Marshall, Lerner & Botha: Canada's Economic Sanctions on South Africa

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Début juillet 1985, le Canada a imposé un ensemble de sanctions commerciales à l'Afrique du Sud pour lutter contre l'apartheid. Mais les données récentes sur les échanges commerciaux sont embarassantes car les importations canadiennes en provenance d'Afrique du Sud semblent croître (plutôt que chuter), indiquant que la politique des sanctions est un échec. Cependant, ce texte démontre que si l'on mesure bien ces importations elles ont chutés depuis leur imposition. Ceci reflète le résultat bien connu qu'il peut être incorrect d'examiner la valeur plutôt que le volume du commerce. Un appendice démontre qu'en théorie les sanctions modifient le taux de change Canada-Afrique du Sud, qui à son tour affecte la valeur et le volume du commerce. De fait, on peut aisément s'apercevoir que la valeur et le volume peuvent se déplacer en sens inverse. Comme Marshall Lerner et d'autres l'ont démontré, ceci dépend des élasticités. De fait, le volume des importations canadiennes en provenance d'Afrique du Sud a diminué bien que sa valeur se soit accrue.

In early July 1985, Canada imposed a series of sanctions on trade with South Africa designed to fight apartheid. But, recent trade figures have been quite embarrassing. Canada's imports from South Africa appear to be rising (not falling) so that her sanctions policy is seen as a failure. However, as this paper shows, when appropriately measured, Canada's imports from South Africa have fallen since the imposition of sanctions. This simply reflects the well-known fact that looking at the value, rather than volume, of trade can be extremely misleading. In an appendix this paper shows that, in theory, sanctions alter the Canada-South Africa exchange rate. In turn, the altered exchange rate must affect the value, as well as the volume, of trade. In fact, it can easily be seen that the volume and the value of trade might move in opposite directions. As Marshall, Lerner and others have noted, this all depends on elasticities. Finally, it is shown that, in fact, the *volume* of Canada's imports from South Africa has recently fallen, as intended, even though their value has risen.

In early July 1985, for the first time, Canada imposed a series of sanctions against South Africa designed to fight apartheid. In fact, Canada has spearheaded the Commonwealth's campaign of economic pressures designed to force a political change in South Africa. Along with other Commonwealth countries, Canada has imposed restrictions on, particularly, investments, imports of certain products and air transport.

Nevertheless, largely because imports from South Africa appear to be rising (not falling), Canada's sanctions on trade with South Africa are currently seen as a bust. In fact, recent trade figures have been quite embarrassing. However, as this paper shows, when appropriately measured, Canada's imports from South Africa have fallen since the imposition of sanctions.

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Table 1
Canada's trade with South Africa

Year	1985	1986	(%*)	1987[1]	(%*)	1988	(%*)
C$ value of (thousands of $$)							
Imports	227734	373241	(63.9)	155388	(-58.1)	156648	(0.81)
Exports	152661	151529	(-0.7)	113170	(-25.3)	124457	(7.89)
Trade balance:	-75073	-221612		-42218		-32191	

*percentage change from the previous year.
[1] For 1987, these are imports from The Customs Union of Southern Africa which includes Botswana, Lesotho, Swaziland and Namibia along with South Africa.

This reflects the well-known fact that looking at the value, rather than volume, of trade can be extremely misleading.

I The Recent Record

The value of Canada's imports from (exports to) South Africa rose by about 24 (16) per cent over the first nine months of 1988. However, over all of 1988, the value of imports from South Africa was only about 1 per cent higher than in the previous year.[1] Curiously, in 1986, the year after sanctions were first imposed, Canada's imports from South Africa rose by 64 per cent. Since sanctions were imposed in mid-1985, the value of imports from South Africa has only fallen once. In 1987, it fell by 58 per cent. As of year's end 1988, it is about 30 per cent lower than when sanctions were first applied. With respect to exports, the recent experience is somewhat more encouraging. The value of Canada's exports to South Africa rose last year but otherwise has fallen in every year since the imposition of sanctions. The record of Canada's recent trade with South Africa (SA) is summarized in Table 1.

