IMPORTED INFLATION IN PAPUA
NEW GUINEA, 1972–76

NGO VAN LAM

I. INTRODUCTION

THE maintenance of a hard currency and stable money prices have been the two basic policy aims of domestic financial management in Papua New Guinea (PNG) [13, pp. 2–3]. However, the PNG economy is also highly vulnerable to international economic instability. During 1972–76, for example, total exports accounted for 41 per cent of GDP. The principal component was copper, which was responsible for about 55 per cent of merchandise earnings. The remainder was divided between coffee, cocoa, and copra (26 per cent), and several agricultural, fishery, and forestry products. At the same time imports amounted to 44 per cent of GDP, and the principal commodity groups were foodstuffs (21 per cent), manufactured consumer goods (21 per cent), and capital goods (44 per cent).[1] The degree of dependence on foreign trade is therefore very high, and with the recent acceleration of the rate of price rises throughout the industrial countries, the question of imported inflation has assumed serious policy significance in PNG. This is because the externally induced inflation may be made self-sustaining by the chain reactions from various economic units within the domestic environment.

The major transmitting channels of international inflation include higher export or import prices. However, this paper is primarily concerned with the extent to which rising unit values overseas have been communicated to the PNG economy through commodity imports. The period of analysis extends from 1972 to 1976. Inflation is simply defined as a general and persistent rise in the money prices of final output and/or intermediate input of goods and services. Since there are no data on raw material and wholesale price indices, the rate of domestic

[1] For economy of presentation and to minimize the number of footnotes and official statistical references, the data cited in this paper will not be individually specified for sources. Unless where otherwise stated, they are derived from various publications by the Bureau of Statistics and the Bank of Papua New Guinea.

inflation in PNG is, following normal practice, quantified by upward movements in the consumer price index (CPI).[2]

II. INFLATIONARY TRANSMISSION THROUGH COMMODITY IMPORTS

Merchandise imports represent a real addition to total domestic resources available for consumption and investment purposes. And to this extent, the import flow tends to exert an anti-inflationary role particularly in times of aggregate domestic expansion. However, rapidly rising import prices can be highly inflationary, especially when different economic groups attempt to avoid a fall in real income by passing on the externally induced increases in costs. Indeed it is conceivable that an exogenous rise in import prices may be magnified by the reactions of internal wage/cost pressures, resulting in a higher rate of domestic inflation.[3]

A. Transmitting Mechanisms within the PNG Economy

Overseas inflation is communicated, via commodity imports, through a number of channels to the domestic economy.[4] Firstly, higher import prices will increase domestic prices directly where imports are for final consumption. They will also induce producers of import substitutes to raise their prices without jeopardizing their competitive position. In these cases, there exist a direct and proportional (if profit markups are to remain a constant percentage) relationship between foreign inflation and the internal cost of living. The speed of such transmission can be instantaneous especially when stocks are limited. Its magnitude will, however, vary with the price elasticity of local demand, pricing practices of the import distributing and retailing sector, the scope for import substitution in favor of cheaper sources, and government intervention through variations in the exchange rate, tariff structure, and retail price controls.

The above transmitting mechanism constitutes perhaps the most important channel of imported inflation in PNG. In terms of final consumption expenditures, food, clothing, and other household items total over 67 per cent of CPI weights (Appendix Table I). Of this percentage, imports account for almost 60 per cent of the average family budget. The remaining 7 per cent is shared by locally

2 It should be noted that the CPI is only designed to measure the extra amount of income required to maintain the original standard of living, assuming unchanged tastes. Such a standard is represented by the basket of final goods and services purchased by an individual of some typical income group in the base period. Thus the CPI is far from an adequate indicator of the rate of internal inflation. It does not directly take into account input prices or the cost of government services. Besides it is not universally applicable across the various strata of domestic consumers. In addition, with the growth of incomes and the introduction of new goods and serviecs over time, consumption tastes and preferences are bound to change. The standard basket of goods and services may therefore be no longer applicable even to individuals of the same original income level.
3 See, for example, Miller [9, pp. 501–19] for a detailed analysis of domestic responses to rising import prices and the subsequent higher rates of inflation experienced by the United Kingdom during 1973–74.
4 For a discussion of some theoretical macroeconomic effects of imported inflation, see Turnovsky and Kaspura [15, pp. 355–80].

grown fruit, vegetables, and betel nuts which are generally protein deficient. Consequently, imported protein, in the form of canned meat and fish, and dairy produce, has become the *main* component of the urban diet. At the same time clothing and most other household sundries are not manufactured internally. In addition domestic demand for these essential items is also relatively price inelastic.

The heavy dependence of PNG on overseas supplies has resulted in various measures which are designed to insulate the local economy from external inflationary influence. These policy responses include the removal of import levy on five major food items, the tightening up of statutory controls of wholesale and retail profit margins on twenty-eight consumer imports, and several revaluations of the kina. Their impact on retail prices will be examined in detail later in the analysis.

The second channel of inflationary transmission is through intermediate inputs, the higher unit values of which will certainly be reflected in increased final output prices. Such a transfer is, however, indirect and the time lag tends to vary with the size of buffer stocks, the length of industrial processes, and the number of production stages. The relevant magnitude is again governed by the various price elasticities and substitution effects. However, where there exists little competition, producers can even raise prices on output which does not yet embody higher input unit values.

Imports of intermediate inputs are comparatively much less important than those of food, clothing, and household sundries in the PNG economy. Although local transport and services account for 12.4 per cent of CPI weights, the transmission of imported inflation through these activities on to the cost of living appears to be rather limited. This is due to their relatively low import content, estimated to be about 14 per cent of final prices [2, Appendixes A and B]. Besides charges for several public utilities and services such as electricity, housing rent, and education fees are not based on full economic costs. Locally manufactured cigarettes, beer, soft drinks, bread, and Navy biscuits total just under 21 per cent of CPI weighting, and their import content amounts to about 30 per cent of output value.[5] Thus, besides import prices, the inflationary impact of these industries on the cost of living in PNG also depends on the behavior of wages, industry pricing practices, and government sales taxation. In fact, the almost yearly increase in already substantial excise duties on beer and cigarettes constitutes as important as inflationary influence as rising raw material prices or wage expenses.

