DRD DISCUSSION PAPER

Report No. DRD266

PROTECTIONISM AND THE DEBT CRISIS

by

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January 1987

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This paper was written during a visit to Tel Aviv University, which provided a hospitable work environment. I thank Gene Grossman, Indermit Gill, Ricardo Martin, and Nadeem Ul. Haque for helpful discussions. The views in this paper are my own and do not necessarily reflect those of the institutions I am affiliated with.
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ABSTRACT

Fiscal policy and trade intervention in the North have direct negative welfare effects on the South because of the adverse intratemporal and intertemporal (real interest rates) terms of trade shifts it causes for the South. This paper asks whether trade policy in the North has additional costs through its impact on the debt problem. The answer is unambiguously affirmative, and works through four different channels.

Two static channels focus on the "transfer burden." Trade policy in the North enacted against the South is similar to extracting a transfer through the adverse terms of trade effect. Declining marginal utility of income then obviously increases the costs of a transfer for the South in the presence of adverse Northern trade policy. The second static channel is less straightforward. Adverse trade policy may lead to Keynesian unemployment in the presence of downward price rigidity in the South. A transfer made in such an environment will be more costly, because it increases the distortionary costs of that price rigidity.

I then argue, following Cohen (1985), that the nature of the debt problem, rather than a solvency issue, really is, that countries are forced to repay (net) earlier than they would like to. This implies that they are rationed in external capital markets, and this rationing entails welfare costs. I point out two ways in which an adverse Northern trade policy raises the welfare cost of this rationing.
The first one derives from the perhaps unduly optimistic assumption that the increase in Northern protectionism will be temporary. This will trigger the need for a larger terms of trade deterioration "today" than will be necessary in the future when the trade measures will be reversed. Hence current goods will be cheaper in terms of future goods; this in turn triggers a deterioration in the desired trade balance in the South. To still meet the external balance constraint, the wedge between actual and market clearing real interest rates increases and hence so do the welfare costs of the constraints the South faces in the world capital market.

The second channel is driven by income rather than intertemporal substitution effects. If prices are temporarily downward rigid, and no devaluation is undertaken, Keynesian unemployment will result in the South. Thus a temporary loss of real income occurs as resources go idle in Keynesian unemployment. Attempts to smooth out this temporary decline in income will once again lead to an increase in the desired trade deficit and raise the welfare costs of external capital market rationing.
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1. Introduction

Macroeconomic problems in the world economy are, from a developing country's point of view, dominated by the twin problems of debt and protectionism. Earlier papers on North–South interactions (Dornbusch (1985), Sachs and McKibbin (1985), van Wijnbergen 1985a,b) focused on the impact of Northern trade and fiscal policies on world real interest rates and hence on the burden of Southern debt. In this paper, I take the transfer the South needs to make to the North on principal and debt service as given; instead the focus is on how trade policy in the North exacerbates the problem of effecting that transfer.

Tariff reductions undertaken since World War II were continued in the Tokyo Round negotiations, which lowered tariffs to levels not seen before in this century. But while the reductions have been extended to the developing countries under the Most Favored Nation clause, tariffs have been lowered less than the average on products of interest to developing countries.

A more serious danger to developing countries' exports is the growing use of nontariff barriers (NTBs). On one measure -- the proportion of imports subject to restriction -- the extent of NTBs more than doubled in the United States between 1980 and 1983 and increased by 38 percent in the EC. A much larger share of industrial-country imports from developing countries is subject to NTBs than imports from other industrial countries (see Nogues, Olechowski and Winters (1986)). Such ratios do not reflect tightening of existing NTBs and may therefore underestimate their increased use. One example is the progressive tightening of the Multifibre Arrangement each time it is renegotiated.
At the moment, the most severe trade interventions in industrial countries aimed at developing countries are almost all directed primarily against major debtor countries (the Multifibre Arrangement being an exception). Restrictions on steel imports in Japan, the United States, and the EC affect each others' exports, but also those of Korea, Brazil, and to a lesser extent Mexico, three of the largest developing-country debtors. Restrictions on imported sugar in Europe, Japan, and the United States hit Latin America and the Philippines, another country with debt problems. Restrictions on beef imports in Japan and the EC damage Argentina's terms of trade. The list is long and getting longer.

In the next few years, without a significant increase in capital inflows, the major debtors will need to run substantial trade surpluses. That will require an increase in their domestic savings. These increased savings, however, also need to be translated into increased export earnings: in technical terms, the ex ante trade surplus needs to be brought in line with the ex ante excess of domestic production over expenditure. If industrial countries increase barriers to exports from developing countries, that will require a much larger real depreciation of the exchange rate -- or much higher levels of unemployment. Lower levels of trade therefore imply higher social costs for the adjustment programs of developing countries. This in turn seriously threatens the continued implementation of such programs and, more generally, the creditworthiness of these countries and, by straining the ability of major debtors to repay their debts, the stability of the global financial system.

This argument is reminiscent of the old Keynes-Ohlin issue of the burden of the transfer required for reparation payments from Germany. In the
first part of this paper we exploit this analogy. I show how trade policy in the North, through several channels, increases the social cost of effecting a given transfer and discuss the role of the real exchange rate, real wages and unemployment. This is in addition to the terms of trade loss adverse trade policy also causes; the combination of adverse trade policy and the transfer problem causes greater welfare losses than the sum of the losses each would inflict in isolation.

