Effects of Smuggling under African Conditions: A Factual, Institutional and Analytic Discussion

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I. Introduction

This investigation of smuggling started with an attempt in Berg et al. [1985] to measure the extent of intra-African trade, and to inquire into the reasons for its apparently small size and the possibilities of increasing it. It emerged in that study that published figures on intra-African trade were woefully inadequate, that the extent of smuggling was very large, and that the basic motivation for smuggling was survival, rather than tax evasion. Further, it appeared that smuggling under the actually existing African conditions was beneficial. The latter conclusion contradicts the well-known theoretical result of the seminal paper on smuggling by Bhagwati and Hansen [1973] – that because smuggling involves real costs in excess of legal trade it may lower welfare in spite of the fact that it circumvents distortionary government policies. We therefore thought it would be useful to offer several modifications and extensions of the Bhagwati-Hansen model, motivated by our observation of the African experience, in order to illustrate further that there are reasons for smuggling to increase welfare.

In what follows we first, in Section II, report briefly the major factual and institutional features of the African experience that

provide the motivation for our theoretical analysis. The theoretical analysis itself appears in Section III, where we examine four separate modifications of the Bhagwati-Hansen model, each of which provides reason for smuggling to be beneficial. We then return to a more detailed discussion of African conditions, beginning in Section IV with the reasons why published data on trade are not of much use. Section V describes the organization of smuggling in Africa, and is followed in Section VI by a discussion of the causes and amounts of smuggling. Section VII concludes.

II. Major Features of the African Experience

We begin with the officially available data. These data are found to be totally unreliable for most purposes; in particular, they make any construction of trade matrices for particular years impossible. This means that the usual method of estimating the extent of smuggling by using trading-partner data is useless.

The reasons for this will be detailed below in Section IV. They include the manner in which data are recorded and the extreme difficulty of monitoring trade along borders that are "porous". In addition, even when trade is detected, it is often valued at artificial prices that distort the importance of what has been observed. For all of these reasons as well as others to be discussed later in the paper, attempts to measure the extent of smuggling using published trade data are essentially useless.

Despite this difficulty of measuring smuggling from published data, all observers agree that illegal trade is significant. It is less well understood, however, that it is also well organized and sophisticated. The idea that most smuggled goods in Africa are transported by head loads and exchanged by barter is far from the known facts. Instead, smuggling takes place along an extensive network of transport routes using a variety of modes of transportation, and goods are exchanged in traditional markets that deal in a vast variety of products using domestic currencies. In Section V we will report further on how smuggling is organized, with the conclusion that smuggling in Africa is a sophisticated and extensive activity that leads intra-African trade to be much greater than the official statistics indicate.

In view of the Bhagwati-Hansen contribution mentioned above, it is important to assess whether smuggling involves additional real costs over and above those that are associated with legal trade. The sophistication of the smuggling network already suggests that smuggling is

likely to be quite efficient, and we find this indeed to be the case. Further, as we will compare legal and illegal trade in our institutional discussion later in the paper, we will argue that, whatever may be the real cost associated with smuggling, there are as great or greater costs associated with legal trade. These costs arise because of the tremendous inefficiencies introduced by government interference in markets. We find smuggling in Africa not to be just a simple avoidance of taxes, but rather an attempt to circumvent the extraordinary and cumbersome web of government regulations and controls that often make trade through legal channels almost impossible.

Smuggling, then, is caused by a whole variety of factors in the African economies. In some cases, certain undesirable imports are totally prohibited. In others, governments try to keep prices of desirable products artificially low. Marketing boards are used to control both prices and quantities of some goods. Exchange rates are kept overvalued, and foreign exchange must consequently be rationed. We cannot incorporate all of these factors into our theoretical analysis, but their presence does suggest that alternative theoretical causes of smuggling need to be addressed.

Finally, we would mention the overwhelming impression one gets in observing the African economies that the large number of misguided government policies has come close to destroying the productive capacities of the countries, and that it is only through smuggling that the economies have survived at all. Our impression is of production possibilities that have "imploded" as a result of market interference. Quite beyond the marginal improvements that smuggling might yield were it only to circumvent simple taxes or tariffs, it appears that smuggling may play the role of preventing the complete collapse of a country's economy. In the last of the theoretical variations that we present in the next section, we try to give at least a partial reason why smuggling may play such a more important role.

III. Theoretical Analysis

We now turn to a more formal analysis of the facts discussed along the lines pioneered by Bhagwati and Hansen. We omit discussion of the estimates of the tax revenues lost by governments as a result of smuggling etc. Such a discussion is found in Berg et al. [1985]. We also forego an analysis of the undoubted fact that income distribution has worsened with exchange controls and the like.

Figure 1 – *Production and Trade with and without both Efficient and Inefficient Smuggling*
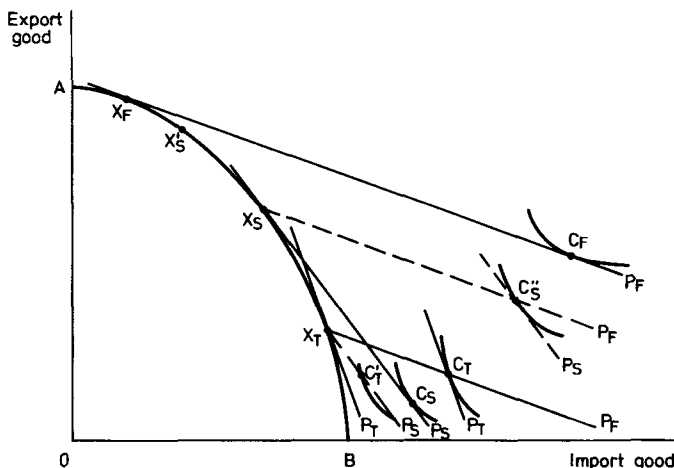
We start with the basic Bhagwati diagram in Figure 1. AB is the true undistorted production possibility curve.[1] Consider first free trade. P_F is the free trade price, with production taking place at X_F and consumption at C_F. Production is determined by the tangency between the price line and AB, while consumption (with balanced trade) is determined by the tangency between that same price line and a community indifference curve.

