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Structural Adjustment for Debt Reduction:

The Case of Malaysia¹

by Manfred WIEBELT

1 Introduction

Following two decades of considerable economic growth, the first half of the 1980s found the Malaysian economy in a critical situation, with a substantial increase in current account deficits and foreign debt. By 1987, however, the current account was registering a record surplus of US\$ 2.6 billion. This short-run economic recovery was achieved through a stabilization programme similar to that demanded by the IMF from governments when negotiating stand-by credits. Such programmes generally focus upon real devaluation. The real devaluation was obtained by both changing the nominal exchange rate and applying measures to curb inflation, including a reduction of the public deficit and a cut in real wages. The question this paper poses is whether the Malaysian reforms

¹ The author wishes to acknowledge helpful comments received from Oskar Gans.

provide a model of structural adjustment for other developing countries. Two aspects of this question are addressed in this study:

- (1) Can the Malaysian success be attributed to specific conditions which do not exist in other countries?
- (2) Can the external equilibrium be maintained with the help of the prescribed programme in the medium run without reducing growth momentum?

The short-run recovery in the balance of payments began with an improvement in the current account which, as late as 1983, revealed a deficit of US\$ 3.5 billion and in 1987 closed at a record high surplus of US\$ 2.6 billion (TABLE 1). The recovery might be attributed to the following specific conditions:

- Since 1975, extraction and domestic consumption of oil have been increasing rapidly. A further increase in production along with a reduction in domestic consumption might have led to a considerable rise in Malaysia's export revenues. In fact, however, export revenues from crude oil stagnated due to decreasing world market prices.
- A favourable maturity structure of debt-servicing payments might have eased the liquidity constraint temporarily. Due to increased foreign borrowing, interest obligations in 1985 augmented by almost 50% up to US\$ 3.5 billion compared to the two previous years (TABLE 1). The resulting surplus in the current account is therefore attributable to surpluses in merchandise trade.
- Prior to the debt crisis, increasing export revenues and capital inflows led to a real appreciation of the domestic currency. As a result, relatively cheaper imports were able to penetrate large parts of the domestic market (cf. TABLE A5, column 6). The deflation policy, thus, not only curbed the share of imports in domestic absorption, i.e. in total consumption and investment, but real devaluation and additional import restrictions also helped Malaysian producers to regain former domestic market shares. In other countries as well, a

debt crisis may have been preceded by a phase of rising import shares. In Malaysia, however, the substitution possibilities between domestic and foreign goods might have been exceptionally high. In this case, the adjustment programme had only eliminated unnecessary imports, whereas such imports might be difficult to replace with domestic production in other countries. The validity of this hypothesis will be tested.

In order to maintain external equilibrium in the future, an even higher trade balance surplus is needed in Malaysia. Some of the short-run adjustment measures could be removed because, in the medium term, new substitution possibilities between domestic and imported goods could open and exports could be increased with lower price concessions. Thus, export promotion is an alternative to import protection in the medium-run. For the policymaker, it is important to know the likely effects which these alternatives have on economic growth. Increasing real incomes are expected first and foremost from accelerated industrialization because of a higher marginal factor productivity in industry, economies of scale and dynamic effects. In this study, the alternatives for sustaining trade balance in the medium term - i.e. real devaluation, import protection, and export promotion - and their effects on industrial output will be investigated.

The study is structured as follows. In the second section, the analysis focuses on the evolution of the crisis and the measures taken to overcome the problem. The analytical framework of the empirical analysis, a computable general equilibrium (CGE) model of the Malaysian economy, is briefly described in the third section and documented in the appendix. In sections four and five, simulation results are presented and discussed. Finally, some conclusions are drawn in section six.

· · · · · · · · · · · · · · · · · · ·	1981	1982	1983	1984	1985	1986	1987	1988
	1	Expansion P	hase		Adaptation P	Recovery Phase		
Ringgit/US\$								
(Period average)	2.30	2.34	2.32	2.34	2.48	2.58	2.52	2.62
Real effective exchange rate								
(1980=100)	100.4	106.7	111.8	116.1	110.3	92.6	88.0	80.2
Commodity exports								
(bill. Ringgit)	27.1	28.1	32.8	38.6	38.0	35.7	45.1	55.3
Oil exports								
(% of commodity exports)	25.5	27.4	24.0	22.6	22.9	15.1	14.0	11.1
Commodity imports								
(bill. Ringgit)	26.6	29.0	30.8	32.9	30.4	27.9	31.9	43.4
Trade balance								
(bill. US\$)	-0.1	-0.8	0.4	3.0	3.6	3.4	5.9	5.6
Balance of current account					•			
(bill. US\$)	-2.5	-3.6	-3.5	-1.7	-0.6	0.1	2.6	1.9
Reserve increase								
(bill. US\$)	0.5	0.4	0.1 ·	-0.3	-1.2	-1.0	-1.4	0.9
Gross Domestic Product					1			
(bill. Ringgit)								
At current prices	57.6	62.6	69.9	79.6	77.5	71.1	80.7	90.7
At 1980 prices	57.0	60.4	64.2	69.2	68.4	69.3	72.9	76.0
Total foreign debt								
In bill. Ringgit	15.4	24.3	33.3	37.2	42.3	51.0		
in % of GNP	27.7	40.7	48.8	50.1	58.9	76.7		
Debt service								
(bill. Ringgit)	2.3	3.1	3.7	5.3	7.0	7.4		
Interest payment								
(bill. Ringgit)	1.2	1.6	2.1	3.0	3.5	3.3		
Amortization								
(bill. Ringgit)	1.1	1.5	1.5	2.3	3.5	4.1		
Debt service ratio (in %)	7.1	9.2	9.7	11.8	15.8	17.6		