The third transmitting channel of imported inflation is through the mechanism of cost inflation. To begin with producers catering wholly for the domestic market are certain to lift their prices because of actual or anticipated rises in input unit values. The extent of this induced response depends primarily on the price elasticity of internal consumption. In the case of traditional food (discussed below) demand inelasticity, due to socio-cultural preferences, has been one of

---

[5] The average import content ranges from 37 per cent for alcoholic beverages, 24 per cent for tobacco and cigarettes, to 18 per cent for aerated flavored soft drinks [2, Appendixes A and B].

the key factors behind the very fast rises in market prices of locally produced or gathered vegetables, fruit, nuts, and root crops.

In this connection changes in the magnitudes and rates of wholesale and retail markups on imported commodities deserve some attention. There is evidence elsewhere that business corporations normally attempt to secure a fixed target rate of returns on investment over time [7, pp. 922–23]. However, the possibility of induced increases in profit margins, as a result of higher import prices, cannot be discounted.[6] This pricing behavior tends to occur where there are few import distributors and retailers, and few processors and producers of import-based consumers goods which command, in turn, relatively price-inelastic aggregate demand. A general attempt to enlarge or even maintain percentage import mark-ups will be inflationary, directly or through secondary spirals in the domestic cost structure.

The domestic manufacturing industry, and the import wholesaling and retailing sector of basic commodities are far from competitive in PNG. There are only two cigarette manufacturers and breweries for the whole of PNG. Bread and biscuits, and soft drinks are locally baked or made. There are four bakeries and soft-drink/cordial bottlers in Port Moresby, and one or two each in other major urban centers. Similarly, the importing activity in PNG is heavily dominated by three long-established, transnational import distributors-cum-retailers. Their individual turnover values and employment volumes are estimated by knowledgeable sources to be between fifteen to twenty times greater than the relatively few other "independent" importers and retailers in the business. Only in one provincial city is their individual market share comparatively smaller than that of a local trading firm, which has enjoyed substantial and customary patronage.

However, the gross values of import business associated with the three distributors and retailers do by no means indicate accurately their long-established commercial dominance in PNG. This is because these firms have developed a well-integrated vertical and horizontal business structure over time. They have equity ownership and subsidiaries in Australian companies producing goods and services for PNG and other South Pacific countries; in shipping lines between Australia and PNG; in stevedoring, customs, insurance, warehousing, and forwarding services; in coastal shipping services and repairs; in agricultural plantations, major secondary industries and service activities in PNG, etc.

As a whole the manufacturing, and import wholesaling and retailing sectors in PNG can be regarded as highly oligopolistic. Such an industrial structure tends to affect both the magnitude and variability of profit margins during the processes of inflationary transmission. However, monopoly powers can be exploited to gain greater returns not only to business but also to labor unions. Indeed, the behavior of wages is of crucial importance in the process of induced cost inflation. If the wage bargaining procedure is centralized and/or characterized by the application of CPI clauses and the maintenance of sectoral relativities, then a general increase in the wage level in response to higher import prices is

---

6 Indeed, Evans observes that much of postwar inflation in the United States can be adequately explained only with reference to profits inflation [6, p. 293].

inevitable. If this results in still rising domestic prices, another round of wage increase is in the making. The operational significance of this mechanism depends on the proportion of basic wage subject to CPI adjustments, the speed and magnitude of indexation, the extent of the flow-on and the ability of affected industries to pass on greater production costs in the form of higher prices, and government policies on income and wages. However, in so far as labor costs form an important component of final prices, imported inflation may set off a chain of wage explosion which would sustain or, if fueled by expanded profit markups, magnify the domestic inflationary processes.

In Papua New Guinea, the method of both urban and rural wage formation is relatively centralized in that a very high proportion of the work force is under the determination of the Minimum Wages Board and other wage fixing bodies. The government has no direct control over wage setting except indirectly through its submission to the Wages Board. Owing to various uncertainties and problems associated with emerging constitutional and economic independence, the government did not make any submission before 1976. Consequently, the various Minimum Wages Boards, lacking a comprehensive perspective on the national development strategy, were heavily biased towards the welfare needs of workers and the capacity of employers to pay [10, pp. 1–2].

The minimum urban wage, mainly applicable to labor in the service, processing, and manufacturing sector, was raised from K11.50 in 1972 to K25.80 per week in 1975. Similarly, the corresponding rural wages for non-primary (primary) workers were K5.90 (K5.90) and K10.75 (K8.90). In particular there were rapidly increasing import prices, and hence the cost of living during 1973–74, and booming copper, copra, and cocoa earnings during 1974–75. Mainly as a result minimum wages were almost doubled, although the CPI increased by only 36 per cent, over 1973–75. In its first submission to the Minimum Wages Board in 1976, the government strongly urged wage restraint on various economic grounds. These included the inability of the economy to absorb the very substantial rises in real wages in the past few years. Consequently the rate of wage increase has greatly moderated, and between July 1975 and March 1977 the minimum urban award went up from K25.80 to just K28.08 per week.[7]

The wage explosion in 1973–75 was certainly induced by higher import prices. It exerted in turn an appreciable impact on the costs of traditional food, domestically manufactured consumer goods, and internal transport and services. The extent of such wage-generated inflationary transmission will be analyzed in detail when the price behavior of these CPI categories is examined later on.

B. *Procedure of Analysis*

From the brief outline of some of the direct and indirect channels of imported inflation above, it is evident that the process of transmission extends over different time paths and generates various industrial, institutional, and policy responses, some of which operate in an offsetting manner. This renders the

[7] The corresponding rural wages for non-primary (primary) employees are K11.38 (K9.90) per week.

empirical separation and measurement of each transmitting mechanism or effect extremely difficult. On the other hand, it is also evident that the most readily determinable impact of an increase in external inflation and import prices is a rise in the overall domestic cost of living. Higher import unit values and the internal rate of inflation, as indicated by the CPI, thus lend themselves to empirical quantification.

A number of approaches is available. The most straightforward method involves correlating movements in the import price index (MPI), preferably on a c.i.f. basis, with those exhibited by the domestic wholesale and retail import price index, and the CPI. Although the estimated coefficients of correlation can provide a useful reference point for further disaggregated analyses, this method cannot establish causation. Besides, it requires far more data than are currently available in Papua New Guinea. Index series on wholesale and retail prices are not compiled. The CPI has been available since 1971 but the MPI, set up by the Reserve Bank of Australia on an f.o.b. valuation, was discontinued at the end of 1973. Lastly, the reliability of correlation analyses rests critically on the MPI which may be far from accurate. Because of the sheer enormity of the job, the construction of such a series is beset with serious problems.[8] Besides the price movements of the relatively fewer goods that enter directly into the CPI are certainly masked by the overall variation in prices of more important capital items.

