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Preferential Trade, Mis-invoicing and Capital Flight

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Abstract

This paper examines how preferential trade policy affects the degree of capital flight. It builds up a three-country preferential – non-preferential trade model where low or zero tariff prevails in the preferential trade channel and higher tariff is exercised in the non-preferential trade channel. We show that the preferential trade channel is likely to encourage capital flight and non-preferential trade channel is conducive for illegal transactions in foreign exchange in the local market. We attempt to crosscheck our result with the Mexico – US and Canada and Mexico – Japan trade data.

Keywords: Trade policies, black market of foreign exchange, capital flight.

JEL classification: F13, F32, K40.

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I: Introduction

The dependence of less developed countries (LDCs) on protectionary policies and exchange controls, to manage their balance of payments (BoPs) and scarce capital reserves, are widespread and phenomenal. Presence and persistence of regulatory control on trade and payments induces exporters and importers to undertake illegal transactions. Such actions in turn lead to black market for scarce foreign exchange as well as capital flight. High tariffs provide the incentives to under-invoice import. Such under-invoicing activities on the part of importers will tend to raise the Black Market Premium (BMP), which we define as the difference between legal (official) and illegal (black market) exchange rate. A rise in BMP will give another cause of concern to the policy makers as this will take a significant foreign resource away from legal to the lucrative illegal channel and the domestic foreign exchange reserves will be adversely affected. This may also happen in the form of export under-invoicing. Exporters will report less to the official authority and sell the rest of the unreported foreign exchange to the illegal market for the premium. In this way an illegal market of foreign exchange emerges in the local economy where the bulk demanders are the under-invoicing importers and the bulk suppliers are the under-invoicing exporters. Such process establishes a close link between high tariff and the BMP.

With this backdrop let us shift our focus to analyse a situation where an economy has experienced a certain amount of trade reform through lowering of the tariff rate and a somewhat floated domestic currency. But we wish to make it very clear that any exchange regime in an LDC, cannot nullify the existence of a parallel market because of capital controls[1]. Zero or low tariff rate reduces the incentive for an importer to under-invoice and given a certain amount of BMP he may even go for over-invoicing. A minimal amount of under-voicing or even a positive amount of over-voicing by the importers is likely to reduce

the demand component in the black-market for foreign exchange. The exporters on the other hand may still continue with their under-invoicing practices if they think that they would gain given a small magnitude of BMP and small punishment costs in the event of mis-reporting. Thus there may be continuing supplies of illegal foreign exchange with a reduced demand for it. With capital control still in place, which forbids the domestic investors from investing aboard which are more lucrative destination, huge amount of unauthorized foreign exchange may cross the border illegally.

Usually capital flight is an illegal conversion of financial assets from the national currency to assets in a more stable currency in response to or in anticipation of heightened financial risk. The term is generally applied to abnormal capital flows out of the country. What distinguishes capital flight from 'normal' capital transactions is the motivation behind the outflow. Normal capital transactions are part of day-to-day business transactions where the investor seeks to acquire future income under conditions of acceptable risk. Within the normal category would be portfolio investments in stocks, bonds and government securities and direct investments in foreign-based manufacturing facilities provided they are permissible. On the other hand, capital flight entails flows of financial assets that result from the holder's perception that capital is subject to an inordinate level of risk from devaluation, hyperinflation, political turmoil or expropriation if retained at home in domestic currency. The holder seeks in this negative environment a safe haven for the funds such as the conversion of local currencies into dollars or other foreign currencies and holding them or placing them in foreign bank accounts.

There may be several reasons for capital flight to occur. We may list some of them here, though not all of them come under the purview of trade policy actions. There are other macro-economic and political factors and hardly related to trade policies. The main reasons for capital flight from the LDCs:

- Structure of political institutions giving instability to the government as well as the economy;
- Political interference on economic activities;
- Absence of proper investment climate because of lack of firm long-term policy objectives;
- Lack of confidence in domestic banking systems;
- Widespread corruption and absence of proper property right protections;
- Higher than normal rate of income taxes etc.

Beside the above reasons, for capital flight, another important reason is discriminatory attitude by the government towards resident and non-resident investment. More often than not, particularly in the LDCs, the government and apex banks announce various beneficial measures and sops to attract non-resident and foreign investments while their domestic counterparts do not get that much amount of support. This may cause domestic residents first illegally exporting their capital resources aboard and then when appropriate situation arises, repatriate those funds as non-resident or foreign investment to attract more benefits[2].

With the concepts of parallel foreign exchange market and capital flight clearly stated, the purpose of this paper is to examine how changes in trade policy affects capital flight. This paper builds up a three-country preferential – non-preferential trade model where, ceteris paribus, trade channels are demarcated in the sense that low or zero tariff prevails in the preferential trade channel while higher tariff is exercised in the non-preferential trade cannel. Initially we would experience that the preferential trade channel is prone to capital flight and non-preferential trade channel is conducive for illegal transactions in foreign exchange in the local market. Given these initial outcomes, we would proceed to examine the behaviour of the BMP through the changes in the demand and supply components in the illegal foreign exchange market. Finally we would further examine the process of occurrence of capital flight and the operation of parallel foreign exchange market in the changed circumstances where

BMP is determined endogenously within the model. In this general equilibrium framework, we demonstrate that the initial surge in capital flight through preferential trade channel and increased transaction in illegal foreign exchange market through preferential trade channel would likely to be partly taken care of once we allow changes in the BMP through transaction in illegal foreign exchange market demand and supply components. If both export and import resources move towards the preferential channels, given identical and homogeneous markets, very little resource will be available in the illegal foreign exchange market generated by the non-preferential trade channel, with the BMP remaining high. Due to resource-crunch this market will lose its importance. We also apply the results of our theoretical model to Mexico's preferential non-preferential trade channels to justify the validity of our model.

The rest of the paper is organized in the following manner. Section 2 initiates a brief survey of literature in this field. Section 3 discusses the model in a phased manner and interprets its results. Section 4 examines the validity of section 3's results by taking up the case of Mexico and finally section 5 concludes the paper.

II: Brief Survey of Literature

There is no dearth of literature regarding various trade policy options, capital control and the consequent effects on formation of parallel foreign exchange market and capital flight[3]. Bhagwati (1974) presents a series of papers that effectively demonstrates the relationship between various trade policy options and dishonest activities in international trade, both theoretically and empirically. The regime of exchange control is classified into various phases in Bhagwati (1978). It shows five distinct phases of exchange control regime, from phase one to phase five as a series of liberating steps towards a completely open economy and analyses to what extent they are instrumental in affecting trade scenario, particularly the corrupt practices.

