

Hamid Bugo

The Economic Development of Sarawak

The effects of export instability



PUSTAKA NEGERI SARAWAK



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PUSTAKA
NEGERI
SARAWAK

PERPUSTAKAAN NEGERI
SARAWAK



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by Hamid Rugo



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PREFACE

This study presents an empirical inquiry into the economic development of Sarawak in the period 1960 to 1975 and the effects of export instability on its development. The nature and scope of this investigation has been limited by the dearth of necessary statistical data available since no economic study of this kind has ever been undertaken on Sarawak. Despite this limitation it is felt that some interesting findings have been established which would be of use for further research and future studies.

In the period 1960 to 1975 Sarawak achieved relatively high rate of economic growth resulting from the export of primary commodities, principally crude oil, sawn logs, pepper and other agricultural exports.

Statistical calculations indicated a high rate of export instability. However, **there seemed to be no significant adverse effects on the economy as a whole. But** there are adverse effects on individual agricultural producers including timber workers. What is significant however, is that there are indirect effects, including the perpetuation of dependence on rice cultivated almost exclusively for the **grower's own consumption.**

The policy implications suggested in this study to improve the position of agricultural producers adversely affected by export instability is the establishment of effective Marketing Boards and the setting up of agricultural and wood based industries.

HAMID BUGO

FOREWORD

This pioneering study by Hamid Bugo has a twofold importance.

Firstly, not only does it systematically analyse the relationship between export instability and economic development in Sarawak but also draws attention to the distribution of costs and benefits which results from that instability.

Secondly, the study has clearly slated policy implications, of the type often absent from academic studies, particularly those in the field of economics.

I am delighted to have this opportunity to commend to the reader this original work of scholarship. The author, a Malaysian from Sarawak has brought to the study a freshness of approach, coupled with a wealth of background understanding. The benefits of such intimate local understanding become obvious as each of the major agricultural export industries is discussed in detail. It is particularly appropriate that local scholars of the author's calibre should be engaged in the role of deepening an understanding of this important aspect of the Malaysian economy and polity.



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Finally I wish to record my debt to my wife and family. Their patience is the most important contribution by far.



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Kuching, Sarawak

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INTRODUCTION

I.1 BACKGROUND OF THE STUDY

I.1.1 Choice of Topic

Sarawak is one country where no broad economic study has been undertaken before. Yet it is a country which presents many interesting economic features which are not found in many other developing countries but which have significant relevance to the theory and practice of economic development - its rich and relatively undeveloped natural resources, its very small population but large area, its multi-racial community in which racial origins coincide with political and economic functions, its peculiar land code, its special political position within Malaysia, etc. This pioneer study of Sarawak may therefore provide new insights into the understanding of economic issues especially of small less developed countries and may at the same time be of some use in providing research materials for future studies of the economic development of the State. It is with this in mind that Sarawak has been chosen for this study.

The subject, export instability has been chosen because it is a topic of immense current interest where there is yet no general consensus on several aspects of many of the issues. It has direct relevance to Sarawak because of her dependence on the export of a few primary products and the openness of the economy. And there is now a growing government concern over the fluctuations of Sarawak export products. Knowledge of the causes and effects of export instability in Sarawak may therefore be useful in assisting the formulation of the right policies and strategies towards export products, in particular, and macro-economics development in general.

1.1.2 Methodology, Problems and Limitations

To achieve the objectives mentioned above, this study will attempt the following: -

- (i) to assess the general economic development of Sarawak;
- (ii) to measure the extent of export instability;

- (iii) to assess the effects of export instability on the domestic economy;
- (iv) to examine the causes of fluctuations in export proceeds with special reference to major export commodities;
- (v) to examine the appropriateness of stabilization measures; and
- (vi) to draw implications for policy measures concerning export instability.

The methodology of this study is basically quantitative. The data used comes mainly from the publications of government departments especially those from the Department of Statistics, Kuching. But by no means all the necessary data are available. In fact, important data on items such as Income Distribution, Balance of Payments, Federal Revenues from Sarawak, unemployment, and costs are not available. At the same time certain figures such as production although available are merely estimates. Where data are not readily available or insufficient for statistical analysis the study has necessarily resorted to descriptive method, but based on first hand observations.

The period chosen for the study is 1960 to 1975. This means that it includes the period of over three years, 1960, 1961, 1962 and three quarters of 1963 in which Sarawak was not yet merged with Malaya, Singapore and Sabah to form Malaysia. This inclusion does not affect the analysis in the study despite certain changes in the financial arrangements which came with the formation of Malaysia. For this reason it was decided that since a longer period of analysis is preferred the study period should start in 1960 instead of coinciding with the beginning of Malaysia, i.e. August 1963. The years before 1960 have not been included because no consistent data are available for those years. The first population census since 1947 was taken in 1960. 1960, therefore, provided an appropriate starting point for the study. The period 1960 to 1975 also provided a long enough time period in which considerable economic changes took place. The early sixties did not see much development in the state where as the late sixties and early seventies was a period of considerable economic, social and political change.

1.2 THE COUNTRY

1.2.1 Geography

Sarawak is situated on the North-West coast of the island of Borneo, between the latitudes 0° 50' North and longitudes 109° 30' and 115° 40' East. It is bordered to the North and West by the South China Sea, to

the South by the Indonesian State of Kalimantan, and to the East by the Malaysian State of Sabah. It also surrounds, on the landward side, the State of Brunei, as illustrated on the map (Appendix 13).

The total land area of Sarawak is 124,449 square kilometres (48050 sq. miles) with a length of 740 kilometres (459.9 miles) and a maximum width of 257 kilometres (157.9 miles).

The country comprises three broad relief zones, namely, an alluvial coastal plain which is succeeded inland by a belt of undulating country, and finally the sharply rising mountainous interior. The coastal plain varies in width from about one and half kilometre (less than a mile) to about 160 kilometres (100 miles), and contains about 9010.4 sq. kilometres (5,600 sq. miles) of deep peat swamp at or near sea-level. The coast is therefore generally flat and low-lying with heavy swamp vegetation and flat mud or sandy beaches. In a few places, especially north of the Rajang delta, hills abut on the sea. The belt of undulating country becomes increasingly more rugged and steep towards the headwaters and is interrupted by a few mountain groups. In the Central and Eastern interior, the border between Sarawak and Kalimantan is formed by a broken range of mountains which runs south-westwards through the centre of the island of Borneo.

Because of the deeply dissected nature of the country, roads are difficult and costly to build. The total distance of concrete or sealed roads in the whole State is 3,709 metres (463 miles). These are only concentrated around the town areas. The roads linking the major towns are still under construction. Transportation between these areas is either by air or water. Rivers, in fact, form the major arteries of communication and it is in the vicinity of these that settlement occurs. The Rajang and Baram Rivers, which form the main access routes into the interior, are navigable to small boats of about 500 tons for 160 and 190 kilometres respectively. Most major rivers are navigable to small craft in their lower reaches.

Of the total land area over 76% is still covered by forests. Agriculture takes up about 22%. The rest comprises unused land, the majority of which is undergoing forest regeneration. Potential distribution of land suitability has been given as follows: -

Suitable for agriculture	17.5%
Marginally suitable for agriculture	26.0%
Unsuitable for agriculture	56.6%

The good agriculture land comprises levees and better drained coastal areas. The hill soils are generally regarded as being only marginally

suitable for agriculture due to a generally high level of acidity. These hill soils are usually thin and of low fertility.

Sarawak has a climate which is typical of the humid tropics. Mean air temperatures range from 26° - 29°C with absolute minimum and maximum 19° and 35°C respectively. The greatest part of the country has mean annual rainfall of 3,000 to 4,000 mm (118 to 157 inches) and humidity is constantly high. The climate is dominated by the North East Monsoon which starts in November and lasts till March. This is a period of heavy persistent rain accompanied in the coastal areas by strong winds. In this period certain economic activities such as logging, fishing and rubber tapping normally slow down.

In the inland areas, the rainfall between March and October is relatively light at 120 to 150 mm (4.7 to 5.9 inches) per month. The actual rainfall varies from area to area and is sufficiently frequent and heavy to constitute a major constraint to road construction and to the use and maintenance of roads.

Communication is a major problem not only within Sarawak but also between Sarawak and her neighbours. For example there is no proper road linking Miri or Limbang, the two Northern towns which surround the State of Brunei. To get from Miri to Brunei by road one has to ferry across two rivers and go along a long stretch of unreliable sandy road. Between Limbang and Brunei there is no road linkage at all. Transportation is by river. The same situation exists in the South. There is no road linkage between Sarawak and Kalimantan (Indonesia), although they share a common border the whole length of Sarawak.

Transportation between Sarawak, West Malaysia and Singapore is by sea or air. Although, the shipping services between Sarawak and these countries are quite efficient, Sarawak suffers from inadequate port facilities. Besides, shipping charges have tended to be high because the small volume of imports into Sarawak often means one way cargo (exports) for ship coming to Sarawak.

1.2.2 Political Background

The politics of Sarawak may be said to have started in 1839, the year when James Brooke, who later became the ruler of Sarawak, first visited the country. James Brooke came to Borneo at a time when several rebellions against the Sultan of Brunei were breaking out and for his help in suppressing the rebellions James Brooke was given that area around **Kuching** to look after. Brooke gradually extended his territory and placed himself in the position of Supreme Ruler and Judge. In the

implementation of his task he was assisted by the Malay aristocracy and a small group of European officers.

At first James Brooke had requested the support of the British Government and was even prepared to bring Sarawak under the Sovereignty of the British Crown. However, later he decided that Sarawak would be best served if it became a British possession with a native administration superintended by English officers. The Brooke rule did not gain much official appreciation in London and eventually in 1888 Sarawak became a British Protectorate. The period of absolute rule, however, did not come to an end until 1941 when at the State Centenary, the Third Rajah granted the Sarawak population a new constitution which gave legislative power to the Council Negri, a State Representative Council consisting of official and Government nominated and appointed members. Soon after, the Japanese occupied Sarawak during the Second World War. The new Council Negri did hardly more than approve a proposal of the last Rajah that Sarawak should become a Crown Colony in 1946. The proposal was accepted by 19 to 16 votes and Sarawak became a Crown Colony.

The seventeen years under colonial rule did not bring significant changes to Sarawak. Some vague attempts were made at introducing some form of public representation when some of the members of the Council Negri were elected by a three-tier system and a start was made with local authorities. Real political parties were not founded till 1959. The main contribution of the Colonial rule was in terms of fairly efficient public administration system.

Sarawak is now an independent state within the Federation of Malaysia. The latter came into being in September 1963, embracing the independent eleven-state Federation of Malaya, the internally self governing colony of Singapore, and the Borneo Colonies of North Borneo (renamed Sabah) and Sarawak. In its original form the Federation of Malaysia lasted only until August 1965, when political divergencies coupled with racialism forced Singapore to separate and became an independent entity. Despite some uncertainties about its prospects, the rest of Malaysia has hung together and now seem likely to remain united in the future.

The Malaysian experience in political and economic integration does not altogether accord with one's preconceptions, or with experience elsewhere. The normal expectation is that economic integration precedes political integration. Only as economic integration is pushed toward achievement is increasing political integration considered as a

necessary concomitant of it. Balassa¹ lists the following sequence of steps leading to complete economic integration: -

- (1) Removal of barriers to internal trade;
- (2) Adoption of common barriers to external trade;
- (3) Removal of barriers to internal factor movement;
- (4) Harmonization of economic policies to remove discrimination among members, countries or regions; and finally
- (5) Unification of monetary, fiscal, and other economic and social policy making in a single, central authority.

Only step (5) necessarily implies political integration. On the other hand one normally expects that when political integration does occur it brings with it total economic integration, in the sense of all five of Balassa's steps.

Malaysia's sequence of steps toward economic and political union does not accord with Balassa's chronology. On the one hand significant elements of economic integration, some of them among those usually assumed to be the most difficult to achieve, existed before 1963. This includes totally free movement of private capital, unfettered by exchange control or other restrictions and promoted by the use of a common currency, as well as free movement of labour, although far from total.

This sequence of integration may be appreciated if the reasons for the formation of Malaysia are understood. These have already been made clear by D. R. Snodgrass² who is quoted at length here, "Malaysia was considered by most of the participants in its creation as the solution to a *political* problem. For the United Kingdom it was a means of disengaging from its responsibilities in Singapore, Sarawak, Brunei and North Borneo, with reasonable prospect that these areas would remain politically stable after independence. For the Federation of Malaya, independent since 1957, Malaysia was an ingenious constitutional arrangement whereby its neighbour Singapore could be neutralized and guarded from communist domination through submersion in

¹Balassa: *The Theory of Economic Integration* (Homewood, III: Richard D. Irwin, 1961 p. 2)

²"Some Development Implications of Political Integration and Disintegration in Malaysia" in G. Ranis ed. - *Government and Economic Development* (New Haven, Yale University Press, 1971).

a state dominated by Malay peoples. The Borneo States³ played their role in this arrangement by helping to offset Singapore's impact on Malaysia. They did this by limiting the rise in the proportion of the population that would be ethnically Chinese (altogether they had a population of only 1,255,000, 72 percent non-Chinese, versus 1,700,000 in Singapore, **three-quarters** Chinese) and the Chinese role in Federal Politics (The new constitution gave Sabah 16 seats in the Malaysian Parliament and Sarawak 24 seats but Singapore only 15⁴. The wishes of the peoples of Singapore, Sarawak and Sabah to enter Malaysia were at least nominally tested, and the answer was judged to be in the affirmative⁵

"Whereas Britain and Malaya found the idea of Malaysia attractive mainly for political reasons, the new states of Singapore, Sarawak and Sabah stood to gain more in the economic arena. For Singapore an overcrowded, highly urbanized island dependent for its livelihood on old, stagnant, regional trade flows, Malaysia offered an enhanced home market for the products of the extensive manufacturing sector which it hoped to develop. At its inception Malaysia was a patchwork of separate custom areas, six in all (Malaya, Singapore, Sarawak, Sabah and the "free ports" of Penang and Labuan). The progressive consolidation of these areas into one had been blue printed by the Reuff Report in 1963⁶ Sabah and Sarawak had low, colonial style tariff structures and would therefore have to bear price increases when they were incorporated into a common national market. But they were under-

3 In the original conception, these were to have been three Borneo states, with the British protectorate of Brunei also acceding to Malaysia. Negotiations over the terms of Brunei's entry broke down, however, reportedly because of disagreement over the apportionment of Brunei's oil-enriched state treasury and the appropriate position of its Sultan in the order of succession to Malaysia's rotating titular kingship.

