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PROSPECTS OF INDUSTRIALISATION AS A STRATEGY FOR ECONOMIC DEVELOPMENT IN PAPUA NEW GUINEA

P.A.S. Dahamayaka

and

H.G. Mannur

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INTRODUCTION*

Ever since Adam Smith wrote *Wealth of Nations*, in 1776, increase in material abundance has come to be regarded as the most important goal of economic activity. Today this goal is referred to as economic development and its successes and failures are measured by the rates of economic growth.

Industrialisation is so often considered an essential vehicle of economic development that the terms 'industrialisation' and 'economic development' are sometimes treated as synonyms. This tendency to equate industrialisation with economic progress has led many less developed countries (LDCs) to regard manufacturing industry as a dynamic force which is uniquely capable of transforming economies from a state of underdevelopment and poverty to that of richness and affluence. Even Karl Marx remarked that the industrially developed countries of the world show, to the less developed countries, the image of their own future.

The arguments for industrialisation in LDCs are usually made along the following lines:

(a) The present-day, developed countries of North America, Western Europe and Japan have all achieved economic success, which is attributable largely to their success in industrialisation.

(b) In more recent years, the economic miracles performed by the so-called newly industrialising countries (NICs), particularly by the four little tigers -- Singapore, Hong Kong, Taiwan and South Korea -- also prove the point that industrialisation is the recipe for economic prosperity. The most rapidly growing developing countries have been those which have achieved the most efficient and rapid growth in manufacturing industries (Hughes 1980). These historical experiences confirm the fact that industrialisation is a key to achieving economic development.

(c) The supposed necessity of industrialisation to achieve higher levels of income is also based on the 'natural inferiority' of agriculture. Agriculture suffers from diminishing returns to scale and greater market uncertainties. Countries which specialise in the production and export of primary goods confront lagging export demand as well as instability and uncertainty in export earnings.

Dr. P.A.S. Dehanayake is Head, Economic Studies Division, The National Research Institute and Dr. M.G. Abeykur is Associate Professor of Economics, University
These countries suffer adverse and deteriorating terms of trade for their export commodities. On the other hand, by virtue of the fact that manufacturing industries enjoy relatively better returns to scale, as well as rising consumer demand and more stable market conditions, the industrialised countries enjoy favourable terms of trade, expanding export demand and growing export earnings.

(d) The excessive pressure of population on land and high population growth rates, which characterise many of the LDCs, compel them to generate economic activities and employment opportunities outside the agriculture sector. Industrialisation, therefore, is the only way of absorbing surplus population and of relieving agriculture of its population pressure.

Industrialisation in the Western countries was facilitated by scientific and technological revolutions, the emergence of Sempeterian entrepreneurship, agricultural surpluses and the formation of industrial and merchant capital. It was also facilitated by the spread of colonisation in which the economic interests of the imperialist countries dominated. The spread of colonialism and the development of capitalism created a 'World market' in which the LDCs supplied raw materials and minerals and absorbed manufactured goods produced in the industrial workshops of the Western world. While the industrial revolution progressed in the mother countries, the colonial dependencies experienced more and more economic difficulties.

After many of the LDCs achieved independence, industrialisation became a state-sponsored activity. Some LDCs, notably in South Asia and South America, followed the path of industrialisation based on the more inward-looking, import-replacement strategies, while others, particularly those in South-East and Far-East Asia, adopted the more outward-looking, export-promotion strategies. The import-replacement strategies stumbled, while those who pursued the export-promotion strategies succeeded. Modelled on Japan, the NICs became industrialised and are fast breaking into overseas consumer markets. The four NICs are now the models for other LDCs to emulate. Newcomers in Asia -- Thailand, Malaysia, Philippines and Sri Lanka -- are already doing well. Industrialisation in these countries is facilitated by their low wages and foreign capital is attracted by their cheap, abundant and trainable labour forces. They have increasingly achieved competitiveness and captured markets in the Western world. They welcome foreign investment with open arms and many of them offer generous 'tax-holidays', wage and infrastructure subsidies, and duty-free, tax-free and union-free export-processing (or free trade) zones.

As industrialisation was a key factor in transforming the economies of the NICs and a few other LDCs into rapidly growing ones, it is assumed that industrial development, at least to some degree, would be essential for faster economic development of those LDCs such as Papua New Guinea, which
are currently almost entirely dependent on primary production. This paper examines the scope, policies and future prospects of industrialisation in Papua New Guinea.
The Economy

Both geographically and population wise, the economy of Papua New Guinea is still one of subsistence agriculture, even though that sector's contribution to national income is no more than 30 percent. A large proportion of the population -- about 60 percent -- is dependent on subsistence farming.¹

Nevertheless, Papua New Guinea has been enjoying a level of per capita income which is relatively better than that of many developing countries. This is because the country is endowed with rich natural resources -- both renewable and non-renewable -- some of which are being presently exploited. Most of the mineral resources are yet to be exploited. The resources so far exploited -- gold, copper, plantation crops and forest products -- provide the country with a substantial income which ought to be capable of supporting a satisfactory standard of living. Unfortunately, however, the social indicators do not reflect the existence of a level of social development that is commensurate with the level of per capita income.²

The main sources of income in Papua New Guinea are those economic activities which are centred in the primary produce sector. Copper and gold mining bring the largest export income (53 percent in 1987), with plantation crops -- coffee, cocoa, coconut and oil palm -- and forest products accounting for the rest; there being hardly any industrial exports. In the distribution of Gross Domestic Product (GDP), agriculture dominates with about one-third share, followed by mining with 16 percent, and manufacturing as a sector remaining rather small with less than 10 percent. These sectoral shares have remained more or less the same for the last 15 years, except for the mining sector's share which has improved marginally in recent years (see Table 3).

