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Sectoral Price Effects of the Malaysian Economy

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ABSTRAK

Kaitan antara industri menjadikan harga sesuatu komoditi menjadi kos kepada komoditi yang lain. Matrix struktur sesebuah ekonomi boleh menerangkan kaitan tersebut. Makalah ini mengkaji kesan ke atas harga-harga sektoral ekonomi Malaysia oleh perubahan-perubahan gaji dan upah, cukai komoditi, pendapatan bukan-upah dan import perantaraan. Ia juga menyelidik sama ada perubahan harga tersebut bersebab dari isipadu nilai ditambah dan rantaian antara industri. Keputusan yang didapati megiakan soalan di atas.

ABSTRACT

The interdependence among industries makes prices of a commodity become costs to other commodities. The structural matrix of an economy may indicate such interdependence. This paper analyses the effects on Malaysian sectoral prices of changes in the salary and wages, commodity taxes, non-wage incomes and intermediate imports. It further examines whether the price changes are significantly due to the volume of added value and indusrial linkages. The results affirm the above question.

INTRODUCTION

Study on cost-price structure relationship using input-output analysis was pioneered by Leontief (1986) in 1939 when he analysed the inter-relationship among wages, profits and prices in the American economy. He asserted that the profit earned, for example, by an automobile manufacturer per unit of output equalled the difference between the selling price and total unit costs. For the economy as a whole, the cost-price structure can be viewed as a network, linking all industries such that an increase in any one output price would raise the profit margin of that particular sector and at the same time reduce profits of all sectors using the product as inputs. The study analysed the effects on output prices of changes in wage rates in all non-agricultural industries, an increase in all non-agricultural profit margins, a rise in net farm income and finally of a rise in all business taxes.

Since the seminal work by Leontief, similar methodology has been followed elsewhere including South Africa (Uliel 1976), Norway (Bjerkholt 1982) and India (Venkata 1985). Uliel (1976) answers policy questions such as to what extent an increase in salary and wages, price administration and changes in the economy's exchange rates would have on the prices of the different sectoral outputs.

Venkata (1985), on the other hand, has shown that an increase in price of one commodity would lead to a corresponding increase in the prices of those sectors using it as a major input but would not significantly affect the prices of other sectors. In particular, he showed that a 10 per cent increase in the price of sugar cane would lead to a 50 per cent rise in the price of sugar without affecting prices of other sectors. Also a 10 per cent increase in the price of cotton would lead to a 24 per cent rise in the prices of textiles.

Bjerkholt (1982) examined the effect of the price indices of private consumption, government consumption, gross investment, and gross domestic product of changes in import prices, wage rates, and selected indirect taxes and subsidies by means of macroeconomic models (detailed input-output models) of Norway. The results of the models show that a 10 per cent

increase in import prices, for instance, would increase the price indices of private consumption, government consumption and gross investment by 2.85 per cent, 1.9 per cent and 3.83 per cent respectively, reflecting the difference in import content among the three components of final demand.

A study of cost-price relationships in Malaysia in an input-output framework, to the authors' knowledge, is not available. This study, therefore, is an input-output empirical application of the relationships between costs and prices in a cost-price policy framework. The problem statement is presented in the next section, followed by a brief description of the methodology of the empirical analysis. After a report and evaluation of the empirical results the paper concludes with an overall appraisal of the findings, together with policy implications.

STATEMENT OF PROBLEM

The cost-price relationship within each industry, as described by the structural matrix of an economy, constitutes the basis for analysis. As the model uses a framework based on input-input analysis, which assumes fixed production coefficients, the long-run (supply) price of any commodity is therefore determined not by the scale of outputs, but rather by the invariant unit costs. In other words, the model does not take account of the short run (demand) variation in output. It is thus suitable for explaining the price formation in the commodities whose pricing policy follows the cost-plus rule (Zakariah 1992a).

Prices entered in the costs account (say) of the furniture manufacturers appear as revenue items in the sales acccount of saw-millers, tool-makers and scores of other suppliers. At the same time, the prices of furniture sold by the furniture manufacturers will represent an item of costs in many businesses. The cost-price structure of all the separate industries, thus, links the whole economy into a vast network.