4 Malay received 104 seats. See the Federal Constitution (Kuala Lumpur, 1964).

5 Singapore held a referendum giving voters a say on the terms under which the colony should enter the new federation; no legal means were provided for recording a desire not to enter at all. See Willard A. Hanna, *The Formation of Malaysia* (New York: American Universities Field Staff, 1964) pp. 113-25. Popular sentiment in the Borneo territories was sampled by the Cobbold Commission, which reported a general desire to join, despite the obvious difficulties of measuring public opinion in such primitive and heterogeneous areas. See Report of the Commission of Enquiry, North Borneo and Sarawak (Kuala Lumpur, 1962).

6 Report on the Economic Aspects of Malaysia (Kuala Lumpur 1963).

developed relative to Malaya and Singapore (GNP per capita in 1963, according to estimates by the Rueff Mission, was M\$801 in Malaya, M\$1,304 in Singapore, M\$563 in Sarawak, and M\$645 in Sabah) and could hope that a federation would result in substantial net transfers of public funds to finance their development".

In terms of economics the formation of Malaysia did not alter much in Sarawak. A Custom Union in Malaysia is yet to be formed. Nor is Malaysia a free trade area yet. However, there are several financial arrangements which are rather unique for a federation and this is discussed in a later chapter.

Economic Policies have not changed very much either for a long time. In each country in the Federation the capitalist laissez faire philosophy prevailed, where the role of the government was confined to the provision of law and order and infrastructural facilities. Only recently and in particular since the publication of the Second Malaysia Plan (1971-1975) and the acceptance of the New Economic Policy has the government decided to play a more active and direct part in the development process. This period of some change is, however, outside the purview of this study.

Under the present system, Sarawak is regulated by two separate constitutions: the Sarawak State Constitution and the Federal Constitution of Malaysia. The constitutional Head of State is the Yang Di Pertua Negeri who is appointed by the Supreme Sovereign the Yang Di Pertuan Agong of Malaysia.

The State Legislative Assembly (Dewan Undangan Negeri) consists of a Speaker and 48 members who are elected through a State wide general election every 5 years. The State Cabinet (the Supreme Council) consists of the Chief Minister and not more than 9 or less than 5 either Ministers appointed in accordance with the constitution of the State of Sarawak from among members of the Council Negeri. The constitution also provided for the appointment of not more than 9 Assistant Ministers.

Executive and legislative powers in matters for which the State is responsible as laid down in the Federal and State Constitutions are vested in the Supreme Council and Dewan Undangan Negeri respectively. Amongst the important subjects reserved for the control of the State are land, agriculture, forestry, local government and immigration.

For administrative purposes the State is divided into 7 administrative Divisions each headed by a Resident. Each Division is further divided into a number of Districts under the charge of the District Officers. The State Secretary is at the apex of the pyramid of the public administration system.

The State Government has also set up a comprehensive development planning machinery to deal with the planning and implementation of the States's socio-economic policies. At the centre of the machinery are the State Financial Secretary and the State Planning unit which serve to advise development policy measures. Execution of plans is carried out by specific government departments and agencies. A hierarchy of Committees ranging from Ministerial level to the district level serve as decision making bodies in various capacities.

1.2.3 Economic Background*

Apart from oil refining the economy of Sarawak is almost exclusively agricultural. It was estimated that in 1970 some 75% - 80% of the population (or 80% - 85% of the labour force) was dependent upon farming for their livelihood. However, its contribution to GDP was only about 20%. The main part (2/3) of Sarawak's agricultural population still largely depends on subsistence agriculture in jungle conditions. The all important crop for this population is rice cultivated by shifting cultivation. The two major export crops are rubber and pepper. Rubber, which started as the major important crop, tended to decline in the 1960's. Only in 1973 and 1974, as a result of the increase in petroleum price, did the export of rubber shoot up considerably. Pepper tended to increase although only gradually.

The minor growth in the agricultural sector has been compensated for by considerable growth in the output of the forestry sector which since the beginning of the 1960's, has played quite an important part in the Sarawak economy. In monetary terms it has contributed substantially to the earning of foreign exchange, and its share of GDP in 1970 was more than 15%. This sector has increased at an annual growth rate of approximately 17%.

The oil industry has an important and special position in Sarawak's economy. In the early 1960's oil production was still of minor importance. Even by 1970 production was less than 20,000 barrels a day: on shore exploitation was declining, while offshore production was not fully developed. Since 1971 production has shot up and during 1974 output from the Miri offshore fields exceeded 100,000 barrels per day. On top of all this there was the fivefold increase in world price of oil. The increase in both output and price has multiplied the contribution of this industry to the total GDP.

•The economic Growth & Development of Sarawak is given in greater detail in the next section. This section simply serves as an introduction.

The economic structure described above is complicated by the nature and distribution of the population. The 1970 (latest) census gives the total population of Sarawak as 976,269 which is very small (15 person per acre) for a country which has the same land area as West Malaysia, which has ten times the population. Population growth, however, has been fairly rapid at 2.8% (and slightly higher for the rural areas). But a higher growth rate of the GOP has enabled per capita income to increase. But, as was mentioned earlier, there has only been a small increase in the agricultural sector which means that there is an increasing income gap between the agricultural or rural sector and the urban sector. Yet more than 80% of the population are in the rural sector and depending on farming as their livelihood. This disparity between the urban and rural sectors is a problem in itself but it has become an even more important and urgent problem because of the communal groupings. The rural population is made up of the indigenous groups (Bumiputras)' while the urban population is made up largely of a permanent migrant group, the Chinese. The breakdown of the population by community and areas is given in Table (I) below.

In 1960, of the 93,558 who lived in the urban areas only 23,591 or 25% were Bumiputras. This comprised only 5% of the Bumiputras. The other 95% were in the rural areas. By 1970 the figures had changed little: 30% of urban dwellers were Bumiputras. This is equivalent to 7% of all Bumiputras in the country. This situation led to the identification of rural low income areas with Bumiputras and the richer urban areas with non-Bumiputras.

On top of all this there is also a solid association between occupations and ethnic groups. This may already be obvious from the rural urban distribution of the groups. The Chinese concentrated in towns are largely engaged in commerce, trade and industries. Even those of the Chinese in the rural areas are not all farmers. Many are, in fact, traders and shopkeepers. They almost invariably act as the **first** rank buyers of produce from the native farmers, as well as suppliers of provisions to the rural population. Bumiputras who live in the towns are normally Government employees. In the rural sector, the Bumiputras are occupied in agriculture (including forestry) and fishing. The number of Bumiputras engaged in commerce and industry is negligible.

Even within agriculture, there is also a division along ethnic groups. The Oayaks are basically padi farmers but normally with rubber as their

**TABLE 1: POPULATION BY COMMUNITY GROUPS AND DEGREE
OF URBANIZATION AT CENSUS 1970 AND 1960**

Community	1970			1960		
	Total	Urban	Rural	Total	Urban	Rural
Total	975,918	149,872 (15.4)*	826,046 (84.6)	744,559	93,558 (12.6)	650,970 (87.4)
Dayaks	386,260	8,497 (2.2)	377,642 (97.8)	295,360	2,954 (1.0)	292,406 (99.0)
Malays	182,700	31,059 (17.0)	151,671 (83.0)	129,300	18,490 (14.3)	110,810 (85.7)
Other Natives	103,194	4,859 (4.7)	98,386 (95.3)	82,592	2,147 (2.6)	80,445 (97.4)
Bumiputras	672,105	44,406(30) (0.07)	627,699(76) (0.93)	507,252	23,591(25) (0.05)	483,661(74) (0.95)
Chinese	249,020	102,129(68) (34.7)	191,891(23) (65.3)	229,154	67,371(72) (29.4)	161,783(25) (70.6)
Others	9,735	3,279(02) (33.7)	6,456(01) (66.3)	8,123	2,672(03) (32.9)	5,451(01) (67.1)

(1)* refers to %

cash crop. The Malays normally concentrate on padi, coconuts and fishing. The Chinese normally plant pepper supplemented by vegetables and livestock.

Part of this specialization in crops along ethnic lines may be traced back to the land tenure system. Under this system, land in Sarawak is classified as Mixed Zone land, Native Area land, Native Customary land, Reserved land and Interior area land. A person of any race may hold title or acquire an interest in land in areas classified as Mixed Zone land but Native Area land may be held only by a native in Sarawak. All land at the present time under title fall into one of these two categories. Native Customary land comprises all land held under customary tenure (over 25,899 sq. km in 1960) but without title. It ceases to be so classified as such when title is issued and it is reclassified as native area land. Under Reserve land are included Forest Reserves, land used by the Government for public buildings, roads, etc. The balance of the land is classified as Interior Area land and mainly comprises land under primary forest and other unoccupied land over which no customary rights exist.

Under this system there is limited land for Chinese farmers. The area of Mixed Zone land is in itself limited. On top of this, not all Mixed Zone land is available to Chinese. Besides, Mixed Zone land is concentrated in town areas for purposes of industrial, commercial and residential use. What is left for farming is rather limited. It is this limitation and also the predominance of small holdings which has forced Chinese farmers to go into the intensive cultivation of pepper and vegetables.

As for native farmers the availability of agricultural land under Customary Land Rights has perpetuated the traditional shifting cultivation of rice and the growing of trees like rubber.

The distribution of occupation (and settlement) along ethnic lines has given rise to several problems, economic, social and political. With relatively rapid population growth on the one hand and a slow growth in agriculture on the other, the rural population (Bumiputras) are facing increasing hardships, especially in comparison to the urban (Chinese) population. However, the Bumiputras are politically dominant. This situation has often been termed as "explosive" in the sense that a clash between the races may result. Unless some measures are quickly taken the stability, peace and harmony of the state may not be maintained.

The problem of economic development in Sarawak is, therefore, not simply raising the per capita income. In the words of the Second Malaysia Plan (1970-1975) it is also

as to reduce and eventually to eliminate the identification of race with economic function".⁽¹⁾

It has frequently been suggested that the attainment of at least the first of these two objectives depends on the development of the agricultural sector and, more specifically, the development of agricultural exports. If this is the case, it is important, therefore, that agricultural exports are not subjected to the fluctuations which frequently beset agricultural exports.

1.3 ECONOMIC GROWTH AND DEVELOPMENT

1.3.1 Recent Performance

In an Asian context the economy of Sarawak can be considered as rather prosperous with a per capita Gross National Product of more than US\$442 in 1974. This figure is relatively high for a developing country; it is certainly one of the highest among developing countries in South East Asia as shown in Table (2) which gives the per capita Gross National Product (GNP) of selected countries in South East Asia.

TABLE 2: PER CAPITA GNP OF SELECTED ASIAN COUNTRIES (US\$1974) AT CURRENT PRICES

Singapore	..	..	..	j ,545.5
Taiwan	..	..		587.5
Malaysia	..		..	577.6
Sarawak	..	..	..	442.6
South Korea	..	..	..	365.0
North Korea	..	..	..	332.6
Philippines	..	..	..	263.3
Thailand	..	..	..	231.7
China	..	..	..	175.0
India		..	..	133.6
Indonesia	..	..	..	110.9
Burma				86.4

Source: The Sunday Times, London, May 4, 1975, page 11.
The Sarawak figure is a preliminary estimates.

This relatively high level of income is the result of a rapid rate of growth which took place during the sixties and the early seventies. The Gross Domestic Product went up from \$438 million (1) in 1961 to \$690 million in 1966 and \$1,177 million in 1973, giving an increase of 168.7 per cent in twelve years, and an average rate of growth per annum of 8.71 per cent. The Gross Domestic Product and its index of growth for the twelve years to 1973 are shown in Table (3) below: -

TABLE 3: GROSS DOMESTIC PRODUCT (AT FACTOR COST)
AND INDEX OF GROWTH

Year	GDP (\$ Million)	Index of Growth (1961 = 100)	Per Capita GDP (\$)
1961	438	100	575
1962	460	105	588
1963	495	113	615
1964	532	122	644
1965	606	138	723
1966	690	158	788
1967	688	157	763
1968	760	174	823
1969	831	190	880
1970	860	196	889
1971	957	218	962
1972	1,031	253	1,008
1973	1,177	269	1,120

Table (3) shows that in terms of per capita GDP the figure has doubled in the last twelve years, rising from \$578 per head in 1961 to 1,120 per head in 1973. The annual average rate of growth of the GDP per capita was approximately 5.4 per cent.

The growth of the GDP in real terms is rather difficult to show. Figures for GDP at constant prices are available only for 1967 to 1973 and the only relevant index available is that of the Consumers' price and again available only since 1967.

The GDP at constant price and its index is given in Table (4) below.

TABLE 4: GOP AT CONSTANT PRICE (1970 = 100) AND ITS INDEX

Year	1967	1968	1969	1970	1971	1972	1973
GDP	712	780	855	860	927	999	1054
Index	82.8	90.7	99.4	100	107.8	116.2	112.6

The rate of growth of the GDP at constant price for the period 1967 to 1973 is 6.4 per cent and this compares satisfactorily with those of other countries in South East Asia as indicated in Table (5). The figures in Table (4) together with the consumer price indices given in Table (6) suggest that the rapid growth in Sarawak up to 1972 has not been accompanied by inflationary pressures. However from 1973 onwards there has been strong inflationary pressures.

TABLE 5: AVERAGE ANNUAL RATE OF GROWTH OF GOP AT CONSTANT PRICES FOR SELECTED COUNTRIES

Countries	Gross Domestic Product	
	Total	Per Capita
Korea, Rep. of (1960- 71)	9.1	6.5
Thailand (1960- 71)	8.1	4.6
Sarawak(I) (1967-73)	6.4	3.7
Sri Lanka (1963- 71)	5.3	3.0
Pakistan (1960-60)	5.3	1.8
Philippines (1960- 71)	5.0	2.0
India (1960-71)	3.5	1.3
Indonesia (1960- 71)	3.4	0.7
Burma (1962-67)	2.7	0.6



Source: United Nations Yearbook of National Account Statistics, Part III, International Tables, (1972) . The Sarawak figure is a separate calculation based on figures from "Annual Bulletin of Statistics", Statistics Department Sarawak, 1973

TABLE 6: CONSUMER PRICE INDEX (1967=100)

1967	1968	1969	1970	1971	1972	1973	1974	1975
100	98	97	98	97	102	117	144	150

Source: Statistics Department, Kuching.

1.3.2 Sources of Growth

The rapid rate of growth of GOP has been due largely to the accelerated growth of the output of petroleum, and only to some extent agriculture, logging, trade and services. Thus the growth of GOP is highest after 1970 (Table (13) when the output of petroleum mining shot up rapidly. Manufacturing hardly played any part in this growth. The contribution of the various industries to the GOP are shown in Table (7).

Table (7) indicates that agriculture (including forestry and fishing) is the largest single sector. Its average share of GOP for the period 1961 to 1973 is 35.3%. However its share has gradually declined and the rate of growth of agriculture (4.8%) is far below the rate of growth of GOP (8.6%).

