THREE ALTERNATIVE CONCEPTS OF FOREIGN EXCHANGE DIFFICULTIES IN CENTRALLY PLANNED ECONOMIES*

By PADMA DESAI *and* JAGDISH BHAGWATI

I. Introduction

THE recent entry of the Soviet economy into the world economy, in regard to trade, credit, and technology, has prompted much popular and some scientific discussion of the foreign exchange problems confronting the Soviet Union.[1] However, the analysts of these problems have deployed, and the generalist discussions have occasionally confused, what are quite distinct concepts of the foreign exchange problems.

It is necessary, therefore, to distinguish among three alternative concepts, which are in reality quite different from one another. These are: (1) Foreign Exchange Bottleneck; (2) Open Payments Deficit; and (3) Suppressed Payments Deficit. These are considered in Sections II–IV respectively.

II. Foreign exchange bottleneck

The concept of a foreign exchange bottleneck is a simple *ex ante* planning concept and has no intrinsic relationship (as we will shortly demonstrate) to the *ex post* payments deficit concepts. As developed in the planning literature, it essentially amounts to arguing that, given the objective function and domestic resources-cum-technology of the planners, their inability to transform available into demanded goods is the effective constraint on increasing the value of this objective function.

The classic statement of a foreign exchange bottleneck is in a simple corn-tractor model. The economy produces corn, saves and exports corn to import tractors which constitute investment and produce the corn. In this economy, let the current objective be to increase investment. This means buying more tractors from abroad. Now, if the finance minister cannot tax the economy into saving more corn, to purchase more tractors by exporting this corn, then the economy has a *savings* bottleneck. However, if the

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[1] Two examples of the latter are Holzman (1978), who analyzes why the *CPE*s run into payment deficits, and Desai (1978), who constructs and estimates a simple Swan-Solow model of the Soviet Union to calculate the social productivity of foreign credits to the Soviet Union, while considering conceptually also the foreign exchange bottleneck that is discussed in the text above. We have profited greatly from reading Holzman (1978), in writing this paper.

economy can be coaxed or taxed into more saving, but the economy faces a unitary price elasticity of demand in the world markets for its corn, foreign exchange receipts will not increase. Tractor imports and therefore investment will not increase; we then have a transformation or *foreign exchange* bottleneck.[2]

It will be evident to the reader that a necessary, though not sufficient condition for a foreign exchange bottleneck to exist is the absence of the economy's ability to transform goods into one another in world markets at the initial world prices. I.e., a "small" country, which is atomistic in world markets, cannot have a foreign exchange bottleneck. [It follows equally that, compared to the free trade situation, such an economy will, for a more general class of objective functions (than merely maximizing the volume of investment), do *better* by *restricting* its trade: as is well known from the theory of optimal tariff in the presence of monopoly power in trade.]

In the Soviet context it can be argued that the foreign exchange bottleneck operates *not* with respect to growth of income, but rather with respect to a shift towards greater availability of consumer goods in total and in composition.

This argument of foreign resource inflow being a constraint on the growth and diversification of consumption levels is best illustrated by reference to the classical and idealized demonstration of the foreign exchange bottleneck for developing countries in Fig. 1.

Assume there that the economy, at the relevant point of time, has a production possibility vector, $\bar{P}$: i.e., resources cannot be transferred from one sector to another.[3] Let the two sectors be producing capital and consumer goods respectively *a la* the standard two-sector model. For the developing countries traditionally, the argument of the developmental planners during the 1950s and 1960s was that a foreign exchange bottleneck existed for raising investment (i.e., availability of capital goods) and growth of income. For, starting from $\bar{P}$, the foreign offer curve facing them was $\bar{P}QR$ and if the developing countries could save more than $\bar{P}W$, say $\bar{P}N$, the incremental *ex ante* savings worth NW would not yield any incremental imports of capital goods and hence there would be no increase in *ex post* investment. NW worth of consumer goods, saved by the developing countries, would only accrue to foreigners *via* terms of trade loss from $\bar{P}Q$ to $\bar{P}V$.[4]

[2] An early analysis of the foreign exchange bottleneck concept, and its differences from the concepts of payments deficits, is in Bhagwati (1966). An elegant treatment of the concept in a more elaborate framework is in Findlay (1971). In computable planning models, the concept has been used often by Hollis Chenery and his associates: e.g. Chenery and Bruno (1962).

