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## A SIMULATION OF THE UNITED STATES TRADE POLICY MEASURES AGAINST JAPAN IN A RETALIATION SCENARIO

FRANS BUELENS AND PHILIPPE DE LOMBAERDE

### *Abstract*

The authors do not agree with some conclusions of the new protectionist school in the USA in their analysis of the problem of world trade imbalances. Simulating a trade conflict between the United States and Japan as a retaliation game, they find that all the participants in the conflict will lose, only third countries will eventually win. They isolate the effects of trade diversion, retaliation, and imperfect production substitutability. They stress further the possibility of a combination of these measures with a recession period and warn for the similarity between the actual situation and the thirties. The effects of a trade conflict between two countries can very soon spread towards other countries leading to an escalation with a disastrous and unpredictable contraction of world trade and growth.

### *Introduction*

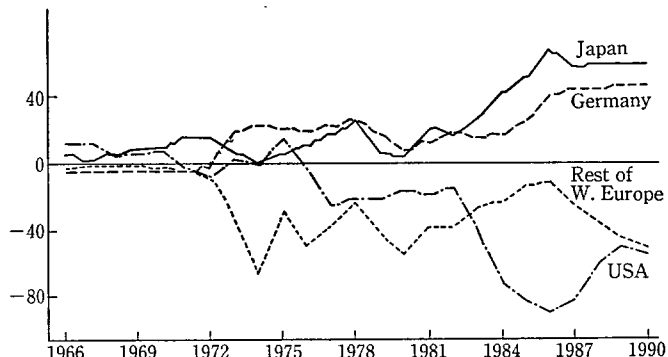
One of the problems of the last decade has been the persistent imbalance in the external balances of the United States, Japan and Germany. Whereas the former shows large shortages (Figs 1 and 2 and Table 2), the latter ones accumulate the according surpluses. This was one of the main reasons of an increasing protectionist pressure inside the United States, as Table 1 indicates. Accordingly, the United States, accusing the other participants in the international trading system of 'unfair trade' practices, are shifting away towards taking unilateral protective measures against their overseas competitors.<sup>1</sup>

One of the latest developments has been that studies in the US have been made in which it is demonstrated that protectionism will not hurt the world economy very much: this can be seen as the ideological preparation for the fatal step, although some of these authors [Krugman (1990)] do not want to see their role as such. The same phenomena occurred during the thirties where leading economists took also a protectionist position [Keynes (1933)].

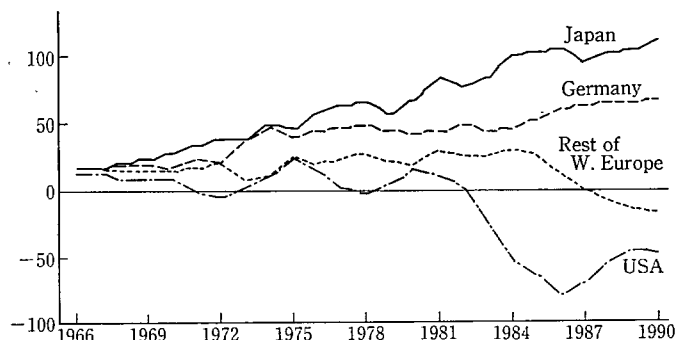
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<sup>1</sup> As demonstrated in the introduction of the Omnibus Trade and Competitiveness Act of 1988, the SII-tasks (Strategic Impediments Initiative) and the semiconductor case. Needless to say all this is in contradiction with the GATT [Bhagwati (1990)]. The EC publication 'Report on United States Trade Barriers and Unfair Trade Practices' e.g. reports extensively on many US protectionist measures [Commission of the European Communities].

FIGURE 1. TOTAL TRADE BALANCES 1965-1990 (1975 USD), (IN BILLIONS)



Source: ARCA Databank.

FIGURE 2. MANUFACTURES TRADE BALANCES 1965-1990 (1975 USD)  
(IN BILLIONS)

Source: ARCA Databank.