Now a tariff is introduced but without smuggling. The tariff raises the domestic price of the import good to P_T, moving production to the new tangency at X_T. As we deal with a small country, world market prices are not affected. Therefore trade proceeds again along a line of slope P_F but originating now at X_T. Equilibrium consumption is now at C_T where another tariff-inclusive domestic price line of slope P_T is tangent to another community indifference curve. The distance between the parallel domestic price lines through X_T and C_T represents the tariff revenue, which is collected by the government and redistributed in lump sum form to domestic consumers.

Bhagwati now introduces smuggling. Smugglers have access to the world markets and hence can obtain the import good at the price P_F.

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[1] An anonymous referee has suggested that another characteristic of the African economies is that elasticities are low. To account for that possibility we will consider in footnotes as we go along how our results would be altered if the production possibility curve were more tightly curved than shown.

However, Bhagwati assumes that smuggling involves an additional cost in terms of real resources that raises the smuggler's cost of imports above the world price to P_S. If this cost is above P_F but below P_T as drawn, then smugglers are able to undercut the official market, and all legal trade will cease.

Production of the import substitute now responds to the smuggler's price, P_S, and production moves to the tangency at X_S, which is between X_F and X_T. However, since P_S unlike P_T now represents a cost in real resources, the country can only trade along the price line tangent at X_S and reaches a consumption tangency at C_S. There is in this case no tariff revenue available to be redistributed to augment consumers' incomes beyond this price line. Clearly, if P_S is high enough, the tangent at X_S will pass below the indifference curve through C_T, as shown, and smuggling will reduce welfare as compared to the situation of a tariff without smuggling.

1. First Modification: Smuggling is as Efficient as Official Trade

Our first modification to this argument is to assume as mentioned above that smuggling does *not* require extra real resources and in fact may be cheaper than official trade. We give further evidence below as to why this assumption is realistic under African conditions.

Now Bhagwati, of course, realized that smuggling may not lower welfare if the real cost of smuggling is not as high as was assumed in Figure 1 above. With a lower cost of smuggling, for example, the production tangency might be at X'_S (Figure 1) and the price line (not shown) would pass above C_T. Smuggling would then be beneficial. Indeed in the extreme case of no excess cost of smuggling at all, in Bhagwati's analysis the free trade situation at X_F and C_F would be restored.

This, however, is probably presuming too much. We would expect instead that smugglers do get a domestic price that is above the world price by some amount. This could arise because there is a real cost, though not an *excess* real cost of smuggling, as we will explain in a moment. Or it could arise because there is limited entry into the smuggling activity. We will examine both possibilities.

To consider limited entry first, it may be that the real cost of smuggling is indeed negligible, but that entry by smugglers is limited and smugglers therefore succeed in charging a price above the competitive price. Thus we would expect the smuggling price P_S to exceed the

free trade price, not because of a real cost of smuggling, but because smugglers fall short of competing away all pure profits from their smuggling activity. Hence production does take place at X_S, but trade with the world takes place after all at the free trade price P_F, leading to consumption at C''_S. The analysis is thus exactly analogous to a tariff, with an amount analogous to the tariff revenue accruing instead as profits to imperfectly competitive smugglers. Incidentally, the level of welfare at C_S is still of some relevance, since it now represents the welfare of everyone in the country other than the smugglers.

Such limited entry is not plausible in all cases, however.[2] Nonetheless we would still expect the domestic price of the smuggled import to exceed the world price, this time due to a real cost of smuggling. But this need not be an *excess* real cost. On the contrary, as we have noted earlier, there are often real costs associated also with legal trade. If the same real cost applies to legal trade as to illegal trade, then while Bhagwati and Hansen's analysis of smuggling at point C_S in Figure 1 is after all correct, their analysis of the tariff equilibrium is not.

Suppose, instead, that legal trade leads to the domestic price P_T, as before, but that a part of this price differential is a real cost, not a tariff, and is equal to the real cost of smuggling. Then trade will not proceed along the price line P_F, but rather from X_T along the price line P_S. Then finding a tangency with the domestic price P_T, consumption with the tariff will be at C'_T.

Note that in both of these cases, smuggling is now necessarily beneficial, in contrast to the Bhagwati-Hansen analysis. With limited entry and no real cost of smuggling, smuggling moves consumption in Figure 1 from C_T to C''_S. With free entry but a real cost of smuggling that is common to both legal and illegal trade, smuggling moves consumption from C'_T to C_S. In both cases welfare necessarily improves.[3]

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[2] Indeed, according to a story told by Sir Maurice Dorman, former governor of Gambia, smugglers came to him and asked for stricter enforcement of the border. As it was, smuggling had become so easy that increased entry into the business had taken all profit out of smuggling!

[3] If the production possibility curve were more tightly curved these results would still obtain, though the costs of the tariff that are alleviated by smuggling would arise primarily from distortion of consumer, not producer, choice. In the extreme, if AB were sufficiently kinked at X_F, then all consumption points would be along the highest line P_F. However, they would be arrayed along that line in the same order as is now shown due to the different prices faced by consumers.

2. Second Modification: There Are two Prices on the Goods Market

Our second modification required by the facts and the institutional discussion to be laid out below is that the goods market is split so that part of trade is carried on at official prices, part at smuggling prices. The existence of two prices for the same good means that both official and unofficial trade exist side by side. This is most realistic and most easily understood for a pure export good, such as is approximately the case of cocoa or coffee, for which there is essentially no domestic consumption. The two prices may then arise from the imperfect application of export controls as exemplified by an export marketing board.

The situation will now look as in Figure 2. AB is as before the undistorted production possibility curve, OA being the maximum amount of the export good, say cocoa, and OB being the maximum amount of the import good, say machinery. P_F is again the free trade price with output at X_F. With all of the cocoa production being exported we get a corner solution at C_F and can use consumption of machinery at C_F to measure welfare.