Another way in which the impact of imported inflation can be gauged is by means of the import content estimates derived from an input-output table, which is available for eleven and sixty-eight activity groups in PNG during 1970 and 1972–73 respectively.[9] This approach provides some useful ideas concerning the general impact of imported inflation on the prices of the whole range of domestic output. However, only a very small proportion of this production enters directly into the CPI. Besides being a highly aggregated indicator, which summarizes detailed relationships between imports, inter-industry demands, and final expenditures, import content estimates also suffer from other weaknesses. It cannot be assumed that prices of home goods will rise by the same amount or proportion as the increase in import prices. Some producers may adopt a markup rule which will widen profit margins with any upward movements in overseas prices. Others may be more dependent on local demand and are prepared to accept a relative compression in their margins. Moreover, the use of the average, instead of the marginal, import content tends to introduce serious estimation biases. It is well known that the composition of marginal expenditure to its total is far from proportional. A reduction in real income exerts a greater impact on the consumption of luxuries rather than on food, tobacco, and daily transport. Similarly, there is a divergence between the average and marginal proportion of final demand

8 These include the arbitrary selection of commodities and price sources to be incorporated, the incompatibility among various quantity units, the inability to take account of quality changes, new commodities, dumping and transfer pricing practices, the use of proxies where source data are not available, the inherent statistical biases of index number construction itself, etc.

9 See Parker [14, pp. 363–80] and Baxter [2, Appendixes A and B].

met from imports. Lastly, the average import content is bound to change over time, especially when the economy is on an expansionary path with newer products and technologies being constantly introduced.

The method adopted in this study is to trace variations in the landed costs of those individual imported commodities which constitute an important component of the CPI. Such changes will then be compared with movements in the retail prices of corresponding import items to determine relative rates of inflation. This essentially disaggregated approach is generally regarded as vital in the analysis of the transmission of overseas inflation to final consumer expenditures [1, pp. 1– 17]. There are 157 items in the cost of living index of the typical national public servant in the five major towns of PNG.[10] Individual imports and domestic goods and services are selected on the basis of relative importance in the CPI weighting.[11] The combined share of specified items both externally and locally produced, under consideration in this study totals 87.2 per cent of CPI weights (Appendix Table I). Of the goods and services which account for the remaining 12.8 per cent, it is assumed that their prices behave in the same fashion as those of the selected commodities and services in the same CPI categories.

Import unit values are derived from six-digit quarterly trade data which, following Australian practice, are recorded in Australian dollars on a f.o.b. basis. Since the analysis import data covers only the period from 1972 to the end of June 1976, no adjustments for exchange rate variations are necessary.[12] Modifications to import unit values to take account of changes in freight and insurance charges, and customs and excise duties have, however, to be made. The latter can be most accurately determined from readily available custom and excise schedules. Estimates concerning the former are much more difficult and must therefore be regarded as an approximation only. Apart from the scarcity of accurate data, shipping and insurance rates depend on several other factors besides the nature, weight, value, medium and schedule of shipping, vessel availability, ports of call, etc.

The services adjustment procedure is as follows. Enquiries with major insurance brokers in PNG reveal that the premium for general cargo "rarely" falls below 0.4 per cent or exceeds 4.0 per cent of the insured value. Other informed sources indicate a "general" insurance rate of between 1.5 and 2 per cent. The *higher* rate of 4 per cent is used to modify import unit values to make sure that the impact of imported inflation will not be underestimated. Adjustments for freight charges are based on the *weighted* average cargo rate per ton of shipment be-

---

[10] These towns, with their percentage weights in parentheses, are Port Moresby (42), Lae (23), Rabaul (17), Madang (11), and Goroka (7). For relevant details, see Department of Labour [12].

[11] The three major exceptions are meat, women's frocks, and textile piece goods, each of which accounts for 1.3, 0.6, and 0.6 per cent of CPI weighting respectively. Meat is retailed in five different cuts and this renders it impossible to identify them from import data. The import quantities of frocks and piece goods are not consistently specified and/or given and thus, it is not possible to derive the relevant unit values.

[12] The kina remained at par with the Australian dollar until July 1976. The dollar was legal tender in PNG until the end of 1975.

tween sydney/Brisbane and major ports in Papua New Guinea.[13] This particular schedule is selected for two reasons. Firstly, only data on general cargo rate are available over a reasonable length of time. This freight charge is likely to under-state the shipping costs of refrigerated cargo such as frozen chicken or butter. However, these items account for less than 2 per cent of final consumer ex-penditures. Secondly, a very large proportion of commodity imports that enter into the CPI comes from Australia. The major exceptions, which include canned fish, tea, lighting kerosene, and manufactured cotton and textile articles, average only about 9 per cent of final consumption.

As the rates of change in commodity unit values are not at all even or uniform, the *relative contribution* of each CPI category to the total loss of domestic purchasing power must be derived. This is done by dividing the product of the quarterly retail price movements of every group and its own weight by the sum of all six products, with the result being expressed as a percentage. Thus a faster rate of price increases exhibited by a particular category, relative to those of other groups, will raise its proportionate contribution to the total inflationary change which, over 1972–76, amounted to 64 per cent (Appendix Table III).

III. PRICING BEHAVIOR OF COMMODITY IMPORTS

A. *Trends in Retail Import Prices*

The prices of imported food, clothing and other household items, which in-creased by 62 per cent between 1972 and 1976, exhibited two distinct develop-ments. Firstly, from 1973-Q3 to 1974-Q2, higher overseas inflation was closely reflected by a persistent acceleration in the rate of changes in retail import prices. Initially the export price boom in Australian beef caused import unit values of canned corned meat to move upwards, by 23 per cent in the June quarter of 1973 alone, throughout the period between 1973-Q2 and 1974-Q3. This was at the same time reinforced by the worldwide inflation which pushed the retail unit values of major food imports by 53 per cent, and those of clothing and household sundries by over 23 per cent, during fiscal years 1972–74 (Appendix Table II). Consequently, the relative contribution of major imported foodstuffs to domestic inflation was boosted up to 56.4 per cent although their CPI weight was only 39.4 per cent. Secondly, between 1974-Q3 and 1976-Q4, retail import prices were comparatively more stable than the rates of change associated with other commodity categories. The relative contribution of imported goods to the total loss of consumer real income was correspondingly smaller (Tables I and II).