Table 1: Macroeconomic and Balance of Payments Data for Malaysia 1981-1988

Source: IMF (1988, 1989a) and Bank Negara Malaysia

2 The Making of the Malaysian Debt Crisis

The Malaysian debt crisis has been caused by a number of factors, both external and internal in nature. The considerable increase in commodity prices in the 1970s had negative effects on the competitiveness of import-substituting and export-oriented industries. Higher disposible income from the commodity price boom – particularly "windfall profits" from crude oil – increased domestic demand for both, tradable and non-tradable goods. However, the prices of tradables are mainly determined on world markets while the prices of non-tradables and labour began to rise as a result of increasing demand. In general, governments are able to avoid these unfavourable effects of commodity booms known as "Dutch Disease" by means of (1) increasing capital outflows (debt reduction, capital exports), (2) compensating for the producers' competitive loss through trade policy (import protection, export promotion) or (3) fostering domestic production [SELL, 1988].

The Malaysian government chose to promote domestic production [SOMOGYI, 1991]. The prospect of considerable oil revenues and the desire to counter the effect of the world recession encouraged the government to embark on an ambitious development programme, i.e. building up a state-owned heavy industries sector, and raising total capital accumulation to 40% of GNP in 1983. The resulting expenditures created severe fiscal and external imbalances that were financed mainly by heavy foreign borrowing. These disequilibria were reduced sharply between 1983-84, as both foreign exchange earnings and budget revenues were boosted by strong external demand, improved terms of trade, and drastic cuts in public spending. Yet, following the erosion of foreign demand and the fall in the prices of oil and agricultural export commodities, the economy took an abrupt downturn in 1985-86; production growth stagnated, investment dropped sharply and unemployment rose. These developments interfered with the process of fiscal consolidation and led to greater foreign borrowing to finance the budget deficit. By the end of 1986, Malaysia's external debt rose to US\$

20 billion or 77% of GNP (TABLE 1), well above the average of 48%, recorded by developing countries with recent debt-servicing problems.

The following recession disclosed structural weaknesses in the economy that had been obscured previously by the buoyancy of demand [WORLD BANK, 1989]. Return on investment deteriorated largely due to the shift in the structure of investment. While public investment in infrastructural projects had been reduced, it expanded into manufacturing since nonfinancial public enterprises diversified into activities in which public enterprises have little comparative advantage. By 1986, this sector accounted for about one quarter of gross value added, one of the highest shares among non-socialist countries. This added to Malaysia's fiscal and external debt burden and crowded out private investment. Private investment activities were further hampered by a loss of competitiveness due to wage increases in excess of productivity growth and a marked appreciation of the Ringgit during the early 1980s. Business confidence was further eroded as the property market collapsed and, partly owing to a heavy concentration of lending to the property sector, a number of banks and finance companies were threatened with insolvency.

When economic growth stagnated in the mid 1980s, the government launched far-reaching reforms focusing on real devaluation and measures to restore the domestic and international competitiveness of the private sector. By reducing the public sector deficit, inflation was dampened to such a degree that the stepwise nominal devaluation could become effective. Between the end of 1984 and the beginning of 1987, the real value of the Ringgit dropped by more than 20%, thereby overcompensating the real appreciation of the early 1980s. While consolidating the public budget, development expenditures were gradually reduced. The investment programmes were trimmed, creation of new public enterprises and diversification of existing ones stopped, prices of public goods and services were increased and subsidies cut. In addition, the government stopped hiring labour and delayed wage adjustment in the public sector. Finally, the government also succeeded in persuading trade unions to accept a rise in minimum wages below the inflation rate. Inflation could thus be further controlled. Lower wage costs not only improved the competitiveness of domestic enterprises and increased Malaysia's attractiveness for foreign investors, but also limited the negative employment effects often entailed by stabilization policies. As a result, production and consumption could be maintained on a higher level.