Now a marketing board is introduced for the export industry. It sets a legal price for cocoa that is below the free trade price. This in effect raises the domestic relative price of machines above the world price, exactly as would a tariff. Representing that price again by P_T,

Figure 2 – *Smuggling Mixed with Legal Trade at Separate Prices*
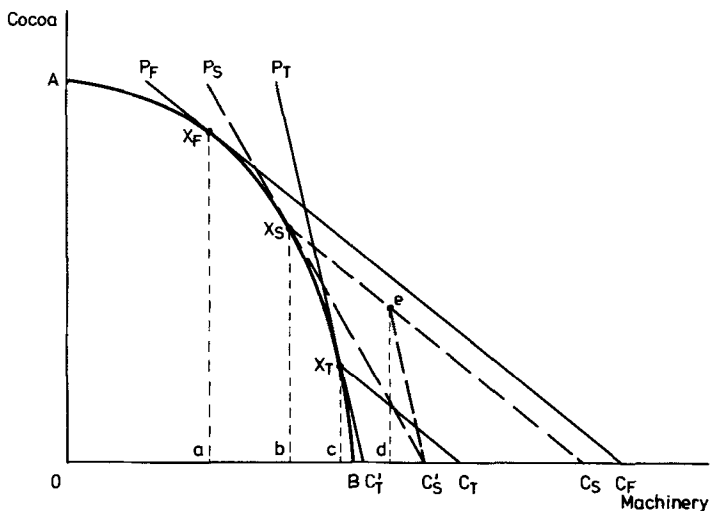
production moves to X_T as before and consumption (now consisting only of machinery) is reduced to C_T. It might be noted that consumption at C_T is now again worth more at domestic prices than is X_T. The difference in this case is the profit of the marketing board, which is of course a form of taxation. The marketing board buys the amount cX_T of cocoa at the low legal price, paying the farmers only cC_T'. It then sells this same quantity on the world market for cC_T.

Now assume that part of cocoa production is smuggled out. This means that cocoa farmers get a better price for the smuggled part of cocoa production. However, suppose that some cocoa is still sold to the marketing board at the official price, either because some farmers live too far from the border for smuggling to be practical (the explanation given by May [1985], for example) or because it is a sensible precaution to keep the marketing board happy and off one's neck by selling it some cocoa.

The analysis is now similar to Pitt's [1981] modification of the Bhagwati-Hansen model to deal with a mixture of smuggled and legal imports/exports. Production responds to a weighted average of the official and the smuggling price, say P_S in Figure 2. This shifts the production point to X_S, somewhere between X_F and X_T.[4] All of this production will be traded for imports at the world price either by the smugglers directly or by the marketing board. Thus consumption now moves outward on the machinery axis to C_S.

How this comes about may be seen by using the P_S price line to observe that farmers now succeed in selling the amount bX_S of cocoa in exchange for the amount bC_S' of machinery. Since the country as a whole imports bC_S, the profit of the marketing board must be the distance $C_S'C_S$ in Figure 2. To earn such a profit the board must have sold an amount of cocoa on the world market, the excess value of which, at world prices over domestic prices, is $C_S'C_S$. To find this amount, point e is constructed as the intersection of a line from C_S' parallel to P_T and the free trade price line X_SC_S. The vertical coordinate of this intersection, the distance de, then tells us the cocoa purchases of the marketing board, which it buys at official prices for an amount dC_S' and sells on the world market for dC_S. It is interesting, as illustrated in the figure, that by turning a blind eye to a certain amount of illegal trade, the marketing board may not only expand the

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[4] This is strictly true only if all producers respond to the same average price P_S. If instead different producers respond to different prices, then some distortion to production may be introduced similar to what we will consider in our fourth modification below.

economy's consumption but also raise both the quantity it succeeds in buying from farmers and its own profits.[5]

3. Third Modification: Price Distortion in the Goods Market

We now turn to our third variant and assume that there is a distortion in the goods market. Such a distortion need not necessarily improve the case for smuggling, but in some cases distortions are caused by the very policies that smuggling is designed to contravene. In such cases, smuggling can serve the added purpose of reducing the adverse effects of the goods market distortion.

Assume for example that imports are restricted not by tariffs but by quotas. Or equivalently, assume that a system of import licensing discriminates among importers in a manner that serves to restrict the quantities of imports in separate industries. Then it is well known that if the number of sellers in a domestic market is small, such restrictions on quantities will reduce the elasticities of demand facing domestic producers [Bhagwati, 1965]. As a consequence domestic producers will arrive at an equilibrium in which price exceeds marginal cost. The exact nature of this equilibrium depends on the number of domestic firms and the nature of the competition among them, but it will generally be the case that production in such a quantity-protected industry will be below what would have been achieved with perfect competition. It will also be the case, if the quantity of imports is fixed by the policy, that the level of welfare will be less than could have been achieved had the domestic industry been perfectly competitive in the presence of the same trade policy.

Thus in Figure 3 we show a variation on Figure 1, in which now an import quota with a perfectly competitive domestic industry would lead to production at X_Q and consumption at C_Q, the domestic price being P_Q and the fixed world price inclusive of any real cost of trading being P_F.[6] The difference between these two prices would be the tariff

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[5] If the response of production to prices were less elastic, then all of these effects would be diminished. Indeed in the special case considered here of a good that is only exported, if there were no production response there would be no gain in welfare at all due to smuggling. Instead smuggling would merely direct some of the marketing board's profits to the smugglers.

[6] Recall from modification 1 that we allow smuggling to involve a real cost but assume that legal trade also involves a real cost that is at least as high. In this current modification we make these costs equal and build them into the world price so that they can be ignored. Thus P_F in Figure 3 is analogous to P_S in Figure 1.

Figure 3 – *Smuggling with an Import Quota and Domestic Monopoly*
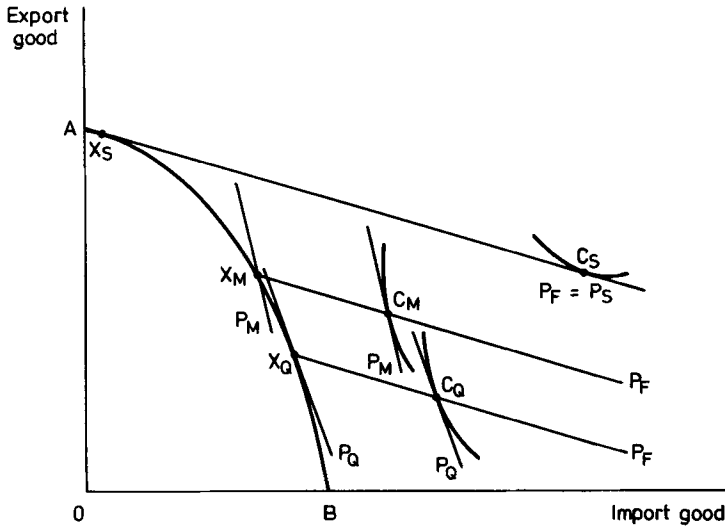
equivalent of the quota with perfect competition, which would have all of the same effects as the tariff analyzed in Figure 1.