The fastest rate of growth has been achieved by mining and quarrying which grew 111% between 1961 and 1973. Since practically all mining and quarrying comprised petroleum mining, these figures show, in effect, contribution of crude petroleum output to the GOP. Petroleum output has expanded substantially. In 1961 it was less than 1.6 per cent (\$7 million) of GOP whereas in 1973 it was 18 per cent (\$212 million). The average daily output is now (1970- 1978) about 100,000 barrels per day. This huge increase in petroleum output resulted from the discovery of an offshore petroleum deposit off Miri in 1968 and which started production in 1971.

The significance of petroleum output can be further appreciated by the fact that if petroleum is taken away from total GOP, the rate of increase of the latter would drop from 8.6% to 6.8% per annum in the period 1961 to 1973. GOP per capita would fall by about \$200 for 1973.

The other sectors which have substantial shares to GOP are services and wholesale and retail trade. The rate of growth of these two sectors have also been quite substantial, being 11.7% for services and 8.8% for wholesale and retail trade.

The rate of growth of construction has also been quite substantial but its total share in GOP is still too small to make any significant impact on the economy.

The manufacturing sector has the lowest rate of growth at 3.3% per annum. In addition its share to GOP has been relatively low and has been declining from its highest (14.6%) in 1966 to its lowest (7.2%) in 1973.

TABLE 7: INDUSTRIAL ORIGIN OF GOP AT FACTOR COST
(\$ MILLION AND %)

	Y E A R														Growth Rate	
	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	(3a)	%	
(1) Agriculture Forestry & Fishing	196 (44.7)	191 (41.5)	199 (40.2)	201 (37.8)	231 (37.6)	243 (35.2)	251 (36.5)	268 (35.2)	312 (37.5)	301 (35.0)	271 (28.4)	243 (23.6)	308 (26.1)		4.8	
(2) Mining and Quarrying	7 (1.6)	7 (1.5)	6 (1.2)	6 (1.1)	6 (1.0)	5 (0.7)	3 (0.04)	9 (1.9)	16 (1.9)	30 (3.5)	129 (13.5)	185 (17.9)	212 (18.0)		11.1	
(3) Manufac- turing	51 (11.6)	59 (12.8)	62 (12.5)	70 (13.2)	78 (12.7)	101 (14.6)	68 (9.9)	71 (9.3)	78 (9.04)	81 (9.4)	81 (8.5)	83 (8.1)	85 (7.2)		3.3	
(4) Construc- tion	17 (3.9)	20 (9.3)	23 (4.6)	26 (4.9)	32 (5.2)	39 (5.6)	34 (4.9)	39 (5.1)	42 (5.0)	46 (5.4)	56 (5.9)	52 (5.0)	58 (4.9)		/OA	
(5) Transport and Com- munication	32 (7.3)	37 (8.0)	43 (8.7)	46 (8.6)	52 (8.5)	64 (9.2)	47 (6.8)	48 (6.3)	51 (6.1)	56 (6.5)	63 (6.6)	66 (6.04)	72 (6.1)		5.4	
(6) Wholesale and Retail Trade	52 (11.9)	53 (11.5)	57 (11.5)	64 (12.0)	79 (12.8)	89 (12.9)	94 (13.7)	115 (15.1)	115 (13.9)	46 (13.5)	119 (12.04)	123 (11.9)	127 (10.8)		8.8	
(7) Services	36 (8.2)	38 (8.3)	41 (8.3)	45 (8.04)	51 (8.3)	59 (8.5)	78 (11.3)	84 (11.0)	81 (9.7)	90 (10.5)	92 (9.6)	111 (108)	141 (12.0)		11.7	
(8) Others	47 (10.9)	55 (12.0)	64 (12.7)	74 (13.9)	77 (12.04)	90 (13.0)	103 (16.04)	126 (16.4)	136 (16.2)	140 (16.2)	146 (15.2)	168 (16.3)	174 (14.7)		11.7	
(9) GOP at Cost	438	460	495	532	615	690	688	760	831	860	957	1031	1177		8.6	
	GOP without Oil														6.8	

1.3.3 Dependence on Exports of Primary Products

The growth of the GDP has been achieved through heavy dependence on exports i.e. the exports of raw materials, in particular, petroleum and timber. This dependence is indicated by the fact that exports formed a large part of GOP, as may be seen from Table (8).

TABLE 8: EXPORTS AS A PERCENTAGE OF GOP

Year	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
%	82.8	80.6	72.2	73.4	70.9	67.6	68.8	75.5	74.8	77.7	77.5	57.2	61.8

In period 1961 to 1963 exports formed, on the average, 74.4% of GDP. Even its lowest share was as much as 57.2% (1972).

The biggest single contributor to export is petroleum and petroleum products (See Table 9). In the period 1960 to 1973 it contributed an average of 56.5% of total exports per annum. However the export of petroleum and petroleum products includes the export of petroleum which has been imported from neighbouring Brunei. The laUer has been exporting its petroleum via Sarawak because of Sarawak facilities. If this reexport is excluded then the share of petroleum and petroleum products in total exports would drop quite substantially, except after 1970 when local production went up rapidly, while at the same time reexport dropped (See Table 10).

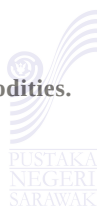
The accelerated increase in the export value of petroleum and petroleum products since 1972 was due to the increase in the price of oil, especially in 1973 as consequence of the Energy Crisis and the oil embargo to European countries by the Organisation of Petroleum Exporting Countries (OPEC) in early 1973.

The share of petroleum products alone in total exports is relatively small. The major share comes from crude petroleum rather than petroleum products. This is obvious from Table (I I) which indicates that the proportion of crude oil has been rapidly rising while that of petroleum products has been declining.

TABLE 9: EXPORT OF MAJOR COMMODITIES FROM SARAWAK

Year	% 1960- 1973			
	Petroleum·	Timber·	Agriculture"	Other
1960	56.9	8.9	29.4	4.8
1961	54.0	10.5	29.3	6.0
1962	55.6	10.0	25.0	9.6
1963	53.9	14.4	26.8	5.0
1964	52.7	16.2	24.7	6.2
1965	50.6	20.6	25.2	3.5
1966	52.3	25.2	18.5	3.9
1967	52.5	29.4	14.9	3.3
1968	49.6	32.8	11.3	6.2
1969	47.2	32.7	17.2	2.9
1970	48.7	33.1	13.1	5.2
1971	60.9	25.3	10.8	2.8
1972	53.2	28.8	12.7	5.4
1973	47.0	31.1	15.6	6.3

*Including products of these commodities.

TABLE 10: SHARE OF MAJOR COMMODITIES IN TOTAL EXPORT
(WITHOUT REEXPORT OF PETROLEUM)

Year	Petroleum	Timber	Agriculture	Others
1960	15.1	17.6	57.8	9.5
1961	11.9	20.1	56.5	11.6
1962	14.9	19.2	48.0	17.9
1963	13.8	26.8	50.0	9.3
1964	11.2	30.4	46.5	11.8
1965	11.9	36.7	45.0	6.3
1966	10.9	47.0	34.8	7.2
1967	0.3	55.4	28.1	6.2
1968	8.8	59.2	20.7	11.3
1969	11.2	54.9	28.8	4.9
1970	12.7	56.2	22.2	8.8
1971	36.4	41.2	17.8	4.5
1972	46.4	32.9	14.5	6.1
1973	41.8	34.1	17.1	6.9

TABLE 11: EXPORTS OF PETROLEUM AND PETROLEUM PRODUCTS
AS PERCENTAGE OF TOTAL EXPORTS

Year	Crude Oil	Petroleum Partly Refined	Petroleum Products
1960	30.0	-	28.9
1961	27.0	-	28.8
1962	26.2	-	30.7
1963	23.7	—	30.8
1964	16.1	8.5	29.0
1965	15.5	7.7	27.1
1966	20.2	4.9	27.4
1967	21.0	5.5	25.8
1968	22.8	5.2	21.6
1969	21.1	4.5	21.0
1970	24.5	5.7	18.5
1971	42.5	7.2	11.2
1972	30.9	9.4	12.2
1973	28.2	8.6	10.2

Source: Calculations based on figures from External Trade Statistics,
Department of Statistics, various years.

The other major export commodities are Timber (and Timber products) and agricultural products, Le. pepper and rubber. The contributions of these to total exports are indicated in Table (10). If petroleum reexports are not included in total exports timber (and timber products) and agricultural products are the two largest contributors. Together they form an average of 78.4% of total exports. The share of agriculture, however, has tended to decline while that the timber and timber products have tended to increase. In both cases there have been fluctuations. The same applies to petroleum exports.

The share of timber products such as mouldings, veneer and plywood to total exports has been small although it has tended to increase. The bulk of timber exports has been in the form of logs and sawn timber as may be seen from Table (12).

TABLE 12: EXPORT OF TIMBER AND TIMBER PRODUCTS
AS %OF TOTAL EXPORTS OF THE SAME

Year	Logs	Sawn Timber	Other Timber Products
1960	2.6	7.7	
1961	4.6	5.8	
1962	5.8	4.2	
1963	8.2	6.1	
1964	2.6	7.7	
1965	10.9	8.2	1.5
1966	18.3	5.7	1.2
1967	19.8	7.2	2.3
1968	23.0	7.0	2.7
1969	22.4	6.8	3.5
1970	22.1	7.4	3.5
1971	15.3	5.9	4.0
1972	13.8	8.4	6.5
1973	14.8	10.2	5.8

Source: (1) External Trade Statistics, Department of Statistics, Sarawak.

(2) Annual Bulletin of Statistics, Department of Statistics, Sarawak.

The major commodities which make up the agricultural product exports are rubber, pepper, sago flour and coconut oils. The share of each of these commodities is indicated in Table (13).

TABLE 13: EXPORTS OF MAJOR AGRICULTURAL PRODUCTS
(\$ MILLION)

Year	Rubber	Pepper	Sago Flour	Coconut Oil
1960	122.4(25.1)"	77.2(3.5)	2.8(0.6)	1.1(0.2)
1961	83.3(20.9)	28.6(7.2)	3.3(0.8)	1.8(0.4)
1962	72.6(17.8)	23.9(5.9)	4.2(1.0)	1.2(0.2)
1963	69.6(18.6)	24.4(6.5)	5.6(1.4)	1.5(0.4)
1964	60.1(15.8)	23.6(6.2)	8.1(2.1)	1.7(0.4)
1965	59.5(13.8)	41.7(9.7)	5.8(1.3)	1.8(0.4)
1966	46.2(10.0)	33.0(7.1)	4.1(1.0)	2.1(0.4)
1967	32.4(6.4)	35.5(7.1)	4.8(1.0)	2.3(0.5)
1968	26.3(4.4)	34.7(5.8)	4.9(0.8)	2.9(0.5)
1969	49.9(7.8)	52.9(8.3)	3.7(0.6)	3.3(0.5)
1970	24.0(3.6)	56.2(8.4)	3.8(0.6)	3.4(0.5)
1971	16.6(2.1)	62.8(8.0)	3.4(0.4)	3.5(0.4)
1972	14.4(2.4)	58.1(9.6)	2.3(0.3)	1.6(0.2)
1973	56.7(7.0)	66.3(7.9)	3.6(0.4)	3.9(0.5)

*Figures in brackets are percentage of total exports. Source: As in Table (12),

This brief survey of the Sarawak Economy indicates that the economy has had considerable growth as measured by GDP and that there is a very heavy dependence on exports. These characteristics prompt us to raise the question as to the nature and role of export instability in the economic development of the country.



CHAPTER 2

EXPORT INSTABILITY AND ECONOMIC GROWTH

2.1 THE PROBLEM OF EXPORT INSTABILITY

2.1.1 The Prima Facie Case

Severe instability in the export earnings of less developed countries caused by fluctuations in price and/or quantity of exports has long been thought to be damaging to the economies of undeveloped countries and to be related to any or all of three things. First, export instability has been attributed to the specialization of individual less developed countries in the export of only a few primary commodities. It has been attributed secondly to the concentration of exports of individual less developed countries to only one or two major developed countries' markets and thirdly to the very high proportion of export of primary commodities to total exports of less developed countries.

Many harmful effects of export instability have been cited. These include the following: -

- (i) it constitutes a serious drag on economic development;
- (ii) it produces meaningless and harmful variation in aggregate consumption and investment domestically and it particularly affects expectation of investors;
- (iii) it causes fluctuation in government revenues, especially where such revenues draw heavily on export receipts;
- (iv) it produces random economically functionless and often unjust changes in the distribution of income and wealth;
- (v) it adds higher degrees of risk and uncertainty to the conduct of any economic activity or enterprise, and only certain type of income earners and asset-holders benefit;
- (vi) it affects the character of the asset structure in the economy, people's planning horizons, and the general pattern of resource allocation because of the added risk in holding certain types of assets; and finally
- (vii) in the particular case of the **agriculture-dominant** export oriented low income countries, economic instability is detrimental because it:
 - (a) causes income instability of producers, many of whom are in the lowest income groups;

- (b) affects the fanner's marginal propensities to invest; and
- (c) influences the pattern of farmers' asset and capital structures, as well as, resource allocations because they must insulate themselves against added risk - i.e. allocations which frequently are detrimental to rapid rates of economic growth.

2.1.2 Empirical Evidence

The results of empirical studies into the causes and consequences of export fluctuations have, however, been far from conclusive. Initial work by Coppock⁸ casts doubts on the validity of accepted theory as outlined above and these doubts were reinforced by the work of MacBean⁹. Both authors found that export earnings for developing countries were not significantly less stable than earnings for developed countries and also that in general, fluctuations in export proceeds did not appear to have any adverse affects on the economies of developing countries. MacBean's work represented an advance on that of Coppock in that he conducted not only a cross-country analysis but also five case studies of individual countries. Maizels¹⁰, however, quickly took issue with MacBean's study arguing that neither approach is used convincingly and contesting the consistency of the data used, the strength of the methodology and the validity of the conclusions. The inadequacies of MacBean's study led Maizels to observe that "the only valid approach to the problem would be to analyse the effect of export fluctuations on the economic growth of each developing country separately"¹¹ and that the value of MacBean's work is to be found in the fact that "it has exposed an important problem in applied economics and has laid the basis for a more systematic approach in the future"¹². Later Glezakos¹³ questioned the statistical foundations of Coppock's

8J.D. Coppock, *International Economic Instability*. New York, McGraw-Hill, 1962.

9A.I. MacBean, *Export Instability and Economic Development*, Cambridge, Massachusetts, Harvard University Press, 1966.

10A. Maizels, *Review of Exports Instability and Economic Development* by A.I. MacBean. *American Economic Review*, 1968, Vol. 58, pp. 375-580.