3 Analytical Approach: A CGE-Model for Malaysia

The objective of this study is to analyze the short- and medium-run effects of the Malaysian reform programme on several macroeconomic and sectoral indicators. However, the effects of discretionary policy measures are difficult to identify in time-series models. A more promising alternative is to stick closely to microeconomic theory, confining the analysis to comparative statics. The model best suited for such an analysis is a computable general equilibrium (CGE) model. Such a model, documented in TABLEs A1-A2 of the Appendix, is applied here. The model is based on a Social Accounting Matrix (SAM), which presents the full circular flow of money, factors and commodities in the Malaysian economy (Appendix TABLEs A3-A5). Accounts 1 and 2 of TABLE A3 and TABLE A5 represent the flow of imported and produced commodities into domestic production. domestically consumption, capital accumulation and exports. Accounts 3-5 of TABLE A3 and TABLE A4 represent the flow of factors into domestic production. The rest of the SAM traces the flow of income from producing sectors to factors of production and then on to institutions, which represent the various economic actors in the economy. Depending on the problem at hand, the production accounts can be specified at different levels of aggregation. The particular sectoral aggregation used here was chosen with a view to facilitate tracing the effects of the adjustment measures on different tradable and non-tradable sectors.

The behavioural equations of the Malaysian CGE model are derived from microeconomic theory: producers minimize their costs under the 18

conditions of a neoclassical (Cobb-Douglas) production function, consumers maximize their utility under an aggregated expenditure restriction and based on an additive (Cobb-Douglas) utility function. Supply, demand and trade are thus determined by changes in relative prices and substitution possibilities between factors of production, between different commodities in demand and, for individual commodities, between imports and domestically produced imperfect substitutes. The measures of the Malaysian reform programme are introduced by fixing the nominal exchange rate and sectoral nominal protection levels. The solution of the model then simulates the impact of these measures on all endogeneous variables. Alternatively, target figures, such as a specific current account deficit can be fixed with the solution, for example, yielding the necessary change in the exchange rate.

The model is specified differently for the short- and medium-run analysis. In the short-run, sectoral capital stocks are fixed. As a result, changes in prices for outputs, intermediates and factors yield sectorally different profit rates. In the medium-run, intersectoral capital movements will lead to an equalization of sectoral profit rates. Also, nominal wages are fixed in the short-run and employment is determined by demand. Over time, real wages may be adjusted to meet employment targets. Finally, substitution possibilities between factors of production and between imported and domestically produced commodities are limited in the short-run. Additional exports can be sold on the world market only with considerable price concessions. In the medium-run, however, substitution and export demand elasticities are higher (cf. TABLE A2).

4 Restoring External Equilibrium in the Short Run

Changes in relative commodity prices have a stronger impact on trade flows when trade and export demand elasticities are high. The objection raised against taking Malaysia's reforms as a model for other countries is that there existed unusually high substitution possibilities between domestic and imported commodities. If this objection is justified, any attempt to simulate the results of the reform programme in a model using (low) short-run elasticities will definitely fail. Real devaluation along with supporting measures would lead to a much smaller improvement of the trade balance. Only the use of implausibly high parameter values would yield simulation results in the magnitude of the observed changes for import expenditures, export revenues, consumption, and employment.

4.1 Specification of the Model Experiments

Between 1984 and 1986, the Malaysian government devalued the Ringgit against the US-Dollar. At the same time, the reduction of the public deficit and of real wages led to an increase in money supply which was lower than the increase in money demand. The result was a real devaluation of the domestic currency of 10%. Since the model does not include a monetary sector, this process cannot be modelled endogeneously. Rather, the real devaluation is introduced directly in experiment 1 by fixing the consumer price index and changing the nominal exchange rate exogeneously by 10%.

Of course, the real devaluation is not independent of flanking measures. These measures are summarized in experiment 2: a real wage cut of 5%, an increase in domestic oil prices of 20%, and the reduction of various production subsidies given to processing industries (excluding construction), which is recorded in the model as a 10% increase of factor costs.

The real devaluation weakens importers' competitiveness. Moreover, quantitative import restrictions and import taxes provide domestic producers with additional protection. For the time being, it is not possible to quantify the tariff equivalent of import licensing. Instead, an estimated uniform tariff of 10% is introduced in experiment 3.

4.2 Macroeconomic Effects

The simulation results for various macroeconomic variables (exports, imports, employment, real domestic absorption) and for sectoral production are listed in TABLE 2. The results correspond to what could be expected from microeconomic theory. Real devaluation increases exports, decreases imports and with declining employment, leads to a considerable reduction in real domestic absorption. Although the various inflation-dampening measures which allow real devaluation to take place modify the result, they do not change the direction (experiment 2). The increase in both the employment rate and absorption are made possible, despite rising net exports, by a cut in real wages. The slowing down of imports caused by additional import protection meets expectations (experiment 3). What may be surprising here is the negative employment effect. One has to consider, however, that a precondition of this experiment was to keep both the real exchange rate and the real wage constant. As domestic producers cannot pass the input costs, which increase along with import protection, on to prices, they adjust to the situation by utilizing the only variable factor, i.e. labour. Overall, the results obtained for the macroeconomic variables are close to their actual changes. Moreover, the hypothesis that unusually high substitution elasticities in domestic demand have supported the Malaysian adjustment process has to be rejected because the results are obtained by using low, short-run elasticities.