However, there are also intertemporal aspects to this interaction. The problem was succinctly put by Lord Lever in a conference on protectionism and the debt problem. In discussing a speech by the U.S. Secretary of the Treasury, he argued that promoting both more trade intervention against the developing countries and full service on LDC debt amounts to "being led by two horses that pull in opposite direction" (Washington Post, 11/1986). The issue is frequently mentioned in causal discussions: on the one hand the North insists on Southern debt service and its attendant transfer; on the other hand it increasingly uses trade policy to prevent the South to run the very trade surplus without which no transfer can be effected. However, this argument is not very tight. Tariffs and quota, through Lerner symmetry, affect imports and exports, the level of trade rather than the balance. Indeed Dornbusch (1985), although he does not discuss Northern trade policy explicitly in his paper, comes close to denying such a link: "credit rationing does NOT give foreign demand a special role" (Dornbusch (1985), p. 317). The existing North-South literature is also of little help in analyzing this problem. Almost without exception that literature, where it addresses short run macro problems at all, assumes them away in the South by the fixed real wage-surplus labour assumption routinely made (Taylor (1981), Kanbur and Vines (1986)).
There is, however, a core of truth to the argument, as I show in the second part of the paper.

There I interpret the requirement to effect a given transfer as an example of external capital market rationing. It is arguable that the nature of the debt problem is not so much that the South needs to repay its debt while it cannot, but that it needs to repay it now rather than tomorrow (Cohen (1985)). In other words, there is a limit on the amount the South can borrow in addition to the usual solvency constraints. This limit drives a wedge between Southern capital productivity and intertemporal rates of substitution in consumption on the one hand and Northern real interest rates on the other. Such a wedge causes welfare losses to the South because of reduced intertemporal efficiency. I show two channels through which Northern trade policy increases the welfare costs (to the South) of such rationing in external markets. The first channel abstracts from macro-economic problems. It addresses the impact of Northern trade policy on real interest rates and intertemporal relative prices relevant for the South. The second channel points out that Northern trade policy causes short run macro problems in the South that interact with intertemporal relative prices such that once again the welfare costs of external rationing increase.

2. Trade Policy and the Transfer Problem: Static Aspects

In the first part of this section, I present a simple static general equilibrium model to analyze the terms of trade and welfare effects of Northern trade policy. The main part of this section comes next however, in section 2.2; there I introduce downward price rigidity and real wage
resistance in the South and discuss the macroeconomic effects of Northern trade policy and the interaction with the debt-related transfer problems.

2.1 Transfers, trade intervention and the terms of trade

Since the focus is on the South, I ignore macro problems in the North and do not discuss the rationale for trade intervention in the North against the South. Consequently, we assume Northern output $X^*$ fixed exogenously:

$$X^* = X^*$$

Northern consumers allocate consumption over Northern goods and Southern goods. Import of the latter is subject to a specific tariff $T$. We choose Northern goods as numeraire, with the pre-tariff relative price of Southern goods equal to $P$. Consumer behavior is summarized through the use of an expenditure function $E$:

$$E^* = E^*(\Pi (1, P + T), U^*)$$

$E^*$ gives the minimum amount of expenditure needed to reach utility level $U$ at a given relative price structure. $\Pi$ is an aggregate price index defined for later convenience. By the properties of expenditure functions, the partial derivatives of $E^*$ with respect to prices equal the Hicksian demand functions for the corresponding goods (Dixit and Norman (1980)).

The budget constraint facing Northern consumers is

$$D + X^* + T E^*_P = E^*$$
D is the transfer the South is required to make; it is denominated in terms of Northern goods. Differentiation of (3) gives the welfare effects of changes in D, P and T on Northern welfare.

\[ E^* \frac{dU^*}{dD} = (1 - T C^*_S)^{-1} (T E^*_{pp} dT + dD + (TE^*_{pp} - E^*_p) dP) \]  \hspace{1cm} (4)

\( C^*_S \) is the Northern marginal propensity to consume Southern goods. (4) yields standard results: for given terms of trade, the impact of a tariff increase is negative if starting from a positive level. This is because it reduces imports which are already too low because of the initial tariff. Against this are potential gains through a terms of trade improvement (the term involving \( \frac{dP}{dT} \) as we will see). Furthermore, an increased transfer received yields higher benefits with trade distortion than without:

\[ \left. \frac{E^* \frac{dU^*}{dD}}{1 - T C^*_S} \right|_{T=0} > \left. E^* \frac{dU^*}{dD} \right|_{T=0} = 1 \]  \hspace{1cm} (5)

once again because it allows higher imports from the South which are too low. Finally both measures carry a secondary benefit for the North to the extent that they reduce the Southern terms of trade (\( dP < 0 \) and \( E^* \frac{dU^*}{dP} < 0 \)).