¹ Subsistence farming constitutes food gardening and fishing largely for home consumption. The majority of these people increasingly sell part of their produce in local markets and also have a few cash crop trees such as coffee, cocoa or coconut.

² Papua New Guinea's per capita income and social indicators in 1982 were:

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GNP per capita US$</td>
<td>820</td>
</tr>
<tr>
<td>Life expectancy at birth (year)</td>
<td>53</td>
</tr>
<tr>
<td>Infant mortality rate (per 1,000)</td>
<td>99</td>
</tr>
<tr>
<td>Literacy rate (1980) (%)</td>
<td>32</td>
</tr>
</tbody>
</table>

The overall growth performance of the economy since independence has been rather unimpressive. During the period 1976-1984, the annual average growth rate of real GDP is estimated to have been about two percent (Goodman et al. 1985:34), which, with a population growth rate of approximately 2.3 percent, gives a negative growth rate for real per capita GDP.

Unemployment remains fairly high at about 13 percent in urban areas and even higher in rural areas. The overall unemployment rate could be as high as 16.6 percent and still higher if underemployment and concealed unemployment, which seem to exist in the rural sector, are taken into account. The unemployment situation seems to be worsening, with an estimated addition of about 40,000 to the labour force each year. Only about 10 percent of these people will have the chance of employment in the formal sector (ibid.).

With general open-door characteristics of free trade and free enterprise, import dependency (about 55 percent of the GDP), has been fairly high compared with many developing countries. About 30 percent of the imports constitute consumer goods. With the gradual monetisation of the large subsistence sector, marginal propensity to import seems high, and the tendency for imports (particularly consumer goods) to rise rapidly in the future, looks strong. The export sector, although confined to primary products, has grown so much in recent years, largely due to increased exports of gold and copper, that the large trade deficits which have been a common feature in the past have turned into surpluses in 1985 and 1986. However, the balance on current account continues to be in deficit due to large invisible payments.

Papua New Guinea still depends heavily on skilled, expatriate labour (about 10 percent of the country’s labour force) which is recruited in the international labour market on internationally comparable wages and other service conditions. High remuneration of the expatriate personnel

3 For further details see National Manpower Assessment: 1982-1992, Department of Finance and Planning, March 1986, Table 1.4, p.5.

4 Import demand is found to be price-inelastic and highly elastic with respect to aggregate expenditure:

\[
\log M = -3.90 + 0.049 \log Pm + 1.46 \log CIG \quad R = 0.96 \\
(1.05) \quad (0.032) \quad (0.45)
\]

Where M = Value of imports of goods and services
Pm = Price index of imports
CIG = Aggregate consumption, investment and government expenditure in the GDP.


(computed by the author)
and their high standard of living have set the sights fairly high for the remuneration of national counterparts, thus resulting in high wage levels compared to other developing countries.

Policy Perspectives

When Papua New Guinea gained independence in 1975, the existing socio-economic conditions had a considerable influence in determining the government's development strategies and priorities. Given the primacy of rural and subsistence activities and the inequalities which existed in the social structure, it was almost inevitable that, in the post-independence development strategies, agricultural and rural development received high priority and industrialisation very little attention.

Prior to independence, in 1965, the World Bank reported that the chances for Papua New Guinea to successfully produce industrial goods for either import replacement or export on a large scale were dim. However, it advised that appropriate tariff protection be provided in order to offset the advantages the industrialists had in Australia under the Australian Export Incentive Scheme at that time, and thereby encourage Australians to set up plants in the Territory rather than export from Australia (World Bank 1965).

In response, a Tariff Advisory Committee was set up in 1969 under a newly enacted Tariff Advisory Committee Ordinance. In 1972, the committee examined and recommended a maximum effective rate of protection of 25 percent as a guideline for the committee's future investigations into requests for protection. However, there is no evidence that the recommended level of effective tariff protection was applied to any industry as a matter of policy or that the Tariff Advisory Committee itself played any effective role in formulating an industry protection policy. In the absence of such a policy, the tariffs were applied in a haphazard manner and, in general, tariff rates remained very low by developing country standards.5

Tariff rates were decided almost entirely on cost of living and revenue considerations and not on industry protection considerations. The industry protection policy was confined to import bans on a very few products in which

5 To date, imports of essential goods such as rice, tinned fish, medicines and books have been duty free. A wide range of other consumer goods have been subject to a nominal 'general import levy' which, after slight increases over the years, remained at 7.5 percent as at the end of 1986. Other intermediate and luxury goods were subject to duties, varying from 7.5 percent to 50 percent, with few exceptions such as expensive motor cars, alcoholic beverages and tobacco products. In 1987 the General Import Levy was abolished and tariff rates were reclassified into five categories:

(Continued next page)
the local industry could supply the entire domestic market at import parity prices.6

Post-independence policies for economic development were influenced largely by the Eight National Aims, announced in 1972. These aims were designed at a time when economic activities in the country were largely dominated by foreigners and sought to achieve such objectives as rapid increase in the proportion of economic control and income accruing to citizens, greater rural and agricultural development, more equal income distribution and a more self-reliant economy. Economic growth was not an objective by itself; nor was industrialisation.

The National Development Strategy of 1976 (Central Planning Office 1976) which embodied the Eight National Aims and formed the most important policy document of the first independent government, however, makes reference to the importance of medium to large-scale manufacturing in having a positive effect on employment, government revenue and the balance of payments (ibid.:42-43). Although it recognised the need for foreign investment in industrial development, it made no mention of any government assistance or any special incentives to attract investment into that sector. On the contrary, it discouraged any import replacement industries that might be established, expecting special incentives such as protection from the government, by stating that the "government policy will .... exclude" investments in "inefficient import replacement industries". Following a strict cooperative advantage approach, the policy was to concentrate more on mineral and agricultural exports and use foreign exchange earnings "to purchase goods which can be produced more efficiently abroad" (ibid.:43).