---

[13] This weighted rate is necessary to take into account higher freight charges for Lae, Rabaul, and Madang. The weights used are based on the tonnage discharged in these ports relative to that at Port Moresby between 1973 and September 1976. Also, changes in bunker surcharges and freight rates, which totalled seventeen times between March 1973 and September 1976, can take place any time during the year. Such variations have to be redistributed throughout the year in the computation of the weighted yearly freight rate for general cargo. If the change is effective after the fifteenth day of the month, the new charge is assumed to be applicable only from the following month.

TABLE I

RELATIVE SHARES OF VARIOUS COMMODITY GROUPS IN TOTAL DOMESTIC INFLATION, 1972–76 (%)

Group	1972 to 1976			
	Weights	(a)	(b)	
1	7.2	12.1	12.1	
2	20.7	15.5	11.1	
3	39.4	46.1	46.1	
4	7.2	4.6	4.6	
5	13.1	11.0	11.0	
6	12.4	10.7	10.7	
Total	100.0	100.0	95.6	

Group	1972 to 1976-Q2			
	(a)	(b)	(c)	(d)
1	12.2	12.2	12.2	12.2
2	14.6	9.9	14.6	9.9
3	48.0	48.0	58.0	58.0
4	4.3	4.3	3.7	3.7
5	10.6	10.6	12.8	12.8
6	10.3	10.3	10.3	10.3
Total	100.0	95.3	111.6	106.9

Group	1973-Q3 to 1974-Q2			
	(a)	(b)	(c)	(d)
1	11.6	11.6	11.6	11.6
2	11.4	5.2	11.4	5.2
3	56.4	56.4	68.7	68.7
4	3.2	3.2	4.9	4.9
5	6.3	6.3	4.3	4.3
6	11.1	11.1	11.1	11.1
Total	100.0	93.8	112.0	105.8

Group	1974-Q3 to 1976-Q2			
	(a)	(b)	(c)	(d)
1	11.3	11.3	11.3	11.3
2	15.3	11.6	15.3	11.6
3	47.1	47.1	54.7	54.7
4	5.0	5.0	3.7	3.7
5	12.0	12.0	15.6	15.6
6	9.3	9.3	9.3	9.3
Total	100.0	96.3	109.9	106.2

Sources: Computed from data supplied by the Bureau of Statistics; and Appendix Tables II and III.

Notes: 1. Group 1=locally grown foodstuffs, Group 2=domestically manufactured commodities, Group 3=major food imports, Group 4=minor food imports, Group 5=imports of clothing and household sundries, and Group 6=local transport and services.

2. (a)=Based on retail import price index, including excise duty on group 2. (b)=Same as (a) but excluding excise duty on group 2. (c)=Based on import price index for group 3, 4, and 5 only; including excise duty on group 2. (d)=Same as (c) but excluding excise duty on group 2.

TABLE II

QUARTERLY SHARES OF VARIOUS COMMODITY GROUPS
IN TOTAL DOMESTIC INFLATION, 1972–76

(In percentage; 1972-Q1=0)

Group	1	2	3		4		5		6	Total	
1972-Q2	10	14	81	(102)	−5	(−5)	0	(−8)	0	100	(113)
Q3	48	14	52	(74)	−14	(−3)	0	(14)	0	100	(147)
Q4	48	24	23	(55)	−6	(−3)	7	(18)	4	100	(146)
1973-Q1	35	16	16	(61)	−3	(−1)	3	(0)	33	100	(144)
Q2	23	15	28	(62)	−1	(3)	5	(3)	30	100	(136)
Q3	18	13	43	(67)	2	(4)	4	(2)	20	100	(124)
Q4	15	12	53	(67)	1	(5)	5	(4)	14	100	(117)
1974-Q1	12	12	54	(68)	5	(5)	7	(5)	10	100	(112)
Q2	8	10	64	(71)	4	(5)	7	(5)	7	100	(106)
Q3	10	11	60	(65)	4	(4)	8	(12)	7	100	(109)
Q4	10	12	56	(62)	5	(4)	10	(14)	7	100	(109)
1975-Q1	11	12	51	(60)	5	(4)	12	(14)	9	100	(110)
Q2	11	14	48	(55)	5	(3)	13	(17)	9	100	(109)
Q3	12	15	45	(53)	5	(4)	14	(17)	9	100	(110)
Q4	12	18	42	(52)	5	(4)	14	(16)	9	100	(111)
1976-Q1	12	18	41	(48)	5	(3)	12	(17)	12	100	(110)
Q2	12	18	41	(48)	5	(4)	13	(16)	11	100	(109)
Q3	11	18	39	n.a.	5	n.a.	13	n.a.	13	100	n.a.
Q4	12	20	37	n.a.	6	n.a.	12	n.a.	13	100	n.a.

Source: Same as Table I.
Note: Figures in parentheses indicate quarterly shares assuming constant profit margins on imports. Six-digit import data are not available after June 1976.

The rate of wage increases during fiscal year 1973–74 was comparatively more moderate than previously (Appendix Table III). Thus to what extent was the accelerated rate of domestic inflation during this period externally generated through rapidly rising import unit values, and/or domestically induced through inflated profit markups or sustained by inelastic internal demand? In addition was the reduced rate of retail price rises from July 1974 to the end of 1976 mainly the result of various anti-inflationary measures introduced or enforced more closely by the government? Firstly, the across-the-board import levy of 2.5 per cent ad valorem was removed from rice, canned beef and fish, sugar, and flour in July 1974. Secondly, price controls on 28 consumer items were tightened up in October of the same year. These regulations attempted to limit the maximum *combined gross* margins earned by the import distributors and retailers on controlled commodities to 17.5 per cent (5 items), 20 per cent (8 items), 25 per cent (12 items), 35 per cent (2 items), and 45 per cent (1 item) of the landed unit cost of imports. Lastly, the kina was revalued by 5 per cent against all currencies in July and by another 10 per cent against the Australian dollar in December 1976 so as to partly insulate domestic prices from external influence.