The South uses Northern goods and Southern labour (earning a wage W) as input into the production process. Output decisions are described using a revenue function \( R \):

\[ R = R (P, 1, L) \]  \hspace{1cm} (6)
By properties of revenue functions (cf. Dixit and Norman (1980),

\[ R_P = X \quad (6a) \]

\[ R_P^* = -Z \quad (6b) \]

\[ R_L = W \quad (6c) \]

with \( X \) Southern output, \( Z \) intermediate imports, and \( L \) labour used. Combining (6a, b and c) yields an output supply function

\[ X = X(P, W/P) \quad (7) \]

with \( X_P > 0, X_W = \partial X/\partial(W/P) < 0 \). At full employment, \( W \) is such that (6c) holds for \( L = 1 \), the normalized size of the Southern labour supply. The Southern budget constraint is:

\[ R - D = E (\Pi (1, P), U) \quad (8a) \]

\( E \) is the Southern expenditure function, analogous to \( E^* \) defined before. (8a) yields standard welfare effects:

\[ E_U dU = E_P^* dP - dD \quad (8b) \]
The model is completed through a commodity market clearing equation for Southern goods (Walras' law makes the Northern goods market clearing equation redundant):

\[ R_\text{p} = E_\text{p}^* + E_\text{p} \]  \hspace{1cm} (9)

A graphical representation in \( W/P - P \) space will be useful for the analysis of the disequilibrium version of the next section. Consider first the labour market equilibrium condition (6c) evaluated at \( L = \bar{L} \) and after dividing through by \( P \):

\[ R_\text{L} (1, \frac{1}{P}; L) = \frac{W}{P} \]

or

\[ \frac{dW/P}{dP} = - \frac{R_{LP}^*}{P^2} > 0 \]  \hspace{1cm} (10)

\( R_{LP}^* \) is by necessity negative in this two factor model.

Commodity market equilibrium follows from (9) after substituting out \( U \) and \( U^* \) (use (6) and (8)). Differentiation yields the slope of the CM curve (see fig. 1) describing commodity market equilibrium:

\[
\left[ E_{PP}^* + E_{PP} + (C_S - C_S^*) E_P^* - \frac{C_S^* E_P^*}{1 - Tc_S^*} (Tc_S^* + \frac{T_n^*}{P + T}) - X_p \right] dP \\
+ \frac{E_{PP}^*}{1 - Tc_S^*} dT = X_w d(W/P)
\]

Therefore
\[
\frac{dW/P}{dP} \bigg|_{CM} = -\frac{E_{PP}^* + E_{PP} + (C_s - C_s^*)E_p^* - C_s^*E_p^* \left(\frac{T_{P}^*}{P+T} + T_{C_s}^*\right) - R_{pp}}{x_w}
\]

\[
> \frac{dW/P}{dP} \bigg|_{LL}
\]

(11)

The latter inequality is required for stability. (10) and (11) represent the loci CM and LL in figure 1. Equations (10) and (11) also tell us the impact of a higher transfer imposed on the South:

\[
\frac{dP}{dD} \bigg|_{LL} = 0
\]

(12a)

\[
\frac{dP}{dD} \bigg|_{W/P, T=0} = \frac{C_s^* - C_s}{\Lambda}
\]

(12b)

with \( \Lambda \) the numerator of (11), including the minus sign (thus \( \Lambda > 0 \)).

Consumer preference for home goods is a clear empirical fact and implies \( C_s^* - C_s < 0 \); hence (12b) is negative. A higher transfer requires a fall in real product wages and a terms of trade deterioration in the South: if \( C_s^* - C_s < 0 \), there is a secondary transfer burden, a standard result.

Northern tariffs against Southern goods have similar effects:

\[
\frac{dP}{dT} \bigg|_{LL} = 0
\]

(13a)

\[
\frac{dP}{dT} \bigg|_{W/P} = \frac{(1 - T_{C_s}^*E_{pp}^*)}{\Delta} < 0
\]

(13b)
FIGURE 1
See the shift from A to B in figure 1. Like a higher debt burden, Northern tariffs require a fall in the Southern terms of trade and a decline in real product wages. In essence what the Northern tariff against Southern goods does is extract a second transfer from the South, on top of the transfer already required.

Before turning to macroeconomic problems, a final issue: the tariff is not only similar to extracting extra transfer, but, when imposed, raises the welfare costs of the original one. This is easily seen by comparing the welfare costs of the transfer at a zero tariff and at positive tariffs:

\[
\frac{dU}{dD} \bigg|_{T>0} = -E_U^{-1} \left( \Pi (1, P_B), U_B \right) - E_U^{-1} \left( \Pi (1, P_A), U_A \right) \\
\quad + E_U^{-2} \left( E_U^{-2} \left( (P_B - P_A) + E_U (U_B - U_A) \right) \right)
\]

\[
< \frac{dU}{dD} \bigg|_{T=0}
\]

which, according to Rolle's theorem, holds exactly if \( E_U^{-2}, E_U \) and \( E_U \) are evaluated at the appropriate point between \((P_A, U_A)\) and \((P_B, U_B)\), say at \( P_C, U_C \) with \( P_A > P_C > P_B \) and \( U_A > U_C > U_B \).

Equation (14) states that the welfare costs of the primary transfer equal the marginal utility of income on the margin. The point is that higher tariffs lower welfare and so raise that marginal utility, and hence the welfare costs of the original transfer.
2.2 **Real Wages, Debt Service and Unemployment**

In this section I introduce short run macroeconomic rigidities in the South to explore the macroeconomic costs (to the South) of Northern trade policy. I will then show that these macroeconomic costs also raise the burden of the original transfer.

The rigidities introduced are two-fold. On the one hand, I assume downward rigidity of prices, of a temporary nature (this, of course, only matters in the intertemporal version of this model, presented in the second part of the paper). There is some theoretical support for such asymmetric price behaviour: cf. Reagan and Weitzman (1984). Second, I introduce real consumption wage resistance against wage reducing shocks unanticipated at the time wage agreements were struck. For a similar, one-country disequilibrium model see van Wijnbergen (1985c). These rigidities imply the possibility of disequilibrium in both labor and commodity markets.