Footnote 5 (Cont’d)

Group A: essential imports -- duty free;
Group B: basic imports and consumer goods -- at a duty rate of 7.5 percent;
Group C: intermediate goods -- at a duty rate of 25 percent;
Group D: luxury imports -- at a duty rate of 50 percent; and
Group E: special goods such as motor vehicles, petrol, alcoholic beverages, soft drink, etc., -- at various rates of duty.

Import bans have been applied on frozen poultry, flour, sugar, tinned corned beef and occasionally certain types of vegetables. Bans are either lifted or relaxed at times of shortages. Price control measures have been designed to enforce import parity pricing in the case of import-banned products. Producers are normally required to agree to import parity pricing when they apply for import restrictions. However, this does not appear to have applied in the case of

6
The establishment of the National Investment and Development Authority (NIDA) in 1974 is an important landmark in Papua New Guinea's industrial development policy. Its main objectives were to promote and regulate foreign investment in the country and to facilitate Papua New Guinean participation in investment as well as Papua New Guinean ownership, management and control of foreign investment. NIDA's performance over the years has apparently done very little to promote foreign investment and industrial development in the country. The Brown Report concludes that NIDA did not play an effective role in performing the functions specified in the Act. Other studies indicate that NIDA practically did nothing to promote foreign investment and that it functioned more like a policing agency (Dahsmanyke 1983).

Thus in the early years, industrialisation in Papua New Guinea had to find its own way in the absence of any significant supporting policies or priorities for its development, from the government. The industries that came to be established (except for a very few cases) are those which could survive amidst stiff competition from imports. The result has been the lack of industrial growth in the economy.

The functions of NIDA, as provided for under the NIDA Act of 1974 are:

(a) to facilitate the channelling for investment into those fields of business activities that will make the best use of resources consistent with national development and investment policies;
(b) to facilitate citizen participation in investment and the ownership, management and control of foreign enterprises;
(c) to enable the identification of activities that will achieve the purposes set out in (a) and (b); and
(d) for the promotion of those purposes, to provide for the control of foreign investment.

In the performance of these functions the Act makes it obligatory for NIDA to:

• promote investment (not necessarily foreign investment); and
• regulate and control foreign investment.

In performing the function of regulation and control of foreign investments, NIDA registers and monitors the activities of foreign investors.

An advisor from the Commonwealth Fund for Technical Cooperation, was commissioned to study the functions and performance of NIDA and make suitable recommendations. His report (known as the Brown Report) was submitted in November 1981.
By 1983, the continued poor economic performance both in terms of industrial growth and the overall growth of the GDP, led to an increasing concern among policy makers about the need for a new strategy for development that would put the economy on a growth path. Consequently, the initiative for a new development strategy was taken in 1983. It called for a sectoral-based Medium Term Development Strategy (MTDS), where each sector placed the highest priority on economic growth and employment generation. In industry, a number of specific initiatives were taken to rationalise and streamline government policies and activities to promote industrial development. First, a new department — the Department of Industrial Development — was created in early 1983 and second, a White Paper on Industrial Development was adopted in Parliament in early 1984 (Government of Papua New Guinea 1984). The new department's responsibilities were to:

(a) function as the coordinating agency within the government for all matters concerning the development of secondary industries;
(b) take over the promotional function from MIDA and perform as a one-stop shop for industrial promotion, and actively attempt, at home and overseas, to attract investors in and to Papua New Guinea; and
(c) formulate foreign investment policies and oversee their implementation (ibid.:27).

The White Paper spelled out the government's new policies for industrial development. Its main objectives were to encourage employment, skills development, export promotion and import replacement (ibid.:1). To achieve these objectives, the White Paper outlined a package of policy initiatives which included proposals for:

(a) a range of incentives such as depreciation allowances, tariff protection, tax concessions, etc., for infant industries;
(b) a three-year tax-holiday for new export industries;
(c) an employment-based tax rebate to encourage employment;
(d) the construction of industrial estates by the government to facilitate new industries;
(e) the relaxation and simplification of existing procedures for registration of foreign enterprises through appropriate amendments to the MIDA Act;
(f) assistance for feasibility studies; and
(g) the establishment of an Industry Assistance Board to determine tariff and other forms of protection for local industries and an Industry Advisory Council to provide a forum for the private sector to discuss policy issues.

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9 The submission to the National Planning Committee was made by Hon. Paia Winti, Deputy Prime Minister and Minister for National Planning and Development, 1 December 1983.
Under the Medium Term Development Strategy, the government also took the initiative to reduce real wages in order to encourage both investment and employment. Wages in Papua New Guinea are relatively higher than in other developing countries. This is true of both minimum and average wages, as shown in Tables 1 and 2. Table 1 also shows that the wage differentials between Papua New Guinea and other developing countries have widened over time.

Table 1: Average Non-Agricultural Wages in Selected Lower-Middle Income Countries, 1975 and 1980

(US $ per week)

<table>
<thead>
<tr>
<th>Country</th>
<th>1975</th>
<th>1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papua New Guinea</td>
<td>38.80</td>
<td>52.07</td>
</tr>
<tr>
<td>Western Samoa</td>
<td>36.97</td>
<td>26.91</td>
</tr>
<tr>
<td>Nigeria</td>
<td>16.00</td>
<td>21.93</td>
</tr>
<tr>
<td>Philippines</td>
<td>9.43</td>
<td>10.50</td>
</tr>
</tbody>
</table>


Recognising the possible disincentive effects of high wages on investment and employment, the government in its submission to the 1983 Minimum Wages Board, made a strong case for a 15 percent real reduction in wages over a three-year period. Although the government's attempt was not fully successful, its intended policy paved the way for some reduction in real wages by the country's wage determination process.

