Uniform Commercial Policy, Illegal Trade, and the Real Exchange Rate: A Theoretical Analysis

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Countries on fixed exchange rates sometimes use uniform tariff cum subsidy (UTCS) schemes as a way of achieving a real depreciation without disturbing the nominal exchange rate. A potential drawback of this policy in relation to an across-the-board devaluation is that a UTCS scheme provides incentives for illegal trade. Using an optimizing model with currency convertibility and illegal trade, I find that welfare is lower under a UTCS scheme than under a corresponding across-the-board devaluation and that in some cases the real exchange rate actually appreciates in response to an increase in the UTCS rate.

For countries on fixed exchange rates, achieving a real depreciation through macroeconomic policy alone may be highly contractionary if preexisting wage contracts or other rigidities prevent rapid reduction of domestic costs in relation to foreign costs. When competitiveness needs to be improved, but policy considerations prevent the use of the nominal exchange rate, a natural alternative is the uniform tariff cum subsidy (UTCS). By applying a constant ad valorem tariff to all imports and an equal subsidy to all exports, a UTCS achieves the same rapid adjustment in the domestic prices of traded goods that would be implied by a parity change.

Laker (1981) studied the use of uniform trade taxes and closely related fiscal proxies for devaluation in France (1957–58), Israel (1955–62), India (1963–66), and the Federal Republic of Germany (1968–69). UTCS schemes have been used more recently in a number of developing countries, including Ghana, Sudan, and Senegal. A recent case in point is provided by Côte d'Ivoire.

Côte d'Ivoire is a member of the West African Monetary Union, a group of countries whose common currency (the CFA franc) is freely convertible into...
French francs by agreement with the French Treasury, which guarantees convertibility by extending overdraft privileges to the Union's Central Bank (Krumm 1985). Increases in domestic inflation starting in the mid-1970s, together with the recent nominal appreciation of the French franc and significant nominal depreciations in neighboring Ghana and Nigeria, have produced real appreciations in Côte d'Ivoire and a number of other CFA countries. This has led several authors (Krumm 1987; Devarajan and de Melo 1987; Leiderman 1987) to suggest that an optimal macroeconomic policy package would include a devaluation of the nominal exchange rate were it not for Côte d'Ivoire's responsibilities to the CFA Zone, where the exchange rate against the French franc has been fixed since 1948. The government of Côte d'Ivoire implemented a UTCS scheme in mid-1986 with the precise objective of achieving a rapid increase in competitiveness.

Initial experience with the UTCS in Côte d'Ivoire has not been encouraging. There is anecdotal evidence of widespread under invoicing of imports, and in some cases the government has been substantially late in paying the export subsidy. The Ivorien experience suggests a potentially important asymmetry between devaluations and UTCS schemes: UTCS schemes, unlike devaluations, provide incentives for illegal trade. This article analyzes the implications of this asymmetry for welfare and resource allocation within the framework of a commonly used general equilibrium macroeconomic model. My findings support Laker's (1981) contention that illegal trade may significantly weaken the case for uniform trade taxes as proxies for devaluation.

I. UTCS Schemes and Dual Exchange Rates

In the literature about trade theory, the close formal relationship between UTCS schemes and devaluations was pointed out by Meade (1951) and, later, by Bhagwati (1968) and Dixit and Norman (1980). Abstracting from issues of implementation, the key difference between the two policies is one of coverage. A recent treatment is given by Adams and Greenwood (1985), who derive a precise equivalence result between uniform trade taxes and exchange rate changes. They find that in a frictionless, competitive environment, a UTCS scheme covering trade in goods and services is fully equivalent to a devaluation of the commercial rate in a dual exchange rate system.

This asymmetry of coverage has sometimes been regarded as a primary virtue of UTCS schemes. Keynes, for example, favored a UTCS as a way to address the overvaluation of sterling in the early 1930s. He believed a UTCS scheme would improve competitiveness without "the injury to the national credit and to our receipts from foreign loans fixed in terms of sterling which would ensue on devaluation" (quoted in Laker 1981, p. 118). For the typical developing country, however, foreign assets and liabilities are denominated in foreign currency, so Keynes' argument does not apply.