Variable	Real Devaluation ³⁾ (Experiment 1)	Supporting Measures (Experiment 2)	Add. Import Protection 5) (Experiment 3)	Total ⁶⁾	
Macroeconomic Variables					
Export revenues ⁷⁾	2.28	1.60	0.10	3.98	
Import expenditure ⁷⁾	-12.31	0.39	-3.87	-15.79	
Employment	-4.34	5.69	-2.64	-1.29	
Real domestic absorption ⁸⁾	-9.12	0.01	-1.68	-10.79	
Sectoral Production ⁹⁾					
Agriculture	0.30	1.30	-0.13	0.87	
Mining and crude oil	0.11	0.19	-0.01	0.29	
Consumption goods	1.15	-6.33	0.03	-5.15	
Intermediate products	-2.09	-9.17	-0.07	-11.33	
Capital goods	-3.34	-2.54	-0.15	-6.03	
Construction	-19.84	9.87	-6.05	-16.02	
Services	-2.25	6.47	0.19	4.41	

Table 2: Short-term Effects of the Adjustment Programme in Malaysia (Changes in %)¹⁾²⁾

1) Model projections. - 2) Rate of change after one year with the respective measures as compared to the same year without them. - 3) Real devaluation against the US\$ by 10%. - 4) Real wage decrease by 5%; increase in domestic prices for mining and oil products by real 20%; rise in costs of consumption industry; intermediate product manufacturing and capital goods industry by 10% of factor costs. - 5) Uniform import tax of 10%. - 6) Real devaluation; supporting measures and uniform import tax. - 7) In US\$. - 8) Private and public consumption as well as capital and inventory investments. - 9) For sectoral classification, see Table A4.

Source: Own calculations

4.3 Sectoral Effects

Breaking up the results according to sectors of production, we see that the activities in agriculture, industry and construction, and services are affected quite differently by the reform programme. Only agriculture, mining and crude oil, as well as services expand their production, whereas all other sectors contract. Since production of industrial intermediates and capital goods is heavily import-dependent (cf. TABLE A4), these sectors are more strongly affected by increasing import costs than others. In addition, these sectors were cut off from their previous production subsidies. Although importers are crowded out by domestic producers from the domestic markets, this is not enough to compensate completely for shrinking domestic absorption. As could be expected, the reduction of production is highest in construction. This is the least tradable sector, yet its production is heavily import-dependent and, therefore, adversely affected by any policy that raises import prices.

5 Maintaining External Equilibrium in the Medium Run

In order to maintain external equilibrium, Malaysia will have to show a trade surplus in the coming years. The likely impacts of alternative adjustment measures (real devaluation, increasing import protection and export promotion) on industrial production and growth will be analyzed subsequently.

5.1 Modelling of the Adjustment Alternatives

In the fourth experiment it is assumed that trade balance can only be achieved by means of a real devaluation. The improvement of the trade balance estimated in the short-run experiment is predetermined exogeneously. Also, in the formation of real wages, the situation on the labour market has to be taken into account, while overall employment is fixed exogeneously. The market-clearing nominal exchange rate and nominal wage rate are then determined endogeneously by the model. Moreover, in the medium run, intersectoral capital movements will tend to equate sectoral profit rates. Therefore sectoral profit rates are fixed to the economy-wide average profit rate.

The sectoral results obtained by the third experiment have shown that a uniform tariff slows down industrial production in the short run. The increase in input costs resulting from devaluation and import protection is higher than the nominal protection afforded to these sectors; effective protection decreases. In order to eliminate this undesired structural effect, the government could limit additional import protection to processing activities. This implies a strategy of forced industrial import substitution. In the fifth experiment, this adjustment alternative is modelled by increasing nominal protection for intermediates and capital goods. A comparison of the results with those of experiment four will indicate the degree by which industrial import protection reduces the need for real devaluation and their impact on other macroeconomic variables, i.e. industrial production, real wages, domestic absorption.

Alternatively, the government could embark on a strategy of export promotion. This strategy is modelled as increasing export subsidy rates. It is further assumed, that the subsidies are financed by shifting former production subsidies for import-competing industries to export industries. The experiment thus reveals a step towards importsubstituting and export-oriented activities being equally promoted.