Most initiatives taken in 1983 to promote faster industrialisation, however, almost fell by the wayside after the change of government in late 1985 when the Medium Term Development Strategy was not fully implemented. Under the new government, economic growth and employment continued to remain the top priority and agriculture as a sector was given topmost priority, as it was considered that greater potential for growth and employment existed in that sector than in industry.

The Department of Industrial Development failed to reorganise itself to serve as the intended one-stop shop for prospective investors and the proposed amendments to the NIDA Act did not materialise. Most of the incentive
measures for industrial development mentioned in the White Paper on Industrial Development were not implemented. Although the Industry Assistance Board was set up, it has not been effective yet in formulating and implementing appropriate policies for industry protection. The present government, which took office in July 1983 is expected to revive the NTDS approach and give an equal priority to industry and agriculture. Whether it will also revive the industrialisation initiatives of 1983 is yet to be seen.

Table 2: Minimum Wages in Selected Developing Countries, 1978

(US $ per day)

<table>
<thead>
<tr>
<th>Country</th>
<th>Manufacturing</th>
<th>Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papua New Guinea</td>
<td>7.00</td>
<td>2.60</td>
</tr>
<tr>
<td>Malaysia</td>
<td>3.55</td>
<td>1.90</td>
</tr>
<tr>
<td>Western Samoa</td>
<td>3.40</td>
<td>2.70</td>
</tr>
<tr>
<td>Philippines</td>
<td>1.85</td>
<td>1.55</td>
</tr>
<tr>
<td>Thailand</td>
<td>1.70</td>
<td>1.25</td>
</tr>
</tbody>
</table>


Constraints

Industrialisation in the LDCs can be constrained by many factors. Shortages of capital and skills are the often mentioned resource constraints. Additionally, agricultural surpluses (Mahalanobis 1969) and adequate education facilities (Ayres 1985) have been indicated as preconditions for industrialisation. Papua New Guinea undoubtedly suffers from several constraints despite the fact that it may have surpluses from primary production (both agriculture and minerals).

However, as a late starter, Papua New Guinea also can be expected to benefit from several modern technological advantages which many LDCs did not have a few decades ago. It is often less costly to start with the latest technologies than to replace the old with new. The use of the latest technologies in production, communications and computing would make any new industry as comparable and competitive as anywhere in the world, provided of course other conditions remain equal.

Newcomers, of course, are not without disadvantages, vis-a-vis established suppliers. It usually takes time for new products to break into existing markets no matter how much better or cheaper they may be, and that creates
additional costs for new industries. Apart from such constraints, which can be common to any country that wants to industrialise, there can be several specific constraints peculiar to each country. Papua New Guinea suffers from a variety of constraints — structural, institutional and policy.

**Small and Fragmented Market**

The extremely small and fragmented nature of the domestic market in Papua New Guinea is a major structural constraint. Papua New Guinea's population of about 3.5 million is quite small, relative to the size of the country. The bulk of the population lives in widely scattered and isolated rural areas. Only some 30,000 expatriates and 100,000 Papua New Guineans belong to the middle and upper income groups (Hughes 1984: 34) and they are the ones who generate the 'market' for industrial goods and services. Between them, they consume a very small amount of a very large variety of industrial goods which are presently satisfied largely by imports.

Due to limitations in economies of scale, such a small and fragmented market would be extremely constraining to industrialisation of the import substitution type. Any successful industrialisation initiative therefore would have to be export orientated.

**Infrastructure**

The road system in Papua New Guinea is still undeveloped. Large distances between towns and the rugged nature of the terrain make road construction extremely costly, relative to immediate benefits, and beyond the country's capacity. Even Port Moresby, the country's capital city, still remains unconnected by road with any other town or city. Alternative means of transport — by air mostly and by sea among island ports — have become high-cost elements in the economy. Poor conditions of the available roads also make road transport very costly.

**Skills**

Papua New Guinea has an acute shortage of skilled manpower. Most of the required skills (accounting, business, managerial, marketing, manufacturing, engineering and so on) have to be imported. The imported skilled personnel are two to three times more expensive than their local counterparts for two main reasons:

(a) their accommodation costs are exceedingly high; and
(b) they are recruited mostly from developed country labour markets at internationally competitive remuneration packages.

Skills shortage is largely due to inadequate education facilities, which are beyond the country's capacity to fund. Community and lower secondary schooling are inadequate and
there are only four national high schools in the whole country.

The student dropout rates are very high: among Grade 10 children, the dropout rate is about 70 percent. Between ages 6 and 20 only about 27 percent attend school. Not only are education facilities inadequate but so are the facilities for vocational training; so much so that most of those who have some primary education are unemployable due to lack of trade skills.

Policy Constraints

There are two main policy constraints:

(a) The "hard kina policy" adopted in the early days of independence to keep inflation and cost of living down was discouraging to industrialisation. Continued appreciation of the local currency was unattractive or even discouraging to traded goods production. Although the policy was abandoned in 1983, and therefore is no longer a disincentive, its early effects held back whatever chances Papua New Guinea had for industrialisation.\(^\text{10}\)

(b) It is widely believed that wages in Papua New Guinea are too high for a developing country. This view has been supported by the World Bank and a team of consultants who recently reviewed the country's economy. The World Bank points out that:

'At the time of independence, the precocious minimum wage 'explosion' had brought wages in Papua New Guinea to a level well above prevailing rates in other developing countries ...'

and concludes that:

'the comparatively high level of wages in Papua New Guinea must have inhibited total investment in the country and influenced capital intensity of investment that took place' (World Bank-1982:152).

The report by Goodman et al. (1985) maintains that wages in Papua New Guinea are high compared to those in other developing countries, and that:

'... Minimum urban wages are so much higher, relative to productivity, than wages in competing countries that it is difficult for Papua New Guinea to get started in even the simplest manufacturing industries; and it is equally difficult for industries, once started, to grow ... High wages also intensify the search for labour

\(^{10}\) For a detailed discussion of the "Hard Kina Strategy", see Dhinayake 1985.
substituting techniques of production in both urban and rural areas'.

