Comments on

Steady Growth and Transition in a Dynamic Dual Model of the North American Free Trade Agreement

by Leslie Young and Jose Romero

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This paper is interesting in that it raises a number of important issues. In it Young and Romero make at least four significant contributions: First, they attempt to quantify in a structural model the dynamic impact of a North American Free Trade Agreement on the Mexican economy. Second, imports of intermediate goods and capital goods play an important role in their model, as they undoubtedly will in Mexican economic development over the next decade. Third, they focus on the gains that Mexico will reap from increased efficiency on the production side of the economy rather than on the consumption side, and it is here where the potentially large gains are. Fourth, they illustrate numerically the importance of capital flows into Mexico.

I will not say much now about the first contribution that Young and Romero make. As my own paper presented here illustrates, I think that modeling the dynamic impact of a NAFTA, both on the balanced growth path and on the transition path to it, is essential. The dynamic impact that Young and Romero analyze is significant. As I point out in my paper, however, I think that the most important potential dynamic impact of a NAFTA on Mexico is the impact on growth rates, which Young and Romero do not model.

The second contribution of this paper is to emphasize imports of intermediate goods and capital goods. In modeling trade flows, the authors specify thirteen goods: the nine goods that can serve as final or intermediate goods; labor; and three types of capital goods - machines, buildings, and vehicles. All of the goods except buildings and labor are tradeable. The other goods are homogeneous both domestically and internationally: U.S. automobiles are perfect substitutes for Mexican automobiles, are perfect substitutes for Canadian automobiles, are perfect substitutes for automobiles from the rest of the world. The price of an automobile in Mexico is equal to the international price times one plus the tariff,

$$P^* = P(1+T).$$

A NAFTA is modeled as lowering tariffs with the U.S. to zero so that the domestic price is equal to the international price. Given that domestic prices are fixed by international prices both before and after a NAFTA, the authors can model the dynamic equilibrium by analyzing alternative profit maximizing production decisions at these different prices without analyzing the consumption side of the model. Any excess of supply over demand is implicitly exported; any shortfall is imported.

One problem with this specification is that it does not allow simultaneous importing and exporting of goods in the same product category: Mexico either imports automobiles or exports them but not both. When we look at figures on North American trade, however, we see significant amounts of cross-hauling, the simultaneous importing and exporting of goods in the same product category. The table for U.S. merchandise trade with Canada and Mexico in 1989 shows cross-hauling even at the two-digit SITC level, a disaggregation much finer than the authors', that dwarfs net trade flows. Notice, for example, that the biggest export of the U.S. to Canada is road vehicles, which is also the biggest import to the U.S. from Canada; ~~the biggest export of the U.S. to Canada is road vehicles, which is also the biggest import to U.S. from Canada;~~ the biggest export of the U.S. to Mexico is electrical machinery, which is also the second biggest import to the U.S. from Mexico, after petroleum. The approach adopted by the authors ~~rejects~~ neglects whatever is causing this phenomena and

UNITED STATES MERCHANDISE TRADE BY COMMODITY 1989

(Millions of 1989 U.S. Dollars)