TABLE 1. US PUBLIC OPINION ON ARGUMENTS FOR PROTECTIONISM

|   | Good Argument | Not a Good Argument | Don't Know |
|---|---------------|---------------------|------------|
| Restricting Imports Would:                  |               |                     |            |
| Give Americans More Jobs                    | 73%           | 24%                 | 3%         |
| Help American Companies Make Bigger Profits | 51%           | 41%                 | 7%         |
| Improve Our Trade Balance                   | 68%           | 25%                 | 7%         |

Survey by Roper Organization Inc., poll of 2,000 adults, reported in USA Today, Feb. 8th, 1985.

Source: Yarbrough & Yarbrough (1988: 271, 441).

Concentrating our simulation efforts on the USA can then be justified by two reasons (a) the US is really at the heart of the multilateral trading system, (b) protectionist threat is much more important in the US than elsewhere.<sup>2</sup>

<sup>2</sup> Certainly, all this does not mean that the other participants in the international trading system are pure defenders of free trade ideas, see e.g. Van Bael (1990), Yannopoulos (1985), and Tharakan (1988) on the protectionist aspects of EC's anti-dumping policies.

Using the ARCA World Model, originally developed at the University of Cambridge, we have made computations about the effects of protectionist measures taken by the US. Contrary to the very optimistic allegations by the new protectionist school in the US, we did find very hard results indeed, that although it might be right that the world as a whole will not suffer dramatically (or not at all) from US protectionist measures, it will be hard (if not impossible) for the US to meet its objectives, unless complex and unrealistic trade policy instruments would be applied. Participants in an eventual trade conflict will not reach the trade goals and they will loose in terms of economic growth. The initiator of the conflict might relatively gain vis-a-vis the "victim," but only third countries might profit in absolute terms.

The potential impact of two individual factors contributing to these results have been isolated: one of a rather economic nature (trade diversion), one of a rather (trade-) political nature (Japanese countermeasures). The eventual additional impact of a third factor, being imperfect production substitutability, has also been assessed.

### I. *The Simulation Model*

The model which has been used in this study is the ARCA World Model. It was originally developed by the Cambridge Economic Policy Group (CEPG) at the University of Cambridge [see e.g. Atkinson e.a. (1980)]. Later, it has been updated as the FERE World model [Cuyvers (1986), Cripps & Ward (1987)]. Recently, the model has been updated, adapted and disaggregated as the ARCA World Model [Cripps & Ward (1991)].

It is a real trade and income model which is especially suited for studying adaptation processes of income, spending and supply in answer to shocks of internal or external origin. Three commodity categories are considered: raw materials, energy, and manufactures. Commodity trade appears in the model in the form of block-wise balances; only for manufactures trade, exports and imports are also explicitly present.

Trade policy actions from the US side, which will be simulated below, will initially only act on manufactures trade. This is not only for technical reasons, but corresponds with the so-called "non-ag non-oil" trade and balances which are considered as relevant in trade policy discussions [see e.g. Krugman (1991)].

The original model contained 9 trade blocks: Western Europe (incl. Yugoslavia), US, Japan, Other Developed Market Economies (Canada, Australia, New Zealand, South Africa, and Israel), (former) Centrally Planned Economies, Latin America, Asia, Africa, and the Middle East. In the current ARCA Model Western Europe has been split up into Germany and the Rest of Western Europe and the Centrally Planned block has been split up into Eastern Europe, the USSR, and China. Therefore the world is modelled as an interdependent system of 12 trading blocks. Each block is equally detailed elaborated in the model structure; there are 27 equations per block, to which 5 equations for the world as a whole are added.

Historical data are drawn from UN, OECD and IMF sources. In the current model version data cover the period 1961–1989. All variables are expressed in real terms (USD of 1975). Trends of exogenous variables are computed until the year 2000, which corresponds with the period for which a base scenario has been calculated.

## II. *A Simulation of US Protectionist Trade Measures against Japan*

We simulated a situation whereby the US takes an unilateral decision to cut the (foreseeable) Japanese bilateral surplus away in 1992. Different concrete measures can be used to achieve this goal (e.g. quota's). We suppose that the concrete elaboration of the political decision poses no problem. An objective is fixed and is carried through by the administration.