High wages in Papua New Guinea became institutional due to the early policy of adopting wage standards and wage fixing mechanisms from Australia. The continuance of the practice of Minimum Wages Board determinations, though contributed to relative industrial stability, has nevertheless prevented productivity based wages in the economy (Goodman et al. 1985: 61 and 63.)

Land

Land policy is identified as a major constraint to investment in Papua New Guinea. Traditional land tenure systems and land administration procedures make it extremely difficult and expensive for any individual or firm to obtain land for a business venture. The existing collective land ownership system makes it practically impossible for individual investors to use land as security for loan finance. Also it is not easy for investors to obtain land at a reasonable rent due to protracted and outdated procedures and incessant compensation demands. Land supply rigidity has contributed to excessive housing rents which are among the highest in the world.

Institutional Constraints

Reference was made earlier to Papua New Guinea's institutional arrangements for industrial development. Old arrangements under NIDA were identified as inhibiting while the new improved arrangements introduced in the early 1980s under the new Department of Industrial Development did not get off the ground. Thus the expected institutional improvements to facilitate industrialisation in the country have yet to materialise.

Performance

Although industry received some priority at certain times, as a sector, it remained relatively small in the Papua New Guinean economy. During the period 1976-1983, while the total GDP at current prices increased by an annual average of seven percent, the manufacturing sector's

From the early 1970s, wages in Papua New Guinea have been influenced largely by the Minimum Wages Board (MWB) determinations made from time to time. Prior to 1981, wages were fully indexed to cost of living increases. After 1981, however, the wage indexations were limited to lesser amounts of cost of living increases. MWB determinations, once made for minimum wages, are also accepted for adjustments of most other wages in both the public and private sectors.

About 97 percent of land in Papua New Guinea is held under customary title or tribal ownership.
contribution increased at a lesser rate of six percent per annum. However, in real terms, the GDP during the same period grew by less than one percent a year, as did the manufacturing sector's contribution to the GDP. Furthermore, the manufacturing sector's share in the GDP declined marginally during the period 1976-1977 to 1983 (see Table 3).

If we take the value added in all secondary industries, which includes manufacturing as well as other industries (see Table 5), it amounted to 12.7 percent of the GDP in 1980 and 12.3 percent in 1986. Among the 'low-middle income' countries (the category to which Papua New Guinea belongs in the World Bank classification), Papua New Guinea has the lowest share of industry in the GDP (see industry's share in the GDP for selected low-middle income countries, which have similar agriculture and mineral resource backgrounds -- Table 4).

**Table 3: Distribution of Gross Domestic Product by Main Sectors, 1976-1977, 1980 and 1983**

(X m)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>451.7</td>
<td>565.7</td>
<td>647.3</td>
</tr>
<tr>
<td>(36.7)</td>
<td>(33.1)</td>
<td>(32.8)</td>
<td></td>
</tr>
<tr>
<td>Mining and Quarrying</td>
<td>106.0</td>
<td>225.7</td>
<td>210.8</td>
</tr>
<tr>
<td>(8.8)</td>
<td>(13.2)</td>
<td>(10.7)</td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>173.2</td>
<td>162.3</td>
<td>172.9</td>
</tr>
<tr>
<td>(9.6)</td>
<td>(9.5)</td>
<td>(9.0)</td>
<td></td>
</tr>
<tr>
<td>Services and Others</td>
<td>552.1</td>
<td>754.4</td>
<td>936.8</td>
</tr>
<tr>
<td>(44.0)</td>
<td>(44.2)</td>
<td>(47.5)</td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>1 231.0</td>
<td>1 708.1</td>
<td>1 973.7</td>
</tr>
</tbody>
</table>

**Note:** The figures in brackets indicate sector values as percentages of the total GDP.


At 1977 prices, the GDP in 1977 and 1983 amounted to K1 328 million and K1 409 million respectively, giving an annual average growth rate of one percent. When the average population growth rate of 2.3 percent is taken into account, real per capita income declined by an annual average of 1.3 percent.
Table 4: Share of Industry in the GDP in Selected Low-Middle Income Countries, 1982

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Papua New Guinea</td>
<td>13</td>
</tr>
<tr>
<td>Fiji</td>
<td>20</td>
</tr>
<tr>
<td>Indonesia</td>
<td>39</td>
</tr>
<tr>
<td>Nigeria</td>
<td>39</td>
</tr>
<tr>
<td>Philippines</td>
<td>36</td>
</tr>
<tr>
<td>Thailand</td>
<td>29</td>
</tr>
<tr>
<td>Average for Low-Middle Income Countries</td>
<td>35</td>
</tr>
</tbody>
</table>


The performance of secondary industries in Papua New Guinea is summarized in Table 5. The number of factories has declined slightly over the years after reaching a peak in 1983, while employment grew substantially until 1982, dropped sharply in 1984 and recovered thereafter. Both output and value added have shown some growth, but declined slightly in 1985. If we disregard the unpublished data for 1986, the value of output in real terms has risen by about 5.6 percent per year from 1980 to 1985. These trends indicate the possibility that some smaller uneconomic factories were closed down and the larger ones expanded and were able to reap the economies of scale, thus leading to output growth, despite lack of growth in capital expenditure. Growth in employment in 1983 and 1985 is significant in that it is indicative of more labour intensive tendency, particularly after the change in policy to reduce real wages in 1983. The food, beverages and tobacco category of industries seems to dominate the industrial sector in Papua New Guinea, in terms of number of factories, output and employment. It also seems to be the most labour intensive with an average of about 65 employees per factory in 1985.14

Almost the entire industry output is meant for the local market, and as yet there are hardly any industrial exports worth mentioning. Although the country has a fairly large export income (about 45 percent of the GDP), it is