11 Ibid., p. 580.

12 Ibid., p. 580.

13 C. Glezakos, *Export Instability and Economic Growth: A Statistical Verification*, *Economic Development and Cultural Change*, XXI:4, 1973, PP. 670-678.

work. Maizels and Glezakos suggested that export fluctuations are detrimental to growth efforts. Further support for the conventional wisdom is to be found in a later study by Naya¹⁴ who concluded that developing countries throughout Asia experience greater degrees of export instability than do the developed countries. Doubts have been cast on Naya's conclusion, however, by recent work by Askari and Weil¹⁵ who found no evidence, in a study covering not only Asian but also Latin American and African countries, in support of the traditional view that there is greater instability in export proceeds for primary-exporting countries.

Despite the large element of disagreement in the conclusions of empirical studies, most of the developing countries do appear to be concerned about the question of export instability. Their efforts to negotiate international commodity arrangements, to operate domestic marketing boards, to form regional trading blocs and to diversify exports all find at least some part of their justification in a wish to avoid fluctuations in earnings. Sarawak is no exception. In the past few years the government has been concerned with the performances of exports. Two reasons have given rise to this. One is the implementation of government agricultural projects such as rubber planting schemes and the other is the increasing number of complaints which have been received from the agricultural sector regarding fluctuations in their incomes. It is therefore appropriate to examine whether or not the issue of export instability is relevant or not. It is hoped also that this case study would provide further evidence as to the place of export instability in the economic development of less developed or developing countries as a whole.

2.2 MEANING AND MEASUREMENT OF EXPORT INSTABILITY

2.2.1 The Meaning of Export Instability

While instability is necessarily a dynamic phenomenon, not everything dynamic presents a problem of instability, for a steady increase or a steady decrease is compatible with a situation of perfect stability.

14 S. Naya, *Fluctuations in Export Earnings and Economic Pattern in Asian Countries*, *Economic Development and Cultural Change*, XXI:4, 1973, pp. 629-641.

15 H. Askari and G. Weil, *Stability of Export Earnings of Developing Nations*, *Journal of Development Studies*, Vol. 11, October, 1974 No. 1, pp. 86-90.

Export instability therefore does not mean simply any changes in exports. "The observable changes over time in the value of exports result from the interaction of a variety of market forces, both on the supply and on the demand sides. It is an arbitrary, but nevertheless convenient, procedure to distinguish arbitrary between long-run forces, which can be said to determine the trend and short run forces, which can be viewed as determining fluctuations around the trend". It is the short-run changes in the time series which are unaccounted for by the trend which is defined here as export instability.

Given this definition the measurement of export instability must consider the variations net of the growth trend of exports. Otherwise, the instability index of countries with a faster growth rate would tend to be biased upwards and that of others downward.

Coppock, however, found a high degree of correlation among the rankings of countries according to degrees of instability of export earnings given by different indices. This evidence suggests that the choice of index is largely a matter of indifference.

Several methods of measuring instability indices were tried for the export series for Sarawak. The periods taken are 1951 to 1959 and 1960 to 1973. The results are given on table (14).

TABLE 14: EXPORT INSTABILITY INDICES
FOR SARAWAK

	I_1	I_2	I_3	I_4	I_5	I_6	I_7
1951 - 1959	1.0919	0.2022	0.0582	6.6778	6.7373	0.0332	6.9051
1960 - 1973	1.1633	0.5098	0.0934	12.5697	13.7643	0.0608	11.9008

Since all the indices indicate that the export instability for Sarawak has increased between the two periods mentioned, it suggests that there is close correlation between the various methods of measuring instability.

In this study the index of instability used is the arithmetic mean of the absolute values of the yearly changes in a time series corrected for the trend and expressed as a percentage of the average of all observations. That is

$$I_x = \frac{100}{X} \sum_{t=2}^n \frac{|X_t - X_{t-1}|}{n-1} \quad b1$$

where b is the slope of the linear trend $X_t = a + bt$ fitted by the ordinary least squares method. C. Glezakos¹⁷ claimed that this method possesses the following desirable properties for a good instability index: -

- (a) reversibility with regards to time;
- (b) symmetry with regard to a common trend;
- (c) multiplicity (that is, it takes into account the relative importance of the variation;
- (d) independent of the size of the trend; and
- (e) this index can be given a logical economic interpretation. The yearly change in export proceeds can be divided into two components. Part of the change would be expected on the basis of the positive or negative trend in export proceeds experienced in the past. The other part, *that is*, $X_t - X_{t-1} - b$, would be the unexpected and probably the more disturbing part of the change.

Using this index the export instability for Sarawak for the period 1960 to 1973 is 11.9 which is 72% higher than the period 1951 - 1959 which has an index of 6.9. This justifies the concern over the problem of export instability.

2.2.2 The Export Instability Indices for Sarawak

The measurement of export instability for Sarawak has been included in two other studies. In the study by Guy F. Erb and Salvatore-Compo's both the exponential and linear were used to measure export instability of sixty developing countries for the period 1950-1959 and 1960-1968. The instability indices calculated are given in Table (15).

17 C. Glezakos "Export Instability and Economic Growth: A Statistical Verification", Economic Development and Cultural Change, Vol 21, 1973.

18 "The Decline in World Export Instability: A Reply". Bulletin of Oxford University Institute of Economic and Statistics, August, 1971.

TABLE IS: EXPORT INSTABILITY INDICES OF DEVELOPING COUNTRIES (Conld)

	¹ A		¹ 8	
	1950-59	1960-68	1950-59	1960-68
Algeria	9.3	18.7	9.2	17.8
Argentina	15.1	9.4	15.1	8.8
Barbados	10.7	12.0	10.5	11.1
Burma	12.9	19.0	12.8	16.5
Cameroon	12.1	7.7	11.8	8.1
Ceylon	7.8	5.0	7.7	5.0
Chad	13.3	12.5	13.3	11.3
Chile	13.0	6.0	.. .	.. .
Colombia	14.8	5.5	14.8	5.5
Congo (DR)	11.8	17.1	11.2	17.1
Congo (PR)	9.5	18.2	" .	.. .
Cuba	11.9	9.0	11.9	9.0
Cyprus	12.5	5.6	" .	" .
Dahomey	14.9	22.0	14.4	21.9
Dominican Republic	8.3	10.8	8.1	10.8
Ecuador	8.9	4.2	7.9	4.7
El Salvador	9.9	5.2	.. .	.. .
Ethiopia	14.5	9.2	13.4	8.5
Gabon	10.1	5.9	.. .	.. .
Gambia	21.5	13.4	21.4	13.4
Ghana	10.0	5.9	9.9	5.9
Guinea	18.0	10.9	.. .	.. .
Guyana	9.7	5.7	8.1	5.4
Haiti	16.5	9.8	19.1	9.7
India	10.6	5.2	10.6	5.1
Indonesia	14.1	5.5	14.0	5.5
Iraq	23.1	5.8	18.6	5.7
Ivory Coast	11.7	8.2		
Jamaica	.. .	.. .	9.4	4.2
Jordan	33.2	6.3	.. .	.. .
Kenya	11.6	4.5	11.7	4.1
liberia	20.1	11.8		
Madagascar	9.1	5.1		
Malaysia:				
West Malaysia	21.0	5.1	20.9	5.1
Sabah	21.2	5.7	.. .	.. .
Sarawak	7.6	12.2	7.6	12.5

TABLE 15: EXPORT INSTABILITY INDICES OF DEVELOPING COUNTRIES

Mauritius	11.3	18.7	10.5	18.3
Mexico	10.3	3.8	10.0	3.1
Morocco	7.9	4.3	7.0	4.2
Mozambique	7.3	7.2		
Nicaragua	14.7	11.9		
Niger	28.0	8.6		
Nigeria	9.5	13.7	9.3	13.2
Philippines	6.8	5.4		
Reunion	13.6	7.9	13.0	7.9
Senegal	12.8	5.7	11.9	5.8
Sierra Leone	.. .	...	12.6	13.2
Singapore	17.0	8.6	16.9	8.6
Somalia	.. .	...	18.3	7.7
Southern Rhodesia	7.5	28.7	7.3	27.8
Sudan	24.8	7.8	24.6	7.8
Surinam	7.3	14.2		
Syria	15.8	14.4	14.4	13.8
Tanzania	12.8	8.0	12.8	7.9
Togo	27.6	12.0		
UAR	11.8	9.5	11.8	9.6
Viet Nam (Rep)	.. .	...	25.2	16.5
Zambia	20.1	9.1		
MEAN	13.8	9.7	12.7	9.8

The instability indices were calculated as follows: -

$$I_A = 100 \frac{\sum_{i=1}^n (x_i \cdot x_i')}{\sum_{i=1}^n x_i^2}$$

where $x_i = a(I + r)^t$; t varies from 1 to n and a and r are obtained by regressing the $\log(x_i)$ series over t by the least square method

$$I_B = 100 \frac{\sum_{i=1}^n (x_i - \bar{x})^2}{\sum_{i=1}^n x_i^2}$$

Source: Guy F. Erb and S. Schiavo-Campo, "The Decline in World Export Instability: A Reply", Bulletin of Oxford University Institute of Economics and Statistics, August, 1971.

As can be seen from Table (15) the export instability of Sarawak for the period 1950-1959 was 7.6 using either the exponential or the linear trend. For the period 1960-1968 the instability index was 12.2 using the exponential and 12.5 using the linear trend. The mean for the 60 countries were 13.8 for 1950-1959 and 9.7 for the period 1960-1968 using the exponential and 12.7 for 1950-1959 and 9.8 for 1960-1968 using the linear trend. It is clear that the instability index for Sarawak for the period 1960-1968 is substantially higher than the mean for the 60 countries. What is more important is that the study indicates that while the export instability for the 60 countries as a whole has declined, that of Sarawak has risen by 60%.

The other study in which the measurement of export instability for Sarawak was included was done by S. Naya¹⁹. The export instability for Sarawak for the 1960's was calculated at 14.4 which is the fifth highest among the seventeen Asian countries chosen. The mean for the seventeen countries was 12.14. Considering that export fluctuations in the Asian Region is higher than for other less developed countries and that the fluctuations of exports for less developed countries are in turn higher than those for developed countries, the Sarawak figure becomes even more significant. According to S. Naya, "The average instability level for Asia, though reduced by more than one-third over the two periods, is higher than for other less developed countries by 40% (1950's) and 55% (1960's). Tables (16 and 17) gives the instability indices calculated by S. Naya.

TABLE 16: EXPORT INSTABILITY OF ASIAN COUNTRIES, 1960.

Country	Instability
1. Burma	20.37
2. Cambodia	17.49
3. Ceylon	5.78
4. Hong Kong	5.73
5. India	5.48
6. Indonesia	7.55
7. Korea	5.68
8. Laos	44.83
9. Pakistan	6.24
10. Philippines	6.69
11. Sabah	7.19
12. Sarawak	14.14
13. Singapore	11.94
14. Taiwan	8.49
15. Thailand	7.59
16. Vietnam (South)	22.37
17. West Malaysia	8.89
MEAN	12.14

Source: S. Naya op. cit.; Naya calculated his instability index as follows: -

The trend values of export were first completed with the exponential growth trend: $X_t = a + rt + e_t$, where $\log X_t$ refers to the natural log of the dollar value of exports of year t ; r , the growth rate of export over period considered, and e_t , the "error" for the year t . The difference between the actual and expected values (in log) of a country's export is represented by e_t and the estimated standard deviation of e_t is used as the index of instability.

TABLE 17: EXPORT INSTABILITY BY REGIONS

Region	Simple Size	Instability 1950s	(Simple Mean) 1960.
1. Total	66	14.15	7.97
2. DCs	18	9.98	4.28
3. All LDCs	48	15.72	9.36
4. Asia	17	19.28	12.14
5. Other LDCs	31	13.77	7.83
6. Difference between LDCs and DCs as a % of DCs	-	57.52	118.6
7. Difference between Asia and other LDCs as a % of other LDCs	-	40.01	55.04

Source: S. Naya - Table 1.

It is clear from the above that export instability for Sarawak is not only higher than that for other less developed countries but is also on the increase. Given the prevailing views on export instability and economic growth and development this magnitude of instability implies that there are considerable repercussions on the domestic economy.

2.3 IMPACT OF EXPORT INSTABILITY ON THE DOMESTIC ECONOMY

Fluctuations of the magnitude which Sarawak has experienced in her export earnings could be expected to have a fairly sizeable impact upon the domestic economy. This is especially so since the share of exports in the Gross Domestic Product is very high as may be seen from Table (18).

TABLE 18: SHARE OF EXPORTS IN GOP (1960-1973)

Year	GOP (\$ million)	Export (\$ million)	Export/GOP (%)
1960		488.3	
1961	438	397.2	90.7
1962	460	407.2	88.5
1963	495	373.8	75.5
1964	532	381.1	71.6
1965	606	433.7	71.6
1966	690	463.6	67.2
1967	688	503.0	73.1
1968	760	604.3	79.5
1969	831	642.0	77.3
1970	860	671.3	78.1
1971	957	787.5	82.2
1972	1,031	603.5	58.5
1973	1,177	834.5	70.9

In the period 1960-1973 exports formed on the average 65.5% of Gross Domestic Product. Even the lowest figure was 58.5% for 1972 and for all other years the share was well above 60%.

2.3.1. Relationship Between Exports and Income

Since Sarawak depends so much upon exports, a priori, fluctuations in exports would bring about corresponding fluctuations in income in the export sector which in turn induces a secondary round of income instability followed by other cycles in the Keynesian fashion.

Time series data on income in the export sector are not available. One may, however, examine the relationship between changes in exports and changes in money supply since, under the Currency Board System money reflects the movement of income. As Sarawak depends so much upon exports, exports would generate income and hence would affect the currency issue and money supply. With increasing income demand for money would be increased. Moreover exports would affect the currency issue and the money supply directly through the balance of payments because the merchandise trade balance is included in the balance of payments. It is therefore appropriate to relate exports with money supply under the Currency Board System.

Sarawak entered the Currency Board System in 1950, joining Malaya, Singapore and Brunei. With the formation of Malaysia in 1963 the system has been officially replaced by the Central Bank System. However, despite significant changes in the range and policies of financial institutions following the formation of Malaysia and the subsequent withdrawal of Singapore from Malaysia in 1965, Sarawak (and for that matter Malaya) had not by 1973 effectively broken away from the old Colonial Currency Board System. It is therefore appropriate to look at the workings of the Currency Board System to understand the relationships between exports and money supply and income.

Under the Currency Board System²⁰ the Malaysian dollar was pegged to sterling and it was mandatory for the currency to be covered at least 100 per cent by foreign (sterling) assets. This leads to an automatic relationship between changes in export earnings and changes in total money supply. The Money Supply Changes are affected both through changes in currency issue and through changes in demand and time deposits.