If instead the domestic import-competing industry is monopolized, however, then the domestic price will exceed marginal cost, and the domestic price line will cut the transformation curve from above, as at X_M. In addition, in order to keep the level of imports at the same level permitted by the quota, the domestic price of the import good must rise above what it would be in the competitive case. Thus the case of domestic monopoly is shown by production at X_M, consumption at C_M, and the domestic price P_M. Consumption at C_M must lie on a lower indifference curve than C_Q, since C_Q attains the maximum welfare consistent with the transformation curve AB and the given quantities of exports and imports.[7]

If we now allow smuggling, as before, an additional effect will be to reopen competition between the domestic producers and imports at the smugglers' price, $P_S = P_F$. Thus even if there is only a single domestic producer, it will be forced back into competitive behavior, and the outcome will be the same as it was in Figure 1, with, say, production at X_S and consumption at C_S.

[7] This follows from the fact that the (convex) indifference curve through C_Q is tangent to a price line P_Q with the same slope as AB at X_Q.

The welfare achieved with smuggling is the same as it was in Figure 1. However, because the presence of domestic monopoly has lowered welfare in the absence of smuggling, the effect of smuggling is now to yield a greater *increase* in welfare than before. Thus the presence of domestic monopoly when imports are quantity-constrained provides an additional role for smuggling to benefit the domestic economy.[8]

4. Fourth Modification: Imports of Intermediate Goods

For our last case, we allow imports to be used as intermediate goods. Trade restrictions then raise the prices of these inputs to production of other goods and cause a distortion of producer choice that is analogous to that of consumer choice when imports are final goods. Smuggling, by reducing prices closer to their world levels, removes this distortion and raises welfare exactly as before.

The situation without smuggling becomes even worse, however, if we add the realistic consideration that the restricted imports are not allocated on an equal basis among all users. Instead it is typical that some sectors receive favored treatment under a system of import licensing and thus have access to imports at world prices, while other users must pay a premium. Assuming that this system is successfully monitored to prevent the favored users from reselling their imports at the higher price on the domestic market, then we get the added distortion of different sectors of the economy paying different shadow prices for their intermediate inputs. This distorts the economy still further, reducing its output below what would have been technologically feasible. It therefore provides greater scope for smuggling, when it removes the distortion, to raise welfare.

To illustrate we again consider a simple 2-good general equilibrium model. This time, however, we let the imported good, M, be machines that are used as an intermediate input only. In Figure 4 we measure *net* output of M (gross output of M less intermediate inputs of M) along the horizontal axis to the right, and output of the final good food, or F, vertically. Points in the left-hand quadrant of the

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[8] Again these effects depend on production being responsive to price. If production were fixed, then the monopolist would neither restrict output nor raise price under a quota as compared to the situation with a tariff. However, as long as there is even a small ability to restrict output on the part of the monopolist, then these extra benefits from smuggling will obtain.

Figure 4 – *Smuggling of an Intermediate Input Subject to an Unevenly Administered Quota*
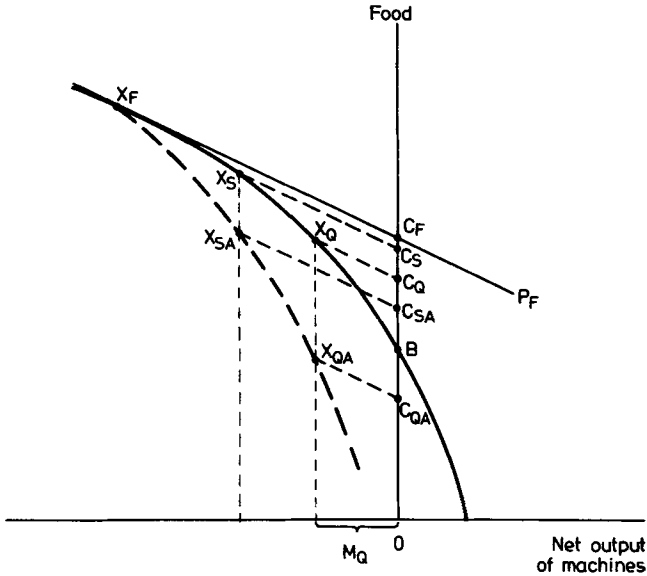

figure therefore represent gross outputs of M that are less than the intermediate inputs of M used in producing both M and F.

Given fixed endowments of two primary inputs, say labor and land, that are used in variable and unequal proportions in the two sectors, there will be a curved production possibility frontier much as in our earlier examples, though this one extends on both sides of the vertical axis. In an undistorted autarky equilibrium, for example, since imports of M would be impossible and only F yields utility as a final good, both production and consumption would be at point B where the production possibility frontier crosses the vertical axis. Likewise, a free trade equilibrium for the country confronting world prices P_F would find production at X_F (where value of net output is maximized) and consumption at C_F, the country producing a negative net output of M and importing the difference in exchange for its excess production of F.

Now suppose that an import restriction is put in place limiting imports of M to the quantity M_Q. This could be done by a tariff equal to the difference between the slope of the transformation curve at X_Q and the world price, or it could be done by a quota which would (in this competitive model) generate a quota rent of the same size as the

tariff. In either case, as long as all domestic users of M see the cost (or opportunity cost) of M as its domestic price, production on the transformation curve will be achieved and production will take place at X_Q, consumption at C_Q. As before, the effect of smuggling that reduces this domestic price while generating smugglers' profits will be to move production to X_S and consumption to C_S. The rise in utility due to smuggling is now evident from the rise in consumption of the single final good.

Now suppose that the quota is not administered evenly, with all buyers of M paying the same domestic price. Instead, let one sector, say M, be favored by those who administer the quota, being allowed access to M at the world price while only users in the other sector must pay a premium. If the intermediate input were used in fixed proportion to output in both sectors, this input-price differential would not be able to distort input choices. But if input coefficients are variable, as we now assume, then this method of administering the quota will distort input choices and reduce output to a point strictly beneath the transformation curve.