### Table 5: Secondary Industries: Number of Factories, Employment, Capital Expenditure and Value of Production, Selected Years, 1971-1986

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. No. of Factories:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food, beverages and tobacco</td>
<td>729</td>
<td>767</td>
<td>776</td>
<td>697</td>
<td>690</td>
<td>707</td>
<td>713</td>
</tr>
<tr>
<td>Textile, wearing apparel and leather</td>
<td>117</td>
<td>122</td>
<td>154</td>
<td>157</td>
<td>144</td>
<td>147</td>
<td>153</td>
</tr>
<tr>
<td>Timber and wood products including furniture</td>
<td>n.a.</td>
<td>n.a.</td>
<td>11</td>
<td>9</td>
<td>15</td>
<td>16</td>
<td>17</td>
</tr>
<tr>
<td>Paper, paper products, printing, etc.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>118</td>
<td>97</td>
<td>96</td>
<td>109</td>
<td>110</td>
</tr>
<tr>
<td>Chemicals, coal, rubber and plastic products</td>
<td>n.a.</td>
<td>n.a.</td>
<td>33</td>
<td>27</td>
<td>26</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Non-metallic mineral products except petroleum and coal</td>
<td>n.a.</td>
<td>n.a.</td>
<td>19</td>
<td>22</td>
<td>24</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>Basic metal industries, fabricated metal, machinery, equipment, etc.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>20</td>
<td>22</td>
<td>18</td>
<td>19</td>
<td>18</td>
</tr>
<tr>
<td>Factories and workshops attached to other industries(b)</td>
<td>n.a.</td>
<td>n.a.</td>
<td>153</td>
<td>132</td>
<td>118</td>
<td>126</td>
<td>124</td>
</tr>
<tr>
<td>2. Employment - total expatriate</td>
<td>15 283</td>
<td>17 447</td>
<td>25 545</td>
<td>27 605</td>
<td>25 469</td>
<td>27 195</td>
<td>29 911</td>
</tr>
<tr>
<td>3. Capital Expenditure (K m)(c)</td>
<td>2 643</td>
<td>2 238</td>
<td>3 045</td>
<td>2 324</td>
<td>2 698</td>
<td>1 987</td>
<td>n.a.</td>
</tr>
<tr>
<td>4. Value Added (K m)</td>
<td>n.a.</td>
<td>n.a.</td>
<td>25.3</td>
<td>30.9</td>
<td>29.0</td>
<td>23.1</td>
<td>n.a.</td>
</tr>
<tr>
<td>5. Value of Output (K m)</td>
<td>n.a.</td>
<td>n.a.</td>
<td>216.3</td>
<td>235.4</td>
<td>260.5</td>
<td>313.7</td>
<td>305.9</td>
</tr>
<tr>
<td>6. Value of Output at 1981 prices (K m)(d)</td>
<td>107.0</td>
<td>217.0</td>
<td>461.3</td>
<td>525.5</td>
<td>669.9</td>
<td>695.7</td>
<td>676.0</td>
</tr>
</tbody>
</table>

**Notes:**
(a) Due to the change of industrial classification from Australian Standard to International Standard in the late 1970s, data for certain categories are not available for those years.
(b) Other industries include electricity; construction; wholesale and retail trade; restaurants and hotels; transport, storage and communication; community, social and personal services; and all other industries.
(c) For manufacturing industries only.
(d) Derived using the implicit GDP deflator.
(e) Unpublished data from the National Statistical Office.
P = provisional

**Sources:**
dominated entirely by primary products, which together account for almost 100 percent of domestic exports. The only exports that can be considered industrial are those processed agricultural and forest products such as copra oil, plywood, woodchips and sawn timber. Small export quantities of sugar and paint in recent years have been the only exceptions.

For instance, in 1987, export shares of various categories were:

<table>
<thead>
<tr>
<th>Category</th>
<th>Export Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minerals</td>
<td>63.6%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>24.0%</td>
</tr>
<tr>
<td>Forest products</td>
<td>9.9%</td>
</tr>
<tr>
<td>Fish products</td>
<td>1.0%</td>
</tr>
<tr>
<td>Re-exports</td>
<td>1.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

PROSPECTS AND POLICY PRESCRIPTIONS

The Need for Diversification

Both by design and necessity, Papua New Guinea's economy came to be heavily reliant on two primary sectors -- agriculture and mining. Comparative advantage, high export potential and employment possibilities favoured agriculture to receive top priority in the country's development planning. At the same time, the availability of large mineral resources, foreign investor interests and the need for relatively quick revenue, favoured mining development. Within the next decade or so Papua New Guinea is destined to enter a mineral boom with the development of large, newly-discovered gold and petroleum resources. With these developments, the country may be able to substantially raise its export earnings and the national income in the not-so-distant future.

However, some of the problems associated with this kind of economic structure are likely to remain unresolved unless some initiatives are taken for a greater degree of diversification of the economy. Both price and income fluctuations in primary production and the associated uncertainties are well known. Given the enclave nature of the projects, mining development has relatively little to offer in terms of employment and linkage effects in the rest of the economy.

More particularly, the growth in the mining sector is well known for its 'Gregory' effect (Gregory 1965); that through its effect on the balance of payments, mineral export growth could have a disincentive effect on other export sectors as well as the import competing industries in the economy -- an effect similar to that of a tariff reduction on imports and a tariff increase on exports. A squeeze on tradable sectors could lead to more unemployment and lack of growth in those sectors. Such effects, if left unchecked, will perpetuate the already unbalanced economic structure in Papua New Guinea. Hence, there is the need for policy action to counteract such effects and induce a more balanced structural change through greater industrialisation. When mining projects eventually cease sometime in the future, they are likely to leave behind an economic vacuum with many social and economic problems. Given the agriculture and mining biased structure of the economy, industrialisation seems to be the logical answer to fill that vacuum.