We do not take the state of the economy to be in a recession at first: otherwise we would have an entanglement of two phenomena. Naturally, when such measures would be taken in a recession situation, the effects would become a combination of two downworking forces. In a real world scenario it will often occur that protectionist measures are taken in a recession situation, pressure for protectionism being greater in such a situation.

It is supposed that the US does not control all other imports simultaneously for technical and political reasons; therefore, trade diversion effects will appear (see also below).

It is supposed that the time is over that the US could take unilateral measures: Japan responds and enters in a retaliation scenario. Following a tit-for-tat strategy they take the same kind of measures the US has taken. The bilateral surplus cut away by the US corresponds with 3/4 of the total Japanese exports to the US, so the response is clear: 3/4 of the American exports to Japan are cut away.

The simulation results are presented in Table 2. The main conclusions are the following:

1. The US does not reach its initial target (being the reduction of its trade deficit). Although there is a slight 'improvement' in the first year (−56.2 billion 1975 USD compared to −58.0 billion 1975 USD in base scenario on the manufactures trade balance; −62.2 billion 1975 USD compared to −63.3 billion 1975 USD in base scenario on the total trade balance) this is not very impressive. Furthermore, in the medium run, there are even adverse effects (for the year 2000 −115.4 billion 1975 USD compared to −112.8 billion 1975 USD in base scenario on the manufactures trade balance; −103.2 billion 1975 USD compared to −102.5 billion 1975 USD in base scenario on the total trade balance).
2. GDP effects for the US are small and only in the short run positive. In 1992 a positive effect of 0.21% deviation from base scenario is calculated; negative effects are expected for the following years (−0.58% in the year 2000).
3. The US-Japan bilateral trade balance improves significantly from the US point of view (−3.1 billion 1975 USD compared to −44.9 billion 1975 USD in 1992) although it continues to be imbalanced.
4. Due to Japanese countermeasures this pursued effect is weakened in the consecutive years (a −13.1 billion 1975 USD bilateral trade deficit in 1993).
5. Because we simulated a US trade policy which was considerable in volume terms the resulting (negative) trade and growth effects for Japan are indeed drastic (−10.81% of GDP in base scenario for the year 1992).
6. Third countries encounter beneficial trade and growth effects because of trade diversion. Western Europe e.g. would encounter a steadily growing positive effect on its

TABLE 2. BASE SCENARIO AND SIMULATION RESULTS OF US TRADE POLICY MEASURES AGAINST JAPAN IN A RETALIATION SCENARIO

|  | 1991<br>1996     | 1992<br>1997     | 1993<br>1998     | 1994<br>1999      | 1995<br>2000      |
|--|------------------|------------------|------------------|-------------------|-------------------|
| US Trade Balance (1)                                 | -58.99<br>-82.25 | -63.30<br>-87.23 | -67.83<br>-92.28 | -72.52<br>-97.37  | -77.34<br>-102.50 |
| US Manufactures Trade Balance (1)                    | -52.85<br>-83.12 | -58.00<br>-90.20 | -63.70<br>-97.51 | -69.83<br>-105.05 | -76.32<br>-112.78 |
| Bilateral Manufactures Trade<br>Balance US-Japan (1) | -42.46<br>-55.89 | -44.94<br>-58.84 | -47.54<br>-61.87 | -50.23<br>-64.96  | -53.02<br>-68.12  |
| US Trade Balance (2)                                 | -58.99<br>-82.86 | -62.22<br>-87.76 | -70.23<br>-92.81 | -73.98<br>-97.96  | -78.21<br>-103.16 |
| US Manufactures Trade Balance (2)                    | -52.85<br>-84.89 | -56.23<br>-92.06 | -66.55<br>-99.58 | -72.02<br>-107.36 | -78.16<br>-115.36 |
| Bilateral Manufactures Trade<br>Balance US-Japan (2) | -42.46<br>-15.51 | -3.09<br>-16.33  | -13.05<br>-17.15 | -13.87<br>-17.97  | -14.69<br>-18.79  |
| GDP of US (3)  | 0.00<br>-0.41    | +0.21<br>-0.45   | -0.33<br>-0.48   | -0.37<br>-0.53    | -0.39<br>-0.58    |
| GDP of Japan (3)                                     | 0.00<br>-17.87   | -10.81<br>-18.47 | -13.77<br>-18.86 | -15.66<br>-19.10  | -16.97<br>-19.22  |
| GDP of W. Europe (3)                                 | 0.00<br>3.03     | 1.54<br>3.13     | 2.33<br>3.19     | 2.68<br>3.22      | 2.89<br>3.24      |
| GDP of the World (3)                                 | 0.00<br>+0.02    | 0.03<br>+0.01    | 0.04<br>0.00     | 0.04<br>-0.01     | 0.03<br>-0.02     |
| GDP of the Industr. Countries (3)                    | 0.00<br>1.52     | -0.68<br>-1.64   | -1.01<br>-1.75   | -1.21<br>-1.85    | -1.38<br>-1.94    |
| GDP of LDCs (3)                                      | 0.0<br>4.17      | 2.26<br>4.34     | 3.19<br>4.47     | 3.64<br>4.57      | 3.94<br>4.65      |