An explicit analysis of this phenomenon would require, say, a three-dimensional Edgeworth Box to illustrate the substitution between the intermediate and two primary inputs. All we need for our analysis, however, is the familiar result from two dimensions that an input-price differential causes production away from the efficiency locus in such a box, and thus that output lies inside the transformation curve. Since in this example the quota has already determined what net output of M must be, we know that such an administered quota will push production in the diagram somewhere vertically below X_Q, such as to X_{QA}. Continuing to trade with the world at world prices, consumption will be at C_{QA}, and the additional loss due to the input distortion of an administered quota is evident.

How far point X_{QA} lies below X_Q depends on the extent of substitution that is possible between the input and other factors in both sectors, and it depends also on the size of the input-price differential. The latter will be larger the larger is the quota premium for sales to the non-favored sector, F, and thus the more restrictive is the quota itself. We can imagine a locus of production points like X_{QA} for different levels of imports, extending down and to the right from the free trade production point, X_F. A quota larger than M_Q, for example, would permit production further up and to the left along this locus, both because it would reduce the domestic price of M and discourage its production, and because it would reduce the input-price differen-

tial between the sectors and permit output to approach more closely to its efficient level.

Now suppose that smuggling is introduced into this situation of an administered quota. As before we let smugglers buy M at the world price and sell it at a monopoly markup on the domestic market. However, they now sell only to users in the F industry, since users in the M industry already have favored access to the good at the world price. Thus smuggling will normally reduce but not eliminate the input-price differential, exactly as if the quantity permitted by the quota had been increased. That is, production will move up and to the left along the aforementioned locus to a point such as X_{SA}. Once again, there is gain in welfare due to smuggling, this time a gain that is augmented by the role of smuggling in reducing the input distortion caused by an input-price differential.[9]

It should be noted that our analysis here assumes that the favored sector does not completely exhaust the permitted imports by its purchases at the world price. If that were not the case – if the favored M sector were to demand more than M_Q at the world price – then it would after all face the domestic price for inputs at the margin and there would be no input-price distortion. This would undermine the argument of this section.

5. Dynamic Feedback

All of our discussion so far has been static. However, the implications of these static models, particularly the last of them, can become much more significant if we now add the final notion that policymakers may respond over time to the effects of their own policies.

To illustrate the dangers involved, suppose in the context of our last model that policymakers are using their trade restrictions in a (misguided) attempt to promote growth of the domestic economy. Because they believe that growth must be achieved in the manufacturing sector, they are likely also to believe that exempting that sector from the effects of their trade restriction is a sensible policy. But look at what happens when they do it! Starting, say, from free trade, the

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[9] The story here again depends on production being variable, since the welfare losses and gains we have described occur entirely from variations in output. However, what is crucial here is not that *outputs* respond to prices but that *inputs* do, for it is through the inefficient use of inputs that outputs are reduced. Note, though, that input choices can be made inefficient not just as a rational response to differential prices, but also by direct restriction of the quantities of inputs that various users are allowed to purchase.

quota on imports of M does (by definition, in this model) raise net output of M. But it lowers the value at world prices of the outputs of M and F together. Worse, because of the input-price distortion, output drops still further, and this would be a drop in value even at domestic prices.

What will happen when government observes this decline? Ideally it would recognize the problem as being the result of its own policy and would return to free trade. But it is likely that it will instead attribute the decline in value of national output to other, unrelated, causes, and thus feel the need to make its trade restriction even more binding. If so, then we will observe a movement over time further and further down the locus of administered quota equilibria, a sort of implosion of production possibilities due to the adverse effects of trade policy. Once again, the existence of smuggling, by reducing these distortions in the first place, may also reduce the incentives to make them worse.

IV. The Problem of the Data

We now return to a more detailed examination of the African experience that motivated our theoretical analysis. We begin with the officially available data, which as we have noted are more or less useless.

According to the officially available trade figures, intra-African trade is small and declining as a percentage of total African trade. But before ad hoc theories are spun to explain these supposed facts – such as that the similarity of factor endowments works against the development of an extensive intra-African exchange of goods – it might be well to see what the data really show.

First, the global import and export data for intra-African trade are not independently determined. Instead it is simply assumed that imports are 110 percent of exports – to allow for the difference of cif and fob pricing. Investigations suggest that 10 percent is about the right magnitude for this difference.

Much more important, however, is the fact that the recording of the data within each country is extremely erratic, for reasons ranging from incompetence and sloppiness to the quite reasonable decision not to bother about duty free trade. The domestic sources of the trade data are customs and the central banks. The international sources for trade data are essentially the United Nations, in particular its specialized agencies, the International Monetary Fund, the Economic Com-

mission for Africa, GATT and UNCTAD. All officially employ the UN methodology, and the individual countries officially use the same SITC classifications.

Reality, however, looks quite different. The basic data used by both the UN and the IMF come necessarily from official domestic country sources. For often perfectly good reasons these domestic sources frequently use different methodologies. Customs registers data when a border is crossed. The other major data collecting agency, the central bank, is interested when the title to the commodities changes, which is mostly when payments are due. Moreover, partner country data, however precisely defined,[10] frequently simply do not exist, though they are supposed to.

This is the least problem. Exports are supposed to be recorded fob and imports cif. However, in many reported cases exports are bigger than the corresponding imports of the supposed partner country. An admittedly extreme example that also highlights a second problem is the following: in 1978, official imports of Nigeria from the Cameroons were 1090 percent of the corresponding Cameroonian exports to Nigeria. In 1977 the same percentage was 0.6 percent for Nigerian imports from Togo compared to Togo's recorded exports to Nigeria. Notice too that the examples refer to two different years. No complete data exist for a single year. It is impossible therefore to construct a complete trade matrix with independent data for any particular year, to say nothing for a number of years.

The IMF apparently does construct such a matrix, but it uses partner country data where other data do not exist, and it interpolates where no data exist at all. For some purposes this will do, particularly as the staff of the IMF is very knowledgeable. But the IMF also corrects official data on an ad hoc basis when the latter are obviously absurd. As an example, everyone knows that the Congo Republic does not produce diamonds, though it shows them as exports. Everyone knows that these diamonds are – very profitably – smuggled by ferry from Kinshasa across the river to Brazzaville. Another example, this one involving West Europe, is recorded exports of cocoa from the Netherlands. And a final example is the illegal movement of peanuts from Senegal through Gambia whose peanut production is reasonably well known. The IMF quite reasonably makes corrections in each of these cases. But no complete list – or any list for that matter – of

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[10] An internal UNCTAD report gives four different possibilities of defining the partner country! See Tymowski [no date].

all these corrections seems to exist. Thus the IMF data are much improved over the raw partner country data, but examples like these, and the likelihood that not all such examples have been accounted for, leave the credibility of these data very uncertain.