However, the question remains as to what potential exists for industrialisation in Papua New Guinea. As for specific areas in which the potential for industrialisation may exist in Papua New Guinea, several can be mentioned, a priori, in the absence of reliable feasibility studies. Although many feasibility studies have been made, they have not been very favourable, particularly to those industries which may threaten traditional import sources. One quoted example is that of rice production, where it has often been
 mooted that these studies were biased in favour of traditional import supply sources.

Given the geography and natural resources, Papua New Guinea would undoubtedly have a high potential for agro-based industrial development, provided some of the constraints imposed by market imperfections can be overcome. Large fertile plains would provide opportunities for large-scale cattle and dairy industries. English-type vegetables are already grown very successfully in the highlands. Tropical fruits such as mangoes, pineapples, bananas and many others grow very well all over the country. Many new varieties of tropical fruits can easily be introduced. These can provide opportunities for fruit canning and fruit juice industries. Papua New Guinea is already producing sufficient poultry, soft drinks, beer and cigarettes to meet local demand, and others such as biscuits, soap and confectionery have expanded almost to self-sufficiency levels. These industries could be expanded further to cater for export markets as well. With very rich fishing resources, the potential for fresh and canned fish ought to be very high. However, there is a lack of government assistance to promote and develop the industry.

Furthermore, the export sector itself would need to be diversified in order to be able to reduce the export income uncertainties and variabilities of primary products. However, given the limited size and fragmented nature of Papua New Guinea's domestic market, industrialisation is not likely to succeed unless the production is export orientated. Import replacement alone, therefore, cannot be the basis for industrial development in the country. Rather, import replacement in the long term would have to be achieved through export orientation of industrial production.

In the initial stages, import replacement possibilities may help industrial ventures, but in the long term, success is likely to depend largely on their ability to orientate production for export markets. Efficiency, profitability and quality criteria can better be achieved through such an outward-looking approach rather than through an inward-looking strategy of import substitution.

Infrastructure developments such as fishery harbours with refrigeration facilities and better marketing, training and credit facilities may be needed to uplift the local fishing industry. With abundant high quality timber, the potential for the manufacture of furniture and timber-based construction material could be good. Cement, too, is mentioned as a potential industry if export markets can be found.

In order to overcome the market constraint to industrialisation, Papua New Guinea, being centrally located, should try to take advantage of its proximity to large ASEAN markets, Australia, New Zealand and the South Pacific island countries. Papua New Guinea already has special trading arrangements with Australia and New Zealand.
Similar arrangements with ASEAN countries, Pacific island nations, and more distant neighbours like Japan and South-East Asian countries, may prove favourable to industrialisation.

Market imperfection-type constraints would also have to be overcome to help the country exploit its industrial development potential. High wages, high rent, land problems and inadequate transport development all contribute to high production costs, which erode the country's competitiveness in international markets. More job-orientated training may be needed to increase the supply of local skills and thereby reduce wage costs. Supply of land and housing would need to be more market orientated so that existing rigidities can be removed, thus paving the way for reduced rents.

In a country where land is relatively abundant compared to many other developing countries, land ought to be available for investors at a much lower cost and with fewer problems than in those highly-populated, developing countries. But this is not the case in Papua New Guinea due to traditional land tenure systems. Nor is it easy for investors to obtain land at a reasonable rent because of incessant compensation demands from landowners. Some form of radical land reform may be needed to redistribute land and institute a marketable and individual land ownership system.

In housing, the government has already adopted a comprehensive housing policy designed to create a housing market through home ownership schemes and housing loan schemes. However, the implementation of the policy has been slow and it is likely to take many years before the policy impact is really felt in the market place. As for transport and communication constraints, the government has given high priority for infrastructure development, particularly road improvement and construction. However, in view of the high costs involved, their development to reach a satisfactory level is likely to take more than a decade. Telecommunications and applications of modern technology have improved considerably. However, the introduction of appropriate and low-cost technologies may also be essential in certain fields of production both to reduce costs and to encourage more labour intensity.

The Export Processing Zone (EPZ) approach has been recommended (Goodman et al. 1985:129-133) as a means of overcoming some of the constraints to industrialisation in Papua New Guinea. It is argued that constraints such as a small and fragmented domestic market, land problems and high wages can be overcome, because EPZs would be producing for the export markets, their land requirements can be met by government under special arrangements and they can be exempted from minimum wage regulations. Certainly if these arrangements can be made and if they are politically acceptable, the EPZ approach could have prospects in Papua New Guinea. It would not only promote export diversification and growth, but also generate certain linkage effects on the domestic economy.
However, there are still a number of problems which can make the EPZ concept an impracticable proposition in Papua New Guinea. It is well known that EPZs have succeeded in countries where foreign investors have been attracted by their cheap and easily trainable labour (that is, labour with fairly good basic education and willing to work at low wages) and low infrastructure costs (land and housing rents, electricity and telecommunication costs). The former cannot be ensured unless the government would be willing to permit EPZs to import cheap labour from overseas if such labour is not readily available locally; and the latter is not likely to be the case as infrastructure in Papua New Guinea has an inbuilt high cost structure.

The Case for Assistance and Protection

In the foregoing, it was argued that there is a need for industrialisation in Papua New Guinea. Also, it has been shown that there are many constraints and problems standing in the way of such industrial development. In the absence of some sort of intervention in relation to the constraints and problems, industrialisation is not likely to take place at a desirable pace. Almost all countries, both developed and developing, have used intervention in some form or another to assist industries. In some instances, extreme forms of intervention have led to industries practically becoming closed economies, with alarming results (such as shortages, inferior products, flourishing inefficient industries, increasing unemployment and falling productivity and economic growth). In others, welfare losses due to intervention may have been less severe, but many of them are said to have experienced varying degrees of distortions in their economies.