B. Retail Prices and Profit Margins

To evaluate these issues, import price indices for major and minor foodstuffs, and for clothing and household sundries are constructed and used to replace the respective retail price series in the calculation of relative shares in domestic inflation. Thus the results presented in Tables I and II indicate what would happen if gross profit margins, defined as the excess of retail prices over the landed costs of the corresponding import items,[14] were to remain *constant*. Two important observations can be drawn. Firstly, the loss of internal purchasing power, due to higher prices for major food imports, would have been about 21 per cent greater during 1972 and June 1976. The corresponding percentage for the subperiod from July 1973 to June 1974 was 22 per cent and from July 1974 to June 1976, 16 per cent (Table I).

It follows therefore that gross profits on consumer imports had been compressed well before the tightening up of selective import price controls in October 1974. However, the behavior of gross markups on various imported commodities was not at all uniform. Gross margins on major food items, which accounted for 66 per cent of final imports, were significantly squeezed. The ratio of import over retail price index of these foodstuffs was steadily declining from 100 to 83 between 1972-Q1 and 1973-Q2 (Appendix Tables II and III). From then on,

TABLE III

WEIGHTED GROSS MARGINS (M) ON, AND SALES VOLUME INDEX (I) OF,
VARIOUS IMPORTED COMMODITY GROUPS, 1971–76

(Margins in percentage; volume index: 1971=100)

Commod-ity Group	(3)		(4)		(5)		(5a)	
	M	I	M	I	M	I	M	I
1971	51	100	69	100	108	100	106	100
1972	53	101	66	98	135	71	138	71
1973	34	89	60	95	179	78	147	75
1974	36	93	61	102	117	91	176	93
1975	33	95	74	105	100	67	109	64
1976	35	111	75	100	106	74	117	53

Source: Computed from data supplied by the Bureau of Statistics.
Notes: 1. Gross margins are defined as the difference between the retail prices and the landed unit costs of the corresponding import items. This difference is expressed as a percentage of the import unit values, and weighted by CPI weights.
   2. (3)=Major food imports. (4)=Minor food imports, excluding sao biscuits. (5)=Imports of clothing and household sundries, excluding blouses. (5a)=Same as group (5) but excluding kerosene, a price controlled item.

[14] Thus the major difference between the import unit values so derived and the landed unit costs statutorily allowed is in the ad valorem buying commission of 2.5 per cent for Australian and New Zealand supplies and 5 per cent for other import sources. The much higher rate of insurance and, to a lesser extent, transport charges used in this paper appear to be sufficient to cover custom clearance and bank expenses, while transport costs from port to store are, from informed estimates, a relatively minor item.

it has stabilized around 82 index points. In contrast there appeared to be some successful attempt to inflate gross profits on minor food imports, and this caused their retail prices to be about 16 per cent higher than otherwise would be the case during 1972–76 (Table I). Gross markups on imports of clothing, footwear, and household sundries were definitely widened during 1973-Q3 and 1974-Q2, although they seem to have stabilized around the 1971 level of gross returns since then.

The main determinant of the voluntary compression of gross profits on major food imports, particularly between 1973–74, was certainly not attributable to higher sales volume (Table III). Rather, it was motivated by the desire to maintain turnover and overcome consumer resistance during a period when import prices were increasing twice as fast as the rate of wage rises. Indeed, with the possible exception of rice, the import quantities of all other major food items were slightly falling between 1972 and 1974. The relatively lower gross profits on food were to be partially offset by higher markups on other imports, especially clothing and household sundries. In general it can therefore be noted that the accelerated rate of domestic inflation during 1973–74 could be *almost wholly* attributed to external import cost pressures. The internal loss of real purchasing power was, however, lower than might have been due to a voluntary squeeze in gross margins on major food imports. Such a pricing behavior was, in turn, necessitated by adverse local demand conditions in response to imported commodity inflation.

The second observation concerns further markup reductions, especially on food imports, that have taken place since the second quarter of 1974. These compressions, together with the slowdown in import unit value (Appendix Table III) and, to a lesser extent, the removal of an ad valorem custom levy of 2.5 per cent on five major food imports, undoubtedly helped reduce the rate of import retail price increases and hence domestic inflation after 1974-Q2 (Appendix Table II). However, such pricing behavior also indicates that the *absolute* markup returns on imported commodities might initially have been very high.

The above remark is supported by the magnitude of CPI weighted gross earnings on the three import categories presented in Table III. Gross wholesale and retail profits can simply be termed as very substantial, especially in the early 1970s. It was noted earlier that import profit squeezes were the main factor contributing to a lower rate of domestic inflation, particularly between 1973 and 1974. This contribution could have been much greater because there was certainly considerable scope for further markup reductions. The weighted gross margins on the three import categories ranged from 41 to between 62 and 144 per cent during 1972–74, compared to the weighted legal limits from 20 to 25 per cent.

In general the almost continuous decline in gross returns on major food imports since 1974 has been primarily the consequence of regulatory import price controls. However, as already discussed, markups on minor imported food have definitely risen probably to compensate for reduced earnings on other food items. The trend of gross profits on clothing, footwear, and household sundries is not as clear-cut, although they have tended to increase slightly over the period 1972–76 as a whole (Table III). In any case, it is undeniable that returns on these items have

remained very high in absolute terms. It can be argued that such a "compensatory" pricing practice adopted by the import distributing and retailing sector is necessitated by a higher rate of loss in PNG due to spoilage, mishandling and theft, or a greater quantity of stocks being constantly carried, etc. However, it is also clear that the level of gross margins on imported items outside price controls does represent a concerted attempt to maintain as much as possible the customary high returns that have been long earned by the oligopolistic import sector.

C. *Exchange Rate Revaluations and Retail Import Prices*

More serious is the implication that the postulated stabilizing impact of an exchange revaluation, designed to offset rising import prices, may not at all materialize. The kina was revalued by 5 per cent against all currencies toward the end of July 1976 primarily to insulate domestic real income from external inflationary influence. Given the inevitable time lag required for existing stocks to be exhausted, it is too early for the exchange adjustment to be fully felt. However, available data indicate that retail prices of major food imports were declining by about 0.6 per cent per quarter during the second half of 1976. Such a movement appears, however, more likely to represent the continued trend of profit compression to comply with price control regulations, rather than a result of the kina revaluation as has been implied officially. This interpretation is supported by two facts. Firstly, retail prices on imports of minor foodstuffs, clothing and household sundries were *increased* by about 4.5 per cent in the second half of 1976 (Appendix Table II). Secondly, the kina went up by another 10 per cent against the Australian dollar in December 1976. Yet, during the first half of 1977, the retail prices of clothing and household items were increased by 4.9 per cent, and those of the all-important food component, by 1.7 per cent. This is the *same* as the rate of food price inflation for the first half of 1976 despite the variously lower rates of inflation experienced by Australia, which supplies about 66 per cent of CPI final imports, Japan, and Hong Kong during the first half of 1977, compared to the previous year.