The Currency Board operated just like a big exchange house, exchanging sterling for Malaysian dollar. An increase in foreign asset holdings of the Currency Board would automatically lead to an increase of

20 For further explanation and description of the Currency Board System see Lee Sheng.Yi, "The Monetary and Banking Development of Malaysia and Singapore", Singapore University Press, 1974 and P.I. Drake, "Financial Development in Malaya and Singapore", A.N.U. Press, Canberra, 1969.

currency issue and vice versa. Generally speaking an export boom would lead to a favourable Balance of Trade, an improvement in the Balance of Payments and hence an increase in currency issue. With increasing exports more sterling or foreign exchange would be offered to the Board in exchange for Malaysian dollar for financing increased exports and import trade. Similarly with the consequential rising income more currency would be demanded for transaction purpose. Thus an improvement in the balance of payments through increased exports leads to an increase in the currency issue.

Money supply may also be affected by commercial banks through their operation or credit creation. However, bank lending policy was determined with reference to foreign trade, i.e. they were more prepared to extend credit in time of export boom than to do so for bolstering up domestic production activity. Under the Currency Board System there was no control over money supply by the monetary authority. The Currency Board System had no discretionary power to increase or decrease currency issue. The System was unable to increase money supply to achieve the stabilization objective in time of falling exports and negative Balance of Payments. Instead it would have to reduce currency issue and money supply causing deflationary pressure and transmitting the unfavourable effect of exogeneous factors fully into the internal economy. Conversely in time of export boom, currency and money supply would be increased with the possible effects of inflationary pressures on the economy.

Given Currency Board System, then, the relationship between exports, income and money supply may be represented in the following manner:-

$$\text{Exports} \longrightarrow \text{Income} \longrightarrow \begin{matrix} \text{Active Money (M}_1\text{)} \\ \text{Total Money (M)} \end{matrix} \text{ and also}$$

$$\text{Exports/Capital Inflow} \longrightarrow \text{Balance of Payment} \longrightarrow M_1 \text{ and } M$$

Where M_1 represents Currency in circulation plus Demand Deposits and M represents M_1 plus Fixed and Savings Deposits.

An increase in exports would cause an increase in income and hence a greater demand for money. Both M_1 and M are increased. M_1 increases because of the need for more money for transaction purposes and because of the credit expansion. M increases because of the increasing fixed and saving deposits, consequent upon increasing income and savings. This may be called the income effect. An increase in exports

and/or an inflow of capital would cause an improvement in the Balance of Payments. With an increase in net foreign assets of commercial banks these would be an increase in active money, M . This may be called Balance of Payments effect, which bears a direct relationship to active money. These two effects together determine the money supply. Changes in the money supply reflect the changes in the income arising out of changes in exports. Thus under the monetary system described above the effects of export fluctuations on income would be reflected in the relationships between exports and money supply.

In order to test the causal relationship between changes in export proceeds and money supply the following regressions have been carried out for the period 1960-1973.

- 1). $\Delta C = 14.05 + 0.06 \Delta X \quad r^2 = 0.05 \quad t = 0.22$
- 2). $\Delta F = 17.9 + 0.09 \Delta X \quad r^2 = 0.21 \quad t = 1.74$
- 3). $\Delta D = 4.86 + 0.05 \Delta X \quad r^2 = 0.15 \quad t = 1.37$
- 4). $\Delta M = 36.68 + 0.19 \Delta X \quad r^2 = 0.14 \quad t = 1.35$

Where ΔC represents changes in currency in circulation, ΔF changes in Fixed and Savings Deposits with commercial banks, ΔD changes in Demand Deposits with Commercial banks and ΔM changes in total money supply.

Equation (4) suggests that there is no significant relationship between changes in total money supply and changes in exports. Either are the relationships between exports and currency in circulation, fixed and saving deposits and demand deposits. Thus we can conclude that changes in exports do not affect money supply and therefore income.

A regression analysis was also carried out between changes in exports and changes in private expenditure, for if, following the Keynesian type of analysis, producers income fluctuates in sympathy with export earnings, one would anticipate parallel fluctuations in private consumption expenditure. Private consumption expenditure is expected to fluctuate with exports since 80% of the national income is to be found in the urban centres where export trade predominates. The 80% of the population which populate the rural sector are dependent on subsistence farming and have very little monetarised economic activities. The exporters and traders (largely export related) form the bulk of the private consumption expenditure.

The result of the regression is the following: -

$E_p = 29.05 + 0.07X$ $r^2 = 0.01$ $t = 0.33$ which suggests that there is no significant relationship between private consumption expenditure (E_p) and exports (X).

Comparison between the index of instability of exports and the index of instability of Gross Domestic Products also support the conclusion that changes in exports did not affect income. For the period 1960 to 1973 the instability index for export was 11.89 whereas the index for Gross Domestic Product was only 3.73. Thus, despite high export fluctuations, income has remained relatively stable.

2.3.2 Relationship between Changes in Export Earnings, Changes In Imports And Changes in Gross Fixed Capital Formation

A priori capital formation is an essential element in economic growth and development, and for countries whose economic structure is not geared to the production of capital goods, imported investment goods are of crucial importance. The importance of imports is usually indicated by its share in Gross Domestic Product and by its composition, especially with respect to the share of capital goods.

The ratio of imports to Gross Domestic Product for the period 1960 to 1973 is given in Table (19). On average total imports come up to 63.3% of GDP.

TABLE 19: RATIO OF IMPORTS TO GDP

Year	Imports (\$ million)	GDP (\$ million)	Imports/GDP (%)
1961	411.7	480	77.9
1962	400.6	515	77.8
1963	396.5	550	72.1
1964	429.7	595	72.2
1965	484.9	683	70.0
1966	525.7	768	68.5
1967	536.9	784	68.5
1968	574.8	845	68.0
1969	579.8	914	63.4
1970	660.4	954	69.2
1971	693.2	1,061	65.3
1972	470.8	1,144	41.2
1973	599.5	1,301	46.1

As for composition, the import of fuel has been the most prominent up until 1972 (Tables 20 and 21), and if one defines Linder's concept of "input imports" to include not only capital goods but also raw materials, intermediate goods and fuels, then this import would constitute about 65% of total imports. Food is the next largest item, averaging about 16% in the period 1960 to 1973.



TABLE 20: PRINCIPAL IMPORTS OF SARAWAK BY SECTION (1960-1973)
(\$ MILLION)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Food	59.5	66.2	68.3	77.3	86.1	89.3	93.3	95.0	88.6	96.9	101.8	99.8	104.3	148.0
2. Beverages & Tobacco	9.9	9.5	9.5	12.2	15.7	12.6	11.4	11.6	16.2	24.4	27.3	27.4	24.6	28.6
3. Manufactured Products	43.5	46.3	47.4	50.6	52.7	64.5	73.1	66.2	72.0	76.3	97.1	97.0	102.0	141.8
CONSUMER GOODS	112.9	122.0	125.2	140.1	154.5	166.4	177.8	172.8	176.8	197.6	226.2	224.2	230.9	318.4
4. Mineral Fuels	251.1	201.6	207.2	186.8	191.7	212.4	237.8	252.9	283.0	272.5	293.0	321.7	92.9	92.9
5. Other Imports	54.8	59.5	34.4	29.9	34.0	38.2	41.4	40.1	40.7	43.5	54.6	56.1	66.4	87.0
RAW MATERIALS AND INTERMEDIATE GOODS	305.9	261.1	241.6	216.7	225.7	250.6	279.2	293.0	323.7	316.0	347.6	377.8	159.3	179.9
6. Machinery and Transport Equipment	26.1	28.6	33.9	39.7	49.6	68.0	68.7	70.8	70.3	66.1	86.7	91.1	80.7	101.3
CAPITAL GOODS	332.0	289.7	275.5	256.4	275.3	318.0	347.9	363.8	393.0	382.1	434.3	468.9	240.0	291.1
TOTAL IMPORTS	444.9	411.7	400.7	396.5	429.8	485.0	525.7	536.6	570.8	579.7	660.5	693.1	470.9	599.5

TABLE 21: PRINCIPAL IMPORTS OF SARAWAK BY SECTION 1960-1973
(%)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
1. Foods	13.4	16.1	17.0	19.5	20.0	18.4	17.7	17.7	15.4	16.7	15.4	14.4	22.2	24.7
2. Beverages and Tobacco	2.2	2.3	2.4	3.1	3.7	2.6	2.2	2.2	2.8	4.2	4.2	4.0	5.2	4.8
3. Manufactured Products	9.8	11.2	11.8	12.8	12.3	13.3	13.9	12.3	12.5	13.2	14.7	14.0	21.7	23.7
CONSUMER GOODS	25.4	29.6	30.2	35.4	36.0	34.3	33.8	32.2	30.7	34.1	34.3	32.4	59.1	53.2
4. Mineral Fuels	56.4	48.9	51.7	47.1	44.6	43.8	45.2	47.1	50.1	47.0	44.4	46.4	19.7	15.4
5. Other Imports	12.3	14.5	8.6	7.5	7.9	7.9	7.9	7.5	7.1	7.5	8.2	8.1	14.1	14.5
RAW MATERIALS AND INTERMEDIATE GOODS	68.7	63.4	60.3	54.6	52.5	51.7	53.1	54.6	57.1	54.5	52.6	54.5	33.8	29.9
6. Machinery and Transport Equipment	5.9	6.9	8.5	10.0	11.5	14.0	13.1	13.2	12.2	11.4	13.1	13.1	17.1	16.9
CAPITAL GOODS	74.6	70.3	68.8	64.6	64.0	65.7	66.2	67.8	69.3	65.9	65.7	67.6	50.7	46.8

Given the high percentage of import to GOP and the high percentage of "input imports" to total imports changes in imports would have significant effects on investment. But imports have to be paid for by exports (foreign capital inflow is very low for the period 1960 to 1973). The capacity to import and to invest is determined by export and therefore fluctuations in exports can be expected to affect imports and investments. We need therefore to examine the relationship between changes in export earnings, changes in imports and changes in fixed capital formation.

The nature of the relationships between these changes is indicated by the results of the following regression analysis. In this analysis it is assumed that there is a lag of one year between both exports and imports and exports and investment. The results are as follows: -

$$\text{Total Imports}(1+I) = 398.52 + 0.2871 X(I) \quad r = .473 \quad r' = .224 \quad 1 = 1.5$$

$$\begin{array}{l} \text{Capitol Goods} \\ \text{Imports}(1+I) \end{array} = 343.52 + 0.0059 X(I) \quad r = .011 \quad r' = .0001 \quad 1 = 0.31$$

$$\begin{array}{l} \text{Gross Capital} \\ \text{Formation}(t+I) \end{array} = 77.21 + 0.1999 X(I) \quad r = .4279 \quad r' = .1832 \quad 1 = 1.3389$$

$$\begin{array}{l} \text{Consumer} \\ \text{Goods}(1+I) \end{array} = 78.68 + 0.2304 S(I) \quad r = .654 \quad r' = .4278 \quad 1 = 2.445$$

The above equations suggest that there is no significant relationships between imports and exports or between capital formation and exports. Even consumer goods import seem to be unrelated to exports. The reasons for this are given in Chapter 2.4.2.

2.3.3 Relationship Between Changes in Export Earnings and Changes in Government Consumption Expenditure

Fluctuations in export earnings can also affect domestic income through changes in government expenditure. In an economy which is strongly oriented towards the export of primary products there is a prima facie case that government revenue would come largely from export taxes and consequently fluctuations in exports would cause government revenue to be volatile which in turn tends to destabilize domestic income via corresponding changes in government expenditure.

This situation, however, is not to be found in Sarawak. Despite the very large share of exports in GDP, export taxes constituted only a small percentage of total revenue as may be seen from Table (22).

TABLE 22: EXPORT TAXES AS %OF TOTAL REVENUE

Year	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
%	2.2	2.4	1.6	2.7	3.7	1.4	2.3	0.1	0.1	2.6

This arises as a result of financial arrangement within Malaysia or rather between the Federation of Malaya and Sarawak.(2) Taxes in Sarawak are classified into two types, i.e. Federal Taxes which go to Federal Government or State taxes which go to State Government. Thus export duties on petroleum, rubber and pepper which are in fact the major export products of Sarawak, all go to the Federal Government. Sarawak is left only with export taxes on timber (and other forest products) and agricultural products such as sago and coconut oils which are rather negligible in amount. These do not rate high in the total revenue. The major share of the State Revenue comes from royalties from forests, import duty on petroleum, and allocation from Federal Funds. The details of these sources are given in Table (23).

TABLE 23: SARAWAK STATE REVENUE (%)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Export Duty On Timber	1.9	1.9	3.5	2.6	2.3	1.4	0.6	0.1		
Export Duty On Forest Product	0.3	0.3	1.0	0.1	1.4	0.2	1.7	0.1	0.1	2.6
Forests										
- Royalties										
- Permits	14.2	14.7	1.2	16.9	20.5	22.1	22.1	26.4	24.3	21.1
Import Duty On Petroleum	8.5	8.2	8.2	7.5	6.8	8.9	10.3	10.6	10.9	12.4
Exercise										
- Petroleum Products	1.0	1.2	1.3	1.3	1.3	1.6	1.2	1.6	1.5	1.8
Lands & Mines	4.7	4.3	3.1	2.9	2.6	1.0	6.5	6.8	6.4	5.7
Licences and Internal Revenue	6.9	6.7	6.3	6.0	5.6	7.4	7.2	6.2	7.4	8.6
Government Services	8.1	10.1	7.3	7.1	3.8	4.4	2.5	2.0	1.9	2.1
Government Property	8.5	6.4	10.5	10.8	11.3	13.6	15.1	15.1	13.0	10.4
Miscellaneous Receipts & Land Sales	11.8	8.0	6.9	5.3	7.2	8.2	6.2	5.5	6.1	8.3
Allocation From Federal Funds	33.9	38.1	37.7	39.7	37.3	26.2	27.6	25.4	28.3	26.7

From the Table it is obvious that Federal Grants form a large share of total revenue. These grants are not given on the basis of Federal revenue collected in Sarawak. The sizes of the grants are fixed by the Federal constitution, and according to Schedule Tenth of the said constitution, Sarawak was to receive "a grant of which the amount in 1964 and each of the four following years shall be respectively \$3½ million, \$7 million, \$11½ million, \$16 million and \$21 million, and in later years shall be fixed on a review under article 112D". The amount for the later years has now been fixed at \$16 million.