First consider labor market equilibrium under excess demand for goods. This implies firms will be on their demand schedule for labor, so (10) holds (LL in fig. 2).

---

1/ Ideally one would like to introduce price setting mechanisms and reasons for rigidity explicitly, e.g. through monopolistic competition and "menu cost" assumptions. See for example Blanchard and Kiyotaki (1986), Akerlof and Yellen (1985) and Mankew (1986). Aizenman (1986) and Svensson and van Wijnbergen (1986) provide an open economy example where this is done. In the context of this paper, however, the additional complexity would not lead to changes in results. We therefore do not introduce such an extension.
Figure 2. A Disequilibrium Model
Similarly, since CM has been set up based on \( X(P, W/P) \) rather than on the full employment level \( \bar{X} \), the part of CM above the Walrasian equilibrium is not affected either. There firms face excess supply of labor, while commodity markets clear by construction; we are after all at the CM locus. However, the region between LL and CM to the South-East of A would involve double rationing of firms (excess demand for labor and excess supply of goods). This regime therefore collapses and the two segments of the LL and CM loci that surround it collapse into one negatively sloped curve, called LC in fig. 2.

Upward price flexibility implies that the economy always is along CM (classical unemployment) or LC (Repressed Inflation), or in the K region (Keynesian unemployment).¹/

Finally real wages. We assume short run downward rigidity in real consumption wages. This allows for changes in the Southern real product wage \( W/P \) if the terms of trade change. More precisely, a rigid real consumption wage implies

\[
W = \gamma \Pi (1, P) \tag{15a}
\]

or

\[
\frac{dW/P}{W/P} = - (1 - \psi) \frac{dP}{P} \tag{15b}
\]

¹/ Notice that this definition of classical unemployment differs from the usual one in the disequilibrium literature. There one usually refers to the region NW of A as classical unemployment, with excess demand for commodities prevailing. In our definition of classical unemployment, commodity markets clear; but unemployment prevails because real consumption wage indexation prevents real product wages to fall to their market clearing level.
with $\psi = Pn/P$, the consumption share of Southern goods in Southern consumption expenditure. (15a,b) implies a restriction on the possible changes in $W/P$ and $P$ compatible with short run equilibrium. Fig. 3 introduces (15b) as the Wage Indexation Line (WIL) under the assumption that $(W/P,P)_A$ satisfies (15a).

Consider now the impact of a Northern tariff imposed against the South. Labor market equilibrium is not directly affected, so it does not shift. However, the tariff shifts world demand away from Southern goods; to restore equilibrium, a fall in the Southern terms of trade becomes necessary. CM therefore shifts to the left (fig. 2) and $P_B < P_A$:

$$\frac{dP}{dT} = -(1-TC^*_S)^{-1} E^*_PP/H$$

$$< 0$$

$H$ is the Jacobian of (10) and (11) and is negative in stable configurations. Such a terms of trade deterioration has the standard negative welfare effects on the South, of course; but in addition, if prices are downward rigid at least in the short term, further welfare costs will arise out of the resulting macroeconomic problems. After the tariff is imposed, there is excess supply of Southern goods at $A$ while the new Walrasian equilibrium is at $B$. Failure to adjust prices downward would lead to Keynesian unemployment, unused resources and hence additional welfare costs. If downward rigidity of $P$ is caused by downward rigidity of nominal prices, a devaluation could assist in bringing about a move from $A$ to $B$. Before we can discuss this, however, a discussion of real wages is needed.
Since the South uses Northern goods for production, the value marginal product of labor will decline at unchanged technology. To restore equilibrium, a fall in the real product wage is necessary:

\[
\frac{d(W/P)}{dT} = R_{LP}^* \frac{E_{PP}^*}{(1-TC_S^*) H} < 0
\]

(17)

This opens up a second source of potential conflict. Efficiency requires a fall in real product wages from A to B, but along the way the terms of trade also deteriorate. This means a fall in real consumption wages becomes unavoidable. But if the fall in the terms of trade necessary to effect the transfer implied by \(dT > 0\) is to be implemented, maintenance of the real consumption wage requires a rise, not a fall in real product wages (see (17) and S in fig. 3). Northern tariffs hence cause a direct conflict between social peace, requiring a move towards S, and economic efficiency (point B). Social peace requires a rise in the real product wage in the face of a terms of trade deterioration; efficiency requires a fall.

This also indicates why a devaluation to effect a fall in P in the face of nominal downward price rigidity would be problematic. Real consumption wage indexation would require the economy to move along WIL. Goods market equilibrium would then be restored at S. Moreover, at S the real product wage would be well above the market clearing real product wage. A devaluation in these circumstances would therefore indeed avoid Keynesian unemployment, but at the cost of triggering classical unemployment. It would have changed the nature of unemployment rather than avoided unemployment.
Figure 3. Impact of a higher transfer in a sustained classical unemployment regime caused by Northern trade policy and Southern exchange rate response.
2.3 Welfare Aspects

The post-tariff unemployment equilibria A and S involve unused resources and hence have obvious welfare costs. The point of this section is different however. I will show that these macroeconomic problems, in addition to causing direct welfare losses, also raise the welfare costs of effecting a given transfer. Hence the interaction of Northern trade policy with a debt transfer causes welfare losses that are higher than the sum of the welfare costs each measure would trigger in isolation. In this sense the Northern trade policy not only inflicts direct welfare losses, but raises the burden of debt service.