[3] That is, the "clay" assumption applies to all factors of production.

[4] The super-imposition of the foreign offer curve $\bar{P}QR$ on the production point P is, of course, the technique due to Baldwin. The stretch QR represents unitary foreign elasticity of demand for the developing countries' exports of consumer goods.

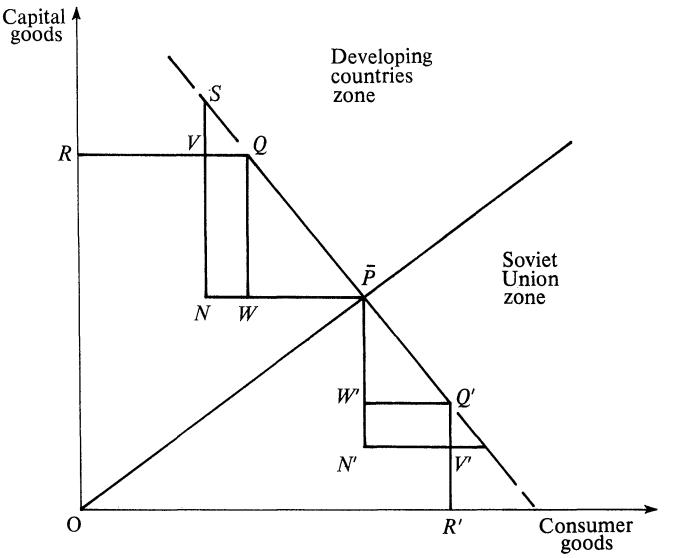

FIG. 1

The Soviet Union's present situation, on the other hand, may be idealized in this illustration by turning the dilemma on its head. With its objective of shifting availabilities in favor of consumer goods, the foreign exchange constraint for the Soviet Union would seem to imply a willingness, but not the ability (beyond $\bar{P}W'$ of capital goods) to transform capital goods[5] into consumer goods through foreign exchange earnings with foreign offer curve $\bar{P}Q'R'$. The foreign exchange constraint of the Soviet Union, therefore, is indeed, as with developing countries, on shifting the availabilities between investment and consumption through trade. However, in the case of the developing countries, this translated into a constraint on growth of income; in the case of the Soviet Union, it amounts rather to a constraint on the composition of the growing income.[6]

III. Open payments deficit

In contrast to the *ex ante* planning concept of the foreign exchange bottleneck, the payments deficit concepts relate to the *ex post* macroeconomic situation.

[5] The idealized treatment of the Soviet economy in Fig. 1 may appear unrealistic to the reader who knows that the Soviet Union exports mainly raw materials such as ores, timber, oil and gas, and chemicals such as potash and ammonia. This worry can be laid to rest by thinking of exports at the *margin*, as in fact we need to do here; and then it is readily seen that Fig. 1 is close enough to reality. Thus, recall that Soviet machinery exports are widely referred to in the Sovietological literature as "soft exports" whereas exports of raw materials beyond current levels appear infeasible owing to supply, rather than demand, difficulties.

[6] We may note explicitly that the argument in the text assumes that wage goods availability will not constrain the growth of Soviet income.