5.2 Real Devaluation

Between 1984 and 1985, the Malaysian government took drastic measures to restore external equilibrium in the short term. If the improvement in the balance on current account - which was achieved by these measures - is also to be maintained in the future, less drastic interventions are necessary. A comparison between the results obtained by the overall short-run adjustment programme (TABLE 2, column 4) and those from experiment 4 (TABLE 3) gives information on the required measures. Real devaluation could be reduced from 10% to about 6.5% and the cut of real wages from 5% to about 2.5% without any additional import protection. The rise in export revenues indicates that it is particularly the success achieved on export markets which makes medium-run adjustment easier. Malaysia does not have any monopoly power on foreign markets for primaries and consumer goods. In the medium run, domestic producers can therefore expand exports without sizeable price concessions. In contrast to the short-run solution, increasing export revenues tend to appreciate the Ringgit and, thus, increase imports.

The structural change in foreign trade – and this may be surprising at first sight – does not bring any noticeable improvement in domestic absorption, compared to the short-run adjustment. This follows from the assumption of fixed profit rates. In this case, the devaluation does not lead to decreasing profit rates but under-utilization of the capital stock. Compared to the short-term solution, the performance of production and real domestic absorption improve only slightly. The more favourable result for real wages is achieved by an increase in labour's share in value added. In the medium run, the reduction of industrial production is less than in the short run. The simulation shows an increase in the consumer goods industry by 3.28% as compared to 1.15% in the short-run simulation. The production of intermediates is reduced by 0.31% instead of 2.09%, and production of capital goods falls only by 1.05% in the medium run, instead of 3.34%. In all three cases there is an

Variable	Real Devaluation (Experiment 4)	Industrial 3) Protection 3) (Experiment 5)	Export Promotion ⁴⁾ (Experiment 6)
Macroeconomic Variables			
Trade balance ⁵⁾	3.14	0(EX)	0(EX)
Export revenues 6)	J.52 -11 75	-3.14	9.14
Real exchange rate	6.47	-2.05	-2.35
Real wages	-2.48	-6.21	7.45
Real domestic absorption	-7.11	0.01	1.14
Sectoral Production ⁷⁾			к. 1
Agriculture	1.38	-1.10	1.58
Mining and crude oil	1.01	-0.67	2.03
Consumption goods industry	3.28	2.21	7.06
Intermediate product manufacturing	-0.31	2.88	4.20
Capital goods industry	-1.05	-3.19	7.07
Construction	-25.21	-0.64	-6.81
Services	-0.31	1.61	-5.65

Table 3: Medium-term Effects of Measures to Maintain External Equilibrium in Malaysia (Changes in %)¹⁾²⁾

1) Model projections. - 2) Rate of change after five years with the respective measures imposed as compared to the same period without them. - 3) Increase in the nominal protection rate by 50% for the processing industry sectors. - 4) Introduction of an export subsidy of 20% for the processing industry. - 5) Absolute changes in bill. Ringgits in 1983. - 6) Percentage change in US\$. - 7 For sectoral classification, see Table A4.

Source: Own calculations

improvement in comparison to the short-run adjustment, despite a permanent and strong reduction of domestic investment and consumption. In the medium run, too, the relative changes can be traced back to the degree of import dependency. The production of intermediates and capital goods is exceptionally import-intensive and is thus more strongly affected by a rise in import prices than the primary sector, consumer goods industry and the service sector.

5.3 Import Protection or Export Promotion?

The Malaysian government can assist domestic industry either on domestic markets by providing import protection or on foreign markets by promoting exports. In both cases, the need for an exchange rate revaluation is reduced: importers demand less foreign currency, while exporters supply more of it. In addition, the relative appreciation following fom trade restrictions has a dampening effect on the domestic demand for domestically produced tradables. If domestic production is not directly promoted, it decreases in the international sector (agriculture, mining industry and oil extraction) and increases in the domestic sector (construction and services). The adjustment mechanisms are similar to those described in the "Dutch–Disease" literature.

The effects of import protection and export promotion on industrial production, factor markets and real absorption are, however, not only gradual – as the results of experiment 5 and 6 show. Import protection can only slightly change the domestic structure of production. Increasing input costs exhaust the potential for further import protection. In the case of Malaysia, the possibilities for an import-substituting strategy are limited. Taking on macroeconomic costs would, in this case, be futile. The undervaluation of domestic factor services would result in lower wage rates and lower profit rates, while real absorption would not be affected.

In contrast, export promotion is not limited by the size of the domestic market. Rather, it widens the capacity for imports of intermediates and capital goods (TABLE 3, column 3). In spite of the overall export growth, industrial export promotion improves the terms of trade, since the share of primary (industrial) exports decreases (increases) and export demand is more elastic in the industrial sectors than in the primary sectors². The reform also yields efficiency gains because distortions which result from import protection tend to be eliminated. Finally, export promotion increases the profitability of capital-intensive sectors (cf. the sectoral factor income shares shown in TABLE A5), attracting asset capital from abroad. An export-oriented industrial policy thus fosters industrialization in the medium term, without infringing upon real absorption and real wages.