The analysis uses Neary-Roberts (1980) concept of virtual prices and builds on van Wijnbergen (1986). Consider a reformulation, first of the Keynesian, and then of the Classical regime. In the K-region, demand exceeds supply in commodity markets, and, at A, the real product wage exceeds its market clearing value. We can define a virtual price \( \bar{P} \) at which producers would willingly supply the output demanded at the actual price \( P \):

\[
X (\bar{P}, W/P) = E_p (\Pi(1,P), U) + E_p^* (\Pi (1, P + T), U^*) \quad (18)
\]

Introduction of this concept requires rewriting of the budget constraint facing Southern consumers, since this constraint holds at actual prices, not at virtual ones:

\[
E (\Pi (1,P), U) = R (\bar{P}, 1; L(\bar{P}, W/P)) + (P - \bar{P}) X(\bar{P}, W/P) - D \quad (19)
\]
Hence we can rewrite the welfare costs of an increase in D in the K-regime, with $P$ and $W/P$ fixed, as follows:

$$E_U \frac{dU}{dD} = (R_P - X + (P - \bar{P}) X_P) \frac{d\bar{P}}{dD}$$

$$= -1 + (P - \bar{P}) \frac{d\bar{P}}{dD}$$

Now from (18) it is clear that

$$X_P \frac{d\bar{P}}{dD} = - (C_S - \frac{C_S^*}{1 - Tc_S^*})$$

$$< 0$$

with sufficiently strong preference for home goods which we, plausibly, assume. But in the K-region, $P > \bar{P}$, so (20) and (21) combined established our claim:

$$E_U \frac{dU}{dD} \bigg|_K = -1 - (P - \bar{P}) (C_S - \frac{C_S^*}{1 - Tc_S^*})$$

$$< -1 = E_U \frac{dU}{dD} \bigg|_W$$

Hence in the K-region, the welfare cost of effecting the transfer to the North exceeds the cost of making the same transfer in a Walrasian market clearing world.
The situation is different in the classical region. There the only disturbance is the discrepancy between the actual and the full employment value of real product wages. We can define a virtual real product wage $\tilde{v}$ at which the labor supply would equal the amount demanded at $W/P$. For $\tilde{v}$ to be well defined, we need to introduce a positive real wage dependence of the labor supply. I will present the mathematics of this extension in the appendix only. However the results of such an extension are clear: effecting a transfer in this regime would lead to a terms of trade deterioration and hence a decline in the demand for labour (of fig. 3). This would further reduce the virtual wage $\tilde{v}$, thus increasing the gap between actual and virtual real product wage. This would again raise the welfare cost of effecting a transfer over and above the welfare costs of such a transfer in a Walrasian context. Hence, if Northern trade policy causes the South to end up at $S$, the welfare costs of the debt service are increased by that trade policy, just like in the K-region.

The conclusion of this section is clear. The macrodisequilibria triggered by Northern trade policy cause larger welfare losses due to debt service transfers than would obtain in a Walrasian context. Moreover, we have also shown how, even in a Walrasian context, Northern protectionism leads to an increased transfer burden for the South. We can therefore claim with considerable generality that Northern protectionism increases the welfare costs of Southern debt service; certainly at full employment, and even more so in the unemployment equilibria that the trade policy can trigger.
3. Intertemporal Aspects

The most obvious intertemporal channel through which Northern policies influence the Southern debt problem is the real interest rate. Fiscal and trade policies affect real interest rates and therefore the cost of servicing LDC debt. This mechanism has, however, already been discussed extensively elsewhere (Dornbusch (1985), Sachs and McKibbin (1985), van Wijnbergen (1985a,b), World Bank (1985)).

Here I want to focus on a different interaction, with a tighter focus on trade policy. The issue was highlighted in the quote from Lord Lever in the introduction, and is frequently mentioned in casual discussions: on the one hand the North insists on Southern debt service and its attendant transfer; on the other hand it increasingly uses trade policy to prevent the South to run the very trade surplus without which no transfer can be effected. However, this argument is not very tight. Tariffs and quota, through Lerner symmetry, affect imports and exports, the level of trade rather than the balance (Razin and Svensson (1983)). There is nevertheless a core of truth in the argument, and I will devote the remainder of this paper to it.

I will interpret "increasing the difficulty of effecting a transfer" as raising the severity of rationing in external capital markets the South is confronted with. For tighter focus, I will completely eliminate the real interest rate issue, since that has been dealt with elsewhere, and assume a given transfer, a fixed required trade surplus. I will show two channels through which Northern trade policy affects the welfare costs of meeting this requirement.

The first channel is not related to macroeconomic disequilibria, the second is; I therefore once again first work with an equilibrium model, then
with a disequilibrium version. The model is an intertemporal extension of the static framework set up in section 2.

3.1 Temporary Trade Policy and the Welfare Costs of External Capital Market Rationing

The focus of this part of the paper is the link between Northern trade policy, Southern "ex ante" trade deficits and the tightness of External Capital Market Rationing (ECMR). We model ECMR as a binding lower limit on the trade surplus (upper limit on the deficit, more realistically) that the South needs to run. Call that limit \( D \). This drives a wedge between Northern and Southern real interest rates. Intertemporal issues in the North matter to the extent that Northern real rates \( \rho^* \) influence debt service on old, floating rate debt. For reasons explained in the preceding paragraphs, we wish to abstract from this channel. This is done through the admittedly artificial assumption that current and future foreign goods are perfect substitutes for Northern consumers; hence their relative price, \( \delta^* = 1/(1 + \rho^*) \), remains fixed. We therefore do not need a separate equation requiring the Northern trade deficit to match the Southern transfer, \( D \): this requirement will be satisfied automatically because of the perfect substitutes assumption.