SITC Code*	EXPORTS			IMPORTS		
	World	Canada	Mexico	World	Canada	Mexico
0 Food and Live Animals	29,425	1,903	1,990	22,497	3,567	2,446
03 Fish Related Products	2,299	198	22	5,711	1,226	397
04 Cereals	15,457	209	976	1,017	417	27
05 Vegetables and Fruit	3,808	738	140	5,686	260	1,095
1 Beverages and Tobacco	5,510	83	19	4,690	583	258
2 Crude Materials Except Fuels	26,947	2,288	1,493	16,524	8,339	675
22 Oil Seeds	4,362	127	358	186	122	27
24 Cork and Wood	4,965	439	143	3,733	3,333	103
25 Pulp and Waste Paper	4,343	184	362	3,164	2,748	8
28 Metal Ores and Scrap	5,313	819	225	4,205	1,257	178
3 Mineral Fuels, Related Products	9,865	1,678	712	56,094	8,053	4,457
33 Petroleum, Related Products	4,828	656	518	52,411	5,126	4,359
4 Animal and Vegetable Fats, Oils	1,350	47	143	785	91	21
5 Chemicals, Related Products	36,485	4,210	2,195	21,768	4,087	600
51 Organic Chemicals	10,609	941	680	7,330	625	162
52 Inorganic Chemicals	4,323	483	206	3,464	1,284	215
6 Manufacturing by Material	27,243	5,865	2,961	65,055	16,989	2,769
64 Paper, Related Products	4,195	738	616	8,926	6,391	380
65 Textiles, Related Products	3,897	696	387	6,417	372	186
67 Iron and Steel	3,278	633	451	11,376	1,678	315
68 Nonferrous Metals	4,699	1,068	308	11,042	4,782	710
7 Machinery, Transport Equipment	148,800	33,194	10,813	210,810	39,293	12,213
71 Power Generating Machinery	14,166	2,915	852	14,488	2,865	1,214
72 Specialized Machinery	13,644	2,446	711	13,390	1,564	151
74 General Industrial Machinery	13,095	2,745	1,228	14,974	1,742	728
75 Office Machines, Computers	2,318	2,572	691	26,251	1,704	776
76 Telecommunications	7,669	803	1,161	23,607	953	2,675
77 Electrical Machinery	23,921	3,572	3,477	33,034	2,453	4,211
78 Road Vehicles	25,480	15,891	2,080	73,843	25,830	2,405
79 Other Transport Equipment	25,038	1,669	406	7,217	1,920	45
8 Miscellaneous Manufacturing	32,637	4,326	2,469	80,470	3,637	2,766
82 Furniture	1,006	277	236	5,278	1,187	533
84 Apparel, Clothing	2,087	109	375	26,026	262	596
87 Scientific Instruments	10,924	1,201	656	5,964	472	471
9 Not Classified Elsewhere	28,388	21,011	1,222	12,820	3,909	1,237
TOTAL	**346,650**	**74,605**	**24,017**	**491,513**	**88,548**	27,442

*Standard International Trade Classification (Revision 3), one-digit and selected two-digit.

Source: OECD, *Foreign Trade by Commodities*, Series C.

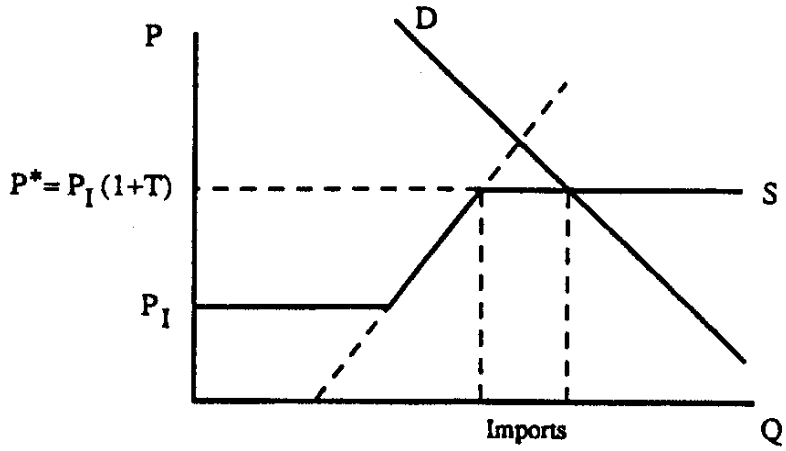
ignores the impact of a NAFTA on expanding this type of trade even further.

One way to account for cross-hauling would be to model imported goods as close, but not perfect, substitutes for domestic goods, the Armington specification. Specifying demands for intermediate imports in this way is meant to capture the observation that, even at a fairly disaggregated level, any product category is made up of a variety of goods that are not perfect substitutes. Admittedly this specification far from a perfect solution to how to model trade flows, and it would complicate the analysis in this paper considerably. It would, however, have the advantage of eliminating one unfortunate implication of the current specification: if the tariff on imports of U.S. machinery in Mexico falls, but that on imports of Japanese machinery does not, then there can be no imports of Japanese machinery into Mexico.