With regard to revenue the situation in Sarawak is not typical of many less developed countries and because of the low ratio of export taxes to total revenue one cannot expect changes in export to significantly influence total revenue or government consumption expenditure. A regression analysis of changes in exports and changes in government consumption expenditure does not show any form of relationship.

$$\Delta G = 15.19 - 0.0286X$$

$$\Delta G_{t+1} = 15.38 - 0.0546X_t$$

On a year to year basis the correlation coefficient is in fact negative. It is also negative on the basis of a 1 year lag for government consumption expenditure

However, there is a strong association between government consumption expenditure and State Revenue - minus - Federal Grants.

$$G_t + I = 8.41 + 2.42 R_t, \quad r^2 = .61 \quad t = 3.31$$

This is plausible because the Federal Grants are largely spent on long term products and government consumption expenditure is financed by State revenue. But, because export taxes constitute only a small percentage of this revenue (See Table 22) again fluctuations in exports have had no effects on total government consumption expenditure and therefore on income.

Contrary to expectation this chapter indicates that the domestic economy has been insensitive to export fluctuations. Reasons for this insensitivity must therefore be explored. This is the objective of the next section.

2.4 DOMESTIC INSENSITIVITY TO EXPORT INSTABILITY

2.4.1 A Priori Argument

The a priori reasoning in favour of a powerful and systematic relationship between export instability and fluctuations of the domestic economy in under-developed countries is very convincing. In the case of Sarawak such a relationship is even more to be expected in view of the degree of export instability, the very large share of exports in the national income, the monetary system based on the currency Board and the almost complete absence of stabilization policy for the State. Yet

as was seen in the previous section the Sarawak economy as a whole has been insensitive to export fluctuations. Reasons for this insensitivity may now be examined.

According to MacBean the explanation for the insensitivity of the domestic economy to export fluctuations in under-developed countries are more likely to be found in the characteristics of these economies. "Many under-developed countries have particular characteristics which are likely to dampen the influence of export fluctuations" Two characteristics have been discussed. One is that "In many under-developed countries the largest and most important firms in the foreign trade sector of the economies are, or were until recently, expatriate firms" ²² In such firms "profit are almost certain to fluctuate in line with fluctuations in the total value of export proceeds and if these firms are satisfied to hold their operating costs payment to government steady while letting profits vary according to good or bad years, the foreign exchange receipts of these countries, net of profits are made relatively more stable". The more repatriated profits are allowed to fluctuate the more stable are these companies payment to the government and to factors of production in the country in which the firms operate.²³ In this way the presence of these firms cushions the economy from the shock of export fluctuations.

The other characteristic discussed by MacBean is the ownership and operation of large sectors of the economy by "a class which is very clearly separated from the mass of the people and whose tastes and outlook are closer to the upper middle classes of Europe and America than to those of the general indigenous population".²⁴ The consumption pattern of this class of people is heavily oriented towards imports and foreign travel vis-a-vis the consumption of locally manufactured goods or services. This class has a "very high income elasticity of demand for goods and services which have to be paid for in foreign exchange. Fluctuations in the income of such people result in relatively little change in their consumption of domestically produced goods. Rather it is their savings and demands for imports which fluctuate in sympathy with export proceeds. If indeed their marginal propensity to consume domestically were close to zero the secondary effects of a contraction in their incomes would be negligible. Given these character-

²¹ MacBean p. 83

²² MacBean p. 83

²³ MacBean p. 86

²⁴ MacBean p. 89

istics it is not surprising that fluctuations in the export proceeds of under-developed countries may have little or no effect on the domestic economy.

The characteristics described by MacBean are found in the economy of Sarawak. In the first place the export sector is indeed dominated by a foreign owned firm, Sarawak Shell Berhad, and by a group of traders dealing largely with export trade. This very same group of people forms the entrepreneurial and merchant class whose level of income is much higher than that of the masses and whose consumption pattern is oriented towards imported goods.

The economy of Sarawak has one other characteristic which would dampen the effect of export fluctuations on the domestic income and expenditure. This is the special financial arrangement which Sarawak has as a state within the Federation of Malaysia. This arrangement has the effect of reducing the significance of exports on the domestic economy.

These characteristics are examined in the following section.

2.4.2 The Foreign Export Sector of Sarawak

As was shown earlier the major export sector of Sarawak are the petroleum and the timber industries. Together these two industries formed, on the average, as much as 75.3% of the total exports for the period, 1960-1973. Therefore, if changes in the export proceeds of these industries have little or no effect on the domestic economy, then total export instability as a whole cannot be expected to have significant repercussions on the domestic economy.

The fluctuation in export proceeds of these two industries have in fact not had significant repercussions on the domestic economy. The income which is accrued to these industries seem to have largely leaked out in the form of repatriated profits and expenditure on imports.

In the absence of relevant statistical data it is extremely difficult to concretely support the observation made above. However, knowledge of the set up and operation of the industries points very much to the same conclusions.

The petroleum industry which contributed more than 53% to total exports between 1960- 1973, until the 1st of April, 1975 was completely foreign owned and the company had a great deal of freedom under the concessionary Agreement which gave Shell the right to explore and freely export any oil found. In return the Sarawak Government has been collecting a royalty of 10% of production of inshore oil

or 5% of offshore oil. It is clear from here that only a small part of income from the export proceeds of petroleum accrues to the State. In fact in the period 1964 to 1973 the government revenue from petroleum averaged only 5.5% with the highest figure of 6.8% in 1971. Data on the distribution of income or profits from petroleum exports are not available but it is beyond doubt that a large share of export proceeds was repatriated. In Sarawak an investment and capital market is absent and even if large profits for potential reinvestment were available, reinvestment would not occur in view of the absence of investment opportunities.

In any case, the expenditure incurred by the petroleum industry does not depend on the export proceeds of the product. Changes in export proceeds have little effect on expenditure. Petroleum is a long term industry. The expenditure on exploration, exploitation and other investment is determined on a very long term basis, on long term income and profits and not on short term fluctuations in exports. For example, the years leading up to 1972 were years of "deficit financing" when the production of inshore petroleum was falling yet costs had to be maintained. Even expenditure on wages and salaries does not vary with short term levels of export production; employment in the industry is normally permanent in nature.

Even indirectly the activities of the petroleum industry in Sarawak are cut off from the rest of the economy. The industry is a good example of an enclaved foreign export sector. It is isolated and has hardly any linkage with any other domestic sectors. This has resulted from a number of factors. In the first place the oil deposits are found only within a small area in Miri and the operation of the industry has accordingly been confined to the Lutong (Miri) area and has not touched the rest of the country, not even the capital, Kuching, which is about 900 km away.

Secondly, the industry is a very capital intensive and specialized one; equipment, materials and other needs of the industry cannot be provided locally and have always been obtained from outside the country. Sarawak has not reached that level of industrialization or technological advancement to be able to provide the needs of a capital intensive industry.

The same dampening effect is found in the timber industry. The structure and nature of the timber operations in Sarawak are such that the income from timber exports are repatriated outside the country.

As in the case of the petroleum industry, relevant data to support this argument are not available. However, an examination of the struc-

ture and workings of the industry lead us invariably to the conclusion that income from the industry is repatriated outside.

In Sarawak all forests belong to the State and harvesting of timber for commercial purpose can only be done through the granting of forest concessions (or licences) which are issued either to an individual, group of individuals or to companies. The concession holders invariably contract out the harvesting and the export of the timber. To date the contract firms are largely Japanese firms, which not only harvest the timber but also normally are the importers of the timber. In most cases these firms not only provide the machinery and equipment but also arrange for shipping, insurance, etc. The important thing is that these activities are normally done directly and therefore have little, if any, repercussions on the domestic economy. The income from timber export goes outside in the form of repatriated profits or in the form of payment for machinery and equipment directly imported by the firms. Sarawak does not produce any of the machinery or equipment locally.

The leakage of income from exports outside the country also takes place in the form of import of consumer goods, including luxury goods. This is due to two related reasons. One is the presence of a class of entrepreneurs and merchants as described by MacBean - a class of people with high propensity to consume and import. Second is the fact that Sarawak is an agricultural country where manufacturing is still negligible and where any manufactured items, even simple ones, have still to be imported.

No data is available on the statistics of the entrepreneurs and merchants or their propensity to import. But some rough estimates may be attempted. Data from the department of statistics estimates that seventy per cent of the population are almost exclusively subsistence farmers living in the rural areas. Of the urban population about twenty per cent own about fifty per cent of the national income. In relative terms the per capita income of the top twenty per cent is ten times that of the lower income group. The income of the top twenty per cent can be related to export since they are largely businessmen and business activities in Sarawak are largely connected with export trade.

The consumption pattern of this class of people is oriented towards imported goods. This is a class of people who are rich and whose propensity to consume is very high. And because locally manufactured goods are non-existent their propensity to import is also extremely high. Changes in their income resulting from changes in exports are therefore not reflected in the domestic economy.

It may be expected that there is a strong correlation between changes in exports and changes in the import of consumer goods in view of the high propensity to import consumer goods, by the traders. This, however, has not been so as was shown in Chapter 2.3.2. The reason for this is that the level of income of this group of people is already very high and with their accumulated wealth the changes in their income from exports no longer have significant effects on their capacity to import. Another reason may be added, and this is that a high propensity to import is also the characteristic of the expatriates and the other highly paid workers of the Sarawak Shell Berhad. Since their income is not related to export changes their capacity to import consumer goods does not change with changes in exports. Their high level of consumption of imported goods only increase the level of income repatriated outside.

The outflow of income resulting from the nature and structure of the export sector, as described above may be seen from the data on the Balance of Payments for Sarawak (1961-1969) given in Table (24) which shows a consistently high outflow of Private transfers (net) as well as of Services Balance.

TABLE 24: SARAWAK - BALANCE OF PAYMENTS, 1961-1969 (Sm)

Item	1961	1962	1963	1964	1965	1966	1967	1968	1969
1. Export (f.o.b.)	389	399	361	355	426	459	498	597	623
Imports (T.o.b.)	354	370	368	390	465	504	504	540	523
Visible Balance	35	29	- 7	- 35	- 39	-45	- 6	57	100
2. Non-monetary Gold (ner)	- 28.6	- 3.2	- 2.6	- 3.4	- 1.3.	- 1.3	- 1.0	- 0.6	
3. Freight and Insurance (net)	- 10.2	-10.4	- 8.8	- 5.6	- 10.4	- 12.8	-23.6	- 25.5	- 25.4
4. Other Transportation (net)	5.4	3.0	2.5	1.6	1.8	2.0	-1.8	- 1.0	-0.7
5. Travel (net)	- 1.3	- 1.4	- 1.5	- 1.8	- 2.6	- 3.1	- 3.1	- 3.2	- 3.3
6. Investment Income (net)	-16.1	- 10.9	- 11.1	- 16.0	- 14.0	- 15.9	- 8.7	- 8.0	- 14.1
7. Government o.i.e. (net)	-0.2	-	1.2	18.0	43.0	26.0	21.0	14.7	17.5
8. Other Services	-3.1	-3.4	-3.9	- 6.6	-8.4	- 21.7	- 35.6	-45.0	- 49.5
Current Amount (I to 8)	- 19.1	2.7	- 31.1	-48.8	- 32.9	- 71.8	-58.8	-11.6	24.5
Services Balance (3 to 8)	-25.5	- 23.1	- 21.5	- 10.4	9.4	- 25.5	-51.8	- 68.0	- 75.5
9. Private Trans Transfer (net)	- 2.4	-2.2	-2.4	- 3.8	-3.9	- 4.0	- 4.0	-4.0	-3.9
Total (I to 9)	16.7	0.5	- 33.5	- 52.6	-36.8	-75.8	-61.8	7.6	20.6

Source: 1961 - 1964 Department of Statistics,
 Data for IMF Consultations, 1966, pp. 61 - 69.
 1965 - 1969 from Department of Statistics, unpublished.

*Figures for other years are not available.

2.4.3 Special Financial Arrangements

Earlier it was pointed out that Sarawak is an independent state within Malaysia. But Malaysia is a Federation made up of thirteen states, with a central government which in effect means that Sarawak cannot be autonomous despite being an independent state. However, unlike most federations of states, Malaysia is not a nation of equal states with a preponderance of power in the central government. Under the Constitution of Malaysia the Borneo States (and also Singapore before its sepeation in 1967) enjoyed more power than the states in Malaya. H.E. Grove thus rightly comments that, "For some significant purpose the Federation has the appearance of a four unit entity with one of the units Malaya, being subdivided into eleven parts. The Malaysian Constitution did not in any real sense bring the new states of Singapore, Sarawak and Sabah into association with the former states of Malaya, as such. What it did was to bring the new states into association with the former Federation of Malaya per se".²⁵

The greater autonomy of the Borneo States is the result of the particular circumstances prevailing at the time of their joining Malaysia. Unlike the states of Malaya their interest in federating was not merely a political one. There were social, economic and financial interests too. The greater constitutional powers of the Borneo States, moreover, reflect the fact that these territories do not form a natural geographical administrative union with the rest of Malaysia.

It is this situation which brought about the special fmancial arrangement which Sarawak has within Malaysia. Sarawak is subject to Federal and State finance, and it is the presence of Federal finance and its relationships with state fmance which also partially explains the insensitivity of the domestic economy to export fluctuations.

In the first place not all revenue from exports goes to the State. The State revenue comes both from Federal and State Governments. Export duties on rubber and pepper, two of the four major commodities, go to the Federal Government, as do duties on other agricultural products. These commodities form more than 18% of total exports. Only export duties on timber and forest products, which form about 23% of total export value, go to Sarawak. Petroleum and petroleum products which form more than 50% of total export value are not subject to export duty. The revenue from petroleum and petroleum products comes in the form of royalties. This means that the revenue of Sarawak

does not depend on exports to the extent that might be suggested by the share of exports to GDP. Figures for the period 1964 to 1973 actually indicate that export duties formed on the average just over 2% of total state revenue (See Table 25).

TABLE 25: SHARE OF EXPORT DUTIES IN TOTAL REVENUE

Year	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
%	2.2	2.2	4.5	2.7	3.7	1.4	2.3	0.1	0.1	2.6

Source: Statistics Department, Kuching.

The biggest share of total revenue comes from Federal Funds allocations which averaged 32.1% for the same period, and these allocations did not depend on contributions from state via taxes or any other source of income. The allocations of Federal Funds to the states are outlined in the Tenth Schedule of the Constitution which also lists the sources of revenue assigned to the states. According to the Constitution there are three types of grants payable to the Sarawak. The **first** is the Capitalisation Grant which is calculated at the following rates:

- (a) for the **first** 50,000 persons at the rate of \$15 per person,
- (b) for the next 200,000 persons at the rate of \$10 per person,
- (c) for the remainder at the rate of \$4 per person.

The second type of grant is State Road Grant which is calculated by multiplying:-

- (a) the average cost to a state of maintaining a mile of state road, including the cost of repairing and maintaining any bridges, viaducts or culverts forming part thereof or connected therewith at the minimum standard determined **for** state roads in those states by the Federal Government after consultation with the national council: by
- (b) so much of the mileage of the state roads in the State as qualifies for grant.