(1) Base Scenario, in Billion 1975 USD.

(2) Simulation Results, in Billion 1975 USD.

(3) Simulation Results, in Percentage Deviations from Base Scenario.

Source: ARCA World Model.

GDP (+1.5% of GDP in base scenario in 1992, +3.2% in 2000).

7. For the world the effects are quasi-neutral (be it that the growth differential trend is negative at the end of the simulation period).

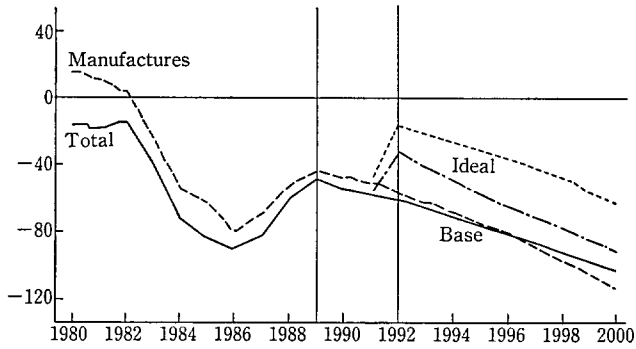
8. Such a conflict between northern industrialised countries tends to have non-intended beneficial growth (re-)distribution effects in a North-South context.

The general conclusion seems to be that for participants in trade conflicts only relative positions are at stake; they will necessarily loose in absolute terms, whereas non-participants tend to win automatically.

### III. Isolating Some Effects

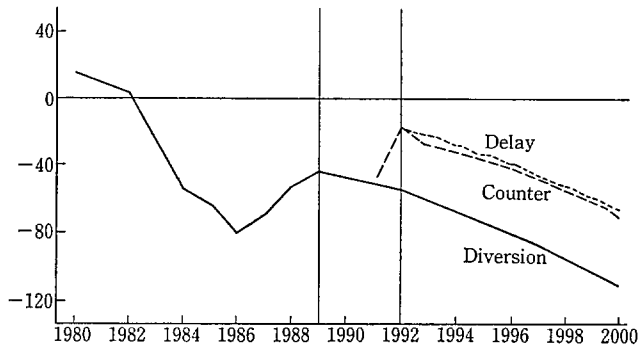
The underlying reasons for the above results can be shown by isolating the potential impact of two individual factors.

FIGURE 3. US TRADE BALANCE 1989–2000 ACCORDING TO “IDEAL” SCENARIO (BILL. 1975 USD)



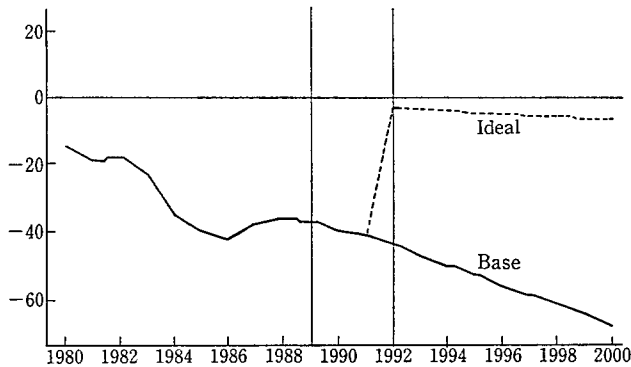
Source: ARCA World Model & Databank.