The relationship between macroeconomic determinants and capital flight is analysed in Cuddington (1986). It says that high interest rate in US acts as a 'magnet' for otherwise 'illegal' capital stock and also blames disbursement of loans to LDC's for huge amount of capital flight. It is shown that new loans increase the availability of foreign exchange needed to effect capital outflows. This kind of relationship between increased indebtedness and capital flight is described as 'asymmetric risk'. Varman-Schneider (1991) asserts that interest in asymmetric risk associated with LDC's is stimulated when capital importing countries experience an asymmetric development in the net foreign asset positions of the public and private sectors. Mohan, Jr. (1991) attributes the huge amount of Mexican capital flight to persistent domestic financial crises and observes that Mexican nationals moved their capital out of the country much more quickly than foreign investors. He also discusses the relationship between exchange policies and capital flight. In an internationally mobile capital regime, models of speculative attacks against inconsistent policy prescriptions are developed in Krugman (1979) and Flood and Garbar (1984). Wyplosz (1986) argues that capital controls that are only temporarily effective, make an adjustable peg viable regime. Without attempting to access the optimality of this system, this model desires to reduce the short-run variance of exchange rates. Calvo (1987) develops a model that addresses the issue of the behaviour of the private sector where it is known that the exchange control regime is inconsistent and will be abandoned when the government exhausts its international reserves. Auernheimer (1987) compares the breakdown of inconsistent regime in a maximizing model with and without capital control. Gros (1992) also models speculative attacks to point out that, while capital controls can limit private sector speculation in most cases, governments are forced to augment the capital control programe with domestic interest rates that are much higher or lower than would be the case in the absence of speculative pressure. Park (1994) builds a maximizing model with householders and analyses whether a liberalization of the capital account can

generate an immediate speculative attack on a fixed exchange control regime. Tanzi (1987) reports that tax experts were concerned that lowering the US individual and corporate rates in the US Tax Reform Act of 1986 would induce a capital drain from other countries by providing a tax advantage to the investors in US. Wijnbergen (1990) demonstrates that the imposition of a tax on capital imports lower domestic real interest rates and raises world real interest rates which may be the reasons for capital flight and a depreciation of the home currency now and an expected appreciation later. Razin and Sadka (1991) show that empirical estimates from the developing countries suggest that a government cannot tax its residents' income from foreign capital at the same rate at which it taxes domestic capital income. Velasco (1991) develops a formal model in which a poorly defined property rights imply that investors will prefer external investment even if domestic investments have a higher social but lower private expected return. Edwards (1989) shows that capital flows related to liberalization of the capital account can generate real exchange rate changes. The welfare aspect of capital control is presented in Edwards and Ostry (1992). Dooley and Kletzer (1994) argue that simultaneous gross capital inflows are frequently the response of private investors to a variety of government guarantees and subsidies. Claessens, Dooley and Warner (1995) examine the volatility of different types of capital flows for a sample of industrial and developing countries. Lucas Jr. (1990) and Tornell and Valesco (1992) explain the fact the conventional wisdom that capital starved LDC's have higher capital productivity and hence high return on capital fails to attract capital from rich to poor countries and capital always moves in the reverse directions. Alesina and Tabellini (1989) explain the simultaneous occurrence of large external debts, private capital outflows and low domestic capital formation. They say that uncertainty over fiscal policies of future government generates capital flight and small domestic investment and induces the government to over accumulate external debt. It also examines how political uncertainty affects the risk premium and how debt repudiation may occur after a regime

change. Laban and Larrain (1993) argue that removing controls on capital outflows generates capital inflow because controls on outflows make investment irreversible. Dellas and Stockman (1993) show that a speculative attack might be generated by the expectation that capital controls will be introduced. Bartolini and Drazen (1996) develop the idea that controls themselves are a signal that affects private sector expectations concerning the government future treatment of investors. In their model, the removal of controls signals to investors that the government is less likely to tax foreign capital income or to reimpose controls once the capital inflow is in place. Pinheiro (1997) discusses the validity of exchange controls to prevent capital flight. Acharyya (1998 & 2001) examines the behaviour of BMP and illegal foreign exchange market relating to various trade policy options. Kant (1998) examines whether individual countries' data show that FDI inflows facilitate capital flight and whether capital flight occurs due to poor domestic investment climate or it is due to discriminatory treatment against residents' investment. Tamirisa (1999) considers the effect of exchange and capital controls on trade in the gravity equation framework in which bilateral experts depend on distance between countries, the country's size and wealth, tariff barriers and exchange and capital controls. Mourmouras and Russell (2000) analyse the impact of dollarisation on the ability of governments to earn seigniorage, the dynamics of dollarisation in a growing economy, and the central role of expectations. This paper demonstrates how leaky exchange controls lead to currency mobilisation and progressive dollarization. Loungani and Mauro (2000) document the scale of capital flight from Russia, compare it with that observed in other countries and review policy options. Zdanowicz et al (1995) develop a global price matrix to show that under invoicing of export is done artificially decreasing the price of export and over-invoicing of import is made by artificially increasing the price of imports and shows how mis-invoicing in trade statement leads to capital flight. They do the exercise based on Indian trade data. Patnaik and Vasudevan (2000) attempt to measure the extent of mis-invoicing in trade

statistics and capital flight from India in the post reform period. Marjit, Dasgupta and Mitra (2000) in their paper have tried to build up a simple export under-invoicing model and verified the fact that with devaluation the extent of under-invoicing fell significantly. They have shown that there is significant differences between actual and official export values in India and the official export is more responsive than the actual one to the changes in the official exchange rate. Finally, Biswas and Marjit (2001) rationalise the trade mis-invoicing phenomenon in LDCs where over-valued exchange rate prevails along with irrational tariff rates. They show that devaluation lowers export under-invoicing and high tariff rate compels an importer to under-invoice. They also analyse the behaviour of the mis-invoiced trade statistics of India for the period of 1958 to 1997.

III: The Model

In this section we build a three-country preferential – non-preferential trade model to examine the effects of trade policy instruments on capital flight and parallel foreign exchange market in the home country. First we build a partial equilibrium framework and then proceed to the general equilibrium model. In the partial equilibrium analysis, only tariff rate can change and other things including the BMP remains unchanged. But as we enter into the general equilibrium framework, we also endogenise the determination of the BMP.

The partial equilibrium framework:

In our model we assume that there are three countries – A, B and C. A is a typical LDC and characterized by regulated foreign exchange and trade regime. Both B and C are DCs. We state that A and B have a preferential trade agreement which implies that each country's export to the other faces low or zero import duty. There is no such agreement between A and C and imports are tariff protected.

Initially, we assume that foreign exchange and other resource transactions between A's two trade channels are strictly restricted and each channel is solely dependent upon its own resource utilization. We also assume that there is a government controlled over-valued fixed or semi-fixed exchange rate (official) and BMP is there. Export subsidy is also there but BMP is more lucrative. Hence we assume that it will act as an incentive for exporters to under-invoice their export values and supply their rest of unreported dollar value of exports to the black or illegal market to earn BMP. This is the major source of supply of foreign exchange in our model.