Under the cost-plus principle the pre-determined prices of all commodities, wage rates and business taxes and net profit margins would be automatically determined for each industry. An increase in price, as in the case of sawn-timber, would raise the profit margins of the saw-milling industry but at the same time reduce those of all sawn timber-using industries. If instead of regulating prices of all commodities, the appropriate authorities prescribed wage rates and profit margins per unit of output by each producer, the application of cost-plus principle would amount to indirect price fixing, since one and only one system of prices can actually be compatible with a given wage and profit distribution. If the prescribed wage rates in one particular industry were increased, a definite adjustment of all individual prices would be required to maintain the profit margins and wage rates throughout all other industries at their original level.

Zakariah (1991) found that at the end of 1987, generally, manufacturers paid one and one third times the 1978 prices of domestic materials and imported inputs and double the price for labour. Among industries which experienced the highest rate of increase in domestic prices were the beverage, tobacco, paper print, glass, cement and other non-metallic industries. Generally, producer prices increased faster than import prices but increase in wage rates for the same time period was slower. Wage rates, however, increased more than one and a half times faster than producer and imported input prices. Among the industries which experienced rapid increases in wage rates were those in agriculture, oil palm, livestock, beverages and tobacco.

Although wage rates constituted the fastest increase, labour costs did not represent the largest proportion of the total costs. And since domestic materials constituted the largest amount of input used in the production for each ringgit worth of output produced, domestic costs accounted for the largest proportion.

This paper reveals the cost-price structure for different sectors of the Malaysian economy. Under the cost-plus pricing system, higher cost of production is usually the reason given by producers for the increased price of final output. Because the cost structure of an industry is generally unknown to the public, it is difficult to judge whether price increases do, in fact, only reflect the increases in price of inputs or whether producers are passing on to consumers price increases beyond those indicated by cost increases.

Broadly, the following analysis attempts to address the problems of cost-price relationships with the aid of input-output model. Although the calculations are applicable only to the cost

structure prevailing in 1983[1], the numerical results provide guidelines when the cost-price relationship between sectors is compared.

In a limited sense the purpose is to analyse, on the basis of input-output framework, the effects on output prices of changes in the price of (payment to) primary inputs. Primary inputs include labour, capital, land and imported inputs. Payments to primary inputs thus include wages, gross profits, indirect taxes and payments to intermediate imports.

The total payments to primary inputs in each industry equal the added value generated in that sector (wages plus profits plus indirect taxes) plus payment for intermediate imports. The cost structure of an industry is made up of the costs of intermediate inputs which consist of purchases of output of the same and other industries, primary inputs and imported inputs. Expressing each of the cost components in per unit of output value, the cost structure reflects the technical coefficient as well as the corresponding primary and imported inputs coefficients that exist in an economy. For industry j, the technical coefficient, a_{ij}, represents the amount of sector i output required to produce one unit of sector j output; while the coefficients for the primary and imported inputs, respectively, represent the amount of the primary and imported inputs required to produce one unit of sector j output. The technical coefficients for all the industries in an economy are normally presented in a structural matrix.

Using the 1983 Malaysian input-output table (Government of Malaysia 1987), the present paper analyses the effects on output prices of the 40 industries (as classified in Table 1) for a change in a) salaries and wages, b) non-wage income, c) costs of imported intermediate inputs and d) indirect taxes. Obviously, the accuracy of the results depends very much on the reliability of the published input-output table which describes the technological relationships in 1983. To reflect structural changes that have occurred, the table can be up-dated (using the RAS method) and the application of this model can be used to examine the policy implications of price effects. The present paper is an attempt to provide a cost-price relationship on the basis of the published 1983 table.

COST-PRICE RELATIONSHIP IN AN INPUT-OUTPUT FRAMEWORK

Column-wise, each sector's price must equal the total outlays incurred in the course of its production. These outlays comprise payments for intermediate inputs and added value which represents payments made to the exogenous sector[2].

