assumed to consist only of domestic money holdings M, and foreign money holdings F. Since households buy foreign currency F only in the informal market, and therefore value it at the informal exchange rate b, the domestic currency value of households' nominal wealth, H, can be expressed as $H = M + bF$.

The government determines much of the context for decisions of other agents in the economy, and also acts as a separate agent. For instance, the government decrees and administers a set of foreign exchange controls which regulate the entry into the formal exchange market. In this market, the government buys for-

eign currencies from households at the formal rate e, and allocates it to pay for government imports (G). The government can buy from only one source: private sector export revenue X. We assume that government spending G is entirely on imports, including payment of interest on foreign debt, and that no new foreign debt is incurred. Further, we assume that any of G that is not financed by taxes must be financed by borrowing from the central bank.

The current account balance in the formal market (for brevity we will call it official reserves, $\dot{R}$ is determined as a fraction of export revenue channelled through the formal exchange market, $(1-\emptyset(t))x(t)$ less government imports (G) all valued in foreign currency). After determining the official current account, the current account in the informal market is determined by subtracting total imports (private sector and government), capital flight, and official reserves, from the total inflow of foreign currency to the economy. Since there is no commonly accepted definition of capital flight in the economic literature (Kant, 2002), in this paper we define capital flight in more broader terms as the outflow of capital from a country to safer havens as a response to risk and uncertainties in the economic policies of that country. As a result, given declining official reserves, increasing informal market rate premium invokes expectation of collapse of dual exchange rate system and a balance of payment crisis then change in capital flight depends on the deviation of the informal market rate premium from specific benchmark level.

These specifications expressed in the system of the following equations:

$$Max \int_0^T \left[\emptyset(t)b(t)x(t) + (1-\emptyset(t))e(t)x(t) - I(b(t))\right]\exp(-\delta t)\,dt \quad (1)$$

Subject to:

$$\frac{dF}{dt} \equiv \dot{F} = x(t) - (g(t) + I(b(t))) - c(t) - \dot{R}(t) \quad (2)$$

$$\frac{dR}{dt} \equiv \dot{R} = [(1-\emptyset(t))x(t) - g(t) \quad (3)$$

$$c(t) = a(\theta(t))[m(t) + \pi(t)F(t)] \quad for \quad a'(\theta) > 0 \quad (4)$$

$$\theta(t) = f(\pi(t) - \bar{\pi}) \qquad for \qquad f'(\pi) > 0 \quad (5)$$

F(0), and R(0) given.

Where ∅ is the proportion of export earning that channel to the informal market, b is the informal market rate, e is the formal exchange rate, which is lower than the informal market rate, b, and x is the total export earnings in foreign currencies. I(b) is the private sector imports funded by the informal market rate, g is the government imports. F and R are respectively private foreign currency holdings by private agents and official reserves held by the central bank, C is the capital flight, which is defined here as outflow of capital through the informal market for foreign exchange.

Equation (1) defines discounted net revenue function of private firms that export domestic products and convert ∅ portion of export earnings via the informal market and the rest $(1-\emptyset)$ through the formal foreign exchange market, minus the cost of imported inputs, I(b), which is a function of the informal market rate, b. Equation (2) defines the foreign currency portfolio held by the private sector as the difference between total foreign currency inflows of export revenues minus total imports (government plus private imports), minus capital flight and official reserves held by the central bank. Equation (3) stipulates official foreign currency reserves as the difference between the export proceeds of the formal market minus the government imports, g. Equation (4) defines the capital flight as a proportion of private wealth $[m+\pi F]$ which combines domestic assets denominated in foreign currencies and stock of foreign currencies, where π is the informal market premium, which is b/e. The proportion of capital flight, $a(\theta)$, depends on political instability of the country, θ, which indicated the divergence of informal market rate premium from benchmark level of the premium, as defined in equation (5). Substituting equations (3) – (5) into equation (2) and rewriting it, the problem can be reduced to:

$$Max\int_0^T \left[\emptyset(t)b(t)x(t)+(1-\emptyset(t))e(t)x(t)-I(b(t))\right]\exp(-\delta t)\,dt \qquad (6)$$

Subject to:

$$\dot{F}=[\emptyset(t)x(t)-I(b(t))-a(\theta)(m+\pi F) \qquad (7)$$

F(0), and R(0) given .