Let us explore the partial equilibrium situation where export subsidy and BMP are exogenous. Following the previous assumption of preferential non-preferential trade model, let – $\underline{d}_t$ is the unit tariff duty on per unit dollar value of imports from country B to A at time t and the same is $\bar{d}_t$ in case of imports coming from C and $\underline{d}_t < \bar{d}_t$. We also assume that given the cost of punishment is covered, it is beneficial for an importer, irrespective of the route of imports, to under-invoice their import values as to them gain from tariff evasion outweighs the BMP loss. Thus import under-invoicing is there and to finance the rest of unreported imports they have to buy the foreign exchange at market exchange rate and have to pay the premium. Thus, clearly the bulk of demand for foreign exchange will come from the importers at the black or illegal market. We implicitly assume that the importers have no previous savings and need to finance the unreported import basket by buying the illegal foreign exchange at market exchange rate.

Let us first specify the A – B import under-invoicing model. Here –

M_{ot}^{B} is the reported or official dollar value of imports from B at time t,

M_t^B is the actual dollar value of imports from B at time t,

e_t is official exchange rate at time t,

E_t is market exchange rate at time t. Let M_{ot}^{B} and M_t^B are related through

$M_{ot}^{B} = (1 - \alpha)M_t^{B}$ …….. (1), where α is the rate of under-invoicing.

BMP is symbolized as v_t and $v_t = E_t - e_t$, $v_t > 0$ and $(dv_t/de_t) < 0$ …….. (2).

The objective function of the importer can be written as:

$V(\alpha) = R(M_t^{B}) - e_t M_{ot}^{B} - e_t \underline{d}_t M_{ot}^{B} - E_t \alpha M_t^{B} - F(\alpha M_t^{B})$ ..... (3) (following (1)), where $R(M_t^{B})$ is the fixed revenue earned by the importer as M_t^{B} is unchanged here.

Incorporating (2) into (3) and solving for first order condition (FOC) for maximizing $V(\alpha)$ with respect to α, gives us $(e_t \underline{d}_t - v_t) = F'(\alpha M_t^{B})$ ….. (4)

and the under-invoicing condition as $e_t \underline{d}_t > v_t$…… (5).

Here, F(.) is the cost of under-invoicing and F′ and F′′ are positive. The second order condition (SOC) is also satisfied.

Let us shift our focus to the A – C import under-invoicing model where

M_{ot}^{C} is the reported or official dollar value of imports from B at time t,

M_t^{C} is the actual dollar value of imports from B at time t and

$M_{ot}^{C} = (1 - \beta)M_t^{C}$ …….. (6), where β is the rate of under-invoicing.

The objective function can be stated as

$W(\beta) = - e_t M_{ot}^{C} - e_t \bar{d}_t M_{ot}^{C} - E_t \beta M_t^{C} - F(\beta M_t^{C})$ ..... (7) (following (6)).

Incorporating (2) into (7) and solving for FOC with respect to β, gives us

$$(e_t \bar{d}_t - v_t) = F'(\beta M_t^{C}) \text{ …. (8)}$$

and the under-invoicing condition as $e_t \bar{d}_t > v_t$… (9).

e_t and v_t remaining unchanged, following (5) and (9) it is easily understood that as $\bar{d}_t > \underline{d}_t$, condition (9) is more likely to be satisfied than (5) given the cost of punishment is covered in each of the cases. This implies that rate of under-invoicing of imports in A – C case will be much higher than that of A – B case, thus we have $\beta > \alpha$, which is also evident from two FOCs (equations (4) and (8)).

In the following lines, we are to examine what happens to country A's exports in the preferential non-preferential trading pattern. Let A's total official export $X_{ot}^{A} = X_{ot}^{B} + X_{ot}^{C}$ where X_{ot}^{B} and X_{ot}^{C} are A's official export to B and C respectively. Also let X_t^A is the actual value of A's total export and $X_{ot} = (1-\gamma) X_t$ ……(10),

where γ is the rate of export under-invoicing.

The objective function the (already assumed) under-invoiced exporter can be formed as: $Z(\gamma) = e_t X_{ot}^{A} + e_t s_t Xot^{A} + E_t(X_t^A - X_{ot}^A) - F\{(X_t^A - X_{ot}^A)\}$……..(11), where s_t is the unit rate of export subsidy at time t.

Incorporating (2) and (10) into (11) we get the FOC and condition of under-invoicing as $(v_t - e_t s_t) = F'(\gamma X_t)$ ……..(12) and $v_t > e_t s_t$ ……..(13) respectively.

Let us focus on the combined effects of export and import under-invoicing on illegal foreign exchange market and possible capital flight. To simplify the case we assume that at the point of the introduction of preferential – non-preferential trade pattern country A's total export and import are divided equally among the two channels i.e., in A – B and A – C channels. Thus we have $X_t^B = X_t^C$ and $M_t^B = M_t^C$. Because of preferential trade through A – B channel and non-preferential trade through A – C channel, we have different rate of import under-invoicing in two channels which are dependent upon the tariff rate. As in our model $\alpha < \beta$, it implies that $M_{ot}^{B} > M_{ot}^{C}$. In case of exports, there is no such discrimination and the common rate of under-invoicing is γ. So, we have $X_{ot}^{B} = X_{ot}^{C}$. Before we start interpreting the outcomes, we want to make one more simplified assumption that before the introduction of preferential trade pattern, supply of illegal foreign exchange was fully exhausted through its demand and the illegal market was stable in each of the channels.

With these simplified assumptions, we now interpret the results. These results are interesting, as we have assumed away exchange transaction between the channels. Evidently, due to low tariff rate as under-invoicing of import falls in A – B channel, given unchanged

supply, the demand for illegal foreign exchange will fall; while in the A – C channel, due to higher tariff rate and higher amount of under-invoicing, given unchanged supply, the demand for illegal foreign exchange will rise. These observations imply that BMP will go down in the A – B channel and the rest of unsold illegal foreign exchange can be flown away to some lucrative external destination to compensate the BMP loss and punishment cost. This is known as capital flight. On the other hand, in A – C channel, BMP will go up and because of increased premium there will be no capital flight from this channel.

At this point if we assume that same baskets of goods are exported and imported by A through two different channels, any of the two following cases may occur.