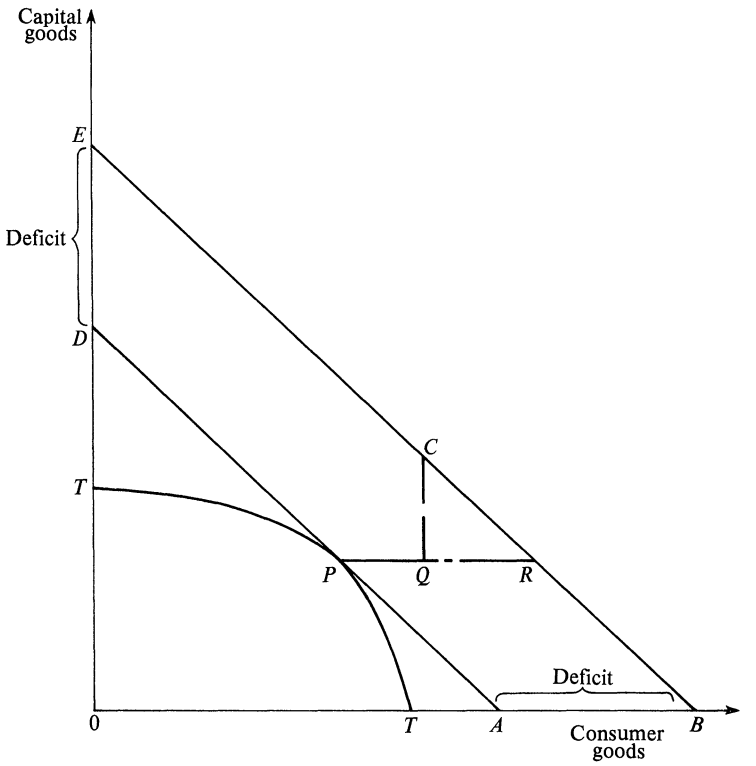

FIG. 2

For "flow" current-account deficits, it is evident that an open payments deficit means that imports exceed exports *ex post*. Therefore we can amend the illustration in Fig. 1 to portray an open deficit simply as in Fig. 2. There, the production possibility curve is TT; production is at P; the world price line, identical with the domestic price line, is APD; the domestic expenditure line is BCE and the national income line is APD, so that the open deficit is AB (if measured in units of consumer goods) or equivalently DE (if measured in units of capital goods).[7] With the consumption vector chosen at C, the deficit is "absorbed" as PQ of consumer goods and CQ of capital goods.

Note two things. First, unlike the foreign exchange bottleneck concept which hinges critically on the assumption of monopoly power in trade, an open payments deficit can arise obviously regardless of whether the country is atomistic or not in world markets. Second, it is possible for such an open payments deficit to arise in several alternative ways. Holzman's (1978)

[7] The equivalence of world and domestic prices, and the tangency of the latter with TT, are simplifying assumptions and can be relaxed without affecting anything essential in the argument in the text, of course.

interesting recent paper in fact argues that *CPE*s have a built in tendency to get into payments difficulties because they systematically either overestimate export earnings or overestimate production/income. Drawing on these two ideas, we will illustrate precisely some (but by no means all) of the ways in which *CPE*s may actually experience open payments deficits.

A. *Demand-determined open deficit*

First, consider cases where the *CPE* overestimates export performance, not because of supply difficulties but because of unduly optimistic assessment of world demand for its exports, but sticks to its import targets instead of revising them downwards. The resulting (world-) demand-determined open deficit may be illustrated for two polar cases: (i) where the export quantity is forecast accurately but the price is overestimated; and (ii) where the export price is forecast accurately, but the quantity is overestimated.

(i) In Fig. 3(a), the first case is illustrated. The *CPE* plans *ex ante* for *PQ* exports in exchange for *QC* imports. However, the terms of trade turn out to be *PE* instead of *PC*. Thus the planned and actual exports *PQ* pay for only *QE* imports. With planned imports sticky at *QC*, the *CPE* then has to run an open payments deficit of *CE*. The effective social budget line then is *RCS* and exceeds the income line *PE* by the deficit.

Note that the "adjustment mechanism" postulated here allows for the disequilibrium resulting from the *ex post* deterioration in export prices relative to *ex ante* expectations to be eliminated by external borrowing or

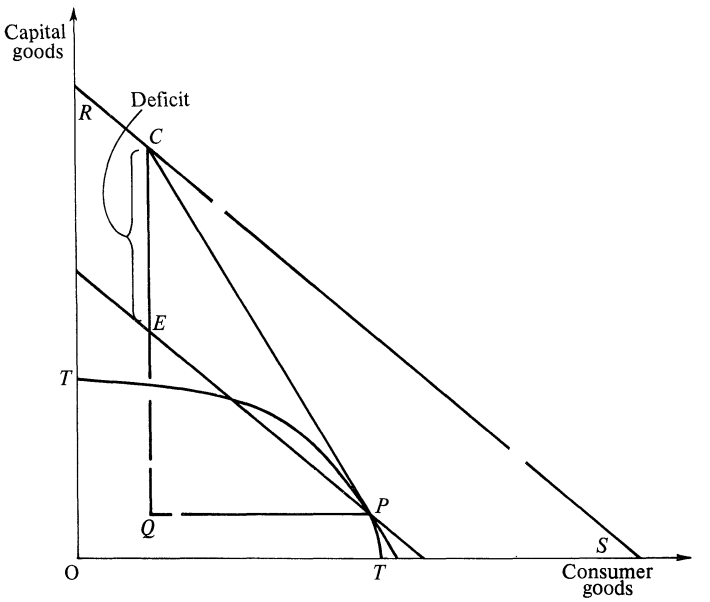

FIG. 3(a)