The relationship for sector i is shown as:

$$P_i = \Sigma_j a_{ji} P_j + V_i \qquad (j=1,2,3,....,n) \qquad (1)$$

where P_i and V_i are price and added value of sector i, respectively. Matrix notation equation (1) can be expressed as:

$$P = A'P + V \qquad (2)$$

Where A' is the structural matrix (transpose of the Leontief A matrix) and P and V are, respectively, vectors of sectoral prices and sectoral added value. The general solution of the price equation (2) will determine the prices of all products from the added value (per unit of output) given exogenously[3] as shown in equation (3).

$$P = (I-A)^{-1}V \qquad (3)$$

Note that $(I-A')^{-1} = [(I-A)^{-1}]'$

where the elements in the transpose of the Leontief inverse matrix measure the dependence of the price of each product on the added

1. The cost structure of the Malaysian economy is represented by the structural matrix which is derived from the input-output table published by the Department of Statistics. The present paper uses the 1983 input-output table to derive the structural matrix of the economy, which is the latest input-output table available. The earlier structural matrix of the economy has been derived for the year 1978 in Zakariah (1991).
2. For further discussion of the inter-sectoral price relationship in an input-output framework, see Mathur and Bharadwaj (1967) and Zakariah (1990).
3. Using the producer price indices compiled elsewhere, Khair (1990/91) treats the price vector as exogeneous in forecasting the economy added value.

TABLE 1
Price change following 10 per cent increase in (a) all industries and (b) industry producing the commodity (per cent)

Commodities and Services produced by:	Salary and wages		Commodity taxes		Non-wage incomes		Intermediate imports	
	1(a)	1(b)	2(a)	2(b)	3(a)	3(b)	4(a)	4(b)
1. Other Agriculture	0.65	0.35	0.06	0.01	8.40	0.18	0.87	0.22
2. Rubber Planting	0.57	0.26	0.05	0.01	8.78	0.13	0.59	0.16
3. Oil Palm	1.71	0.45	0.06	0.01	7.03	0.21	1.16	0.30
4. Livestock	1.03	0.44	0.12	0.04	5.78	1.55	3.05	1.80
5. Forestry	0.79	0.50	0.14	0.02	7.80	0.22	1.25	0.36
6. Fishing	0.29	0.14	0.05	0.01	8.80	0.11	0.83	0.25
7. Mining	4.79	0.52	0.05	0.01	4.18	0.11	0.96	0.25
8. Dairy Products	1.89	0.80	0.16	0.05	4.39	1.84	3.54	0.88
9. Vegetables and Fruits	2.20	0.97	0.19	0.05	5.58	3.87	2.01	0.89
10. Oil and Fats	2.33	0.81	0.10	0.03	5.89	2.69	1.66	0.54
11. Grain Mills	1.16	0.43	0.09	0.03	5.59	4.29	3.14	0.45
12. Baker Confectionery	2.73	0.89	0.18	0.05	4.12	1.67	2.96	1.10
13. Other Foods	1.28	0.57	0.16	0.03	3.59	1.00	4.94	0.63
14. Animal Feed	1.32	0.61	0.15	0.02	2.85	0.91	5.66	0.56
15. Beverages	3.72	0.95	0.18	0.05	3.50	0.68	2.59	0.91
16. Tobacco	2.49	0.83	2.48	0.07	3.23	0.76	1.77	0.36
17. Textiles	3.40	1.28	0.25	0.06	2.19	0.63	4.13	1.04
18. Wearing Apparel	2.68	0.84	0.81	0.05	2.24	0.34	4.25	0.65
19. Sawmills	3.92	0.88	1.52	0.17	3.18	2.37	1.36	0.55
20. Furniture and Fixtures	3.86	1.52	0.82	0.42	3.25	0.43	2.06	0.59
21. Paper Printing	2.99	1.01	0.27	0.04	3.19	0.39	3.53	0.56
22. Indst Chemicals	4.99	1.19	0.15	0.03	1.14	0.30	3.70	0.67
23. Paints etc.	2.74	1.28	0.31	0.06	1.64	0.29	5.30	0.99
24. Other Chemical Prod.	3.18	1.26	0.27	0.07	2.99	0.50	3.54	0.79
25. Petrol Products	2.60	1.93	0.32	0.02	2.31	1.75	4.76	0.46
26. Rubber Processing	1.27	0.53	0.07	0.04	7.73	6.34	0.90	0.43
27. Rubber Products	2.79	0.91	0.21	0.03	4.53	0.81	2.45	0.52
28. Plastic Products	2.83	1.26	0.30	0.04	2.36	0.28	4.49	0.65
29. Glass Products	2.18	1.17	0.22	0.07	4.77	0.73	2.81	0.74
30. Cement	3.56	1.50	0.15	0.04	3.73	0.66	2.54	0.67
31. Non-Metallic	2.91	1.26	0.19	0.04	3.91	0.92	2.97	0.69
32. Basic Metal	3.62	1.95	0.18	0.03	2.39	1.48	3.78	0.65
33. Other Metal	4.60	1.05	0.29	0.05	0.69	0.25	4.40	0.90
34. Non Elec Machines	3.32	1.04	0.37	0.05	2.12	0.30	4.17	0.72
35. Electrical Machines	2.93	0.83	0.42	0.04	1.06	0.19	5.58	0.53
36. Motor Vehicles	0.90	0.33	0.89	0.10	2.49	0.35	5.70	0.74
37. Other Transport	1.26	0.45	0.25	0.03	2.95	0.25	5.52	0.52
38. Other Mfg. Prod.	2.93	1.05	0.29	0.05	2.95	0.36	3.82	0.58
39. Construction	3.77	1.39	0.4	0.14	2.50	0.56	3.30	0.87
40. Other Services	6.83	0.92	0.13	0.03	1.13	0.29	1.89	0.47