Case I: Given unchanged actual total export and import values for country A through her two trade channels, the share of preferential trade may increase. It can happen as same good(s) can be imported cheaply from B taking advantage of low tariff rate. This is trade creation. Thus there is a fair possibility that import share of preferential trade channel may increase and that of non-preferential channel may decrease. On the other hand, as like A, B is also importing from A cheaply, B's import demand for A's good will increase and as a result A's export to B may increase while given same amount of A's total export, her export to C may decrease. This is an example of trade diversion. As the share of preferential trade is increased, it means that the share of non-preferential trade will decrease. It implies that the importance of illegal foreign exchange market will be reduced and chances are high that the volume of capital flight will be increased.

But one important point is to be noted here. Allowing trade creation and trade diversion to take place we imply that along with imports, share of exports will also increase in the preferential trade channel and decrease in the non-preferential channel. But unlike tariff rate, as BMP remains unchanged, irrespective of share of exports in the two trade channels, the value of unreported exports will remain unchanged. This is clear from equations (12) and (13),

the conditions of export under-invoicing. With (v_t - $e_t s_t$) remaining unchanged, if X_t rises (falls) then given unchanged Marginal Benefits (MB), the Marginal Costs (MC) will increase (decrease). Hence, the rate of under-invoicing (γ) must fall (rise) to keep MB equal to MC. Thus, the supply of black foreign exchange due to export under-invoicing will remain unchanged irrespective of trade creation and trade diversion.

Case II: In this case we are not allowing the movement of exports and imports form the non-preferential channel to the preferential channel as if there are pre-contracts and pre-commitments. Here, as we have already found, BMP will fall and capital flight may increase in the preferential channel and BMP will rise and local illegal market will be activated in the non-preferential channel.

Determination of the market exchange rate in different trade channels:

The above results are the features of our partial equilibrium model where BMP is exogenous. In this sub-section we endogenise the BMP to move towards the general equilibrium. Before we proceed let us discuss the shape and slope of the demand and supply components of the illegal foreign exchange market given the demand and supply as well as the official exchange rate (over-valued) in the official market.

In figure (1) on the horizontal axis, we measure the demand and supply of the foreign exchange and on the vertical axis we measure the official exchange rate. The conventional demand and supply curves for foreign exchange are D and S respectively. The officially administered over-valued exchange rate is e_t. As it is over-valued there exists an excess demand for foreign exchange. The unsatisfied customers are prepared to offer more than e_t to get required exchange and that paves way for illegal exchange transaction. Let us concentrate on the illegal exchange market and its components. Whenever market exchange rate (E_t) lies below e_t, the illegal supply will be zero and supply starts only when E_t is greater than or at least equal to e_t. Thus if we erect the E_t axis where e_t cuts the S curve, then the origin

shifts to O´ and the illegal supply curve (S^B) must start from the new origin (O´) as at zero BMP, the amount of illegally supplied foreign exchange will be zero. On the other hand, the rate at which a consumer is prepared to buy a given amount of foreign exchange is shown by his demand schedule (D). Any price beyond his D curve will keep the consumer away from the market. Hence the demand schedule for the illegal exchange starts where the E_t axis cuts the D curve. This is shown by the D^B curve. We also know that there is a cost of punishment for both export and import under-invoicing. Thus both the demanders and suppliers have to earn some amount of extra resources to meet the punishment cost and hence the illegal demand and supply schedules will be steeper than the legal counterparts.

Let us again specify the prime moving forces behind the operation of illegal foreign exchange market in the domestic economy.

$$S^B = S(v_t, s_t) \text{ with } S_{vt} > 0 \text{ and } S_{st} < 0 \quad \ldots\ldots\ldots\ldots(14) \text{ and}$$

$$D^B = D(v_t, d_t) \text{ with } D_{vt} < 0 \text{ and } D_{dt} > 0 \quad \ldots\ldots\ldots\ldots(15).$$

S^B And D^B are respectively the supply and demand for illegal exchange. Thus, (14) and (15) indicate that as we have previously discussed, supply of illegal foreign exchange is a function of BMP and unit rate of subsidy while demand for illegal foreign exchange is the function of BMP and unit tariff rate and we also specify the signs of the partial derivatives. With these assumptions in hand, let us explore the effects of the two trade channels on the illegal market of foreign exchange.

Illegal foreign exchange market and the preferential trade channel:

By assumption the A-B trade channel is preferential trade channel and is obviously characterized by low (or Zero) tariff duty. We have seen low tariff duty would induce an importer to reduce his extent of under-invoicing resulting in a fall in the demand for illegal foreign exchange. This will reduce the BMP in this channel. This is illustrated in figure (2). In figure (2), e_t is the exogenous official exchange rate and E_t was the initial black rate before

the starting of preferential trade. With the commencement of preferential trade and simultaneous wipeout of high tariff rate, the import under invoicing in this channel will fall. As a result, the importers will require less amount of illegal foreign exchange to finance their unreported import market. This will induce a leftward shift in demand curve for black foreign exchange and illegal rate will fall to E'_t as is BMP obviously in this channel.

Illegal foreign exchange market and the non-preferential trade channel:

Contrary to A – B channel, here no kind of preferential trade is taking place and the tariff rate is higher than the average tariff. This will induce importers to increase their extent of under-invoicing. Let us see what happens to the illegal foreign exchange market because of increased demand of illegal foreign exchange in A – C channel. This is shown in figure (3). Initially illegal rate is at E_t and e_t is given. But through upward shift in the demand curve, given the supply of foreign exchange in illegal market, the black rate will depreciate further and will go up to E'_t. As a result of it BMP will rise and illegal foreign exchange market will be strengthened. Thus, there is hardly any possibility for capital flight through this channel.

Thus there are certain distinctive features between the two trade channels. The preferential channel is more likely to wipe out the BMP and provides disincentives to illegal foreign exchange market activities. The black market gets reduced demand for foreign exchange. Thus, as an illegal activity has already taken place through mis-invoicing activities, the illegal foreign exchange will be exported aboard as capital flight. On the other hand, the non-preferential trade channel increases the BMP and the black market activities grow further and little scope remains for capital flight.

Up till now, we have kept the resources including foreign exchange confined to its own channel but let us introduce interaction between the two channels. If we allow trade creation and trade diversion, given fixed total exports and imports, then definitely slowly but surely the share of non-preferential trade in total trade will be close to zero. If this

happens, then country's total import under-invoicing will fall though the supply remains unchanged. As a result, in a unified market for illegal foreign exchange, the BMP will fall as shown in figure (4). But if we do not allow movement of export and import baskets between channels, then we cannot say whether the BMP will fall or rise in a unified illegal foreign exchange market. It will depend upon the relative magnitude of the excess supply of black exchange in the A – B channel to the excess demand for black exchange in the A – C channel.

The general equilibrium framework:

In this general equilibrium framework, let us explore the effect of changing BMP on the mis-invoicing problem and how it affects the amount of capital flight and / or illegal foreign exchange transactions.