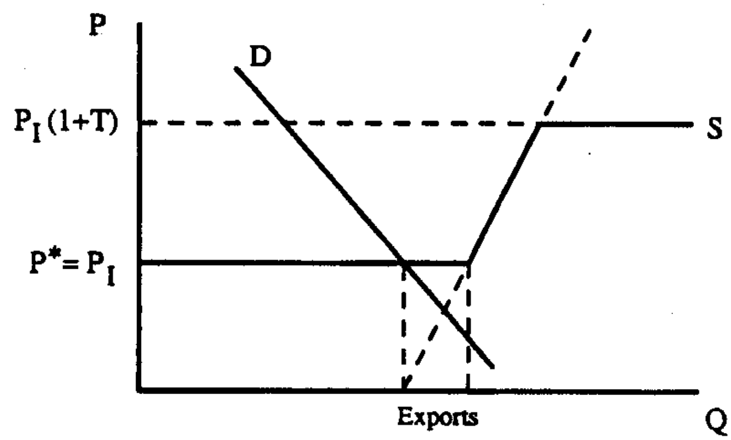
The third contribution made by this paper is to focus on dynamic efficiency gains on the production side of the economy. The authors claim that potential gains on the consumption side of the economy are negligible. While I agree that increased production efficiency is the major source of potential gains for Mexico, I disagree with the way that the authors have specified the impact of a NAFTA on consumption. The problem is that, before NAFTA, $P^* = P_I(1+T)$, whether or not Mexico imports or exports the good. The more natural way to model the relation between foreign and domestic prices is that depicted in a suggestive way in the partial equilibrium diagram in Figure 1: There $P^* = P_I(1+T)$ if the good is being imported, but $P^* = P_I$ if the good is being exported: unless Mexican exporters of automobiles receive a subsidy equal to what the tariff would be on imports of automobiles, they receive the international price for their product on world markets. Furthermore, there is even a range of outputs, as depicted in Figure 1, for which the domestic price is between the two limits fixed by the international price, $P_I < P^* < P_I(1+T)$.

Distortionary Effect of Tariffs

a) Imports



b) Exports



c) No Trade

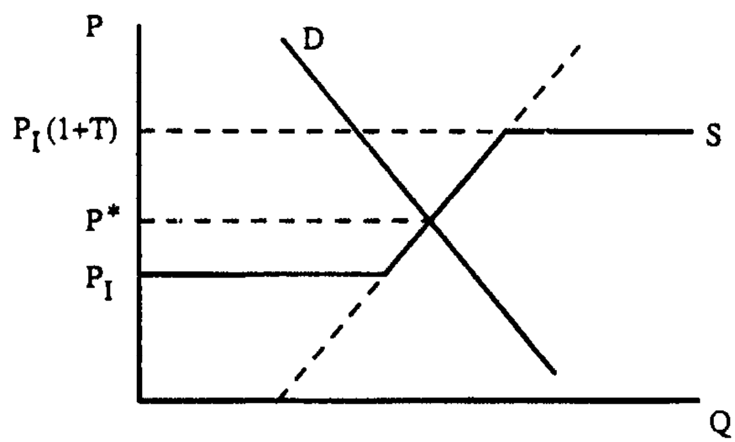


Figure 1

In this range, domestic producers move along the ordinary supply curve and there are no imports or exports.

Partial equilibrium analysis like that embodied in Figure 2 is not suitable for measuring the gains or losses resulting from a NAFTA. It can, however, point us towards the sources of these gains or losses. In Figure 2 a fall in the domestic price from $P_I(1+T)$ to P_I results in a rise in demand from Q_D to Q'_D and a fall in supply from Q_S to Q'_S. Imports rise from $Q_D - Q_S$ to $Q'_D - Q'_S$. The triangle A represents the increase in consumer surplus; the rectangle B tariff revenues; and the rectangle C is the decrease in consumer surplus. If Mexico exports the good before the NAFTA, however, as in Figure 1b, reducing the tariff to zero changes nothing. This partial equilibrium analysis neglects the effects that changes in different markets have on each other in terms of both supply and demand. These effects are, of course, crucial, and this is why we use general equilibrium models. What is worth noticing, however, is that the impact of a tariff reduction is drastically different if Mexico starts off being an importer of the good than it is if Mexico starts off being an exporter. This distinction is, unfortunately, ignored in the authors' analysis.