The Northern expenditure function now includes future commodities:

\[
E^* = E^* \left( \Pi (1, p + T), \delta^* \pi(1, p + t), U^* \right)
\]  

Output in the North remains exogenous:
We use upper (lower) case letters for first (second) period variables. The intertemporal budget constraint is:

$$X^* + \delta^* x^* + T E_p^* + \delta^* t E^*_p = E^*$$

I assume throughout that trade policy is temporary and set $t=0$ accordingly. This takes out second best implications through changes in the distortionary costs of second period tariffs.

The South can be extended in a similar manner:

$$X = X (P, W/P)$$

and

$$x = x (p, w/p)$$

I will throughout assume that unemployment and effective demand failures are due to policy surprises after wages and prices are set and are thus of a short run nature; hence there will always be full employment and commodity market clearing in the second period. We can therefore suppress $w/p$ as an argument of $x$.

Expenditure now needs to be allocated over commodities in both periods:

$$E = E (\Pi (1,P), \delta \pi (1,p), U)$$
The requirement to make a transfer D to the North drives a wedge between Northern and Southern discount factors (interest rates). The Southern market clearing interest rate will guarantee that

\[ R - \pi (1, p) E_\pi (1, \delta \pi / \Pi, U) = D \]  

(29)

The intertemporal budget constraint, evaluated at world prices, tells us that

\[ R + \delta r + (\delta^* - \delta) (r - E_\pi) = E (\Pi, \delta \pi, U) \]  

(30)

External rationing imposes a constraint on first period deficits (in practice D is, of course, negative); this implies a matching floor on the second period surplus:

\[ \delta^* (r - \pi E_\pi (1, \delta \pi / \Pi, U)) = - D \]  

(31)

(31) determines the wedge between \( \delta \) and \( \delta^* \). We assume the constraint to bind:

\[ \delta^* (r - E_\pi (1, \frac{\delta^* \pi}{\Pi}, U) \pi) < - D \quad \Rightarrow \delta^* > \delta \]  

(32)

The model is completed by two goods market clearing conditions, for current and future Southern goods:

\[ X(P, W/P) = E_p^* + E_p \]  

(33a)
and

\[ X(p) = \frac{E^*}{p} + \frac{E}{p} \]  

Consider now the impact of temporary Northern trade policy, \( dT > 0 \).

I want to focus on intertemporal substitution effects, so I will assume a zero initial tariff. First there are standard direct effects on the terms of trade, for given virtual discount factor \( \delta \):

\[ \frac{dP}{dT} \bigg|_{CM1} = \frac{E^*_{pp}}{X_p - E_{pp}^* - (C_s - C_s^*) E_p^*} < 0 \]  

or a Northern tariff increase causes a first period terms of trade deterioration for the South.

And, since foreign demand will be shifted not only towards current home (Northern) goods but also to future Southern goods, the Southern terms of trade improve in the second period:

\[ \frac{dP}{dT} \bigg|_{CM2} = \frac{E^*_{pp}}{X_p - E_{pp}^* - (C_s - C_s^*) E_p^*} > 0 \]  

The impact on the trade balance constraint can be obtained by differentiating (31):

\[ E_{\pi \Pi} \frac{\pi}{\Pi} d \delta = (1 - C_\pi) E^* \frac{dp}{dT} - c_\pi \frac{E^*}{p} \frac{dp}{dT} - \frac{E}{\pi} \frac{d(\pi/\Pi)}{dT} \]

and

\[ \frac{d(\pi/\Pi)}{dT} = \frac{\pi}{\Pi} \frac{dp}{dT} - \frac{\pi}{\Pi} \frac{dp}{dT} > 0. \]
Hence

$$\frac{d\delta}{dT} < 0.$$  \hfill (36)

The mechanisms are straightforward: temporary trade policy yields

(A) an income loss today: \( E^* \frac{dP}{dT} < 0 \)

(B) an income gain tomorrow: \( E^* \frac{dP}{dT} > 0 \)

(C) and, most importantly, it raises the relative price of future goods in terms of current goods at unchanged \( \delta: \frac{d\Delta(\pi/\pi)}{dT} > 0 \)

(A) and (B) yield a desired first period trade balance deterioration in the South because of income effects (a temporary current loss and future gain); (C) leads to substitution effects away from future goods, which also puts pressure on the first period trade balance in the South. But the South is rationed in external capital markets; therefore the gap between the actual and desired trade deficit goes up. Hence the decrease in \( \delta \) (increase in real interest rate), \( \frac{d\delta}{dT} < 0. \)

Since the welfare cost of ECMR is proportional to the square of \( (\delta^* - \delta) \), a decline in \( \delta \) leads to an increase in the welfare costs of ECMR. This result explains the second term in the welfare effect of \( dT \) that can be obtained by differentiating the intertemporal budget constraint (30):
The conclusion is clear: current trade policy in the North, in addition to its standard direct negative welfare impact on the South, raises the welfare costs (to the South) of the external capital market rationing that constitutes the current debt crisis.