We know that BMP, $v_t = f(e_t, E_t)$ with $f_{et} < 0$ and $f_{Et} > 0$ ….(16).

Equation (16) shows that devaluation of the official exchange rate reduces the BMP and depreciation of the market exchange rate increases the BMP. In our model though e_t is exogenous, we have shown how E_t can be determined within the model through simple interaction between the demand and supply of foreign exchange in the black market. We have shown that in the preferential trade channel, E_t will fall due to reduced demand. Thus, following (16), fall in E_t causes a fall in v_t. Also from (14), as v_t falls, the amount of illegal exchange supplied in the black market of A – B channel will fall. This result is also evident from condition (12) for export under-invoicing. A fall in v causes the MB to fall and the rate and amount of export under-invoicing is reduced. When the rate and amount of export under-invoicing is reduced, the MC of punishment also falls and MB equals MC. Thus it is clear that both demand and quantity of illegal exchange supplied in the black market will fall due to preferential trade arrangement. This, along with reduced activities in the illegal foreign

exchange market, reduces capital flight, if any, as excess illegal foreign exchange supplied in the black market falls. Obviously, our arguments are based from the point of view of trade policy instruments. Arguably, there are several reasons for which capital flight may occur. We are not turning our focus to those. We are only to opine that in the preferential trade channel, changes in the policy instruments will cause mis-invoicing of export and import to fall. It may cause the disappearance to both capital flight and illegal foreign exchange transaction in this channel.

Next we look into the effects of changes in v_t at the non-preferential, A – C, trade channel. We have shown that due to high incidence of tariff rate, the rate of import under-invoicing and thus the demand for illegal exchange rises in this channel. This causes an increase in E_t and hence an addition to the BMP. An increase in v_t will attract more illegal exchange and hence amount of illegal exchange supplied in this channel will increase. Thus through an increase in demand and quantity supplied in the illegal exchange, the illegal foreign exchange market due to A – C channel will be strengthened unlike the A – B channel. The only way the illegal activities can be reduced in this channel is to assume that exports and imports move from this channel to the preferential channel. In that case, the illegal foreign exchange market generated in this A – C channel will slowly loose its importance and may end up by a symbolic presence in the overall contents of country A's trade.

We can mention one important point here. We have understood that in the preferential trade channel, the amount of export under-invoicing falls and increases in the non-preferential channel. We should further understand that when we take into account this observation, we should not rule out export over-invoicing phenomenon in the preferential trade channel. Due to preferential trade agreement an exporter may be committed to export to the preferential channel. But as the BMP is not lucrative in that channel and if an exporter wants to gain the BMP through corrupt activities, he must shift his resources to the non-preferential channel. But

as stated above, if the exporter is compelled to increase his share in the preferential channel, he may first pass his basket through the preferential channel and then further redirect it unofficially to the non-preferential channel. Consequently, in the non-preferential channel, where the BMP is attractive, he increases his rate of under-invoicing and gains in terms of the BMP. Thus, we are not ruling out export over-invoicing in the preferential trade channel and under-invoicing in the non-preferential channel, which is quite obvious.

Lastly, we take the situation where the two separate markets are unified. We have seen that if the share of preferential trade rises, then the BMP falls. It implies that the total illegal foreign exchange supplied will be reduced. Thus there is a possibility that the illegal exchange market can be wiped out form the local economy. But if the share of non-preferential trade is not reduced, then as BMP increases, the quantity supplied of illegal foreign exchange will increase and local illegal exchange market will be consolidated. In this case, along with the importers, exporters also will increase their rate of under-invoicing.

Thus, the results of our model demonstrate that a preferential trade channel is initially prone to capital flight and non-preferential trade channel strengthens the local illegal foreign exchange activities. But after the BMP is adjusted in the illegal foreign exchange market, it can be expected that the preferential trade channel will wipe out both the capital flight and BMP.

IV: Empirical Evidence: The Mexican Case

We have taken the Mexican case of trade mis-invoicing to analyse the validity of the results of our model. Mexico is a typical developing country of Latin America, which is characterised by high tariff rate, and unpredictable value of domestic currency against dollar. Mexico's trade statistics in analysed for a period of 1985 to 1999 with respect to her three developed country trade partners USA, Canada and Japan. We have chosen these countries as all of them are

developed countries and we assume that they have less of trade controls and better monitoring facilities. The other important reason for choosing USA, Canada and Japan is that Mexico has entered in a preferential trade arrangement along with the former two countries through NAFTA (North American Free Trade Association) since 1994. Thus Mexico – US and Canada (M-US&C) trade relationship is characterized by low tariff regime where as no such preferential relationship exists with Japan. So, Mexico – Japan (M-J) trade is non-preferential trade.

Let us focus on our methodology. First for both M-US&C and M-J trade relations, we calculate Mexico's amount of export and import mis-invoicing values, the same way as is done in Biswas & Marjit (2001) for the Indian case. Then we calculate the ratio of export mis-invoicing to import mis-invoicing (Exim ratio). We first take the case where both export and import values are under-invoiced. Intuitively if the ratio hovers around one, then we understand that through transaction of foreign exchange in black market black foreign exchange supply is sufficient to meet the illegal foreign exchange demanded by the importers. But if the ratio is much lower than one, then definitely the black foreign exchange supply from that channel is not sufficient to finance the unreported import basket. In that case, we are not ruling out illegal inflow of capital, which is attracted by high BMP. On the other hand, if we find that the ratio is greater than one then we can say that the whole of black foreign exchange supply is not required to meet the illegal demand for it. Hence it may head for some external destination and capital flight may occur. Also, if we find that export is under-invoiced and import is over-invoiced then possibility of capital flight is increased and if export is over-invoiced then we may argue that repatriation of previously held illegal capital is made through the export channel.

We now focus on the results. Before we interpret, we have already said that trade mis-invoicing and trade policies are only partly responsible for capital flight. Since there may be

many reasons and many channels for capital flight our results are only indicative in nature. To proceed, let us first analyse the M – US&C data. We find that from 1985 to 1990, the Exim ratio is almost hovering around one (with the exception of 1987), implying that demand for illegal exchange has matched the supply of it for the said period. This is an indication of less to no capital flight through this channel. But in the post 90's we can see a real turnaround. Table (1) shows that in this period the exports are over-invoiced, the incidence of which are not ruled out in the preferential trade framework given the existence of non-preferential trading channel. Along with it we can also experience that the extent of import over-invoicing is being increased as we move towards the late 90's (with one exceptional year of 1997). This is one clear indication of capital flight as there is hardly any component of demand for illegal exchange through trade mis-invoicing. Notably, here the Exim ratio becomes irrelevant.