FIGURE 4. US MANUFACTURES TRADE BALANCE 1980–2000 ACCORDING TO ALTERNATIVE SCENARIOS (BILL. 1975 USD)



Source: ARCA World Model & Databank.

FIGURE 5. BILATERAL MANUFACTURES TRADE BALANCE US-JAPAN ACCORDING TO “IDEAL” SCENARIO (BILL. 1975 USD)



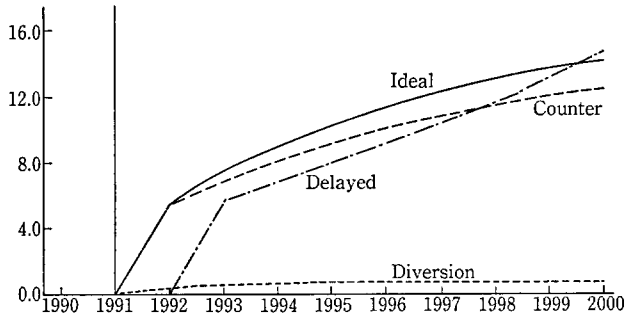
Source: ARCA World Model & Databank.

FIGURE 6. BILATERAL MANUFACTURES TRADE BALANCE US-JAPAN ACCORDING TO ALTERNATIVE SCENARIOS (BILL. 1975 USD)



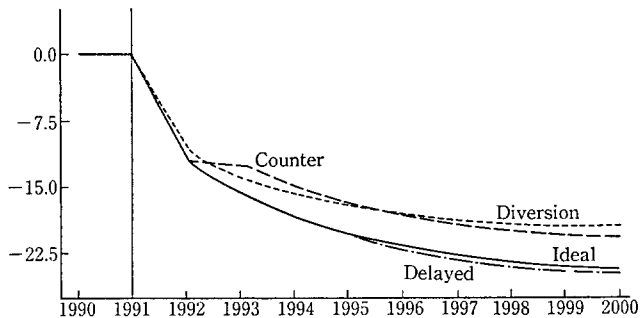
Source: ARCA World Model & Databank.

FIGURE 7. GDP EFFECTS OF TRADE POLICY MEASURES FOR US (% deviations from GDP in Base Scenario)



Source: ARCA World Model & Databank.

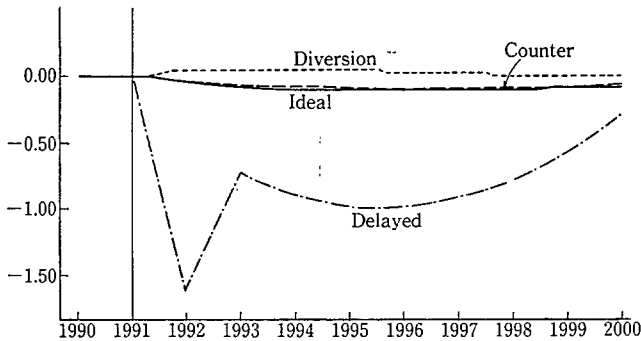
FIGURE 8. GDP EFFECTS OF TRADE POLICY MEASURES FOR JAPAN (% deviations from GDP in Base Scenario)



Source: ARCA World Model & Databank.



FIGURE 9. GDP EFFECTS FOR THE WORLD  
(% deviations from GDP in Base Scenario)



Source: ARCA World Model & Databank.

Let us, for the sake of the exposition, start from a “ideal” scenario in which the US takes perfectly successful trade policy measures against Japan (see Figs. 3, 5, 7, 8 and 9). This would mean that production of suppressed Japanese exports could simply be shifted to the US. Static effects, including employment effects in the US and Japan (taking labour productivity differences into account and assuming the absence of factor shortages) and trade effects (caused by differing openness and trade mix of both economies), and dynamic effects can then be expected.

This model is unrealistic for several reasons.