Source: Computed from the model using 1983 Input-output Table

value per unit of output. In the present analysis, the vector of added value is further broken down into salary and wages, the value of intermediate imports, commodity taxes and the non-wage value-added, all of which are derived from their respective rows in the input-output tables.

RESULTS AND DISCUSSION

The numerical measures of the quantitative relationship between price and wages, profits (i.e. non-wage income) and costs of intermediate imports are shown in Table 1.

Column 1(a) shows the magnitude of the percentage change in the price of each sector if salaries and wages in all sectors were raised by 10 per cent while profits (non-wage income) as well as other components of added value were held constant. Price of textiles (sector no. 17) will increase by 3.4 per cent if salaries and wages in all sectors were increased by 10 per cent while profit and other components of added value were held constant. The data in column 1(b) show the (smaller) price change for a particular sector if salaries and wages for that sector were increased 10 per cent and salaries and wages for all other sectors remained constant. For example, if salaries and wages in the textile sector (sector no. 17) increased by 10 per cent, while the salaries and wages for all other sectors remained the same, the price change in the output in the textile industry is 1.28 per cent. Also, prices in all other sectors would change (not shown). In other words, the data in column 1(b) illustrate what might be called the *direct* effects of the increase in salaries and wages on the price of the sector's own output.[4]

Had the 10 per cent increase in salaries and wages occurred throughout *all* sectors of the economy (profit and other components of added value remaining constant) the increase in price of the output of the textile sector would be given by the corresponding data in column 1(a), i.e. 3.4 per cent. The difference between the data in the column 1(a) and the corresponding entries in column 1(b) measures the *indirect* effects on the prices of the output of the sector concerned. That is, they measure the effect that increases in salaries and wages of 10 per cent in the other sectors would have on the price of the output of the sector concerned. In the textile sector the indirect effect therefore would be, 1.12 per cent.[4]

Columns 2(a) and 2(b) show the total and the direct price effects of a hypothetical 10 per cent increase in the commodity taxes (computed on the assumption that intermediate imports, salary and wages, non-wage value-added as well as other components of value-added remain constant). The explanation given above in regard to the differences between column 1(a) and 1(b) applies *mutatis mutandis* to column 2(a) and 2(b).

Similarly, while columns 3(a) and 3(b) represent the price effects of a change in the non-wage incomes; columns 4(a) and 4(b) represent the price effects of a change in the intermediate imports, each by 10 per cent, computed on the assumption that the values of all the other components of the value-added in all the various sectors remain the same.

THE ROLE OF VALUE-ADDED CONTENT AND INDUSTRIAL LINKAGES

The primary sectors contribute a significant proportion of the economy's total value-added. Among the most important are other agriculture, rubber plantation, oil palm, forestry, fishing and mining subsectors (See footnote 6).

In this section, the focus is on the change in sectoral output prices due to the change in the value-added of each of the subsectors. Specifically, we would like to ask what would happen to sectoral output prices if total value-added of a particular subsector were assumed to increase by 10 per cent, while value-added of other subsectors remained the same.