Let us shift our focus to the M – J trade data. Table (2) shows us that from 1985 to 1994, for each of the years, the extent of export under-invoicing is much less than import under-invoicing. This indicates that for this period, the Exim ratio is much less than one. This is obviously an indication of no capital flight; one can even conclude that illegal capital inflow has taken place for this period, as BMP should be quite high in this channel. But the trend is a bit different from the viewpoint of import mis-invoicing as we enter into the mid-90's. One can note here that from mid-90's onwards Mexico has significantly lowered the tariff and non-tariff barriers for her imported items irrespective of preferential – non-preferential trading patterns and more specifically Mexico has started negotiating with Japan to enter some form of tariff rationalisation between them. Hence, from 1995 onwards, M – J trade data shows that, though the export under-invoicing continues, the import becomes over-invoiced because of low tariff rate. Again we find that the Exim ratio becomes irrelevant and in the post 90's, even the M – J trade channel becomes prone to capital flight.

Thus the above results are somewhat supportive of the results of our model. We have

found that the lowering down of import tariff duties can be a stimulus to the capital flight. We have also found that export over-invoicing may take place in the preferential trade channel while export under-invoicing is quite obvious in the non-preferential trade channel.

V: Conclusion

In this section we summarise the paper and explore the scope of further extension of research in this area. We have seen that a tight trade and foreign exchange regime generates various financial incentives for traders to mis-invoice their traded values. They use the undisclosed resources to initiate parallel foreign exchange market activities and gain high BMP. If policy makers continue with their regulatory policies then we have analysed that there is hardly any reason to believe that corrupt activities will slowly subside. In fact, continuation with tight foreign exchange and trade regime will only aggravate the problems. On the other hand, a flexible trade and exchange regime results a lowering down of tariff duties and a market determined exchange rate. It is likely to wipe out the incentives for fabrication of traded values of exports and imports. Even a lower tariff rate along with over-valued exchange rate leads us to the desired results. We have clearly shown that a fall in tariff rate immediately makes an importer to reduce his extent of under-invoicing. As his extent of import under-invoicing falls, his demand for black foreign exchange falls. This leads to two important effects. First due to lack of demand the BMP falls and secondly unsold amount of foreign exchange is exported as 'Capital flight'. In the short run it adversely affects the exchequer. Income falls through fall in tariff revenue and then outflow of foreign exchange occurs illegally. But this is a temporary phenomenon. As BMP falls, it compels an exporter to reduce his extent of under-invoicing. This results in a fall in the quantity supplied for foreign exchange in the black market. Hence, resource available in the black market to be illegally exported as 'capital flight' falls. Hence, a

liberalised foreign exchange regime has three distinct effects on corrupt practices – first mis-invoicing of traded values fall; secondly, the importance of parallel foreign exchange market falls and hence BMP falls and last but not the least, unhealthy flows of capital flight is controlled.

Nevertheless, we have repeatedly pointed out that there are so many motive and so many ways through which 'capital flight' may occur. Our paper only addresses the fact that through liberal trade policies, capital flight at least can be controlled and parallel foreign exchange market can be weakened. We have just tried to show that distorted trade statistics can be indicators for either illegal capital flight or existence of parallel foreign exchange market, which generates premium.

We can suggest several extensions of this paper. One interesting exercise would be to analyse effects of rate of interest, both domestic and aboard, on the volume of capital flight. Another interesting research work can be initiated to judge to what extent 'capital control' is effective in improving the health of a country's BoP, particularly for the LDCs. One can try to analyse and interpret the volume of capital flight with or without capital control, taking into account various macro economic factors that are responsible for capital flight. Lastly, theory of expectation can be introduced in this model where foreign exchange traders allocate their portfolio between capital flight and illegal foreign exchange market taking the risk factors into account.

Notes:

1) For details see Jianping (1998).
2) Law (2001) finds that if someone wants to bring in foreign exchange and take it out at will, without being subjected to regulation, he or she has to become an Overseas Corporate Body (OCB). This as one example of resident Indian foreign exchange earners shift their foreign exchange to any OCBs and then invest in India to get lucrative benefits.
3) Dooley (1996) provides an excellent review of existing studies on capital flight and analyses recent theoretical and empirical work on controls over international capital flight.