3.2 Short Run Unemployment and the Welfare Costs of External Capital Markets Rationing

The adverse trade policy in the North forces a downward shift in the Southern terms of trade; if prices are temporarily rigid downward, first period unemployment will result, as I discussed in section 2.2. This rigidity eliminates most of the intertemporal substitution effects that drove the results of the previous section; instead it introduces temporary income losses associated with first period unemployment.

To assess welfare effects we need to formulate the output and price determination mechanism in the Keynesian regime. For \( P \) above market clearing level, output is demand determined, so we define a virtual price \( \bar{P} \) in the usual manner:

\[
X(\bar{P}, W/P) = E_P + E^*_P. \tag{38}
\]

In the second period, commodity markets clear at actual prices:
The trade balance constraint still holds:

\[ \delta^* (r - E_\pi (1, \delta \pi(1,p)/\Pi(1,\delta), U) \pi) = -D \]  

Finally the Northern budget constraint:

\[ X^* + \delta^* x^* + T E^*_p + D = E^* (\Pi (1,P + T), \delta^* \pi (1,p), U^*) \]  

and similarly for the South:

\[ R + \delta r + (\delta^* - \delta) (r - E_\Pi) - D = E (\pi(1,P), \delta \pi (1,p), U) \]  

It is clear from (38) that the virtual price will fall with adverse trade policy in the North:

\[ \frac{dP}{dT} \bigg|_{CM1, \delta, P, T=0} = \frac{E_{PP}}{X_P} < 0 \]  

The impact effect on the second period terms of trade remains positive if income effects are not too strong:

\[ \frac{dp}{dT} \bigg|_{CM2, P, \delta, T=0} = \frac{E^*_{\pi \Pi} \pi^* P^* \Pi^*}{x_p - E_{PP}^* + E_{pp}^* - (C_s^* C_s) E_s^*} \]
This in turn means that, once again, the consumption discount factor \( \delta \pi/\Pi \) will increase at unchanged domestic real rates:

\[
\frac{d (\delta \pi/\Pi)}{dT} \bigg|_\delta = \frac{\delta \pi}{\Pi} \frac{dp}{dT} - \frac{\delta \pi}{\Pi^2} \Pi_p \frac{dp}{dT} > 0 \tag{45}
\]

The inequality sign is established using (43) and (44). Hence future goods are now more expensive in terms of current goods in the South; expenditure will be shifted unless real rates adjust to offset this increase in the ex ante trade deficit the South would like to run. Equation (40) yields:

\[
\frac{d \delta}{dT} = \frac{(E^* - E_{\pi \pi \Pi} \delta \pi \pi_p)}{E_{\pi \pi \Pi}} \frac{dp}{dT} + \frac{(E_{\pi \pi \Pi} \delta \pi \Pi_p/\Pi^2 - C_{E_p})}{E_{\pi \pi \Pi}} \frac{dp}{dT} < 0 \tag{46}
\]

using (40), (44) and (45). This establishes the result we are after: the welfare costs of ECMR are proportional to \( E_{\pi \Pi} (\delta^* - \delta)^2 \), the temporary trade policy raises the wedge \( \delta^* - \delta \) and thus, once again, increases the welfare costs of ECMR. Formally this can be seen through differentiating the budget constraint:

\[
E_{\pi \Pi} \frac{dU}{dT} = (E^*_p + (\delta^* - \delta) E_{\pi \pi \Pi} p/\Pi^2) \frac{dp}{dT} \tag{47}
\]

\[
+ (E^*_p - (\delta^* - \delta) (E_{\pi \pi \pi} + E_{\pi p}) \frac{dp}{dT} \]

\[- (\delta^* - \delta) E_{\pi \pi \Pi} \pi/\Pi \frac{d\delta}{dT} = E_{\pi \Pi} \frac{dU}{dT} \bigg|_{\delta=\delta} - (\delta^* - \delta) E_{\pi \pi \Pi} \Pi \frac{d\delta}{dT} \]
The second term in (47) indicates that, indeed, the welfare costs of trade intervention are higher with than without ECMR. This is because temporary trade intervention in the North raises the welfare costs to the South of the external capital market rationing that constitutes the current debt problem.

If exchange rate policy is pursued to effect the required terms of trade deterioration, Keynesian unemployment will be avoided; instead classical unemployment will result if real consumption wages are downward rigid, as shown in section 2.2. The temporary income loss will cause similar secondary effects on the welfare costs of ECMR. The analysis is similar to the Keynesian case and is therefore left to the interested reader to perform.

4. Conclusion

Fiscal policy and trade intervention in the North have direct negative welfare effects on the South because of the adverse intratemporal and intertemporal (real interest rates) terms of trade shifts it causes for the South. This paper asks the question whether trade policy in the North, in addition to these standard negative impact effects through the terms of trade, has additional costs through its impact on the debt problem. The answer is unambiguously affirmative.

I identify four channels through which Northern trade policy interacts with the Southern debt problem, raising the costs of the latter for the South. The first two are static in nature, the second two intertemporal. Consider them in turn.
The static channels focus on what has become known as the "transfer burden," since the well known discussion between Keynes and Ohlin on German war reparations payments. Trade policy in the North enacted against the South is similar to extracting a transfer through the adverse terms of trade effect. Declining marginal utility of income is then one obvious explanation of why a transfer is more costly for the South to make in the presence of adverse Northern trade policy than in the absence of such policies.