Then there is the extremely important problem of pricing. The offical UN instructions to the individual statistical services are un-equivocal: use market prices. In fact pricing is largely arbitrary. In Francophone countries there are the so-called *valeurs mercuriales,* at which trade is to be valued. These were originally meant as an aid to customs officers. Officers are instructed to enter also actual values into their reporting tables. But UN statistical experts who have looked at this matter report that this is not done. Moreover, technical experts from GATT or UNCTAD report, for example, that the unit values of identical goods exported from Upper Volta (now Burkina Faso) to France and Germany show widely different magnitudes for which no rational explanation exists [Tymowski, no date].

All this has to be said to explain why it becomes necessary to rely more on individual investigations of smuggling than on the seemingly more comprehensive data that are available. The accumulated weight of individual investigations must take the place of the addition of individual country numbers.

V. The Organization of Smuggling

We turn now to a description of how smuggling in Africa takes place. As we have noted, this illegal trade is better organized and more sophisticated than is commonly understood. Igué [1976a, b; 1977], a Beninese scholar and geographer, has written a number of highly competent and very interesting articles on illicit trade between Benin and Nigeria. His results can very probably be generalized in many instances. We rely on his findings, though the interpretations are ours.

First, smuggling persists because it reflects ancient trade patterns that conflict with modern boundaries. The geography of Africa south of the Sahara conflicts with its politics. In *West Africa* the coastal regions are heavily populated and relatively well off, compared to the northern regions. Coastal rain forest is more productive than Savan-nah. The coast is a swampy region, making road building expensive and difficult, but it allows cheap water transport. As a result all natural transport lines run east-west along the coast and through the lagoons. East-west trade is natural, cheap, and ancient. North-south trade is expensive, requiring roads. In contrast, many of the new states

themselves, such as Dahomey-Benin, Togo, and Ghana, are organized along north-south axes. Of course, free trade would in fact solve most problems of regional integration. But "nation-building" on the basis of existing boundaries and inward-looking policies interferes. It is understandable that in these circumstances smuggling becomes a safety valve for the economic activities of the population. In some cases it becomes essential for sheer survival.

Secondly, smuggling is well organized. As a result of the geographic realities, there are in the coastal regions many well organized traditional markets and many traditional and not so traditional trade routes. Igué counted more than 50 smuggler routes crossing the southern 100 km of the Benin-Nigeria border, compared to 14 Beninese and 6 Nigerian official border crossings. There are the equivalents of brokers, agents and double agents working for both customs and smugglers at the same time, with schedules for their services. Where necessary, young ladies will divert the attention of the customs agents.[11] This institutionalizes corruption into an orderly market transaction, if one may use the word "orderly" in this context.

In *East Africa* the terrain allows the use of trucks off the roads in addition to the use of the great lakes. This is more difficult in West Africa, where trucks are most of the time limited to roads. There are documented cases indicating that smuggling of coffee from Uganda or Tanzania into Kenya is so profitable that even ruining a truck in a single operation pays well. The truck, incidentally, is likely to be a new Mercedes and is equally likely to be loaded with twice its rated capacity. In West Africa, bicycles can transport up to 50 kg, mopeds up to 100 kg for about 80 km, and canoes up to ten tons.

Thirdly, from our standpoint the most important fact is that the traditional markets are excellent break-of-bulk points where the smuggled goods are, in modern American parlance, laundered. *Everything* is traded, including cement, machinery, electrical machinery, textiles, sheep and goats, cocoa, coffee and peanuts, whiskey and wines, and goods from India, South Korea and Eastern Europe as well as from Western Europe, America and Japan.

Fourthly, even more important, these goods are bought and sold at the border markets, not with convertible dollars or francs (except for the latter in Francophone countries, where the CFA-Franc is convertible into the French Franc and thus into dollars as long as the

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[11] The best artistic treatment of this symbiosis of smugglers and customs is Bizet's "Carmen"!

French Franc is convertible), but with local currencies of the neighboring countries which as a rule are inconvertible at officially controlled and normally overvalued exchange rates. This fact is mistakenly interpreted by the concerned government as a net loss of convertible currencies. No case of barter is reported. That is, *the officially nonconvertible currencies* at fixed exchange rates are used for illegal trade and thus *are made convertible at fluctuating rates.*

All of this suggests that: (a) Africans are a great deal more sophisticated than they are being given credit for; (b) illegal trade is trade-creating, not trade-diverting as governments all too often claim, though there are now indications that at least some governments look for this reason more favorably on "parallel" markets; and (c) that trade among these countries with their similar factor endowments is or could be big and profitable for the countries concerned and certainly is much bigger than officially claimed.

VI. Causes and Amounts of Smuggling

The list of goods traded and the use of money rather than barter already suggest two major reasons for smuggling: that official economies fail to make needed and wanted goods available, and that currencies are severely overvalued. It should be stressed that the needed goods are only to a small extent luxuries, or even final consumer goods, and are more often such intermediate goods as spare parts or spray pumps.

Smuggling in both directions is the consequence of domestic policies. Goods are smuggled in because they are not available officially. A few goods are officially regarded as "luxuries", hence less desirable, and their exclusion is thought to raise the savings rate. More generally, import substitution is practiced with such a vengeance that there is an insufficient supply of essential goods at reasonable prices and occasionally even at any price. Goods are smuggled out, as in the cases of coffee, cocoa and peanuts but also to a (very) minor extent some industrial goods, because the *real* prices received by the producers are kept officially low. This is often done directly by marketing boards that pay low farm gate prices in local currencies. And more indirectly, import substitution policies keep the prices of the goods that farmers buy very high, causing them to export illegally in order to get the currency they need for imports.

Exchange rates are kept overvalued, and interest rates for favored borrowers low, partly under the erroneous impression that this will

reduce the *real* cost of development to the economy, as distinguished from the cost to the individual importer lucky enough to get an exchange allocation at the official rate. The scarce foreign exchange is usually first allocated to government enterprises to pay for their imports. This explains also why recipients of the officially allocated foreign exchange do not turn around and sell it to the highest bidder. Exchange rates are also kept overvalued in part because a devaluation would imply a very substantial redistribution of income in favor of farmers who are the majority of the people, the majority of the producers, and the majority of the poor, but who are located away from the more powerful urban interests.