For what it is worth, although still in deficit, Canada's balance-of-trade with South Africa has been improving over the last few years.

Largely owing to the recent import record, Canada's sanctions policy is in disarray. The policy is under attack even by supporters of sanctions. Clearly, since trade with Canada is relatively unimportant to South Africa, her imposition of sanctions would have little impact on the South African economy. Therefore, it is all the more distressing to learn, if true, that Canada can not even affect her own trade with South Africa. On the other hand, perhaps Canada should not be overly embarrassed. At least since the UN-sponsored oil embargo of the 1960s, South Africa has become a champion sanctions-buster. Her entrepreneurs and bureaucrats are now quite expert at falsifying bills of lading, relabelling crates, diverting cargoes and forging end-user documents. Moreover, many of Canada's sanctions are voluntary.

Among other things, the goal of sanctions is presumably to reduce the volume (not the value) of trade, particularly imports, with South Africa. Of course, reducing the volume of imports from South Africa is just reducing her exports. At least when Canada acts in consort with other nations, this reduces aggregate demand in South Africa which, presumably, lowers South Africa's output and/or employment causing some economic distress. In no way does this paper enter the debate on the desirability of sanctions as a tool for achieving the goal of ending apartheid. Rather, it simply asks: Have sanctions restricted South Africa's exports to Canada?[2]

II Sanctions: Some Theory

The Appendix models bilateral trade between two small nations (embedded in the larger world) to illustrate the possible ef-

fects of Canada's (C's) sanctions on trade with South Africa (SA). For the purpose of modelling, the standard Keynesian-type equilibrium *macro* model is used.

With this simple model, it is shown that, ceteris paribus, sanctions on imports from or on investment in (exports to) South Africa would appreciate (depreciate) the dollar against the Rand. Why? Because, if at all binding, import or investment (export) sanctions must improve (worsen) Canada's balance-of-payments with South Africa. But this just means a rise (fall) in the demand for Canadian currency on the part of South Africans or vice versa.

Of course, a sanction on imports (exports) must initially lower imports (exports); but, as seen above, it will also appreciate (depreciate) the dollar against the Rand. In the end, this exchange appreciation (depreciation) may be sufficient that, on balance, imports (exports) rise. Moreover, even should the volume of imports fall (as intended) their value will rise if import demand is more than unit elastic with respect to the (real) exchange rate. The Appendix shows that, whether on imports or on exports, no sanction has, a priori, a determinate effect on the targeted magnitude. But an export (import) sanction, through its effect on the C-SA exchange rate, unequivocally lowers imports (exports). Thus, the volume of trade (say imports) must initially fall when the import of particular goods is restricted. But this import sanction would eventually appreciate the Canadian dollar against the South African Rand increasing Canada's import of other (i.e. non-restricted) South African goods. Finally, through its accompanying currency appreciation, restricting investment in South Africa would also unequivocally restrict imports but raise exports.

In short, any sanction alters the C-SA exchange rate. In turn, the altered exchange rate must affect the value, as well as the volume, of trade. In fact, it can easily be seen that the volume and the value of trade might move in opposite directions. As Marshall, Lerner and others have noted, this all depends on elasticities.

III Sanctions: The Facts

Disillusionment with Canada's sanctions policy almost exclusively comes from the supposed perverse behaviour of her imports from South Africa. At least theoretically, sanctions may have been effective even though they raised the *value* of imports. But, have Canada's sanctions worked in fact; in particular, have they reduced the volume of Canada's imports from South Africa?

Quite disturbingly, the value of Canada's imports from South Africa has risen recently.[3] However, other things which are not affected by Canada's sanctions have not been constant. For example, let e be the dollar price of the Rand (i.e. the Canada-SA exchange rate) and let P^* be SA's prices (measured in Rands). Then, the $C value of Canada's imports from SA is $Vm = eP^*M$ where M is the volume of imports from South Africa. SA's inflation rate has been about 14% a year recently and the nominal C-SA exchange rate, e, is certainly altered by things other than Canada's trade sanctions. One could correct for this 'valuation problem' by looking only at the volume of imports, $M = VM/eP^*$. It is the intent of the policy and the prediction of the theory that trade sanctions cause M to fall.