UTCS schemes therefore represent a particularly simple departure from unified
exchange rates. As Adams and Greenwood (1985) show, this departure does not imply an asymmetry between the effects of UTCS schemes and across-the-board devaluations, provided that the private sector (correctly) views the policies in question as permanent. With flexible prices and perfect capital mobility, neither a permanent devaluation of the commercial rate nor a permanent across-the-board devaluation has real effects. Both policies produce once-and-for-all offsetting adjustments in domestic prices and an immediate rebuilding of money balances through a balance of payments surplus. With perfect capital mobility and a fixed exchange rate, the rebuilding of money balances simply requires an exchange of foreign bonds for money between the private sector and the central bank (see Obstfeld 1981, 1986 and Adams and Greenwood 1985).

Asymmetries emerge in this idealized environment only when the policies are expected to be temporary. Adams and Greenwood (1985) and Frenkel and Razin (1989) show that, although a temporary across-the-board devaluation has no real effects, a temporary UTCS or devaluation of the commercial rate lowers the real interest rate facing the private sector and is therefore equivalent to a subsidy on foreign lending.

Actual experience with UTCS schemes suggests a further set of differences between UTCS schemes and across-the-board devaluations, differences arising from the close proximity of the former to traditional commercial policy (see Laker 1981). Unlike changes in the exchange rate, for example, UTCS schemes require an administrative apparatus for determining the values of traded goods. Moreover, the political and administrative aspects of policy implementation leave more room for rent seeking and discriminatory application in the UTCS case than in the devaluation case. Finally, as emphasized in this article, UTCS schemes drive a wedge between the domestic and foreign prices of traded goods; illegal trade therefore becomes a potentially important source of asymmetry between the two policies.

Although I will be focusing on the differences between UTCS schemes and across-the-board devaluations, the basic insights of that analysis carry over, in modified form, to the “equivalent” dual exchange rate policy. Thus, although dual (or multiple) exchange rates do not introduce direct incentives for simple smuggling or customs fraud, these systems provide indirect incentives for illegal trade as part of more complicated attempts to arbitrage between different exchange rates. A permanent devaluation of the commercial rate, for example, encourages the over invoicing of exports and under invoicing of imports, with the (purportedly unrelated) residual payment taking place at the more appreciated capital account rate. The exact equivalence between trade tax regimes and departures from unified nominal exchange rates is broken, however, because even without other distortions the microeconomics of illegal activity varies, depending on whether a given structure of relative prices is achieved through different exchange rates or trade taxes. Because arbitraging between dual exchange rates requires the completion of at least two separate illegal transactions, it would appear that the dual exchange rate alternative would typically provide
smaller incentives for illegal trade than the otherwise equivalent UTCS. This remains an open question, however, because the relationship between the two alternatives depends on the details of evasion technologies and enforcement policy.

II. An Equilibrium Framework Based on the Standard Model of a Dependent Economy

I will examine the implications of illegal trade using versions of the standard model of a dependent economy. Although the model is readily adaptable to short-run analysis, I will assume perfectly flexible wages and prices and therefore abstract from the short-run macroeconomic effects that would arise with nominal rigidities. I will also restrict the examination to one-period models, thereby dropping the distinctions between temporary and permanent policies and between across-the-board devaluations and devaluations of the commercial rate. And because the existence of illegal trade does not give rise to a black market in foreign currency as long as the capital account is open and free convertibility is maintained (with “no questions asked” about the source or destination of foreign exchange obtained by private individuals), I will exploit these features of the Côte d'Ivoire case and will leave monetary and portfolio issues out altogether (see Pitt 1984, Macedo 1987, and Branson and Macedo 1989 for models in which tariffs and export taxes, combined with controls on foreign exchange or capital, give rise to a black market).