The pricing practices of the import sector may therefore constitute a more significant determinant of the behavior of retail import prices in PNG. Indeed there exists considerable evidence in the United States and Canada that, within an oligopolistic industrial framework, commodity prices tend to be unresponsive to small variations in operating costs in general, and marginal exchange rate adjustment in particular. Companies prefer to adopt a long-term target pricing or, in the case of multinational corporations, engage in dual or transfer pricing arrangements. The margins are sufficiently large to cover expected fluctuations in running expenses or exchange rates so as to ensure output price stability [4, pp. 1165–70] [3, pp. 142–47].

IV. PRICING BEHAVIOR OF TRANSPORT AND SERVICES, AND LOCAL MANUFACTURED FOODS

The rate of price increases associated with these important groups was com-

paratively much lower than those of other categories during 1972–76. Consequently, they contributed proportionately less to domestic inflation than their total weights would indicate (Table I). In particular charges for transport and services remained very stable during the highly inflationary period of 1973–74. Such stability could be attributed to three main factors. Firstly, transport and garbage disposal rates had just been adjusted upwards at the beginning of 1973. The costs of the two other major components in this group, rent and electricity rates, were unchanged in this period. Secondly, the average import content of transport and services was relatively low, at only 14 per cent of final output value. Higher costs for machinery imports would therefore be spread quite thinly. Thirdly, domestic wage rates were lagging behind rising prices between 1972-Q3 and 1973-Q3. Wage pressures, which started to build up towards the third quarter of 1973, resulted in some substantial increases in 1974–75. Transport and service charges were therefore lifted up late in 1974 and in 1975 (Tables I and II).

The price behavior of domestically manufactured items exhibited quite similar developments. Although the retail value of these commodities rose relatively faster than those of transport and services, this was mainly due to the almost yearly increase in excise duties on beer and cigarette consumption. Indirect taxation alone lifted the overall cost of these items up by over 28 per cent during 1972–76 (Table I). Indeed it is surprising that the rate price inflation associated with locally manufactured goods was not greater between 1973 and 1974. This is because the average import content of these commodities was quite high, averaging about 30 per cent of output value. At the same time, input prices for beer and cigarette production were steadily increasing. For example, the import unit values of unmanufactured or partly processed tobacco were about 34 per cent higher between 1972 and 1974. In addition labor costs were also rising very rapidly. Yet the retail prices of beer and cigarettes, net of excise duties, were actually *lower* during the third quarter of 1972 to the end of 1974 than at the beginning of 1972.

Such a high capacity for cost absorption, especially in beer and cigarette manufacturing, could only mean that net returns on those activities were initially sufficiently large to be considerably compressed by rising cost pressures without significantly affecting final prices. This observation is indirectly evidenced by the percentages of import unit values over retail prices, minus excise taxes, of beer and cigarettes. The ratio for beer carton averaged 37 per cent and that for cigarettes, 54 per cent during 1972–74.

Higher wage costs in 1974–75, together with increases in indirect tax rates, which were especially large in 1975–76, steadily raised the rate of price inflation from local manufactured goods, and the relative share of this group in the loss of domestic real income during 1975–76 (Table II). The reduced cost absorbing capacity of beer and cigarette manufacturing is indicated by the rate of price increases of these commodities, net of excise duties. Retail prices of a cigarette packet and beer carton moved up by 31 and 18 per cent respectively, compared to only 15 per cent for general wage rate between July 1975 and 1976. It can

therefore be expected that higher cost pressures on these particular activities will be *more fully* reflected in greater retail unit values in the future.

In general it can thus be said that the price inflation associated with local manufactured commodities, transport and services during 1972–76 was primarily generated by internal cost pressures, namely, labor wages and excise duties on cigarettes and beer, and, to a lesser extent, higher import unit values. The subsequent loss in private real income would, however, have been more serious but for the insulating effect of a significant profit compression on manufactured goods, retail price controls on bread and cigarettes through prices justification procedures, and indirect government subsidies on some public services and utilities.

V. PRICING BEHAVIOR OF TRADITIONAL FOOD

To complete this discussion, it is instructive to note briefly the determinants of price inflation associated with traditional food, which accounts for only about 7 per cent of CPI weights (Appendix Table I). Producers of locally grown or gathered vegetables, fruit, and betel nuts operate in an atomistic framework, using little other inputs except their own surplus labor [4, pp. 18–20]. Yet they have been able to keep well ahead of the rate of domestic inflation. The retail prices of traditional food rose by 115 per cent, compared to 64 per cent for the CPI, during 1972–76 (Appendix Tables II and III). Indeed the terms of trade enjoyed by local growers, although rather variable, never became unfavorable relative to the prices of other goods and services, despite the very high rate of import price increases between 1973 and 1974. This commodity category thus contributed a proportionately greater share to the loss of internal purchasing power than its relative CPI weight would warrant (Table I).

The responsible factors include rising retail unit values of imports and domestically manufactured goods, increased charges for local transport and services, and more importantly, the steady expansion of the national work force, and thus food needs, within the capital city. Total public service employment, for example, was rising by almost 11 per cent per year between July 1971 and June 1973 [11, p. 332]. At the same time, Port Moresby is climatically a dry zone and soil quality within the area, relatively poor.[15] Consequently, greater food requirements were bound to force up the market prices of subsistence produce, not only because of inelastic supplies but so as to attract growers from more distant villages who had to bear higher transport expenses. Over 1962–70 for example, the quantities of traditional food produced within the Port Moresby subdistrict increased by only 20 per cent, compared to between 100 to 150 per cent available from nearby regions [8, pp. 137–39]. However, dearer food prices have also induced internal demand for import substitutes, such as rice and flour, to expand and become inelastic. This substitution effect perhaps partly explains the slowdown in market prices of vegetables, fruit, and betel nuts particularly during 1973–74.