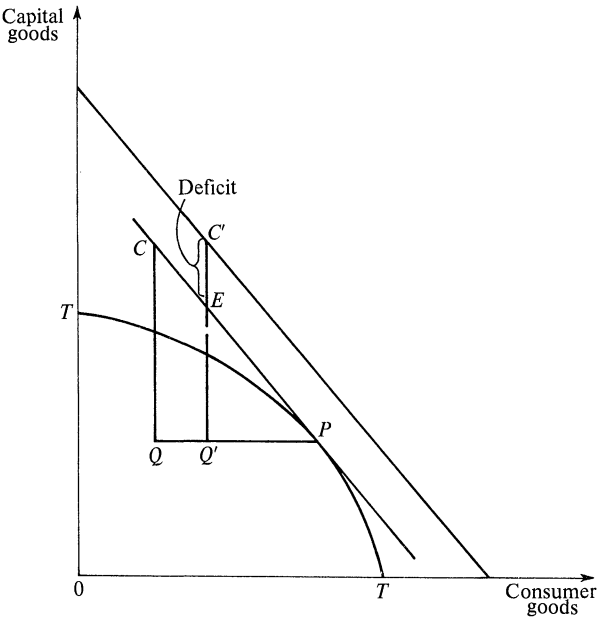

FIG. 3(b)

running down of reserves *and* without permitting reallocation of consumption and production decisions so as to maximize some objective function subject to the constraints constituted by domestic transformation and *ex post* foreign transformation possibilities and borrowing stipulated at CE.[8]

(ii) In Fig. 3(b), we illustrate the other polar case where the quantity of exports is overestimated and falls short of PQ by QQ', whereas their price and hence the terms of trade are correctly anticipated as PEC. Exporting PQ' however will pay only for $Q'E$ imports, thus leaving a payments deficit of $C'E$ to pay for the planned and actual imports $CQ = C'Q'$.[9]

B. *Supply-determined open deficit*

Consider next a situation where the failure in export performance comes from an overly optimistic assessment of production of exportables.

(i) Then, assuming that the CPE is atomistic in world markets and can trade as much as it wants to, let P_e be the *expected* production vector and P_a the actual *ex post* production vector, so that P_aP_e measures the shortfall in

[8] Thus, subject to these constraints, the maximization of a standard social utility function would evidently result in a different *ex post* equilibrium.

[9] Again, note that our depiction of the payments deficit with consumption at C' does not necessarily reflect an optimal *ex post* equilibrium. For, if we were to maximize a social utility function subject to TT, maximal exports of PQ' at terms of trade PE, and a deficit of $C'E$, we could wind up with consumption at a point other than C'. In addition, there is no reason, of course, to expect that a deficit equal to $C'E$ is itself necessarily optimal.

exportable production. P_eQ and QS represent the planned exports and imports respectively. If expenditure is not revised downwards *a la* Holzman (1978), expenditure and income will diverge by SR, which will constitute the open deficit. However, depending on what the planners choose to export in face of the production shortfall, the import level (but not the deficit) will vary; and it can differ from the *ex ante* level QS. In Fig. 4, if the shortfall in exportable production leads the planners to a fully offsetting reduction in (total) exports from P_eQ to P_aQ, the *CPE* will wind up importing altogether SQ, the planned level of imports. On the other hand, if part of the shortfall in exportable production is accommodated through reduced *domestic* availability, exports will not be reduced as much. Thus, if they fall, not to P_aQ but to P_aQ', the payments deficit will remain the same (for it equals the postulated excess of expenditure over income) but the actual import level will rise to $Q'S'$ ($>QS$).

(ii) But we can tell an altogether different story, reflecting a different "adjustment mechanism." So far, we have argued with Holzman (1978) that the excess of expenditure over income is fixed by the assumption that anticipated expenditure is necessarily *ex post* expenditure while *ex post* income falls below anticipated income, and therefore that the trade decisions must accommodate to yield consistency with this. Rather, assume now that it is domestic expenditure that will adjust to accommodate the trade decisions.