First, it is very likely that trade diversion will occur. The trade diversion problem is a well-known problem. For an exposition of the problem of weakened effectiveness of quantitative restrictions due to diversion see e.g. Baldwin (1984: 601, 602). It is shown that under conditions of perfect substitutability (of production sources) the impact of discriminatory quantitative restrictions can totally be offset. Even under imperfect substitutability diversion effects will probably be considerable. Trade policy goals can further suffer from other reactions in supply and demand; Baldwin (1982) e.g. considers imports of goods in different processing stages, substitution (in demand), and smuggling.

In our case similar effects can be expected; it is indeed difficult to imagine that the US would impose controls on all other imports, this is presumably economic and political fiction.

It can be seen that with trade diversion, “positive” results for the US are drastically reduced (see Figs. 4 and 7).

It should be noted that trade diversion not only implies that producers from other blocks can replace the Japanese but that indirect trade and exports from Japanese MNEs located in other blocks will take place.

An assessment of potential trade diverting effects is well able to discourage trade policy makers. This is however only one possibility. Another possibility might be that the US might engage in a real escalation of protectionist measures: extending the geographical coverage (e.g. taking similar measures against NICs, Western Europe...) or introducing more complex trade policy measures (e.g. stipulations of origin).

The presence of third competitors (NICs e.g.) and the presence of Japanese MNEs in other blocks might on the other hand contribute to moderate expectations on the eventual beneficial effects of tariff or quota jumping FDI from Japanese companies in the US.

Second, although Japan is—for obvious reasons—relatively absent from the protectionism debate, it is unreasonable to expect that Japan will stay passive in case of drastic measures. The impact of a proportional “answer” from the Japanese side (in the next year, cfr. US policy measures are presumed to be “unexpected”), is demonstrated in Figures 4 and following. Trade diversion does not occur in this case.

In addition, one might argue that even if there are sufficient import controls and Japan does not take countermeasures a simple shift is not feasible. Technical delays and sectoral factor shortages will cause a delay in this production shift. We simulated the impact of an adaptation of the American production apparatus in the “next” period (see Fig. 4 and following). If these delays occur, the world as a whole would encounter welfare losses (Fig. 9). Analogous conclusions would obviously apply in a trade diversion scenario where delays occur in other blocks.

The ARCA World Model is not capable to take efficiency losses and production substitution possibilities into account.

#### IV. *An Agenda for Further Research*

The results of the simulation scenario as developed in this paper could be expected to be more dramatic once there are additional developments in the retaliation game. This corresponds very well with the practice of the thirties, where the short run initial results of the Hawley Smoot law were slightly positive for the US. Only after a certain time, as a result of the dramatic retaliation process, the consequences of the law became very negative [Pomfret (1988, 33)].

Political trade measures have been simulated independently of the business cycle. Methodologically speaking this can be justified in order to disentangle the effects of an eventual combination of two phenomena. But in real world conditions, protectionist pressure increases often in a recession period, so that the two effects reinforce one another, as was the case in the historical period of the thirties.

In the simulation scenario we have taken only one retaliation round of one single country. This is a rather unrealistic supposition. The changes in the bilateral balance of the US did not correspond with the US target, so it would be possible that the US will take further measures. These measures can be taken against other countries that have been left outside the retaliation game until now. We have seen that the NIC's and Western Europe made their external position better, so it is possible that they become the next objective of the US trade policy measures. In other words, the game just will not end after one single play.

The assumption that all production can be taken over without problems by other countries is not a very realistic one. Insofar as one would add suppositions about losses in world production and efficiency, the effects of US trade policy measures would be more accentuated.

### *Conclusion*

The upward trend in the pressure for protectionism in the US has recently got some theoretical support with the publication of several books and articles minimizing the protectionist threat. The simulation scenario we have computed cannot agree with this conclusion. Nations engaged in a trade war will all loose, although some more than others. The simulation of only one Japanese countermeasure has indicated that those losses are very considerable. Nations that are very seriously hurt will probably engage in a retaliation game. As the development of the dramatic trade war in the thirties has indicated, the short run advantages for the initiator can very soon develop in a loss for all the participants in the trade war game.

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