If the value-added of a particular subsector were assumed to increase by 10 per cent, denoted by V^*, while those of other subsectors remained the same, the vector of sectoral output prices, P^*, is represented as:

4. The definition of direct and indirect effects in the input-output cost-price analysis used in this paper is adopted from Carter (1970) and Uliel (1976). The usual definition of a direct and indirect effect of an autonomous change in added value of a particular sector on sectoral prices can be calculated using the formulation given by the model.

$$P^* = (I-A')^{-1}V^*. \quad (4)$$

Subtracting equation (4) from equation (3) gives the change in sectoral prices, ΔP:

$$\Delta P = P^* - P \quad (5)$$

$$= (I-A)^{-1}(V^* - V). \quad (6)$$

A 10 per cent increase in the value-added of the first subsector is shown as:

$$V^* - V = \begin{bmatrix} 1.1V_1 \\ V_2 \\ V_3 \\ . \\ . \\ . \\ V_{40} \end{bmatrix} - \begin{bmatrix} V_1 \\ V_2 \\ V_3 \\ . \\ . \\ . \\ V_{40} \end{bmatrix} = \begin{bmatrix} 0.1V_1 \\ 0 \\ 0 \\ . \\ . \\ . \\ 0 \end{bmatrix} \quad (7)$$

By substituting these values in equation (6), the changes in all output prices due to an assumed 10 per cent increase in the first subsector are assessed. The numerical results are shown in Table 2 as well as changes in value-added of other selected subsectors.

From Table 2, it is shown that changes in the value-added in a subsector affect the output price of the same subsector. For example, an increase in the value-added of other agriculture (sector no. 1) by 10 per cent gives a subsequent 9 per cent increase in the output price of that same sector. In the case of rubber plantation (sector no. 2), the price change is 9.2 per cent, oil palm (sector no. 3) 8.5 per cent, forestry (sector no. 5) 8.4 per cent, fishing (sector no.6) 9.2 per cent and mining (sector no.7) 8.8 per cent.

Apart from the major increase in output price of the sector concerned, the increase in the value-added would also affect other closely related industries. The increase in the value-added in the rubber plantation industries affects the rubber processing (sector no.26) and rubber products (sector no. 27) industries. The former would increase by 6.7 per cent and the latter by 1.0 per cent for every 10 per cent increase in the value-added of the rubber plantation subsector. Such effects are conceivable because the rubber-based industries are the downstream activities which use significant amounts of inputs from the rubber plantations.

Similar effects are seen in the downstream processing of oil palm (the oil and fat industry, sector no. 10, by 5.1 per cent), livestock (the dairy products industry, sector no. 8, by 2.2 per cent), forestry (the saw-milling industry, sector no. 19, by 2.8 per cent), and mining (the petroleum products and basic metal industries, sector nos. 25 and 32, by 4.0 per cent and 3.2 per cent respectively). The percentages in the parentheses indicate the increase in the output prices of the respective industries due to the 10 per cent increase in their upstream activities.

From the above analysis, one could infer that those industries which have high backward and/or forward linkages will have major impacts on output prices in key industries, for a given change in value-added. The present paper has attempted to test the above proposition by examining the impact on the total output price of the change in the value-added in each of the dairy and other food products industries. These industries are among the few key industries in Malaysia (Zakariah 1992b)[5]. The result gives the total price change of an assumed 10 per cent increase in the value-added in each of the industries as 2.7 per cent and 8.7 per cent respectively.

Comparing the above result with that of total price change of an assumed 10 per cent increase in the value-added in each of the primary subsector (Table 2) which has relatively lower linkage indices, the primary subsectors generally have a larger impact. This leads us to believe that while we may say that closely-linked industries tend to have major effects on output prices of industries for any change in the value-added of a related industry, a change in the

5 The dairy products and other food industries ranked, respectively, first and third in the forty-sector economy index of backward linkage. see Zakariah (1992b).