Thus, in Fig. 4, assume that the planners react to the shortfall in

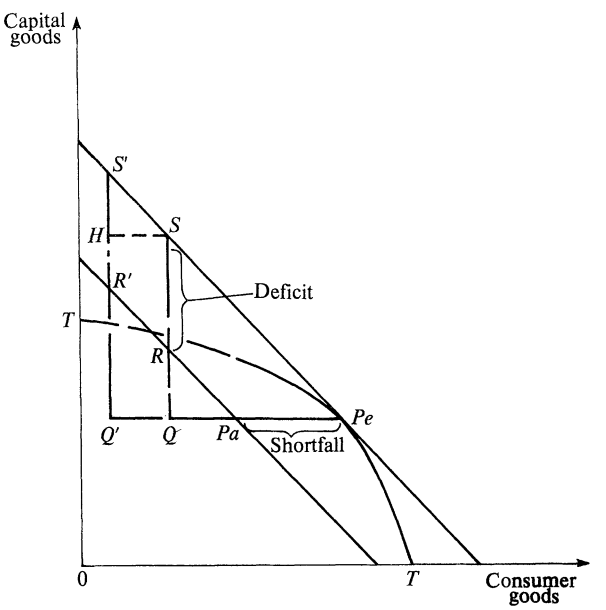

FIG. 4

exportable production by reducing exports from P_eQ to P_aQ'. The planned level of imports is sticky at SQ. Then $R'H$ is clearly the level of imports that cannot be financed from export earnings. These imports then imply a corresponding, open payments deficit: a deficit in this instance that is smaller than under the Holzman (1978) assumptions: $HR' < S'R'$ $(= SR)$.

In conclusion, note that the supply-determined open payments deficit can equally arise from shortfall in importable production. Thus the planned exports QP_e, when effected, will yield in Fig. 5 the anticipated imports QR. But P_eP_a, the shortfall in importable production, implies a shortfall then in domestic availability of RS importables which may lead to an open payments deficit of identical magnitude to eliminate this shortfall.

IV. Suppressed payments deficit

In contrast to the open payments deficit, no matter what precise circumstances cause and shape it, the suppressed payments deficit characterizes a situation where these same circumstances are not permitted to "spill over" into the balance of payments in the shape of an excess of imports over exports.

In the case of market economies, this distinction between open and suppressed payments deficits is quite important for analytical purposes. For, a suppressed deficit implies essentially that, instead of maintaining the