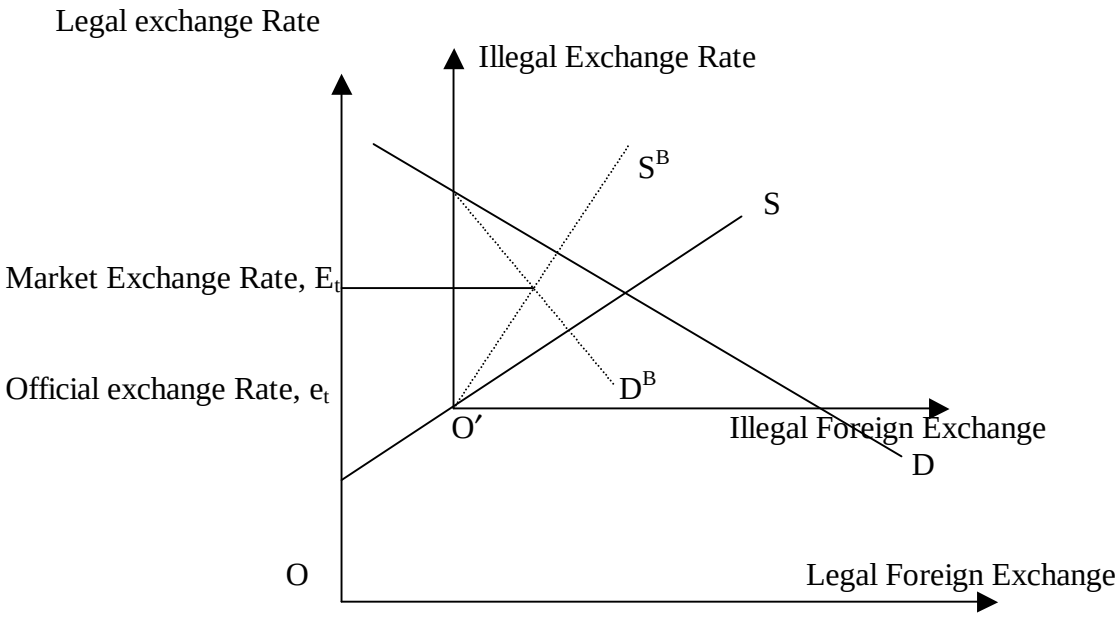

Figure 1: Demand and supply of Foreign exchange in legal and illegal Market

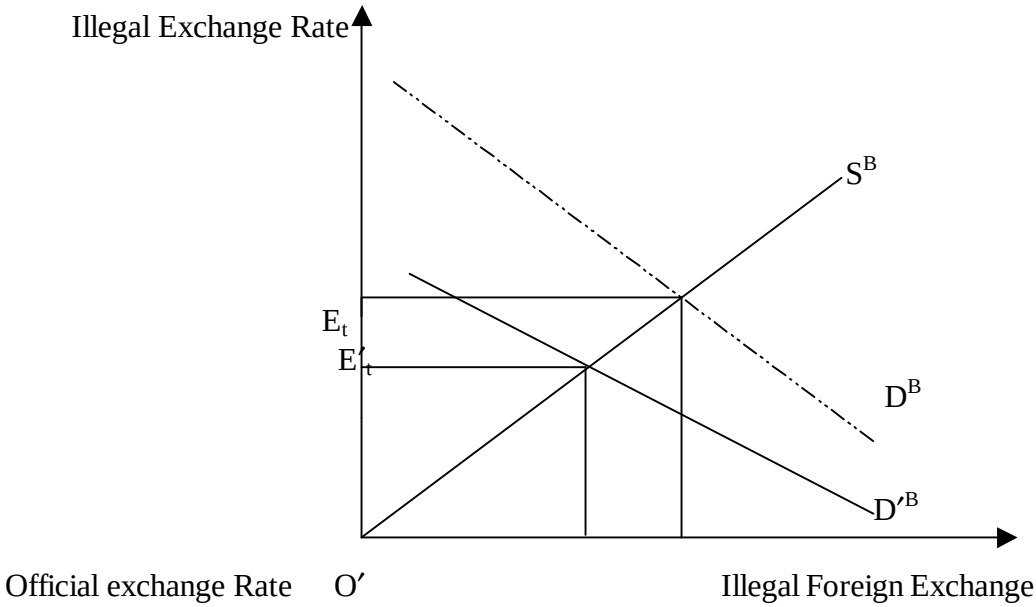

Figure (2): Illegal foreign exchange market in a preferential trade case

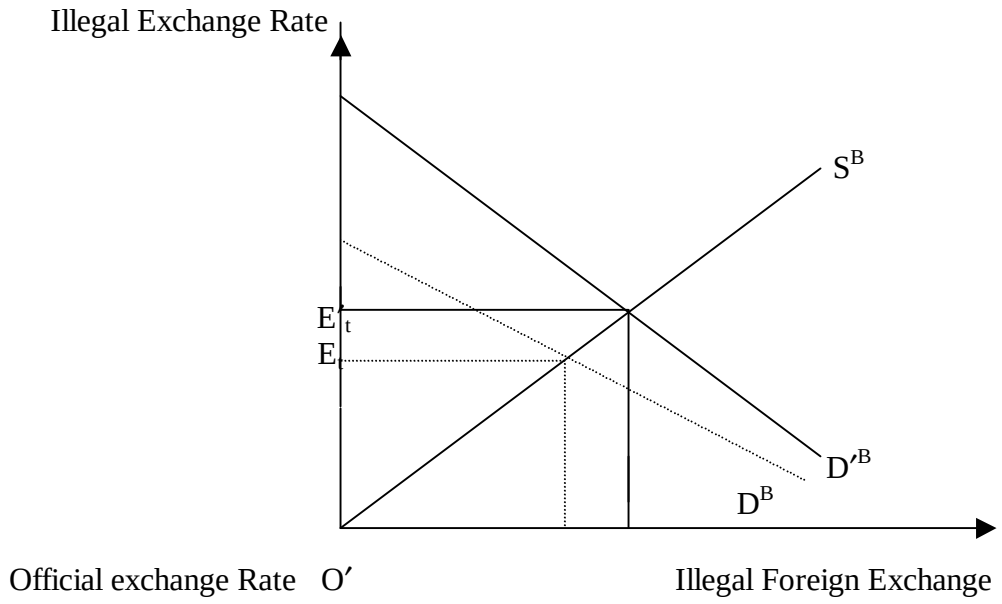

Figure (3): Illegal foreign exchange market in a non-preferential trade channel

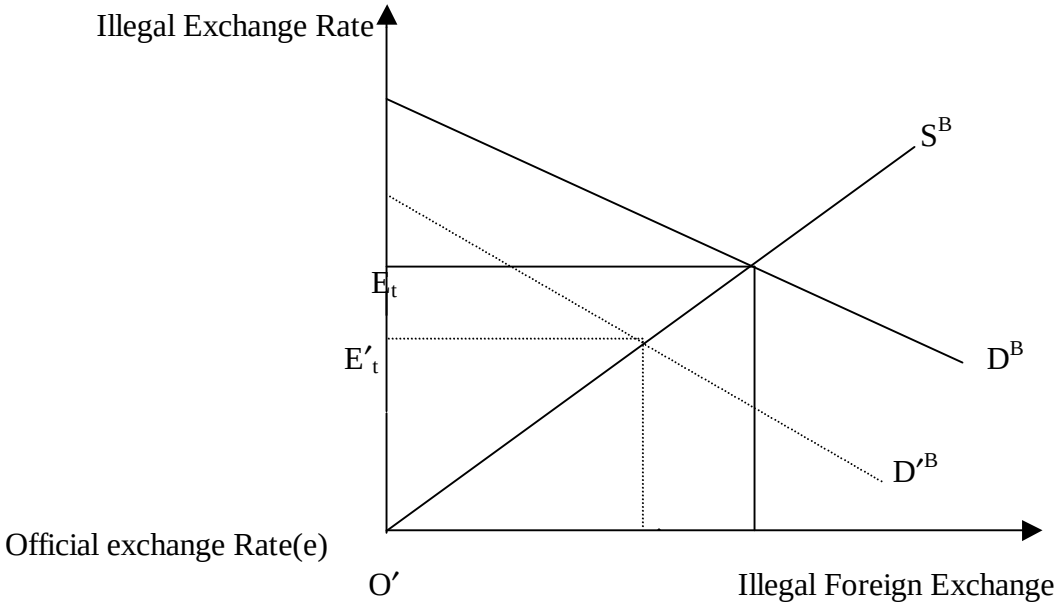

Figure (4): Reduced BMP in a unified illegal foreign exchange market when we allow trade creation and trade diversion