6 Summary and Conclusion

In the mid 1980s Malaysia faced a serious balance-of-payments crisis which resulted in economic imbalances, structural weaknesses, and poor prospects for growth. In order to speed up the necessary adjustment, the government launched a far-reaching stabilization programme that met the standards of IMF requirements. As a result of these efforts, Malaysia achieved a spectacular turnaround: real GDP growth recovered, while the external imbalance was redressed, and inflation controlled. This paper seeks to answer the question of whether Malaysia's successful reform experience provides a model of structural adjustment for other developing countries. In the first step, we examined whether the shortrun improvement of the current account could be attributed to specific economic conditions. In the second step, the study looked at the medium-run effects of alternative industrialization strategies.

The effects of major measures of the reform programme were analyzed in a CGE model of the Malaysian economy. The model was solved numerically, using low trade elasticities that are characteristic for short

² The export demand elasticities are assumed to be -4.0 for primary exports and -10.0 for industrial exports (cf. Table A2).

periods of one year. The simulation results came close to historical figures for the decrease in import expenditure, the increase in export revenues and the drop in aggregated employment. Thus, the hypothesis that the success of the reform programme may be attributed to exceptionally high trade substitution possibilities in Malaysia, has to be rejected. The reforms do therefore provide a model of structural adjustment for other developing countries.

It is generally agreed upon that medium-term growth in newly industrializing economies (NIEs) is closely linked with industrialization. However, results from the Malaysia model show that the reform programme had a negative short-run impact on industrial production. Although real devaluation and uniform tariffs increased domestic relative prices of tradables, this was overcompensated by lower subsidies, increasing import costs for inputs and decreasing domestic absorption.

In the second step of the analysis, the question was posed whether the medium-term external balance would also require a reduction in industrial output. Three alternatives were considered: real devaluation, forced industrial import substitution, and export promotion. The model simulations reveal that the medium-term adjustment is mainly born by increasing exports, with the result being that the pressure of short-run import substitution can be eased.

In the medium run, domestic and foreign demand is more sensitive to changes in relative prices. Real devaluation still leads to decreasing industrial production; but the reduction is less than in the short run. Overall, industry falls behind the primary goods sectors, which, can take advantage of the devaluation, since they are not very dependent on imported inputs.

A further increase in tariff protection does not affect the production of processing industries in the medium term. The advantages granted through higher output prices are completely compensated for by general equilibrium effects. A reform of industrial policy – equating nominal

protection of export-oriented and import-substituting industries – would increase the competitive edge of the Malaysian industry. The model calculations show that such a reform would foster industrialization. It can thus be concluded that in the medium term, import protection should be reduced and export diversification promoted.

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1.	Price System	Number
(1)	$P_{i}^{m} = \overline{P}_{i}^{Sm} (1 + t_{i}^{m}) r$	n
(2)	$P_{i}^{\$e} = P_{i}^{d} / [(1 - t_{i}^{e})r]$	n
(3)	$P_{i}^{q} = 1/\overline{F}_{i}[s_{i}^{p}P_{i}^{m(1-\sigma_{i})} + (1-s_{i})^{p}P_{i}^{d(1-\sigma_{i})}]$	n
(4)	$P_{i}^{n} = (1 - t_{i}^{d})P_{i}^{d} - \Sigma_{j} a_{ij} P_{j}^{q}$	n
(5)	$\mathbf{z}_{\mathbf{j}} \mathbf{\alpha}_{\mathbf{i}} \mathbf{p}_{\mathbf{i}}^{\mathbf{q}} = \mathbf{\bar{p}}$	1
11.	Factor Markets and Commodity Supply	
(6)	$x_{i}^{S} = \bar{A}_{i}[\alpha_{i} \cdot L_{i}^{-\rho} + (1 - \alpha_{i}) \bar{K}_{i}^{-\rho}]^{-\frac{1}{\rho}}$	n
(7)	$\gamma_{ki} W_{k} = (1 - t_{i}^{V}) P_{i}^{n} (\delta x s_{i} / \delta L_{ki})$	m·n
(8)	$\mathbf{L}_{\mathbf{k}}^{\mathbf{D}} = \mathbf{\Sigma}_{\mathbf{i}} \mathbf{L}_{\mathbf{k}\mathbf{i}}$	m
(9)	$L_{k}^{D} - \tilde{L}_{k}^{S} = 0$	m

Table A1: Equations of the Malaysia Model

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Table A1 (cont.)