In addition Sarawak also receives Special Grants to Borneo States which includes a grant of \$5,800,000 each year (until 1973), a grant of \$3.5 million, \$7 million, \$11.5 million, \$16 million and \$21 million in the years from 1964 to 1968 respectively. From 1969 this grant was fixed at \$16 million a year. The result of all these grants is that allocations from Federal Funds have in fact been the major source of state revenue as can be seen from Table (26).

TABLE 26: ALLOCATIONS OF FEDERAL FUND
AS % OF TOTAL REVENUE

Year	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
%	33.9	38.1	37.7	39.7	37.3	26.2	27.6	25.4	28.3	26.7

Source: Statistics Department, Kuching.

Federal Contribution to total State revenue is not the only factor which affects the domestic expenditure. The latter also includes the expenditure directly financed by the Federal Government. Indeed, in the period 1965 to 1973, this expenditure was consistently higher than the State expenditure except for 1964 and 1971. (See Table 27).

TABLE 27: STATE AND FEDERAL GOVERNMENT EXPENDITURE
(\$ MILLION)


Year	State Expenditure	Federal Expenditure
1960	84.3	
1961	81.4	
1962	84.0	
1963	90.5	
1964	70.3	62.9
1965	57.4	77.1
1966	53.3	79.0
1967	79.0	83.4
1968	63.5	85.1
1969	59.2	86.6
1970	64.9	94.7
1971	101.7	96.8
1972	128.7	137.9
1973	119.0	172.1

Source: Annual Bulletin of Statistics,
Sarawak, 1975. Government
Printer, Malaysia.

The characteristic of the Sarawak economy as described above, namely, the enclaved export sector, the high level of imports in relation to income and the special **financial** arrangements do not permit export fluctuations to have any significant effects on the domestic economy. This, however, does not mean that economic activities in Sarawak were not affected by fluctuations in exports. In fact, despite the insensitivity of the economy as a whole, the agricultural producers and the agricultural sector have been adversely affected. The following section examines how the agricultural producers and the agricultural sector are affected by fluctuations in exports.

2.5 EFFECTS OF EXPORT INSTABILITY ON AGRICULTURAL PRODUCERS

The insensitivity of the domestic economy to export fluctuations should not be interpreted to mean that no body or sector has been adversely affected by changes in exports. The domestic economy was insensitive to export fluctuations because of certain features of the economy, i.e. the enclave nature of a large part of the export sector (namely petroleum and timber industries), import leakages and the role of Federal Revenue and Expenditure in Sarawak. Despite this insensitivity the producers of agricultural products for exports have been adversely affected. Furthermore, the fluctuations in the exports of agricultural products can be proved to be not conducive to agricultural development in the State. Yet, development in the agricultural sector is of great importance for the future of the State. The number engaged in the production of agricultural products for export is still small but is increasing rapidly and given the high rate of population growth of 3%, the expected increase in the industrial sector is not likely to be able to absorb the increasingly surplus labour. As it is, the agricultural sector is supporting 75% to 80% of the total population, mostly on subsistence farming. The production of agricultural products for export is a logical development for those presently engaged in subsistence farming, if they are to raise their living standards. Thus although hitherto only a small percentage of the agricultural population was affected by fluctuations in exports the number is rapidly increasing. And if the agricultural sector is to be developed to support the increasing rural population then it is important that the effect of export fluctuations on the agricultural producers be examined with a view to reducing or eliminating any adverse effects.

The major agricultural export products of Sarawak are timber, rubber and pepper and we can now examine how those producing these commodities are affected by fluctuations in their exports.

2.5.1 The Timber Industry*

The timber industry of Sarawak, which comprises mostly logging, is almost exclusively export oriented; commercial production for domestic consumption is very small. Thus fluctuations in the export of timber can be expected to directly affect those engaged in the industry. Furthermore, the export of timber and timber products shows a rather high instability index. For the period 1964-1973 the index (15.06) was higher than the index for total exports (11.4) for the State.

Detailed data on relevant aspects of the industry are not available. It is therefore not possible to quantify the effects of export fluctuations on the industry. However a fair idea may be gained by looking at the activities of those engaged in the industry during the period of slump and boom.

According to the 1970 logging census (the only logging census carried out) logging employed 18,963 full time and 1,265 part time workers giving a total of 20,228 workers or 5.8% of the total labour force. This figure is fairly high compared to those in other industries. This comparison is given in Table (28).

In addition to those in the logging industry there are also those engaged in the wood products manufacturing industries. The number employed in the latter industries in 1970 was 7,139 or 2.1% of the labour force. Comparison of employment figures for all the manufacturing industries shows that wood manufacturing is by far the largest employer (See Table 29). Together logging and manufacturing of wood products in Sarawak contributed 7.9% of total employment. Table (28) and (29) give the figure for only one year (1970). But in view of the slow and limited changes in the economic structure of the country, these figures may be taken as representative of other years.

The effects of fluctuations in timber exports on timber workers are direct, because the industry, especially the logging sector, is highly labour intensive and workers are largely casual labourers engaged on a daily paid or contract basis and as such are easily dismissed without

•A more detailed description of logging is given in the Chapter on "causes of Export Instability".

much notice. **In** the event of a slump loggers and sawmillers are the **first** to go. Key personnel such as camp managers, clerks, mechanics and surveyors are usually retained to maintain the camps, roads and railways and to service and repair machinery. **In** the absence of time series data it is difficult to provide statistical evidence to show this effect. However, isolated data give a clear picture of this. For example, according to **figures** collected by the Department of Labour as a result of the fall in timber (especially logs) exports in the timber slump of 1974 no less than 6,078 (or 36% of total) workers in the logging, sawmilling and manufacturing of timber were retrenched, while another 2,065 more were "affected", i.e. given less work, less pay or bonuses, etc.

The real economic effects of such slumps are however, dampened by the fact that these workers are rural people usually from surrounding or nearby areas, and they normally return to their villages or long

TABLE 28: LABOUR FORCE BY SECTOR (1970)

Industry	No. of Workers	% of Labour Force
1. Agriculture, Forestry, Hunting and Fishing of which Logging	204,965	59.2
2. Agricultural Products Requiring Substantial Processing	20,228	5.8
3. Mining and Quarrying	23,986	6.9
4. Manufacturing	1,108	0.3
5. Construction	17,003	4.9
6. Electricity, Gas, Water and Sanitary Services	5,341	1.5
7. Commerce	1,410	0.4
8. Transport, Storage and Communications	17,317	5.0
9. Services	6,090	1.8
10. Activities Not Adequately Described	38,369	11.1
11. Not Working But Looking For Work	7,684	2.2
Total Labour Force	22,737	6.6
	346,009	100.0

Source: Annual Bulletin of Statistics, 1969, Statistics Department, Kuching

TABLE 29: EMPLOYMENT IN MANUFACTURING INDUSTRIES (1970)

Major Group		Unpaid Workers' Full Time		Paid Workers Full Time	
			Part Time		Part Time
1.	Processing of Estate Type of Agricultural Products in Factories Off Estate	11	16	516	60
2.	Food Manufacturing Industries	639	128	1008	81
3.	Beverage Manufacturing Industries	7	1	485	
4.	Manufacture of Footwear (Except Rubber Footwear) Other Wearing Apparel and Made-Up Textile Goods	400	34	534	181
5.	Manufacture of Wood and Rattan Products Except Furniture and Footwear	40	3	7079	17
6.	Manufacture of Furniture and Fixtures	144	10	431	2
7.	Printing, Publishing and Allied Industries	8		999	4
8.	Manufacture of Rubber Products	4		77	5
9.	Manufacture of Chemicals and Chemical Products	3		124	
10.	Manufacture of Products of Petroleum and Coal			566	
11.	Manufacture of Non-Metallic Mineral Products, Except Petroleum and Coal Products	19	2	387	2
12.	Manufacturing of Metal Products Except Machinery and Transport Equipment	126		490	5
13.	Manufacture of Machinery Except Electrical	72		285	2
14.	Manufacture of Electrical Machinery Apparatus, Appliances and Supplies	23	25	42	
15.	Manufacture of Transport Equipment	232	22	1162	2
16.	Other Manufacturing Industries	216	9	447	17
Grand Total:		2044	250	14712	378

'Usually relatives of owners.

houses whenever there is no work in the timber industry. And subsistence living in the rural areas means that there are repercussions. But it does mean a lowering of the standard of living since provisions would have to be divided among a greater number of people. The high rate of underemployment in the agricultural sector means that additional manpower would not add proportionately to output. Hence, the result of retrenchment in the timber industry is to reduce per capita food consumption.

Fluctuations in employment necessarily mean fluctuations in the incomes of those engaged in the industry. And these in turn affect the economic activities of certain towns which are closely associated with the timber industry. These are, of course, indirect effects for, although the logging and sawmilling industries are not "linked" to other sectors, the industries have produced some "spin-off" effects and these are quite obvious in some towns in Sarawak, and such as Sibul, Miri and Bintulu. In Sibul, for example, it is well known that general business activities tended to reflect the performance of the timber trade. Hotels and night clubs have always done well in times of timber booms. In the log market slump of 1970 several night clubs closed down whereas the opposite occurred during the timber boom of 1973.

In terms of income the volume (largely wages) involved here is too small to be reflected in the national figure. However, it is obvious that a large number of workers are affected by fluctuations in the export of timber.

2.5.2 The Rubber Industry

As in the case of timber, rubber production in Sarawak is purely for export. Fluctuations in the export of rubber may however, be strongly influenced by changes in stocks. If, for example, falling exports are accompanied or preceded by an increase in stocks, then production would not be affected much. This is likely where the producers and exporters are different people, as is the case in Sarawak. Even when demand for exports is low, exporters may still buy from producers to increase their stock in anticipation of higher future demand.

Figures for production and stocks of rubber are available only since 1964 and these, together with the corresponding figures for exports, are given in Table (30).

TABLE 30: PRODUCTION, STOCKS AND EXPORTS OF RUBBER (TONS)

Year	Production	Stocks	Exports
1964	42,871	1,260	42,959
1965	40,355	1,281	40,034
1966	33,245	935	33,589
1967	29,021	1,513	28,445
1968	23,261	980	23,794
1969	38,838	1,089	38,729
1970	21,478	1,107	21,460
1971	19,239	1,067	19,279
1972	19,548	992	19,623
1973	41,675	1,330	41,337

From these figures, stocks do not seem to have any significant effect on exports. In the first place, except for three years (1966, 1968 and 1972), the volume of stocks did not change significantly. In the second place exports correspond closely to production. This close correspondence is to be expected since production is **highly** price elastic. Because only about 1/3 of the rubber trees, at anyone time, are put under production, the latter can be increased (or decreased) by simply tapping the trees more (for less) frequently, e.g. five days instead of three days a week or vice versa. As will be further shown in Chapter 3 below, the rubber industry in Sarawak is consistently operating under-capacity and as such production can be increased at will. The main determinant of the volume of production is export price. **Therefore** changes in the export price of rubber directly affect the rubber producers.

According to the 1970 census those engaged in rubber production numbered as many as 19,800 or 3.4% of the total labour force. These are mostly small holders with **4-6** acres of land planted with rubber. These farmers do not rely solely on rubber. They are also engaged in subsistence agriculture, mainly in rice cultivation.

Fluctuations in the price and consequently in the export of rubber means that there is a frequent movement by these farmers between rubber and subsistence farming. They also move into other crops such as pepper but this has neither been significant nor permanent. Several reasons can be given for this. Firstly there is the belief that rubber price will always go up after a fall. Secondly if other crops such as pepper are to be planted, then the rubber trees must be replaced with other crops because of shortage of land. Furthermore, replacement would require

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1972	19,548	992	19,623
1973	41,675	1,330	41,337

From these figures, stocks do not seem to have any significant effect on exports. In the first place, except for three years (1966, 1968 and 1972), the volume of stocks did not change significantly. In the second place exports correspond closely to production. This close correspondence is to be expected since production is highly price elastic. Because only about 1/3 of the rubber trees, at anyone time, are put under production, the latter can be increased (or decreased) by simply tapping the trees more (for less) frequently, e.g. five days instead of three days a week or vice versa. As will be further shown in Chapter 3 below, the rubber industry in Sarawak is consistently operating under-capacity and as such production can be increased at will. The main determinant of the volume of production is export price. Therefore changes in the export price of rubber directly affect the rubber producers.

According to the 1970 census those engaged in rubber production numbered as many as 19,800 or 3.4% of the total labour force. These are mostly small holders with 4-6 acres of land planted with rubber. These farmers do not rely solely on rubber. They are also engaged in subsistence agriculture, mainly in rice cultivation.

Fluctuations in the price and consequently in the export of rubber means that there is a frequent movement by these farmers between rubber and subsistence farming. They also move into other crops such as pepper but this has neither been significant nor permanent. Several reasons can be given for this. Firstly there is the belief that rubber price will always go up after a fall. Secondly if other crops such as pepper are to be planted, then the rubber trees must be replaced with other crops because of shortage of land. Furthermore, replacement would require

capital expenditure and the farmers are unwilling to get rid of their rubber trees and go permanently into other crops. They can always leave rubber as long as they need to, and come back to it later.

Thus a fall in the export of rubber means that these farmers are forced into subsistence farming. This may be substantiated by examining the acreage of padi against the exports of rubber. Movement from rubber to padi must be reflected in the increase of padi acreage following falling rubber exports. Acreage instead of production of rice is considered here because production is subject to, among other things, weather conditions, so that even if there has been an increase in the number of people working on rice production, the quantity produced may not be increased. On the other hand given the predominance of shifting cultivation in rice farming, increases in manpower automatically means increased acreage. This is borne out by the figures in Table (31) which shows a strong tendency for an increase in the acreage of padi when rubber exports fall, both in terms of quantity and price, and vice versa.

TABLE 31: RUBBER EXPORTS AND RICE ACREAGE

Year	Rubber Exports		Acreage of Rice
	(Tons)	(\$ million)	
1964	42,959	60.1	295,560
1965	40,034	59.5	302,010
1966	33,589	46.2	264,486
1967	28,445	32.4	285,674
1968	23,794	26.3	337,732
1969	38,729	49.9	350,037
1970	21,460	24.0	314,475
1971	19,279	16.2	332,935
1972	19,623	14.4	359,729
1973	41,337	56.7	273,283

Movement of farmers from rubber into subsistence farming automatically means a fall in their income since rubber is a main source of cash. On top of this there is then a need to obtain credit to tide over a period of several months before their subsistence crops are ready. This usually means going to provision shops and obtaining basic

necessities such as sugar, salt, kerosene, soap, etc. It is usually the same shop where they sell their rubber and the provisions are acquired against future sales of rubber (or other crops). Thus when the rubber price goes up, and there is a movement into rubber, the additional income would normally be needed to pay for the debts incurred during the period of low price. In this way many farmers can do no better than to make ends meet. Many often get deeper into debt.