The fourth contribution made by this paper is to stress the potential role of capital flows into Mexico in raising output per worker. A dynamic model such as this is the ideal tool for analyzing such capital flows. In this model the interest rate is exogenously fixed both before and after the NAFTA. The authors achieve a substantial increase in capital flows by lowering the interest rate as a result of the NAFTA. This specification leaves us to wonder, if the post-NAFTA interest rate is the world interest rate, what is the pre-NAFTA interest rate? One possible answer is that a high interest rate in Mexico is the result of closed capital markets and of inefficient, oligopolistic financial intermediaries. If this is the case, we

Consumption Gain from Tariff Reduction

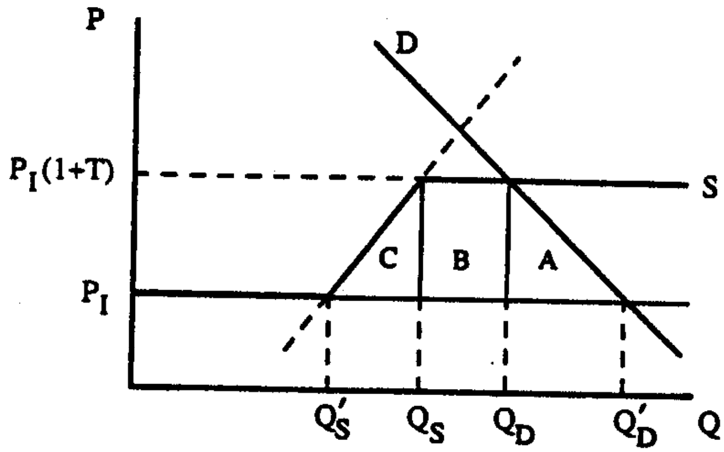


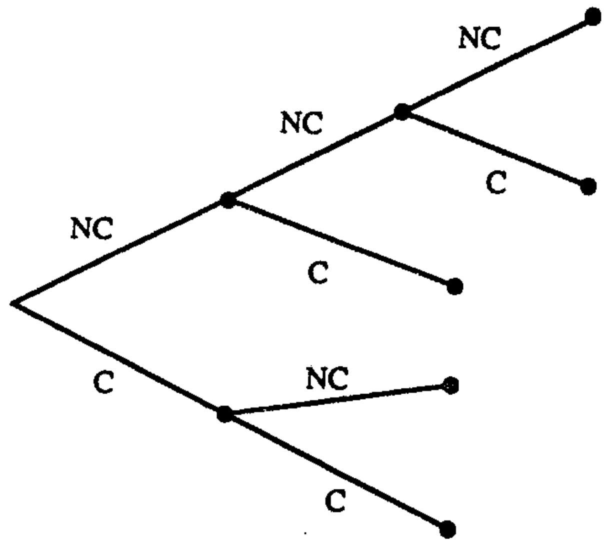
Figure 2

would want to model the pre-NAFTA interest rate as endogenous and also explicitly model the way in which the NAFTA would lower this interest rate.

Another potential answer is that the gap between the pre-NAFTA interest rate in Mexico and the world interest rate represents a risk premium: international investors demand a higher rate of return in Mexico because they fear that a financial collapse and maxi-devaluation like that which occurred in 1982 would wipe out much of their investment. By locking Mexico and its two northern neighbors into policies that would help guarantee economic stability in Mexico, the NAFTA would lower this risk premium and thereby lower the interest rate.

It may be possible to model the process by which the NAFTA would lower the premium in a simple way. Figure 3 depicts an event tree for a dynamic, stochastic general equilibrium model in which there is a probability π_{ct} of a financial collapse in period t and a probability $1-\pi_{ct}$ of no financial collapse. In simulations, we could concentrate on the path in which no financial collapse actually occurs. Even so, in principle, we would have to model what would occur at every node of this event tree. This would subject us to the "curse of dimensionality" associated with an expanding state space typical in this type of model. To simplify the analysis, however, we could model what happens if a financial collapse occurs in a simple enough way so that we do not have to move further out on branches in which a financial collapse occurs to compute the equilibrium outcomes. Even though we would not need to model in great detail what happens if a financial collapse occurs, lowering its probability π_{ct} could have a significant impact on equilibrium outcomes along the branch of the tree where there is no collapse. To make this approach useful, we would need to model the interaction of π_{ct} and the NAFTA in a way that is tractable but also captures the impact of a NAFTA on economic stability in Mexico.

Introduction of Uncertainty



C = Financial Collapse
NC = No Collapse

Figure 3