[15] The relatively inelastic supply of traditional food is evidenced by the fact that the largest market in Port Moresby, Koki, has proved to be a sellers' market. Nearby growers are generally able to sell all of their surplus subsistence output there [5, p. 21].

Higher import prices, domestic costs, and real incomes can be expected to exert some upward pull on the market value of subsistence produce. It is surprising, however, that local growers around the capital city were also able to considerably improve their real disposable resources. Whether or not there was a conscious attempt to earn greater returns is impossible to determine from presently available information on this sector. However, it appears that producers in Port Moresby area are relatively more money conscious. Not only have they been in contact with marketing and exchange for quite a long time, but there is also a very large range of commodities to spend money on. These include the great number of nontraditional items in their daily diet and household. From the inflationary pricing behavior of these local growers an important policy implication arises. So long as employment opportunities continue to be concentrated in Port Moresby, serious upward pressures on traditional food prices will be generated constantly. Such inflationary impact can be reduced through a slowdown in the growth rate of the capital city and/or an increase in the quantities of subsistence food available to the Port Moresby area.

VI. POLICY IMPLICATIONS

The empirical evidence just analyzed indicates, on balance, that overseas cost factors constitute a more important determinant of domestic inflation in PNG during 1972–76. The scope for reducing the externally induced loss in local purchasing power is presently quite limited. Import levies on major food items were removed in July 1974. Exchange rate adjustments have been resorted to as an insulating device, although, as already noted, there exists little solid evidence of their cost-reducing benefits to the consumers. In addition substantial or frequent revaluations cannot always be relied on as they would create serious trading difficulties and uncertainty, adversely affect agricultural export earnings, generate possible balance of payments pressures through higher import demand, and may run counter to current fiscal and monetary policy settings.

Another factor which largely conditions the magnitude of imported inflation and, indirectly, the effectiveness of stabilizing exchange and tariff measures, is the size of and variability in import distributing and retailing profits. Gross margins on imported commodities are presently very large, especially if the statutorily allowable wholesale and retail markups of between 20 and 25 per cent can be taken as representing "fair" investment returns. More extensive import margin controls can be attempted but such price regulations will be widely observed only when they are effectively policed. Given the geographically very fragmented structure of the PNG retailing industry and the limited resources available for official price controls, currently totalling twenty-one officers in four regional areas, successful enforcement must be a very hard task even within the big, easily accessible urban centers.[16] Moreover, loopholes may be discovered or other

[16] Price regulations are being tightened in PNG through a system of price notifications, price justifications, and price controls. It is worth noting that there are presently about 250 annual prosecutions for price control violations. Court fines range from fairly nominal

trading tactics devised so as to evade official intervention. Since the major import distributors have subsidiaries or head offices abroad, the manipulation of transfer prices of goods and services traded between affiliates appears to be a real possibility.

Given these problems, it may be desirable to set up a statutory trading corporation which can competitively, and hence indirectly, control wholesale and retail margins through direct overseas imports and sales to local customers. Such a company can specialize in a limited number of *non-* or *less perishable* goods which command substantial weights in the CPI regime. These include rice, canned beef and fish, tinned milk, sugar, flour, coffee, and tea. These items account for almost 40 per cent of the national family budget and amounted to over K35 million in import values during 1975–76. Sales distribution can be made from one or two central warehouses in major urban areas, initially by mobile trading vans or appointed agents at local markets or villages.

Without a detailed feasibility study, it would be highly pretentious to discuss anything but the most generalized, salient features of the above proposal. The suggested corporate setup would help promote the realization of the first objective within the Eight National Aims through the gradual development of small-scale, national-owned retail trading activities, which has long been absent. It should certainly reap significant economies of scale in bulk ordering with international suppliers or in switching to cheaper sources, and in negotiating to hold down c.i.f. charges or overseas prices. It would also enjoy lower overhead costs by virtue of centralized storage and stock flow control facilities. And if these help holding general retail prices on major food items, the rate of changes in the CPI would certainly slow down. Such a development would, in turn, produce far-reaching consequences on wage and cost structures as factor incomes in PNG are to be fully indexed to upward movements in the cost of living until March 1980.

VII. CONCLUSION

In sum, domestic inflation in PNG was initiated by rapidly increasing traditional food prices, as a result of higher demand relative to inelastic supplies, early in 1973 and then aggravated by the worldwide inflation and commodity export boom during 1973–74. These developments were partially responsible for the explosion in real wages and salaries between 1973 and 1975, which in turn helped finance aggregate consumption demand and push up the costs of local manufactured goods, transport and services.

A more noticeable feature is that domestic producers of vegetables, fruit, and betel nuts were able to more than protect their real purchasing power throughout 1972–76. In contrast there was some markup compression, both voluntary and statutorily enforced, within the manufacturing industry and the import sector.

---

amounts of K20 to K30, although there are some heavier penalties for repeated violations the frequency of which is not known. Data and information are supplied by the Department of Finance.

Such a profit squeeze and, to a lesser extent, other anti-inflationary exchange and tariff measures resulted in a smaller loss of real incomes than otherwise would be the case.

It is also evident that the absolute level of gross margins on imported commodities, particularly on noncontrolled items, has been very substantial. Such high profit markups can, however, be indirectly reduced through the proposed statutory trading corporation. By increasing the degree of long absent competition within a highly oligopolistic activity and through other economies of scale, the suggested corporate setup would help lower retail import prices and generate valuable employment, management, and investment opportunities for the national public.