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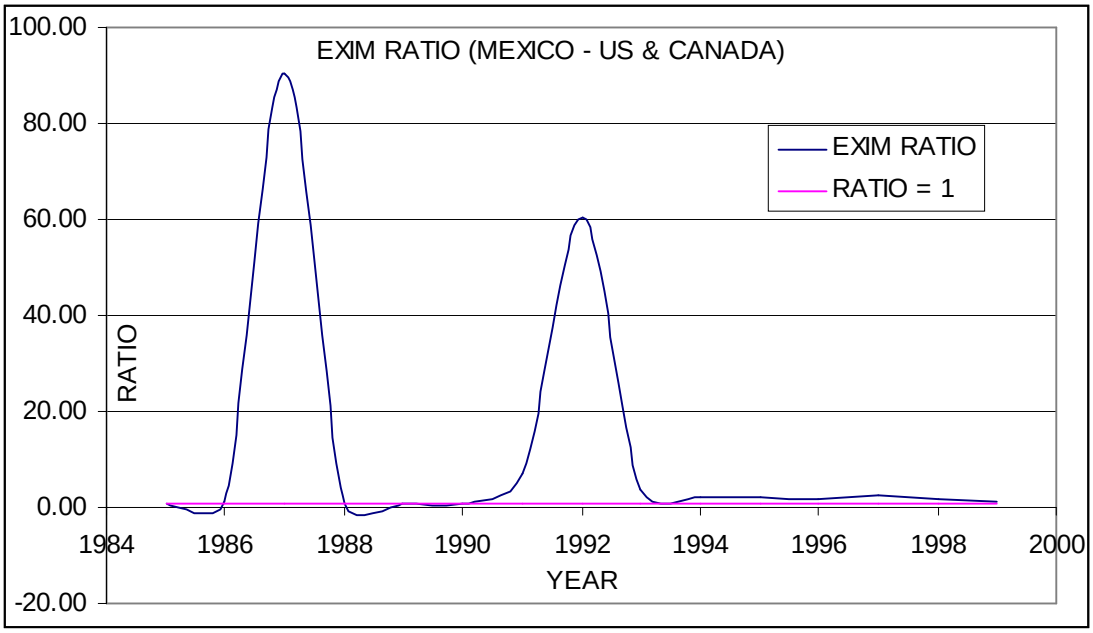
Calculation of actual Exim ratio from Mexico – US & Canada trade statistics*
(Data in million US Dollar)

YEAR	OFF EX RATE	ACT-OFF EXPORT	ACT-OFF IMPORT	EXIM RATIO
1985	25.69	4871.09	5201.10	0.94
1986	61.18	5397.82	4580.00	1.18
1987	137.82	5962.55	65.90	90.48
1988	227.31	8736.55	9523.30	0.92
1989	246.15	10080.82	12077.90	0.83
1990	281.26	10417.27	10721.50	0.97
1991	301.84	-3991.91	-576.40	6.93
1992	309.94	-3637.36	-60.20	60.42
1993	311.56	-4952.09	-1307.50	3.79
1994	337.51	-4508.82	-1970.00	2.29
1995	614.94	-7629.09	-3639.80	2.10
1996	759.94	-11188.36	-6080.90	1.84
1997	791.85	-12459.27	-4736.20	2.63
1998	913.6	-12460.36	-7775.00	1.60
1999	956.04	-16976.45	-12169.70	1.39

Note: Exim Ratio = (Act – Off Export) / (Act – Off Import),

Off Ex Rate = Mexican Peso in terms of one US Dollar.



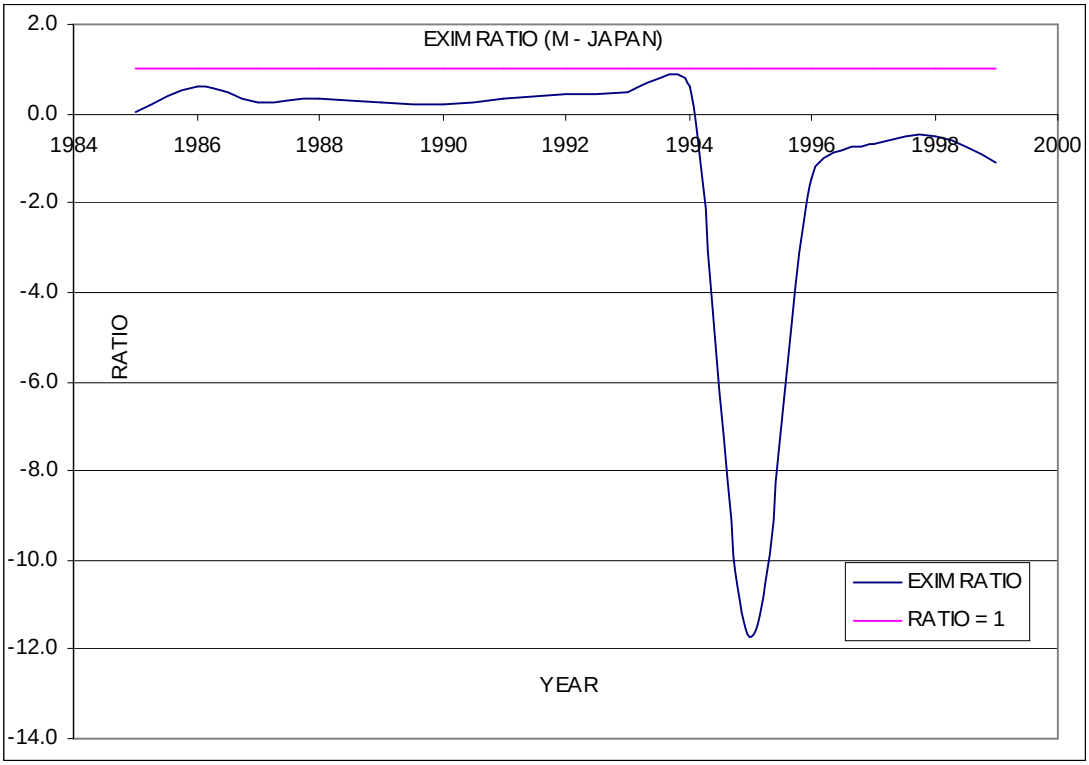
* Data source: Direction of Trade Statistics Yearbook, published by the International Monetary Fund (Various Issues).

Calculation of actual Exim ratio from Mexico – Japan trade statistics*
(Data in million US Dollar)

YEAR	OFF EX RATE	ACT-OFF EXP	ACT-OFF IMP	EXIM RATIO
1985	25.69	3.73	281	0.0
1986	61.18	207.73	343	0.6
1987	137.82	147.55	565	0.3
1988	227.31	218.36	602	0.4
1989	246.15	252.64	1081	0.2
1990	281.26	237.09	1211	0.2
1991	301.84	342.64	1039	0.3
1992	309.94	337.00	764	0.4
1993	311.56	280.00	611	0.5
1994	337.51	230.18	380	0.6
1995	614.94	422.00	-36	-11.7
1996	759.94	350.64	-243	-1.4
1997	791.85	307.64	-458	-0.7
1998	913.6	261.27	-524	-0.5
1999	956.04	734.00	-677	-1.1

Note: Exim Ratio = (Act – Off Export) / (Act – Off Import)

Off Ex Rate = Mexican Peso in terms of one US Dollar.



* Data source: Direction of Trade Statistics Yearbook, published by the International Monetary Fund (Various Issues).