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111.	Foreign Trade	Number
(10)	$ \begin{array}{c} \eta i \\ E_i = \tilde{E}_i (\pi i / P_i^{se}) \end{array} $	n
(11)	$M_{i} = [di/(1 - d_{i})]^{\sigma_{i}} (P_{i}^{d}/P_{i}^{m})^{\sigma_{i}} D_{i}$	n
(12)	$\Sigma_{i} \overline{P}_{i}^{\text{Sm}} = H_{i} - \Sigma_{i} P_{i}^{\text{Se}} = \overline{P} = 0$	1
IV.	Income, Savings and Investment	
(13)	$Y_{H} = (1 - t_{H}) [(1 - t_{i}^{v}) P_{i}^{n} X_{i}^{S} + \overline{F}_{1} r]$	1
(14)	$Y_{g} = t_{H} Y_{H} / (1 - t_{H})$	
	+ \mathbf{E}_{i} $\mathbf{t}_{i}^{\mathbf{d}}$ $\mathbf{p}_{i}^{\mathbf{d}}$ $\mathbf{x}_{i}^{\mathbf{S}}$ + \mathbf{E}_{i} $\mathbf{t}_{i}^{\mathbf{v}}$ $\mathbf{p}_{i}^{\mathbf{n}}$ $\mathbf{x}_{i}^{\mathbf{S}}$	
	+ $\Sigma_{i} t_{i}^{m} \overline{P}_{i}^{m} r M_{i} - \Sigma_{i} t_{i}^{e} P_{i}^{se} r E_{i}$	1
(15)	$S = B_{H} Y_{H} + B_{G} Y_{G} + \overline{F}_{2} r$	1
(16)	$I_i = \theta_i s$. n
(17)	$\mathbf{Z}_{i} = \mathbf{E}_{j} \mathbf{b}_{ij} \mathbf{j} / \mathbf{E}_{i} \mathbf{P}_{i} \mathbf{b}_{ij}$	n

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Table A1 (cont.)

v. S	Sectoral Demand and Commodity Markets	· · ·	Number
(18)	$v_i = \Sigma_j a_{ij} X_j^S$		n
(19)	$c_i = c_{iH} + c_{iG}$		n
(20)	$c_{ij} = q_{ij} (1 - s_j) Y_j / P_i$		2n
(21)	$D_{i} = d_{i} (V_{i} + C_{i} + Z_{i})$		n
(22)	$d_{i} = 1/f_{i} (M_{i}/D_{i}, 1)$		n
(23)	$\mathbf{x}_{i}^{D} = \mathbf{D}_{i} + \mathbf{E}_{i}$		n
(24)	$x_{i}^{D} - x_{i}^{S} = 0$		n
		Total: 17	n + m [•] n + 2m + 5

Endogenous variables are written with capital letters; small-case letters, greek letters and letters with "-" describe exogenous variables and parameters. In equation (22) $f_{(-)}$ describes the CES aggregation function for imports and domestically produced substitutes.

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Table A2: Variables and Parameters of the Malaysia Model

Total: 17n + m-n + 2m + 4

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Table A2 (cont.)

Exc	ogeno	us V	'ari	ables and Parameters
- ?			=	World market price for imports in foreign currency
P			=	Consumer price index
π,			=	World market price
Ā,	Ē,.	Ē,	=	Shift-parameter
ī,s	-	-	=	Labour supply
Ř,			=	Capital stock
Ē,	Ē,.	F	=	Capital inflow
ŧ,	•		=	Indirect tax rate
t			=	Value-added tax rate
t,			=	Tariff rate
t,			=	Export tax rate
1 t,,			=	Income tax rate
п 8 ,	s		=	Savings rates
θi			=	Sectoral investment shares
ь,,				Capital coefficients
ر . ۱۱			-	Input-output coefficients
د. ۹ ₁₁			=	Expenditure shares
د_ ۹			=	Weights in consumer price index
•	°i		=	Distribution parameters
f_(-)		=	CES aggregation function for imports and domestically
°i			=	produced substitutes Substitution elasticity between imports and domestically produced substitutes
ρ,			=	Substitution parameter for labour and capital
η			=	Price elasticities of export demand ¹
1)	Shor	l-ter	:m	$\sigma_i = 2.00 \ (1 = 1.3); \ \sigma_i = 0.75 \ (1 = 2.4.5.6.7);$
				$\alpha_{i} = 1/(1 + \rho_{i}) = 0.4; \ \eta_{i} = 1.25.$
1)	Medi	um-	ten	m: $\sigma_{\underline{i}} = 6.00$ ($\underline{i} = 1.3$); $\sigma_{\underline{i}} = 2.25$ ($\underline{i} = 2.4.5.6.7$); $\alpha_{\underline{i}} = 1.0$ ($\underline{i} = 1.7$); $\alpha_{\underline{i}} = 0.7$ ($\underline{i} = 2.3.4.5.6$); $\eta_{\underline{i}} = 4.00$.