Much of what follows is based on an excellent UN-ECA [1984] document that answers the question of why officially measured intra-African trade is so small by pointing out that every country wants to be paid in convertible currencies but wants to pay in its own nonconvertible money. With convertible currencies it becomes largely irrelevant in which currency one is paid. And the politically preferred solution to the problem, namely to increase credits forever (disguised as a call for increased swing credits and longer settlement periods), is obviously economically unsound.[12] This leads us to believe that domestic inward-looking policies and exchange overvaluation rather than tax evasion are the overwhelming causes of illegal trade.

The UN-ECA report lists 147 border posts in Africa, with 55 in West Africa and 29 in the three former members of the East African Economic Community. The report stresses that "imported goods [i.e. from outside Africa] predominate among the goods traded at the border . . . [including] electrical equipment, radios, television sets, watches, . . . textile goods, . . . motor vehicles, building materials, foods and beverages and various pharmaceutical goods". Unfortunately none of the investigations has extended to the amounts traded.

How is all this paid for? It is obvious that the parallel foreign exchange market plays the central role. Governments insist that the parallel market involves a leakage of foreign exchange. This cannot be correct in most cases. To the extent that smuggling involves trade creation, the foreign exchange involved is additionally earned.[13] It is therefore unrealistic to argue that the same amount of foreign ex-

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[12] It has recently been reported that the IMF is trying to deal with the debt problem of LDC's in part in a similar manner. This may, however, be a response to the embarrassment of having repayments of capital and interest become bigger than new loans!

[13] See however Johnson [1987] for the case of trade diversion.

change transacted indirectly on the parallel market would in the latter's absence have been available to the government. It would not. To be sure, someone must use convertible money for the purchase of most import goods, since these come ultimately from industrialized countries. But this need does not arise at the border, where trade proceeds in local currencies. However it explains the enormous amounts of cocoa and coffee or peanuts that are crossing the borders. There are already official channels for coffee exports in Kenya, where Ugandan coffee can be sold against convertible Kenyan shillings; or Ghanaian cocoa in the Ivory Coast for convertible CFA-Francs, or peanuts from Senegal to Zambia.

These foreign exchange receipts are not as a rule used to accumulate Swiss bank accounts. Such a procedure is, instead, more characteristic for transactions at official exchange rates. Whoever buys the electrical goods at the border, pays with his own currency. But the only use of this money is to buy something in the other country, i.e. to smuggle the money not used for offsetting transactions (the clearing balances, as it were) back into the country of origin. It is virtually certain that all this involves additional monies, not trade diversion, and that production in the exporting as well as in the importing country must be bigger as a result of smuggling than it would otherwise be.

There is *no* evidence that smuggling in Africa involves real costs that are greater than those of trade through official channels. Quite the contrary: official trade with exchange controls and exchange allocations typically involves substantial profits to someone, either the trader directly or officials who receive bribes, and their profits are dissipated in rent-seeking activities as described by Krueger [1974]. The evidence, which in the nature of the case is more anecdotal than systematic, if anything points to the opposite conclusion that smuggling involves less real cost than does official trade. There are costly delays in getting exchange allocations and import permits as well as in clearing customs, etc., all of which involve large amounts of real resources. We therefore assumed above that smuggling involves no extra real cost of trading.

In the African case the market for imports and exports is not uniform but tends to be split, a part being handled through official channels, but some part being handled at higher real prices by the parallel markets.

We have shown above one example of how government policies can shift the production possibility curve inward. This possibility

explains why, in economies where the "implosion" of the production possibility curve has proceeded to catastrophic levels, such as Guinea and Ghana, governments do not try to suppress the parallel markets. Sekou Touré left Guinea in complete chaos, but the inheritance of Nkrumah in Ghana was also rather sad, as is the inheritance of Nyerere in Tanzania.

Thus Guinea sells import licenses – proof that trade outside official channels is not marked primarily by the desire to evade taxation – but gives no foreign exchange allocation. Importers are, however, legally free to get the means of payment somehow [Robson, 1983]. In effect this means that they must stimulate exports. Something similar is true for Ghana where, according to a World Bank study by May [1985], "parallel market activities [are] widespread and relatively open . . . conspicuously public . . . and officially tolerated".

The major motivation for illegal trade in Africa is thus not so much pecuniary gain or greed, as the term tax evasion might suggest, but rather, to put it brutally clearly, the desire to survive. Barriers to survival arise from a whole variety of government policies. Many of these are essentially taxes. High taxes on exports are implicit in low farm gate prices for export commodities whose trade is monopolized by government institutions. High taxes on imports are both explicit in high import duties and implicit in the effects of other restrictions on international trade.

Moreover, even when farm gate prices are raised in terms of domestic currencies, the terms of trade of the farmers do not as a rule improve as long as the imports they are interested in are made more expensive or even unavailable by policies of import substitution and autarky. Income is, after all, income only when you can spend it. High taxes on exports are also implicit in the overvalued currencies of many countries, while high implicit taxes on imports arise from the need to ration foreign exchange in the presence of such overvaluation. Government policies affecting both exports and imports are in many cases so extreme that they have all but eradicated the official economies. Cases in point are Guinea and Uganda, and to a lesser extent Ghana and Tanzania. This statement is in many cases unfortunately almost literally true: even domestic trade does not proceed anymore along normal channels.

The ultimate causes for the troubles are, of course, the fiscal and monetary policies in connection with the various plans. Surplus amounts of money combined with the unavailability of goods must spill over into the market, in underdeveloped as in developed markets,

in socialist as in capitalist countries. As the literature puts it, the governments lose control over their economies. However, this is all to the good because the control has ruined the economies in the first place. Escaping taxes becomes in these circumstances only an outward sign of a deeper malaise.

For example, Mali levies very large export taxes on cattle, sheep and goats, none of which are traded on world markets, though they are traded locally between neighboring countries. The official estimates are that illegal exports of bovines are 3½ times the official exports, and of ovines 2½ times. For peanuts, which are traded on world markets, the official estimate is 1.6 times.