The problem as defined in (6) and (7) is an optimum control problem, with ∅ is the control variable, and F is the state variable. The current value Hamiltonian can be stated as:

$$\begin{aligned} H= \; & [\emptyset(t)b(t)x(t)+(1-\emptyset(t))e(t)x(t)-I(b(t))]+ \\ & \mu[\emptyset(t)x(t)-I(b(t))-a(\theta)(m+\pi F)] \end{aligned} \qquad (8)$$

Where μ is a costate variable. The first-order conditions can be derived as:

$$\frac{\partial H}{\partial \emptyset} = bx - ex + \mu x = 0 \tag{9}$$

$$\dot{\mu} - \delta\mu = -\frac{\partial H}{\partial F} = -a(\theta)\pi \tag{10}$$

Equation (9) can be rearranged into:

$$e(1-\pi) = \mu \tag{11}$$

Differentiating equation (11) and substituting it into equation (10) we get:

$$\dot{\pi} = (1-\pi)(\hat{e} - \delta) + \frac{a(\theta)\pi}{e} \tag{12}$$

where $\hat{e} = \dot{e}/e$

From equation (12) we can deduce that $\dot{\pi} = 0,\ only\ if\ \pi = 1, and\ a(\theta) \approx 0.$

The dynamic system of the model represented in the differential equations (7) and (12). In the following section we analyse the stability of the system.

4. The analysis

4.1 Algebraic approach

For ease of exposition we repeat the two differential equations of the dynamic system:

$$\dot{F} = [\emptyset(t)x(t) - I(b(t)) - a(\theta)(m + \pi F) \tag{7}$$

$$\dot{\pi} = (1-\pi)(\hat{e} - \delta) + \frac{a(\theta)\pi}{e} \tag{12}$$

Proposition (1):

A necessary condition for existence of a saddle point solution for the system of equations (7), and (12) is that the return on investment, δ, should at least be equal to depreciation rate of the formal foreign exchange, $\hat{e}$.

This proposition implies that the return on investment should at least compensate investors the opportunity cost of holding domestic assets in their private portfolio wealth.

Proof:

Analysis of the characteristic polynomial of the linear approximation of the equations (7), (12), shows that the dynamic model has one positive and a negative root if $\delta \geq \hat{e}$. That is, the steady state discussed above is a saddle-point solution, therefore, the economy can (re-)converge to the steady state from a distance away. If this condition is not satisfied there is no guarantee for existence of sustainable unique solution for the system of the equations (7) and (12).

Linearizing equations (7) and (12) around the steady state values $\bar{F}$ and $\bar{\pi}$ yield the following matrix equation:

$$\begin{vmatrix} \dot{F} \\ \dot{\pi} \end{vmatrix} = \begin{vmatrix} \dot{F}_F & \dot{F}_\pi \\ \dot{\pi}_F & \dot{\pi}_\pi \end{vmatrix} \begin{vmatrix} F - \bar{F} \\ \pi - \bar{\pi} \end{vmatrix} \tag{13}$$

Where the first term on the right-hand side of equation (13) is the Jaccobial matrix.

The values of the partial derivatives in the Jaccobian matrix can be determined as follows:

$$\frac{\partial \dot{F}}{\partial F} = -a(\theta)\pi < 0, \qquad \frac{\partial \dot{F}}{\partial \pi} = -a'(\theta)F < 0, \qquad \frac{\partial \dot{\pi}}{\partial F} = 0,$$

$$\frac{\partial \dot{\pi}}{\partial \pi} = \left[-(\hat{e} - \delta) + \frac{a(\theta) + a'(\theta)\pi}{e}\right] > 0 \quad for \quad \delta \geq \hat{e}$$

A necessary condition for a saddle-point solution is that the determinant of the Jaccobian matrix should be negative and the sign of the trace of the Jaccobian matrix is positive, negative or zero. This is the case as can be verified by substituting the above stated partial derivatives in the Jaccobian matrix to get negative determinant:

$$|J| = |\dot{F}_F \dot{\pi}_\pi - \dot{F}_\pi \dot{\pi}_F|$$

$$= \begin{vmatrix} -a(\theta)\pi & -a'(\theta)F \\ 0 & \left[-(\hat{e} - \delta) + \frac{a(\theta) + a'(\theta)\pi}{e}\right] \end{vmatrix} < 0, \quad for \ \delta \geq \hat{e}$$

Proposition (2):

Sustainable unification of the dual foreign exchange markets, ($\bar{\pi} \to 1$), cannot be achieved under political instability that prompt significant amount of capital outflow.

Prove of the proposition can be reached by setting $\dot{\pi} = 0$, in equation (12) and solving for steady state premium level, $\bar{\pi} = \frac{(\hat{e}-\delta)}{\left[(\hat{e}-\delta)-\frac{a(\theta)}{e}\right]}$ to show that $\bar{\pi} \to 1$ only when $a(\theta) \to 0$.