TABLE 2
Price change due to an assumed 10 per cent increase in selected sectors (per cent)

Sector	1	2	3	4	5	6	7	8	9	10
1. Other Agric.	9.022	0.025	0.035	0.010	0.016	0.007	0.051	0.464	0.010	0.354
2. Rubber Pltg.	0.061	9.179	0.024	0.006	0.010	0.005	0.039	0.326	0.010	0.334
3. Oil Palm	0.122	0.032	8.615	0.012	0.031	0.010	0.069	0.576	0.029	0.501
4. Livestock	0.395	0.146	0.213	4.309	0.085	0.821	0.283	2.647	0.029	1.066
5. Forestry	0.021	0.027	0.037	0.008	8.438	0.010	0.056	0.484	0.072	0.843
6. Fishing	0.017	0.021	0.029	0.005	0.012	9.202	0.041	0.386	0.005	0.277
7. Mining	0.015	0.018	0.025	0.006	0.012	0.008	8.747	0.325	0.038	0.802
8. Manufacturing	0.251	0.363	0.498	0.094	0.210	0.077	0.699	6.558	0.035	1.210
9. Construction	0.084	0.116	0.159	0.032	0.067	0.033	0.440	2.093	5.269	1.702
10. Services	0.052	0.036	0.051	0.023	0.021	0.068	0.078	0.641	0.139	8.887
Total change	10.044	9.966	9.690	4.510	8.905	10.248	10.508	14.506	5.632	15.982

value-added in the key industries in an economy may not necessarily have a major impact on sectoral output prices.

We might then ask what makes the differential impact of a change in the value-added. Comparing the total change in output prices due to the dairy products and other food industries with that of the primary industries (despite the fact that the latter have lower linkage indices) we note that they generally show larger price changes.

The differential price effects shown above are caused by the differential value-added content among industries. The ten per cent increase in added of high value-added content industries will have a greater impact on sectoral output prices compared with the same percentage change of the value-added industries. For example, a ten per cent increase in value-added of the mining industry (valued at $7,855 million) is 203 times that of the dairy products industry (valued at $39 million). However, as shown in our earlier analysis, industrial linkages play an important role in determining the sectoral output prices of a change in the value-added of an industry[6].

From the above discussion we may conclude that in the case of Malaysia, value-added content of an industry determines the total output price change of a given change in value-added significantly .

CONCLUSION

The numerical results above represent the structural interdependence between changes in payments to primary inputs and output prices of the various sectors of the Malaysian economy. These results should be considered when evaluating government policy in the following areas:

(1) The effects which an increase in salary and wages throughout the economy will have upon the prices of the different sectoral outputs. This information is important when governments prepares economic development programmes in which national targets are set. For example, if the stated policy is to increase exports (or any other form of final demand), demand for labour will increase and subsequently wages may tend to rise. The effects on domestic prices can be estimated; and this will provide an indication as to the likelihood of adverse effects such price increases will have on the exports of the various industries. The data in column 1(a) in Table 1 illustrate, for example, that the domestic cost of exports of rubber (sector No. 2) will rise by less than that for oil palm (sector no. 3) for the same given increase in salary and wages throughout the entire economy.

(2) Government policies are aimed at controlling prices on the one hand, and salary and wages, non-wage income or any other relevant

6. While dairy products industry ranked first in the economy's index of backward linkage, the mining industry ranked 37th. See Zakariah, *op cit.*

items of the value-added on the other. The data in column 1(b) reveal the price changes in sector j, which are necessary to provide an increase of 10 per cent in wages for the jth sector. Thus, if government is controlling the price of electrical machinery (sector no. 35), we know that a 0.83 per cent increase in the price of electrical machinery will enable the industry to increase employees' wages by 10 per cent.

Similar calculations show that an increase of 15 per cent in the price of electrical machinery will be sufficient to increase wages by 181 per cent provided that other non-wage incomes, cost of intermediate imports and indirect taxes remain constant.[7] On the other hand, a 15 per cent increase in the price of electrical machinery will be sufficient to increase the non-wage income (i.e. gross profit, before deducting taxes) by 789 per cent provided that wages, the cost of intermediate imports and indirect taxes do not change. Similarly, a 15 per cent increase in the price of electrical machinery will be sufficient to increase the indirect taxes by 3750 per cent, provided that wages, the non-wage income and the cost of intermediate imports remain constant.