Since $M = Vm/eP^*$, the volume of imports grows at the rate: $g(M) = g(Vm)-g(e)-g(P^*)$ where $g(a)$ gives the growth rate of a. Using this formula along with data in Table 1 and International Financial Statistics (IMF, 1989), Table 2 suggests that the volume of Canada's recent imports from South Africa has fallen, as intended.[4]

Of course, the fall in the *volume* of imports could be unrelated to sanctions. For examples, Canada's demand for imports would fall with her GNP (i.e. income) or with her terms-of-trade. But, in the last several years, just the opposite has happened: in Canada, both GNP and the terms-of-trade with South Africa have been rising.

On the other hand, measured in $C, the

Table 2

Year	1985	1986	1987	1988
% Change in import volume over previous year	--	50.3	-43.1	-09.72
% change in export volume over previous year	--	3.3	-21.3	03.89
Exchange rates (C$/Rand)				
Nominal (*e*)	.334	.317	.370	.359
Real (*q*)	.240	.193	.206	na

value of Canada's exports to South Africa also rose by almost 8 per cent over 1987–88. Since Canadian export prices only rose by about 4 per cent last year, the implication is that the volume of exports has also recently risen. Nevertheless, the value of exports is now almost 20 per cent less than when sanctions were first imposed in 1985. This is, according to theory, to be expected since the *import*-sanction appears to have been successful.

For interest's sake, Table 2 also records the recent behaviour of C-SA real and nominal exchange rates. With sanctions on both imports and exports, even with ceteris paribus, the direction of change in exchange rates is unpredictable.[5] Nevertheless, as predicted by an import sanction, the value of the Rand against the Canadian dollar fell just after sanctions were first imposed (i.e. between 1985 and 1986) and recently (i.e. between 1987 and 1988). Moreover, while probably irrelevant, Canada's balance-of-trade with South Africa has steadily improved since 1985, as indicated in Table 1.

In summary, if the goal of sanctions is to reduce South Africa's exports to Canada, they appear to have succeeded. Apparently, the volume of Canada's imports from South Africa have recently fallen. Success or failure of sanctions can not be determined by looking at the Canadian dollar value of trade. Most relevant is the *volume* of Canada's imports from South Africa; i.e. South Africa's exports to Canada. Thus, contrary to the opinion often expressed, Canada's policy of resorting to sanctions is to be considered a success.

Notes

1 There is a good deal of seasonality in Canada's trade with South Africa. Thus, an assessment of the effect of sanctions on trade depends on the period chosen. I follow the conventional course of considering annual figures.

2 From this macroeconomic viewpoint, it is clear that Canada would wish to *increase* her exports to South Africa. This would be expansionary for Canada but contractionary for South Africa.

3 In this section, according to theory, I am concerned only with Canada's total trade with South Africa; knowledge of the particular goods whose trade is restricted is irrelevant. Nevertheless, these particular goods can be found in the Area Control List appended to the *Export and Import Permits Act*. It is assumed that sanctions have 'worked' in the sense that the import (or export) of sanctioned goods has, in fact, been restricted. But, it is alleged that sanctions have not worked because the value of *total* imports has risen. This paper is concerned, both theoretically and empirically, with how sanctions affect total trade.

4 This computation is based on the facts that *Vm* and *e* are known and on the presumption that the growth in the price of imports from South Africa has been similar to the growth in the price of SA's 'home goods'.

5 As seen above, import and export sanctions have opposite effects on the exchange rate. In fact, among other things, the exchange rate might have simply been affected by the *expectation* of sanctions.

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Appendix

Consider a three-country world comprising two small nations, Canada (C) and South Africa (SA) and the rest-of-the world (ROW). Each of C and SA produces and exports a single composite good. Canada and South Africa are small and, thereby, exogenous relative to each other. Of course, ROW is exogenous to both of them. The price of Canada's (South Africa's) composite good is P (P^*). Thus, the real C-SA exchange rate is $q = eP^*/P$ where e is the nominal exchange rate defined as the \$C price of the Rand.