Proposition (3):

Controlling domestic currency component (m) in private agents' portfolio wealth limits capital outflow prompted by political instability.

This proposition implies that controlling demand for domestic money by setting higher interest rates on government bonds can be an effective tool to limit capital outflow from the country.

Proof: To prove this proposition we need to differentiate the steady state foreign currency portfolio ($\bar{F}$) from equation (7) with respect to θ (the political instability indicator) that is:

$$\frac{\partial \bar{F}}{\partial \theta} = \frac{a'(\theta)[m-\pi\bar{F}]}{a(\theta)\pi} \to 0 \ \ (as \ \ m \to \pi F).$$

4.2. Phase diagram approach

Figure (1) indicates the dynamic path of steady states of the informal market premium and the private foreign currency holdings. As the solution of the equations (8) and (13) indicates saddle point solution, then if the system, somehow, is placed in quadrants I and III, there is a chance to slide towards the steady state equilibrium point A, as indicated in the figure. However, if the system is placed at the quadrants II and IV, it diverges away from the steady state equilibrium point. When political and economic environment becomes unfavourable in a country, more frequent demands for dollars for capital transfer from the country follows and, consequently, the rising informal market premium depletes official reserves held by the central bank to lower levels. When foreign exchange reserves become insufficient to cover the loss of reserves that takes place during capital flight the public will anticipate a balance of payment crisis that requires discrete devalua-

tion of the formal market rate. The adjustment process in this case is explained in figure (2). Initially, as a consequence of unexpected political shock, the informal market rate jumps from point (A) to point (A') in figure 2. Following the upward jump in the informal market rate and the political uncertainty, significant capital flight follows causing a shift in the private capital portfolio curve $\dot{F} = 0$ to $\dot{F}_1 = 0$, which in turn causes a shift in the $\dot{\pi} = 0$ schedule upward to $\dot{\pi}_1 = 0$. As a result of sharp drop in the official foreign currency reserves and public anticipation of future devaluation of the formal exchange rate, speculative attacks on foreign currency push further upward increase in the informal rate premium from point (A') to point (B). At point (B) the rise in the informal exchange rate premium causes increase in reserve loss, which invokes further anticipation of the formal exchange rate devaluation, and that in turn will push the informal market rate premium at the point (C). When official reserves reach a minimum level at point (C), the government resorts to devaluation of the formal rate and that brings the system to point (D). During the adjustment process from points (C) to (D), along the saddle path some of the reserves previously lost are replenished. It is important to realize that with insufficient reserve the recovery process from a shock is more costly in terms of time period required for convergence of the system to the new steady state point at (D).

However, the adverse effect of the political shock or economic sanctions on capital outflow is mitigated under flexible exchange rate system that maintains a fixed level of informal market rate premium. Figure (2) indicates that if the government adopts a policy of foreign exchange system that fixes the premium level at $\bar{\pi}$, the outflow of capital reduces to ($\bar{F}$ - $\bar{F}_2$) instead of ($\bar{F} - \bar{F}_1$) in the case of fixed formal exchange rate system[3]. The difference between these two levels of capital outflow, $\bar{F}_2$ and $\bar{F}_1$, is that $\bar{F}_1$ correspond to the level of capital flight due to the joint effect of economic sanctions and depreciation of the informal market rate at the informal market premium rate $\bar{\pi}_1$. The dynamic path of the exchange rate premium in figure 2, also indicates that at points B & C, the informal exchange rate premium overshoots the stationary equilibrium exchange rate premium at point D (post shock equilibrium exchange premium).

[3] To verify an adverse effect of economic sanctions on capital outflow, we can solve for the steady state $\bar{F}$ from equation (8) and differentiate it with respect to exogenously determined variable X (export) to show a positive association, that is $\frac{dF}{dx} > 0$.

Figure 1: Saddle point solution

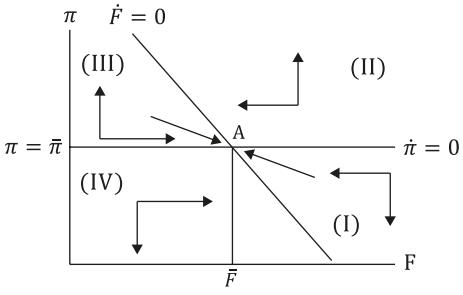
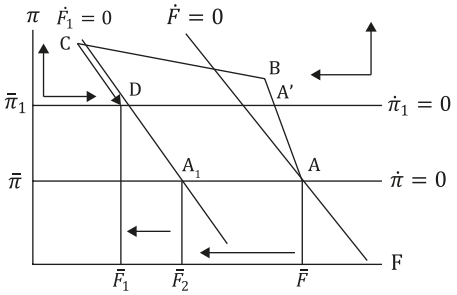