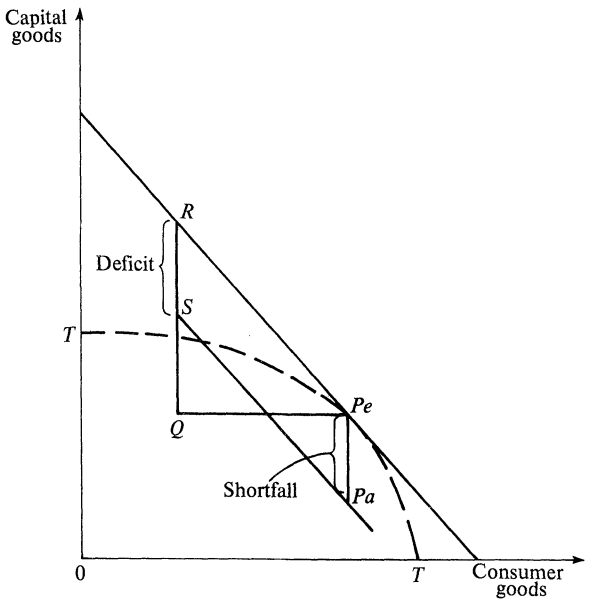

FIG. 5

balance between expenditure and income by a suitable mix of macroeconomic policies which preserves unified exchange rates, and similarly in contrast to the open deficit situation which also permits the preservation of unified exchange rates, the suppressed deficit situation typically implies differential, effective exchange rates on foreign transactions. This is seen in the traditional foreign-exchange-market diagram in Fig. 6. There, the exchange rate r^* corresponds to an equilibrium, unified exchange rate that clears the market. The exchange rate $\bar{r}_e$ leads to an excess demand for foreign exchange that could be met by an open deficit, financed by borrowing or use of reserves, of amount QR: this situation also yielding identical, unified exchange rates for export and import transactions (which underlie the supply and demand curves respectively). However, when the open deficit is suppressed, the exchange rate $\bar{r}_e$ generates supply of foreign exchange $\bar{r}_e Q$ which is cleared in the market at the "premium-inclusive" price, or effective exchange rate, $\bar{r}_m$; and therefore the effective exchange rates on exports ($\bar{r}_e$) and on imports ($\bar{r}_m$) are unequal in this suppressed-deficit situation.

The general-equilibrium "real" counterpart of these distinctions in the traditional 2-sector model of trade theory is usually demonstrated as the free-trade solution for the equilibrium unified exchange rate, the free-trade-with-transfer (equal to the deficit) solution for the open deficit case, and a

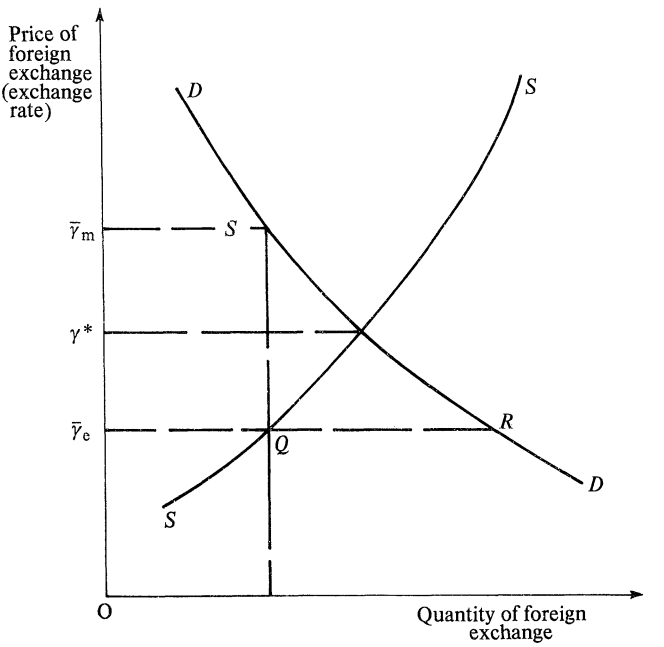

FIG. 6

tariff (implying a higher effective exchange rate on imports than on exports) solution for the suppressed deficit case.

The "suppressed deficit" concept therefore permits us to examine explicitly the alllocational implications of managing the balance of payments, not by adjusting the exchange rate (and therewith the domestic and foreign residents' transactions), but by pegging the exchange rate and using exchange controls to equate import payments to exchange earnings.

Thus, aside from the obvious fact that an open payments deficit and a suppressed deficit differ because the open deficit implies increased current availability of resources to the economy, the open deficit also is characterized by an adjustment mechanism that ensures, *ceteris paribus*, unified exchange rates whereas the suppressed deficit does not. For *CPE*s, however, the latter distinction is not particularly relevant in view of the general delinking of the foreign payments situation from domestic production and consumption decisions. Thus, for the case illustrated in Fig. 3(a), the open deficit situation was not based on either steady-state optimality or even short-run optimality (given the production decision). The corresponding suppressed deficit situation again, if shown by winding up at E (implying that the imports take the entire adjustment burden), would not generally represent an optimal situation either. The distinction between open and suppressed deficits is therefore unlikely to be of the same significance for *CPE*s as it is regarded for the analysis of market economies: the welfare implications for resource allocation of these alternative situations are not as clear for the *CPE*s as they are for the market economies.[10,11]

Columbia University
Massachusetts Institute of Technology

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[10] The resource allocational implications for market economies when the adjustment mechanism consists of exchange controls, in place of actual or simulated exchange rate adjustment, can also be rich and complex, depending on how the scarce foreign exchange is actually allocated by the authorities. For a detailed analysis of the "anatomy" of exchange control regimes and their economic consequences, see Bhagwati (1978).

[11] Moreover, as Neary has reminded us, this raises the possibility of a suppressed deficit actually yielding a higher welfare level than the corresponding open deficit (which was itself sub-optimal), because of second-best considerations.

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