The total volume of Canada's imports (exports) is, respectively:

$Im = A + m + M(q) \quad M_q < 0$

$Ex = E + x + X(q) \quad X_q > 0$

where A (E) are Canada's exogenous imports from (exports to) ROW while q is the real C-SA exchange rate.

m (x) is an exogenous policy tool and gives the level of sanctioned imports from (exports to) SA. With the imposition or tightening of import (export) sanctions, it *falls*. Otherwise, imports and exports of unsanctioned goods from SA [M and X] depend, in the usual way, on the real C-SA exchange rate. All this implies that Canada's real (i.e. measured in terms of the export good) trade balance becomes

$TA = A + [x+X(q)] - zE - q[m+M(q)]$

$= t_o + t(q,m,x) \quad t_q = ?, t_m < 0, t_x > 0$

where t_o (z) is the exogenous trade balance (real exchange rate) with ROW and, of course, $t(.)$ is the trade balance with SA. Analogously, Canada's real net capital account balance is written as:

$CA = k_o + k(i,q) \quad k_i > 0, k_q = ?$

where k_o are the exogenous net capital flows from ROW and k gives net capital flows from SA. An exogenous rise in i means a restriction on investment in SA. For the usual reasons, k_q can not be signed, a priori.

By implication, Canada's *real* balance-of-payments is: $B = TA + CA = b_o + b(q,m,x,i)$, where $b_o = t_o + k_o$ and $b = t + k$ are Canada's balance-of-payments with, respectively, ROW and SA. Since P and P^* are exogenous, one may think of q as the nominal (not just the real) exchange rate.

As discussed by Stern (1973), Canada's exchange rate vis-à-vis all her trading partners is determined by the necessity to clear the exchange market implying that $B = 0$. By Walras' Law, if the C-ROW exchange market clears, so too does the C-SA exchange market so that $b(q,m,x,i) = 0$. For the usual reasons, stability of this latter market requires that b_q be positive.

Given that $b(q,m,x,i) = 0$, the implicit function theorem implies that $q = q(m,x,i)$ with $dq/dm = q/b_q > 0$, $dq/di = -k_i/b_q < 0$ and $dq/dx = -1/b_q < 0$, where $b_q < 0$ by assumption of stability.

An import (export) sanction on SA simply lowers m (x) while restricting investment in SA raises i. Then, an import (export) sanction depreciates (appreciates) the Rand against the Canadian dollar; a sanction on investment in SA also depreciates the Rand.

Of course, while always qualitatively true, the above-derived multipliers refer quantitively only to the long run, unless the C-SA exchange rate is *perfectly* flexible.

Other things constant, sanctions must initially reduce the *volume* of imports or exports. But, other things are not constant. In particular, sanctions alter the Canada-SA exchange rate. In turn, the altered exchange rate must affect the value, as well as the volume, of trade.

The volume of exports and imports to SA are, respectively, $X = x + X(q)$ and $M = m + M(q)$. Measured in terms of exportables, the corresponding values are, respectively, $VX = X$ and $VM = qM$. It can be seen that:

$dX = dVX = (M/b_q)\ \{[(\epsilon - 1) + k_q/M]dx + a\eta\ [qdm - k_i di]/q\}$

$dM = (M/b_q)\ ([(\eta a - 1) + k_q/M]dm + \epsilon\ [dx + k_i di]/q)$

$dVM = qdm + M(1-\epsilon)dq = (q/b_q)\ (\eta a + k_q/M)dm$

where, η (ϵ) is the elasticity of export (import) demand, $a = X/qM$ and, given stability, $b_q = M(\eta a + \epsilon - 1) + k_q > 0$.

Of course, an import (export) sanction

amounts to a fall in m (x) which initially reduces imports (exports). But, after its effect on the C-SA exchange rate, it has an indeterminate effect on both the value and the volume of imports (exports). A restriction on investment in South Africa simply appreciates the dollar thereby lowering exports and raising imports. On the other hand, an import (export) sanction unequivocally lowers exports (imports). Finally, after an initial reduction, the value of imports finally falls from an import sanction only if imports are less than unit elastic. In the long run, the value of imports unequivocally falls.