The value-added of the chemical and petroleum products industry grew at annual growth rate of 13.5 per cent during 1981-88 (UNIDO 1992 p.89). Taking this growth rate to represent those for each salary and wages, commodity taxes, non-wage income, and intermediate imports of the industrial chemical industry (sector no.22), calculations based on data in Table 1 would indicate an increase of 2.96 per cent in prices of industrial chemicals. Similar calculations could be made for different growth rates in the value-added components, if they are known; and would be applicable to any other sector.

(3) It is possible to assess the effects of a change in the value of ringgit relative to other currencies upon changes in prices on a sectoral basis. The figures in column 4(b) show the price changes required in each sector if a devaluation of 10 per cent is to be absorbed. We see, for example, that the price of output of the major exporting industries in Malaysia (forestry, mining (including natural gas), oil and fats (palm oil), textiles, and wearing apparel, i.e., sector no. 5, 7, 10, 17 and 18 respectively) are, fortunately, the least affected by an increase in the cost of intermediate imports (ringgit devaluation). On the other hand, if government policy is to diversify exports, the domestic price of other potential exporting sectors may rise substantially owing to increases in the price of intermediate imports. This may have an adverse effect on the price of domestic output relative to the price of similar foreign products.

To be realistic, one should consider these results only as minimal price increases, i.e. in reality price will probably tend to rise higher. This is implied by the data in Table 1 which show only the increase in the unit cost and do not incorporate either the demand aspect or the market forms in which each sector operates.

(4) The relative size of a particular sector is of over-riding importance in assessing its total output price effects in the event of a change in the sector's value-added. In the case of Malaysia, the effects are particularly important to the primary subsectors of rubber plantation, oil palm, mining, forestry, livestock and fishing; together

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7 Since a 10 per cent increase in each of the salaries and wages, non-wage incomes and indirect taxes in electrical machinery industry (salaries and wages, non-wage incomes and indirect taxes in other industries remained constant), results in a direct increase in price of the industry by 0.83, 0.19 and 0.04 per cent respectively, the effects of a 15 per cent increase in price in the industry on salaries and wages, non-wage incomes and indirect taxes can be estimated by the following arithmatical calculations:

salaries and wages	non-wage incomes	indirect taxes
$\frac{150}{0.83}$	$\frac{150}{0.19}$	$\frac{150}{0.04}$
= 181 per cent	= 789 per cent	= 3750 per cent

they contribute one-quarter of the economy's added value[8]. Among the most significant subsectors is mining, which contributes about 9 per cent of the economy value-added.

Apart from the petroleum products, basic metal, motor vehicle, electrical machinery, industrial chemical and oil and fats industries, the manufacturing subsectors are not major contributors to the economy's value-added. In line with the findings of the present paper, the above subsectors should be given particular attention with regard to their changes in commodity taxes, intermediate imports, salary and wages and profits, because they may have significant effects on all output prices.

(5) Linkages among industries play an important role in determining sectoral output price effects. In Malaysia where a significant proportion of the economy is still in agriculture, an industrialisation programme will have considerable linkages with the agricultural sector. The present paper found that the agro-based industries are the ones severely affected in terms of rising output prices caused by any change in the prices of agricultural output. The agricultural sector, apart from its ability to cause significant price increases to the whole economy due to its relative size, also affects the agro-based industries which are mostly identified as the key industries of the economy[9]. This factor calls for a more serious consideration of any change in the components of the agricultural value-added or its prices, for it may seriously affect the whole economy.

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8 **Value-added of primary and selected manufacturing subsectors, 1983**

Subsectors	RM Mill.	%
Other agriculture	2,432	11.2
Rubber plantation	2,584	12.4
Oil palm	2,758	13.3
Livestock	864	4.2
Forestry	2,425	11.7
Fishing	1,782	8.6
Mining	7,855	38.1
Primary sector total	20,700	100.0
Petroleum products	2,115	8.6
Basic metal	1,458	5.9
Motor vehicles	2,231	9.1
Electrical machinery	4,430	18.1
Industrial chemicals	1,283	5.2
Oil and fats	754	3.1
Others*	12,179	50.0
Manufacturing sector total	24,450	100.0

* consists of other 24 manufacturing subsectors
Source: 1983 Input-output Tables.

9 Zakariah (1992b) has pointed out that out of the total forty sectors investigated, the first seven sectors in the ranking of backward linkage indices are the agro-based manufacturing.

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