REFERENCES

1. BARKER, T. S., and LECOMBER, J. R. C. "The Import Content of Final Expenditures for the United Kingdom, 1954–72," *Bulletin of the Oxford University Institute of Economics and Statistics*, Vol. 32, No. 1 (February 1970).
2. BAXTER, P. F. *Input-Output Matrix for Papua New Guinea, 1972–73* (Port Moresby: Institute of Applied Social and Economic Research, 1977).
3. DUNN, R. M. Jr. "Flexible Exchange Rates and Oligopoly Pricing," *Journal of Political Economy*, Vol. 78, No. 1 (February 1970).
4. ECKSTEIN, O., and FROMM, G. "The Price Equation," *American Economic Review*, Vol. 58, No. 5 (December 1968).
5. EPSTEIN, T. S. "Buyers and Prices at Indigenous Produce Markets in TPNG," *Industrial Review*, Vol. 7, No. 2 (July 1969).
6. EVANS, M. J. *Macro-economic Activity* (New York: Harper and Row, 1969).
7. LANZILLOTTI, R. F. "Pricing Objectives in Large Companies," *American Economic Review*, Vol. 48, No. 5 (December 1958).
8. McCULLOUGH, A. R. "Koki Market in Port Moresby," *PNG Agricultural Journal*, Vol. 22, No. 2 (August 1971).
9. MILLER, M. H. "Can a Rise in Import Prices Be Inflationary and Deflationary?" *American Economic Review*, Vol. 66, No. 4, (September 1976).
10. Papua New Guinea. "Submission to the Minimum Wages Board, 1977," mimeographed (1977).
11. Papua New Guinea, Central Planning Office. *Programs and Performance, 1975–76* (Port Moresby: Government Printer, 1975).
12. Papua New Guinea, Department of Labour. *Income and Expenditure Survey of Local Public Servants—July 1970*, 3 Vols. (Port Moresby: Department of Labour, 1971).
13. Papua New Guinea, Minister for Finance. *Budget Speech, 1976–77* (Port Moresby: Government Printer, 1976).
14. PARKER, M. L. "An Inter-Industry Approach to Planning in Papua New Guinea," *Economic Record*, Vol. 50, No. 3 (September 1974).
15. TURNOVSKY, S. J., and KASPURA, A. "An Analysis of Import Inflation in a Short Run Macro-economic Model," *Canadian Journal of Economics*, Vol. 7, No. 3 (October 1974).

APPENDIX TABLE I

MAJOR COMMODITY GROUPS AND RELATIVE WEIGHTS IN THE CONSUMER PRICE INDEX

	(Weighting in percentage)
1. Locally grown foodstuffs	7.2
Sweet potatoes	(1.7)
Bananas, cooking and eating	(1.4)
Taro	(1.3)
Betel nuts	(0.8)
Tapioca	(0.6)
Pumpkin tips	(0.4)
Others	(1.0)
2. Domestically manufactured commodities	20.7
Cigarette packet	(6.0)
Beer carton	(4.5)
Bread	(4.5)
Soft drinks	(2.4)
Navy biscuits	(1.6)
Beer, middy glass	(1.1)
Others	(0.6)
3. Major food imports	39.4
Rice	(13.5)
Canned corned beef	(9.1)
Canned mackerel pike	(5.9)
Sugar	(4.3)
Evaporated milk, unsweetened	(2.6)
Flour, plain and self-raising	(1.7)
Tea	(1.0)
Others	(1.3)
4. Minor food imports	7.2
Fresh butter	(0.9)
Frozen chicken	(0.8)
Instant coffee	(0.3)
Biscuits, nice and sao	(0.3)
Eggs	(0.2)
Onions	(0.2)
Potatoes	(0.1)
Powdered milk, full cream	(0.1)
Others	(4.3)
5. Imports of clothing and household sundries	13.1
Cotton shorts	(3.4)
Shirts, white or sport	(2.3)
Cotton blankets	(0.2)
Blouses	(0.1)
Rubber thongs	(0.1)
Lighting kerosene	(1.0)
Laundry soap	(0.8)
Toilet soap	(0.1)
Others	(5.1)

6. Local transport and services		12.4
PMV and bus fares		(5.1)
Rent		(4.0)
Electricity charges and rates		(1.3)
Theatre admission fees		(1.0)
Garbage disposal costs		(0.4)
Others		(0.6)
Total weights of specified items		87.2

Source: Data supplied by the Bureau of Statistics.

APPENDIX TABLE II

RETAIL PRICE INDICES, 1972–76

(Base: 1972-Q1 = 100)

	Commodity Group					
	(1)	(2)	(3)	(4)	(5)	(6)
1972	109	101	102	98	100	100
Q1	100	100	100	100	100	100
Q2	102	101	103	99	100	100
Q3	110	101	102	97	100	100
Q4	123	104	102	97	102	101
1973	133	108	112	100	104	121
Q1	135	106	103	97	102	120
Q2	126	106	106	99	103	120
Q3	132	108	114	103	104	121
Q4	139	111	126	103	108	122
1974	150	120	156	122	123	123
Q1	145	115	137	117	115	122
Q2	141	120	163	121	120	122
Q3	155	122	163	124	126	122
Q4	161	124	161	128	131	125
1975	184	138	161	136	151	138
Q1	175	128	161	130	142	135
Q2	176	134	162	135	149	136
Q3	185	139	160	139	156	140
Q4	199	152	163	142	159	140
1976	205	157	164	148	161	162
Q1	203	154	163	145	157	157
Q2	201	154	165	146	161	159
Q3	202	159	164	149	163	167
Q4	215	163	163	151	163	167

Source: Constructed from data supplied by the Bureau of Statistics.

APPENDIX TABLE III

IMPORT PRICE INDICES, CONSUMER PRICE INDEX (CPI) AND
MINIMUM URBAN WAGES INDEX (MWI) 1972–76

(Base: 1972-Q1=100)

	Commodity Group				CPI	MWI
	(3)	(4)	(5)	Weighted Total		
1972	108	98	104	106	102	122
Q1	100	100	100	100	100	100
Q2	108	98	98	105	102	100
Q3	112	97	107	109	103	115
Q4	112	96	112	110	103	144
1973	137	110	104	127	110	158
Q1	124	98	100	116	105	144
Q2	127	106	104	119	106	144
Q3	142	114	103	130	111	153
Q4	156	123	110	142	118	172
1974	189	133	139	171	136	196
Q1	171	130	116	154	125	172
Q2	193	136	120	170	138	172
Q3	197	133	155	180	139	188
Q4	196	135	164	182	141	250
1975	201	136	190	191	150	304
Q1	205	138	175	190	145	285
Q2	198	131	192	189	148	285
Q3	199	136	197	191	151	322
Q4	204	140	196	195	157	322
1976	200	142	204	194	162	311
Q1	200	139	206	194	159	322
Q2	201	145	202	194	161	322
Q3	n.a.	n.a.	n.a.	n.a.	163	340
Q4	n.a.	n.a.	n.a.	n.a.	164	340

Source: Constructed from data supplied by the Bureau of Statisitcs and the Department of Finance.