Figure 2: Unexpected shock

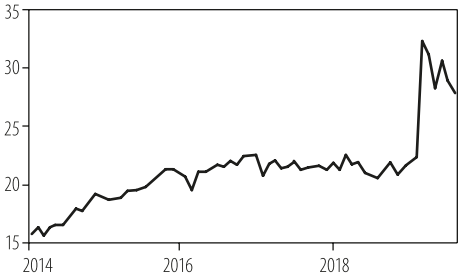


5. Robustness

To check robustness of our findings in the paper we used data on Venezuela to see how proposition 3 can explain the situation. Immediately after the return of American sanctions on Venezuela in August 2018, the informal market exchange rate premium (the difference between the informal market price to buy dollars and the formal rate) widened to the extent that in just one week, after the sanctions the bolivar depreciated 18% against the dollar on the streets where the currency is traded informally.

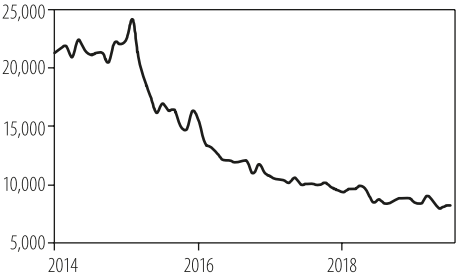
To control the increasing gap between the informal and formal foreign exchange rate premium, the government implemented restrictive monetary regulations on banks to keep bolivars out of the hands of individuals. These policies were designed to drain liquidity and to keep local currency out of the informal market for foreign exchange. This is exactly what proposition (3) implies: to control capital outflow due to economic sanctions it is recommended to control demand for domestic currency. As a result, in August 2018, the benchmark interest rate rose from 23% to 33% in just one-month period, and then swung around 30% for the rest of the year (figure 3). Due to such contractionary monetary policy that aimed at controlling demand for domestic currency, depletion of foreign exchange reserves, which is a measure of capital outflow from the country, became relatively more stable in the period after August 2018, as indicated in figure (4).

Figure 3: Venezuela Interest Rate



Source: tradingeconomics.com;
Banco Central de Venezuela

Figure 4: Venezuela Foreign Exchange Reserves



Source: tradingeconomics.com;
Banco Central de Venezuela

6. Conclusion

The paper employs the partial equilibrium dynamic model to assess the impact of economic sanctions against a small and open economy on dynamics of foreign exchange markets. The economy in the model is characterized by dual foreign exchange markets, including a formal market for foreign exchange with inadequate and volatile official foreign exchange inflows, and a strong and thriving informal market with higher exchange rate.

The paper attempts to answer the following questions: What is the necessary condition needed to stabilize the foreign exchange rates under such dual foreign exchange system? Does the informal market rate approximate steady state equilibrium exchange rate? Is it possible to sustain unified single exchange rate system? What is the appropriate policy needed to ease the adverse impact of economic sanctions that prompt capital outflow?

The findings in the paper indicate that a necessary condition for stabilization of the exchange rate system is that the return on investment should not be less than the depreciation rate of domestic currency in the formal foreign exchange market. This condition implies that the return on investment should at least compensate investors the opportunity cost of holding domestic assets in their private portfolio wealth. This is to say that depreciation of the formal foreign exchange rate represents implicit cost to investors in domestic assets. It should be realized from the dynamic path of the foreign exchange premium (figure 2) that stability of the foreign exchange rates is more difficult to achieve under insufficient official

reserves, as the recovery process from a shock becomes more costly in terms of time period needed for the adjustment process to complete, even when the stability requirement stated above is satisfied. With regard to the second question, the dynamic path of the foreign exchange premium also shows (figure 2: points B & C) that under massive capital flight invoked by economic sanctions, the informal market exchange rate overshoots the equilibrium stationary exchange rate, and the size of such overshooting depends on the size of available foreign exchange reserves held by the central bank. In other words, as the foreign exchange reserves held by the central bank dwindle, speculative attack on the informal foreign exchange rate induces higher level of the informal market premium. The findings in the paper also indicate that sustainable unification of exchange rates cannot be attained under political instability and economic sanctions that cause significant size of capital outflow from the country. However, to mitigate the impact of economic sanctions on capital flight, our findings indicate that controlling demand for domestic money by setting higher interest rates on government bonds with the aim of taking domestic money out of the hands of private agents in the country, and adopting flexible exchange rate policy that maintains fixed informal foreign exchange rate premium, can ease the capital outflow from the country.

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