I begin by reviewing the basic structure of the two-sector dependent economy model (Dornbusch 1980). The economy produces and consumes nontraded goods (N), importables (M), and exportables (X). The country is sufficiently small in world markets that the international prices of traded goods can be treated as exogenous. Given the import tariff and export tax (or subsidy) rates, the domestic prices of traded goods are also fixed, and importables and exportables can be consolidated into a single composite “traded good.” The associated price index, \( P_T \), is a linearly homogeneous function of the domestic prices of importables and exportables; in the case in which the import tariff and export subsidy are both equal to \( z \geq 0 \), \( P_T \) is given by

\[
P_T = f(P_X, P_M) = f[E(1 + z)P^*_X, E(1 + z)P^*_M] = E(1 + z)
\]

where \( E \) is the nominal exchange rate, an asterisk denotes an international price, and world prices \( P^*_X \) and \( P^*_M \) are set equal to unity. The real exchange rate, \( e \), is defined as the domestic relative price of nontraded to traded goods: \( e = P_N/P_T = P_N/e(1 + z) \).

I assume that labor is perfectly mobile in the period under analysis but that all other factors of production are specific to the sectors in which they are initially located. This is the Ricardo-Viner model of trade theory (see Dixit and Norman 1980 and, for a dependent economy application, van Wijnbergen 1986). The production functions \( q_N(L_N) \) and \( q_T(L_T) \) have the standard properties: \( q(0) = 0 \),
\( q' > 0 \) and \( q'' < 0 \), with the latter property (diminishing returns to labor) implied by the fixed supplies of sector-specific factors. For the moment, I also assume that \( q'(0) = \infty \) in order to ensure that even a small UTCS elicits a smuggling response; I generalize this to \( q'(0) > 0 \) in the discussion at the end of the section. Wages and prices are flexible, so that full employment prevails; perfect mobility of labor implies that a single economywide nominal wage prevails in equilibrium.

Equilibrium can be described in a straightforward manner using revenue and expenditure functions (Dixit and Norman 1980). Because all activities are purely competitive, labor will be allocated to maximize domestic revenue from the two activities. Denoting the maximized value of revenues by \( R \) and assuming a fixed total supply of labor, \( L \), \( R(P_T, P_N; L) \) maximizes \( P_T q_T + P_N q_N \) subject to the resource constraint \( L_T + L_N \leq L \). Because \( R \) is homogeneous of degree 1 in all prices, deflating by the domestic price of traded goods yields real revenue, \( R/P_T = r(l, e; L) \). The revenue function \( r \) has the property that its partial derivatives are the supply functions for traded and nontraded goods.

Turning to the expenditure side, aggregate expenditure on traded and nontraded goods is simply \( P_T c_T + P_N c_N \), where \( c_j (j = T, N) \) is consumption of good \( j \). The minimized value of expenditure for any social utility level \( U \) is denoted by \( Z(P_T, P_N; U) \). Because \( Z \) is homogeneous of degree 1 in all prices, the expenditure function can be written in terms of traded goods as \( Z/P_T = e(l, e; U) \); the partial derivatives of \( e \) are the compensated demand functions for traded and nontraded goods. \( e \) and \( r \) are related by the budget constraint \( e = r - \tau \), where \( \tau \) is the real value of lump-sum taxes paid by the private sector.

Government finances are equally straightforward. The government receives tariff revenue from imports, pays out a subsidy to exports, and collects lump-sum taxes (which may be negative) from the private sector. Because the subsidy rate on exports is the same as the tariff rate on imports, budget balance requires that lump-sum taxes equal the official trade balance in foreign currency, \( b_o \), multiplied by the UTCS rate:

\[
\tau = zE b_o / P_T = [z/(1 + z)] b_o .
\]

**Equilibrium without Illegal Trade**

Without illegal trade, the official trade balance equals the overall trade balance, which is zero in this one-period model. A UTCS scheme therefore has no net budgetary effect, so that \( \tau = 0 \). It would be straightforward to incorporate government spending on traded and nontraded goods in the amounts \( g_T \) and \( g_N \); in this case, equation 2 would read \( \tau = g + zEP^e b_o / P_T = g + [z/(1 + z)] b_o \), where \( g = eg_N + g_T \).

Equilibrium prevails when there is full employment \( (L_T + L_N = L) \), the nontraded goods market clears \( (e)(1, e; U) = (1, e; U) \), and the private sector and government satisfy their budget constraints \( (e) = r \). Because full employment is already subsumed in the revenue function, the latter two equations fully