The second static channel is more interesting and somewhat less straightforward. I show how adverse trade policy may lead to Keynesian unemployment in the presence of downward price rigidity in the South. I then demonstrate that a transfer made in such an environment will be more costly, because it increases the distortionary costs of the price rigidity: it widens the wedge between actual and market clearing ("virtual") prices and the distortionary costs of the rigidity are proportional to the square of that wedge. These costs come in addition to the standard Walrasian transfer burden, which equals the marginal utility of income. I briefly discuss the case of classical unemployment, which could result if real consumption wages are fixed and the government does engineer an increase in competitiveness, for example through a devaluation. Real product wages will then have to rise to maintain the real consumption wage. Adverse trade policy in that situation would widen the gap between actual and market clearing real product wages; here there is therefore also an additional cost.

The analysis of the two intertemporal channels takes a different approach. Here I argue, following Cohen (1985), that the nature of the debt problem, rather than a solvency issue, really is, that countries are forced to repay (net) earlier than they would like to. This implies that they are
rationed in external capital markets, and this rationing entails welfare costs. I point out two ways in which an adverse Northern trade policy raises the welfare cost of this rationing in external capital markets.

The first one derives from the perhaps unduly optimistic assumption that the increase in Northern protectionism will be temporary. This will trigger the need for a larger terms of trade deterioration "today" than will be necessary in the future when the trade measures will be reversed. But a larger terms of trade deterioration today than tomorrow implies that current goods will be cheaper in terms of future goods; this in turn triggers a Southern expenditure shift towards current expenditure and a deterioration in the desired trade balance. The virtual price of current goods in terms of future goods (one plus the real interest rate) will therefore go up: external rationing makes a bigger trade deficit impossible and hence leave no choice. But this rise in real interest rates raises the wedge between actual and "virtual" market clearing discount factors and hence increases the welfare costs of the constraints the South faces in the world capital market.

The second channel is different in that it is driven by income rather than intertemporal substitution effects. If prices are temporarily downward rigid, and no devaluation is undertaken, Keynesian unemployment will result in the South. While this will eliminate the intertemporal substitution channel just explored (since current prices will not go down), it leads to a temporary loss of real income as resources go idle in Keynesian unemployment. Attempts to smooth out this temporary decline in income will once again lead to an increase in the desired trade deficit; this in turn raises the welfare costs of external capital market rationing along the lines sketched in the preceding paragraph.
To conclude, Northern trade policy directed against the South is of course always objectionable on standard distribut~onal and efficiency grounds. What I have shown in this paper is that it is extra objectionable in the current debt crisis: Northern trade policy is shown increase the transfer burden associated with the debt problem in excess of what it would have been without the trade policy (this in addition to the standard welfare costs of trade intervention); in addition trade policy causes unemployment in the South if there are wage-price rigidities, and this will once again raise the welfare costs of the required transfer; and trade policy through various channels raises the welfare costs of the rationing the developing countries face in external capital markets.

A final point concerning Northern Trade Policy has not been discussed in this paper, but is too important to leave it unmentioned. Even more damaging than the direct costs of trade restrictions could be the signal they send to developing countries. Further proliferation of Non-Tariff Barriers and other trade intervention could very well revive (and justify ...) the export pessimism that prevailed in many developing countries in the 1930s and 1940s. Yet the empirical evidence of the benefits of trade for growth is overwhelming. At a time when more and more governments in the developing world are accepting this link, such an effect makes increased protectionism in industrial countries a major threat to economic development in the South.
APPENDIX

Classical Unemployment with Endogenous Labor Supply

A.1 The production side of the model is as in section 2.2, hence:

\[ R = R(P, P^*, L) \]  \hspace{1cm} (A.1)

with \( P^* \) normalized at one, and

\[ \frac{R}{P} = X \]  \hspace{1cm} (A.2a)

\[ \frac{R}{P^*} = -Z \]  \hspace{1cm} (A.2b)

\[ R_L = W \]  \hspace{1cm} (A.2c)

Define the constrained expenditure function

\[ \bar{E} = \bar{E}(\pi(I, P), L, U) = \min \{PC_S + C_N | U(C_S, C_N, L) \geq U\} \].

The labor supplied in each period is an argument in the expenditure function because consumers are by assumption rationed in their labor supply due to wages fixed at too high a level (see Rodrik (1985) and Dixit (1976) for a more discussion of this concept.) The existence of unemployment implies that the supply price of labor is below the market wage:

\[ W > E_L \]  \hspace{1cm} (A.3)
Hence we can define a virtual real wage $\tilde{v}$ at which consumers would willingly work as little as demanded at actual wage $w$:

$$\tilde{v} = E_L$$  \hspace{1cm} (A.4)

The model is rounded out by a budget constraint:

$$R(P, l; L) - D = \bar{E}$$  \hspace{1cm} (A.5)

Finally wage indexation implies:

$$w = \gamma \pi (1, P)$$  \hspace{1cm} (A.6)

or

$$\frac{dW/P}{W/P} = -(1-\psi) \frac{dP}{P}$$

The welfare effects of a transfer can now easily be derived by combining A.1-6:

$$E_U dU|_C = 1 + E_P^* dP + (W - \tilde{v}) \frac{dL}{d(W/P)} \frac{d(W/P)}{dB}$$

The third term is the additional welfare loss due to the labor market imperfection referred to in the text.
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