Another example relates to Ghanaian cocoa smuggled into the Ivory Coast. At the unofficial exchange rate Ghanaian farmers could earn eight times as much in cedis as they would get at the official exchange rate. In fact the Ghanaian cedi was devalued in 1983 by 90 percent.[14] For Uganda it is estimated officially that up to 40 percent of coffee was smuggled into Kenya.

We cannot describe all of the various methods used to measure illegal trade. However, in the aforementioned study by May [1985], the method of measurement has a family resemblance to the various attempts to measure the underground economies of advanced countries. The calculations for Ghana are facilitated by the fact that cocoa is the dominant export good, and is, with a minor exception, a pure export good. The domestic use, if any, is as an input into cocoa butter which is also exported. May starts with the accounting identity that

Smuggling ≡ Production + Imports
 + Changes in stocks − Consumption − Legal exports .

The first problem is to estimate production. Originally production of cocoa or coffee was put equal to marketing board purchases. That made sense in the 1950s and 1960s when exchange rates were convertible and there were no major price distortions. But it is clearly inadequate in the 1970s and 1980s. May starts, therefore, with an independent estimate of cocoa production based on an econometric model which allows, among other variables, for the number and age distribution of trees. The variables used in the model are reasonably well known. This gives a reasonably reliable estimate of the *quantity* of cocoa smuggled.

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[14] Since 1986, the cedi has been made convertible by weekly auctions which, after a period when their use was restricted, are applied to all transactions since 1987.

The quantities so arrived at are then valued at the black market prices, which are also quite openly available, and converted into cedis at the equally openly available black market exchange rates. This amount is compared with the amount of money M1 on the reasonable assumption that the parallel market does not use money market instruments. Deducting the "illegal" amount of money previously found from M1 gives the "legal" amount of money. The officially measured GDP is then divided by the "legal" amount of money to get the income velocity of M1. Assuming the income velocity of M1 to be the same on both the legal and the parallel markets allows the estimate of the size of the parallel market – on the further assumption, which is approximately true for Ghana, that cocoa is of overwhelming importance in the Ghanaian economy and for Ghanaian exports.[15]

Each of the steps in the estimating procedure is reasonable – a word we have used repeatedly – though in each one substantial error margins must be involved. According to this study, the underground economy – for that is what it is – practically did not exist until 1976. May estimates it for 1976 at 1 percent, a figure which is probably much too low since the troubles of the Ghanaian economy started earlier already under Nkrumah. But by 1982 the underground economy had grown to about a third of the legal economy, of the official GDP. The income velocity of M1 also has been estimated to rise only after 1978/79, to double its size by 1982, a normal phenomenon in high inflationary periods. Again, it is likely that such an increase must have started already earlier under Nkrumah.

As stated before, it is not possible or admissible to add individual country estimates of the extent of smuggling to arrive at a global figure. Yet the impression is overwhelming that the extent of smuggling must be of the order of magnitude of at least a third of exportable production. Certainly official trade data vastly underestimate the importance of the international sector.

VII. Conclusion

Our conclusion is thus unequivocal. Smuggling in African circumstances is an unequivocal blessing for the economies, the people, and ultimately perhaps even for the governments. It is a *healthy* reaction

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[15] This is not entirely true: some Ghanaian industrial goods that are unavailable in Ghana can be found in the Ivory Coast. However, their quantitative importance is small.

to bad situations caused by bad policies. It is healthy in the sense in which a high fever is healthy for a person with an infection. Of course, a healthy body and no fever would be even better.

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Zusammenfassung: Wirkungen des Schmuggels unter afrikanischen Bedingungen. Eine faktische, institutionelle und analytische Diskussion. – Die Verfasser untersuchen die faktischen und institutionellen Bedingungen des Schmuggels in Afrika und verwenden sie, um einige Modifikationen am theoretischen Modell des Schmuggels

von Bhagwati und Hansen zu begründen. Aus diesen Modifikationen ergeben sich einige Gründe, die den Schmuggel für die beteiligten Länder als vorteilhaft erscheinen lassen. Zu den Annahmen, die diese Modifikationen bewirken, gehört erstens, daß illegaler Handel keine größeren realen Kosten verursacht als legaler Handel, zweitens, daß der Schmuggel das gleichzeitige Auftreten zweier verschiedener Preise für das gleiche Gut in einem Land erlaubt, drittens, daß Handelsbeschränkungen Verzerrungen auf den Gütermärkten hervorrufen, die durch den Schmuggel beseitigt werden, und viertens, daß die Rationierung importierter Zwischenprodukte die allgemeinen Produktionsmöglichkeiten verringert.

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R é s u m é : Les effets de la contrebande sous les conditions africaines. Une discussion des faits, des institutions et de l'analyse. – Les conditions de la contrebande en Afrique, données par des faits et des institutions, sont examinées et utilisées pour motiver quelques modifications du modèle théorique de contrebande par Bhagwati et Hansen. Ces modifications donnent quelques raisons pourquoi on peut attendre que la contrebande serait avantageuse pour les pays impliqués. Les hypothèses qui créent ces modifications incluent: (i) que le commerce illégal ne cause plus de coûts réels que le commerce légal; (ii) que la contrebande permet la présence simultanée de deux prix différents pour la même marchandise dans un pays; (iii) que les restrictions au commerce augmentent les déformations aux marchés qui sont disparues par la contrebande; (iv) que le rationnement des importations des produits intermédiaires réduit les possibilités générales de la production.

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R e s u m e n : Los efectos del contrabando bajo condiciones africanas: una discusión institucional, analítica y de los hechos. – Se examinan los hechos relacionados con y las condiciones institucionales del contrabando en el Africa con el fin de motivar varias modificaciones del modelo teórico de contrabando de Bhagwati y Hansen. Estas modificaciones proveen varias explicaciones para la hipótesis de que el contrabando sería beneficioso para los países participantes. Los supuestos que generan estas modificaciones incluyen: (i) que el comercio ilegal no justifica costos reales más altos que el comercio legal, (ii) que el contrabando permite la aparición simultánea de dos precios diferentes para el mismo producto en un país, (iii) que restricciones al comercio dan lugar a distorsiones en los mercados de bienes que son superadas por el contrabando y (iv) que el racionamiento de bienes intermedios importados reduce las posibilidades totales de producción.