Pure economic theory rules out protection and prescribes that each country should follow the dictates of comparative advantage in order to maximise welfare. There is no doubt that theoretically, protection will result in suboptimal welfare situations and that the principle of comparative advantage under a laissez-faire regime will maximise welfare and therefore provide the best solution.

However, several writers have found the standard trade theory based on the theory of comparative advantage as inadequate for understanding the problems of developing countries. For example, Gunnar Myrdal (1968) states that it is false to handle trade policy problems of underdeveloped countries within the framework of theories

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A typical example is Sri Lanka during the period 1960-1977 when an extreme import substitution regime (with severe import and exchange controls) plunged the country into an economic downturn. Economic performance of Sri Lanka dramatically reversed after the economy was fully liberalised in 1977 (Dahanayake 1977). Also for a more general discussion of effects of protective trade policies see Krueger (1974 and 1984).
Sitted to advanced countries. Raul Prebisch (1959) points out that the often advanced view: 'because less developed countries have a comparative advantage in primary products, they should put their development efforts into the primary rather than the industrial sector' would ultimately result in transferring all fruits of progress to the advanced countries.

According to Chenery (1961), because some of the assumptions relevant to developing countries are different from those used in the theory of comparative advantage, this theory cannot be applied as an engine of growth in developing countries. These assumptions relate particularly to serious market imperfections that exist in the developing countries. Imperfections in the capital and labour markets and in communications and transport that are normally found in countries like Papua New Guinea result in disequilibria in the factor markets. For example, some factors can earn high (or low) returns even though their opportunity cost is low (or high). Therefore, protection for such countries, at least in the short term, has been defended.

Infant Industry Protection

The strongest case for protection has been the one for infant industries. The rationale is that, due to various market imperfections, industries will initially face high costs, but in the long term, they may have a comparative advantage. The assumption is that during the initial period of development, a number of such new industries will be set up. Each such industry will generate sufficient externalities for others to benefit from and thereby reduce or cover up their initial excess costs to the extent that their rates of return will equal those earned elsewhere. The infant industry protection rational thus claims to be a valid exception to free trade on three main conditions:

(a) the cost disadvantages to the industry are of a short-term nature;
(b) the industries concerned will generate external economies for each other; and
(c) the protection will essentially be for the short term only.

The Papua New Guinean situation (where the characteristics such as market imperfections, possibilities for externalities and economies of scale and so on, were discussed earlier) seems to justify the application of short-term infant industry protection with a view to promoting industrialisation.

However, a word of caution is necessary. In many developing countries, infant industry protection has been allowed to persist far too long, as if the infant never matures. Once industries get used to protection, they are not likely to be willing to give it up easily. If that were to happen, the objective of protection would be lost and the whole exercise would result in the misallocation of resources and a welfare loss in the long run.
Therefore, it may be difficult to provide an economic justification for protection other than for infant industries. In selecting infant industries for protection, some criteria would need to be applied so that no 'white elephants' are created. Although the comparative advantage by itself may be an inadequate guide in developing countries, it is still a valid criterion for selecting industries for protection in the sense that protection would need to be given only to those industries which have a comparative advantage potential in the long run.

Infant industry protection can be applied in many forms -- tariff concessions, direct subsidies, tax concessions, depreciation allowances, interest subsidies and so on. For import competing industries, tariff concessions may be preferable to direct subsidies and may be applied on the basis of effective rates of protection. A given level of protection could be achieved either through a tariff or a direct subsidy, but the two methods have different implications. Tariffs raise the prices and affect the price level, but they add to the government revenue, whereas subsidies will have no direct effect on prices but will be a burden on the government budget. Tariffs work through the price system, discourage imports and thus help the balance of payments. Tariffs are easier to administer than subsidies and the latter are more prone to abuse.

Export industries -- that is, those which produce entirely for export markets -- will not benefit much from tariff protection. Hence, other forms of assistance such as subsidies and tax concessions may prove to be more effective. However, most industries are likely to be both import competing and export orientated, and therefore a

\[
\text{Effective rate of protection} = \frac{t - a}{\frac{t}{ij} - \frac{1}{ij}}
\]

where \( g \) = effective rate of protection for activity \( j \) (that is, the proportional increase in the effective price resulting from the tariff)

\[
t = \text{nominal tariff rate on product} \ j
\]

\[
t = \text{nominal tariff rate on input} \ i
\]

\[
a = \text{share of} \ i \text{ in the cost of} \ j \text{ at free trade}
\]

\[
ij
\]
package of incentives which contains tariff protection, subsidies and tax concessions may be more appropriate for
that.

As an industry protection measure, quantitative restrictions -- import bans and import quotas -- are
inferior to measures such as tariff protection subsidies and tax concessions. These latter measures operate through the
price system and therefore still provide for protected local
producers to face a certain degree of competition from
imports. Thus it compels them to be efficient, whereas
quantitative restrictions eliminate competition from
imports. Furthermore, experience in other countries has
shown that quantitative restrictions invariably allow for
the flourishing survival of inefficient industries which
will perish once the restrictions are removed at the end of
the infancy period. Thus it would seem that infant industry
protection can be justified only to the extent that the
protection measures are limited to those which operate
through the price system.

However, in Papua New Guinea, in the absence of a well
designed protection policy, the experience so far has been
to apply quantitative restrictions haphazardly to a few
imported goods while following, by and large, a policy of
free trade. Under an industrialisation strategy, a
comprehensive protection policy would need to be formulated.
Such a policy should essentially be limited to infant
industry protection under which quantitative restrictions
should be avoided.12

18

Dumping has often been mentioned as an exceptional
instance that justifies quantitative import restrictions.
When a domestic industry is threatened by dumping, the
case may exist for the imposition of a short-term ban
on such imports. However, a clear case of dumping
would need to be established before taking such a step.
BIBLIOGRAPHY