Expenditures Receipts		Sectors	Commodities	Labour	Capital	Sum (3-4)	Rural Employees	Urban Employees
		1	2	3	4	5	6	7
1	Sectors		102,484					
2	Commodities	71,485						
Fa	ctors							
3	Labour	23,396						
4	Capital	35,663						
5	Total (3-4)	59,059						
Ins	stitutions							
6	Rural employees			2,721		2,721		
7	Urban employees			20,675		20,675		
8	Owners of sector-							
_	specific factors				10,697	10,697		
9	Capital-owners				24,965	24,965		
10	Government	3,686	3,146					
11	Households						2,721	20,675
12	Capital account							
13	Rest of the world		39,793					
14	Total	134,230	145,424	23,396	35,663	59,059	2,721	20,675

Table A3: Social Accounting Matrix for Malaysia 1983 (Million Ringgit)

Expenditures Receipts		Owners Sectorspec. Factors	Capital Owner	Governm.	Households	Capital Account	Rest of the World	Total
		8	9	10	11	12	13	14
1	Sectors			-4,049			35,795	134,230
2	Commodities			11,015	36,459	26,466		145,424
Fac	tors							
3	Labour							23,396
4	Capital							35,663
5	Total (3-4)							59,059
Inst	titutions							
6	Rural employees							2.721
7	Urban employees							20.675
8	Owners of sector-							
-	specific factors					,		10,697
9	Capital owners						-7	24,958
10	Government				1,941			16,775
11	Households	10,697	12,886				-4,411	42,568
12	Capital account		4,071	9,810	4,168		8,417	26,466
13	Rest of the world							39,793
14	Total	10,697	24,958	16,775	42,568	26,466	39,793	523,366

Quelle: Malaysia, Department of Statistics (1988a, 1988b), IMF (1989b)

Sectors ¹ Costs	Agri-2 culture (1-6)	Mining and Crude Oil	Consump. Goods (7)	Interm. Products (8-21)	Capital Goods (22-33)	Construc- tion (34-38)	Infrastructure3 and Services (41)	Total (39,40,42-60)
Input costs	4,449	2,046	16,448	12,978	8,045	9,201	18,318	71,485
with imported inputs (in %)	29.09	28.16	20.67	33.87	58.17	37.86	26.98	
GNP at factor costs	11,224	6,920	3,852	3,482	2,697	3,674	27,210	59,059
Indirect tax less subsidies	510	209	730	694	831	37	674	3,687
Total production costs	16,183	9,174	21,031	17,154	11,574	12,912	46,202	134,230
Factor income shares								
III 70	24 24	10 72	43 72	32 51	30 38	1 69 25	49.65	
Fixed assets	30 13	72 27	45 77	62 75	39.50	25.34	35 39	
Sector spec. factors ⁴	36.63	17.01	10.50	4.74	21.13	5.41	14.96	

Table A4: Structure of Sectoral Production Costs in Malaysia 1983 (Million Ringgit)

1) Sectoral classification according to the 1983 Input-Output Table; sector numbers of the table in brackets. 2) Including forestry and fishing. - 3) Energy and water supply, commerce and transport, private and public services. 4) Natural resources, infrastructure capital, human capital.

Source: Calculated on the basis of Malaysia, Department of Statistics (1988a, 1988b, 1987, 1985) and Pyatt/Round (1984)

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Sector	Intermed. Inputs		Private Con	Public sumption			Gross Invest.	Domestic Absorpt.			Imports Custom	Domestic s Consumpt.	Exports Less Exp.	Total Domestic Broduction
origin ¹⁾	V (1)	+	C (2)	+	G (3)	+	Z (4)	=	Q (5)	-	EM (6)	= DD + (7)	ED = (8)	XD (9)
<u> </u>	·······		<u></u>					in N	fillion R	ingg	it	····· ,	, ,	
1 .	8,867		3,472		-		1,439	1	3,778		1,539	12,239	3,944	16,183
2	5,719		22		-		541	(6,282		2,254	4,027	5,147	9,174
3	10,897		9,042		-		-390	19	9,549		5,090	14,459	6,572	21,031
4	16,584		4,834		-		1,029	2	2,447	•	10,587	11,860	5,294	17,154
5	9,383		5,264				10,056	24	4,702		17,845	6,857	4,717	11,574
6	1,265		-		-		11,706	12	2,971		59	12,912	-	12,912
7	18,770		13,825		11,015		2,086	4	5,695		5,566	40,130	6,072	46,202
Total	71,485		36,459		11,015		26,465	14	5,424		42,940	102,484	31,746	134,230
								S	hares in	%		1		
	V/Q		C/Q		G/Q		Z/Q				EM/Q		ED/XD	
1	64.36		25.20		-		10.44				11.17		24.37	<u> </u>
2	91.04		0.34		-		8.62				35.88		56.10	
3	55.74		46.26		-		-1.99				26.04		31.25	
4	73.88		21.53		-		4.59				47.16		30.86	
5	37.98		21.31		-		40.71				72.24		40.75	
6	9.75		-		-		90.25				0.45		-	
7	41.08		30.25		24 .10		4.56				12.18		13.14	

Table A5: Consumption Structure in Malaysia in 1983 at Producer Prices

1) For sectoral classification cf. Table A4.

Source: Calculated on the basis of Malaysia, Department of Statistics (1988a)