Movement into subsistence farming is not permanent in the sense that rubber is forgotten and all energies are channelled into dependence on subsistence agriculture. However, neglect of the rubber trees **does** lead to a drop in the productivity of the trees, as well as of the rubber tappers, since neglected trees surrounded by undergrowth not only produce less latex but also are more difficult for tappers to work at. In the long run this could only lead to abandonment of rubber and for many a loss of a source of income.

There is another effect which should be mentioned. Movement between rubber and subsistence farming leads to further instability. A rapid return to rubber in time of good prices leads to a sudden increase in production and the market is "flooded". This is followed by falling prices. This happens even though the exports of rubber from Sarawak is only a small fraction of world supply, and one would expect that any export from Sarawak could be absorbed. But there is the problem of transport and storage facilities and finance which prevents the ready export of more than the "usual" quantity. Additional exports would mean additional ships which would have to come usually from Singapore and would have to come empty. The last consideration means a much higher transportation cost making export of additional quantity not worth while, unless the price is really very high, which has not often been the case.

Inability to export quickly also means that exporters are unwilling to buy the additional output of rubber. In the first place the storage facilities are very limited. In fact, most exporters keep their surplus rubber in shophouses or in some temporary sheds. Exporters are also unable to buy large quantities and keep stocks because they are also limited by finance. Exporters usually buy their rubber from shopkeepers who in turn buy the rubber from the farmers. **Normally** exporters have to pay cash for their rubber and would therefore require large funding if they wanted to buy large volumes of rubber. The result of such a situation is that even though the export price is still high the internal price is soon forced down, thus starting another round of fluctuations.

The total effect of the fluctuation in the export of rubber is to force a dependence on subsistence farming. This is not difficult to achieve since as far as the rural population is concerned rice, which is the main crop of the subsistence farmer, is a "sacred" commodity which has first priority. In other words, the population prefers to have a sufficient supply of rice before embarking on producing any other crops.

The other effect is the declining importance of rubber. When the rubber trees are neglected and resorted to only when price is beyond a certain level, productivity of these trees naturally falls. Thus, to obtain the same output, more effort and time have to be put in. This has become another discouraging factor. It is not uncommon that the rubber trees are ultimately completely abandoned.

Neglect and the consequential falling productivity of the trees have another undesirable effect, i.e. that of driving the farmers into perpetual and often greater debts through the acquisition of food and provisions during the transition periods of movement from rubber to subsistence farming and back to rubber.

2.5.3 The Pepper Industry

It was shown earlier that the index of instability for pepper exports was lower than that for rubber and timber, and this may give the impression that pepper farmers have not been as badly affected. A closer examination of the pepper industry, however, seems to indicate that this impression is quite wrong and that the pepper farmers have been just as badly, if not more badly affected than their rubber and timber counterparts.

This section therefore examines the nature of the pepper industry and through that attempts to show how pepper farmers are affected by export fluctuations.

Pepper is produced from the berries of pepper vines which grow on pepper posts (supports) about 3 metres high and spaced out at about 2 metre intervals. The vines are grown from pepper cuttings which are usually obtained as a result of pruning from vines which are under 24 months old. From the clearing of the land to the harvesting of pepper berries, there is a series of laborious processes, all done manually.

Pepper cultivation requires a great deal of attention and, since no part of it is mechanized, there is a heavy demand on manual labour. After the land intended for pepper is cleared of vegetation and burnt,

it is ploughed with "cangkols" (hand hoes) and any roots and debris are removed from the field. Then moulds are burnt and on hill sides where most pepper farms are situated terraces are made. The cuttings have to be shaded with fronds of ferns until they have firmly established themselves. Generally a temporary support for each cutting is used. This is usually replaced later by a hardwood ("belian") support.

In Sarawak it is a common practice to allow the vines to fruit only 18 months after the planting of the cutting, and prior to this the flowers are plucked to allow time for the stem to grow stronger before they can take the weight of the berries. The picking of the flowers and weeding consumes most of the labour used in a pepper garden. Flower picking is done by hand. Weeding is also done by hand, usually with a hand hoe. Some farmers are beginning to use herbicides. Clean weeding is practiced by almost all pepper farmers.

The cultivation of pepper in Sarawak is done by small-holders mainly Chinese. The average area of mature farms is estimated to be 0.66 acres with about 800 vines per acre. The acreage for native farmers is usually smaller and with fewer vines (about 300). The reason for this is that the Dayak farmer, basically a padi planter, only devotes "seasonably surplus labour" to planting pepper. There are also other differences between Chinese and native pepper producers and these differences are important to the type and extent of effect of export fluctuations on these producers.

One important difference is that of expenditure on pepper posts and fertilizers. According to the 1965 pepper survey estimated cash development costs for posts and fertilizers for the **first** 3 years of planting per 100 vines is between \$150 and \$360 for Chinese farmers while for native farmers the cash ranges from \$50 and \$100. The reasons are that native farmers can generally obtain hardwood posts by the use of direct labour in the forest and they also use much less fertilizer (an average \$0.65 per vine for native and \$1.50 per vine for the Chinese farmers).

Another difference between Chinese and native farmers is their dependence on pepper for cash income. The Chinese farmer generally has some other cash crops such as fruit trees and vegetables whereas their native counterparts would normally have padi (which is cultivated for own use only) and sometimes rubber.

Despite the availability of other crops, the dependence on pepper is rather strong especially among the Chinese farmers. The extent to which pepper farmers rely on pepper has been calculated in the form of a single reliance index· which is defined as the percentage of the pro-

ductive land area which was used for pepper cultivation. This is a very crude measure but it is the only measure of reliance on pepper which could be accurately obtained and is therefore used with the knowledge that in the lower figures it is giving a result which is heavily weighted away from the true dependence on a single crop owing to the extensive nature of some competitive crop, notably hill padi. Furthermore it must not under any circumstance be concluded that a single crop reliance index of 50% implies that the farmer derives 50% of his income from pepper. In almost all cases pepper will account for a larger proportion of the family income than the single crop reliance index indicates, the exception being in those farm families where one or more members carry full time employment in a wage earning activity.

The single crop reliance indices for the eight pepper areas in Sarawak are shown in Table (32).

Table (32) indicates that in most of the pepper districts pepper is the most important crop and therefore is the main source of cash income. Only two districts, Sibü and Simanggang, seem to be not so dependent on pepper.

In both these districts rubber is more important for most farmers who have both rubber and pepper.

Dependence on pepper immediately suggests that any fluctuations in the export of pepper would affect the producers considerably, unless of course, stocking exists to break any direct relationship between exports and production. However, stocks in Sarawak are negligible and government statistics often take export figures as an approximation of production figures.

TABLE 32: SINGLE CROP RELIANCE INDEX

Area	SCRI (%)
Lundu	49
Bau	43
Kuching	66
Serian	37
Simanggang	15
Sarikei	40
Sibü	16
Miri	40
Sarawak	40

The effects of fluctuations in pepper exports on the producers varies depending on whether the latter are Chinese or native farmers. In the period under study, the majority of pepper farmers were Chinese. But the number of natives going into pepper production is increasing and it is therefore considered appropriate to also look into the effects of export fluctuations on their livelihood and standard of living.

As was mentioned above, the native farmers (mostly Dayaks) have been more concerned with rice production for their own use. Rubber or pepper has been resorted to only as a source of cash income required for certain basic needs but not normally as a full time employment. This attitude in fact explains why so few natives have taken up pepper and more actually have rubber gardens in addition to their rice production. Pepper requires constant attention and is extremely labour intensive, it cannot be left and returned to as can be done in the case of rubber. (The increase in the number of native farmers taking up pepper in recent years had been due largely to the Pepper Subsidy Scheme, which provides, amongst other things, cash to the farmers).

A fall in the price of pepper automatically means a drop in cash income and for those who have invested money, usually borrowed from creditors, this causes considerable hardship. Normally it would mean having to defer repayment and often this in turns means a substantial increase in interest when the debts are eventually paid. Many native farmers turn to rice production, which results in neglect of the pepper vines and a consequent drop in their productivity, so that even when the price is high output is low and income remains low.

The Chinese pepper farmers cannot be considered as subsistence farmers. Their livelihood depends largely on their pepper farms. There are subsidiary crops such as vegetables and poultry and pigs, but these are also sources of cash income. This heavy dependence on pepper means that the Chinese pepper producers are affected by export fluctuation in terms of income. Any fall in export proceeds would mean a drop in income. But unlike the native farmers, a drop in export proceeds due to either falling price or quantity or both, does not mean a movement to other crops. Often the alternative crops are not there. Crops such as rubber or rice production either take a long period to bring returns, or require a large piece of land which most Chinese pepper farmers do not possess. As for vegetables and poultry, there is only a limited market and farmers cannot easily turn to these when the price of pepper falls. Furthermore, there is the need to look after the pepper vines if future crops are to be maintained or increased. Besides, it is more economical (in the absence of alternative jobs) to harvest

whatever pepper there is, or put in greater effort, in order to produce more pepper to compensate for falling price. **If** the berries are not harvested there would be a complete waste, whereas if they are it would at least pay for some of the capital. The cash income Chinese pepper farmer can still stick to pepper because they do have savings to tide them over the difficult period and they are able to obtain credit from their buyers. Their ability to save springs from several factors. One is the fact that their pepper farms are usually large enough to make considerable profits in times of good harvests and/or higher prices. The native farmers' pepper farms are usually much smaller. They have fewer vines and lower productivity due to inadequate care. Secondly, their cash also comes from other activities such as vegetable growing or poultry rearing. And thirdly, the Chinese farmers are noted for their thriftiness, especially in comparison with native farmers whose propensity to engage in expensive ceremonies often follows good harvests. The Chinese farmers are therefore more "able" to face the fluctuations and may be said have built up a "stabilizing mechanism". This, however, has been helped or made possible by the fact that the prices of pepper have tended to go up and also the fact that crop diseases are less drastic than they used to be. Should there be a prolonged fall in price, say for two or three years running, the effects would be felt much more. As it is the difficulty often lies with new farmers whose attempt could at the very start meet with bad price or bad harvest. This seems to be a discouraging factor for newcomers into the pepper industry in Sarawak.

This latter aspect is of considerable significance to the future development of the economy. The need to develop the agricultural sector to absorb the rising rural population and the need for diversification of agricultural products automatically points to the expansion of pepper cultivation since pepper is the one crop which has tended to maintain a relatively steady increase in demand. At the same time, it is the national policy, in line with the objective of the New Economic Policy, to encourage more native farmers to go into pepper cultivation so as to eliminate the identification of one crop with a racial or ethnic group, which presently is the case with pepper. Yet newcomers into pepper cultivation are discouraged by the element of instability. Therefore, if expansion into pepper cultivation is to be achieved, the problem of instability must be first solved.

CHAPTER 3

CAUSES OF EXPORT INSTABILITY

3.1 PRIME FACIE CASE

The instability of export earnings experienced by the developing countries has often been explained in terms of factors operating both on the demand side and on the supply side, and in terms of three forms of concentration, i.e. concentration on export of primary products, concentration on a narrow range of export commodities and concentration of exports on a small number of developed countries.

3.1.1 Demand And Supply Factors

On the demand side three major factors are frequently held responsible for the short run fluctuation in the export of less developed countries:

- (1) fluctuations in the income of developed countries;
- (2) the development of synthetics and other substitute products; and
- (3) low price elasticity of demand for primary products.

Fluctuations in income in the developed countries are seldom disputed and its effects on the demand for primary products are clearly stated by the following quotation: -

"A major source of export instability is to be found in the cyclical variations that continue to characterise income and output in the industrially advanced countries which constitute by far the most important markets for primary commodities entering international trade. Though the postwar period has been free from economic upheavals of the magnitude of the 1920's and 1930's even the mild postwar recessions in the **industrially** advanced countries have resulted in sharp movements in the demand for primary commodities".2.

The sequence is that fluctuations in the income of developed countries leads to fluctuations in their imports and since these are largely the exports of less developed countries the exports of the latter would in turn fluctuate. It has been argued, however, that the income elasticity of demand for primary products is usually low and consequently the

effects of income changes on exports of primary producing countries may not be as sharp as frequently supposed. But then it has been counter-argued that the primary product exports of each of the less developed countries form a large part of their income or G.D.P. but only a small portion of the income of the developed countries. Thus it only needs a small change in the income of the developed countries to set off a large change in the export of the less developed countries. Furthermore there is the tendency for the developed countries' income to move in the same direction so that a fall in the income of one country is reinforced by a fall in the income of another with the consequence of a larger total change. It has for example, been estimated on a global basis that a change of only 5% in average export prices is approximately equivalent to the entire annual inflow of private and public capital and government grants to less developed countries.²⁷

Fluctuations in the demand for primary commodities also arise as a result of the development of synthetics which have often proved to be good substitutes for raw materials as in the case of rubber. It is the result of technological development and innovation which has led to changes in the demand for primary products. "New methods of production are causing economies in the use of raw materials. Remarkably rapid rates of innovation and changing consumer tastes are causing major adjustments in manufacturing output and hence in the composition of demand for raw materials".²⁸ More specifically the development of substitutes has tended to reduce the demand for natural raw materials with the effect of lowering the already low price elasticity of demand.²⁹ Low price elasticity of demand contributes to fluctuations in export proceeds since changes in price are not compensated for by changes in quantity. And when this is considered together with the changes in income the effects on fluctuations of export proceeds become more obvious.

27 Annual Economic Survey of Asia and The Far East, 1957. Reproduced in Readings in Malayan Economics by T. H. Silcock ed., 1961, p. 112, Eastern Universities Press Ltd.

28 The United Nations, Trade and Development, Commodity Trade, New York, 1964, p. 350.

29 H. C. Wallich • Stabilization of Proceeds from Raw Materials Exports, In Economic Development in Latin America, Edited by H. S. Ellis, International Economic Association, St. Martin's Press, New York.

On the supply side there are three major factors which contribute to fluctuations in both the quantity and price of export commodities. These are: -

- (i) natural factors affecting the level of output;
- (ii) technical progress; and
- (iii) the price elasticity of supply.

"It is self evident that susceptibility to climate conditions and other natural factors lend a large element of potential instability to the production of primary products; droughts, floods, pests and disease can play havoc with the output of a particular crop in one year, while favourable weather conditions can bring about an abundant output in the following year. These changes in production may lead to changes in the amount available for exports".³

Such changes may also arise as a result of technical progress in the developing countries. The introduction of new techniques of production, including the use of fertilizer or selected clones and mechanization in ploughing, planting, harvesting and storing has been rapid in many less developed countries in the past few decades. The effects of these have been to increase agricultural products and cause changes in the quantity for exports.

Short-run price inelasticity of supply is another factor which contributes to fluctuations. According to Wallich, "the short-run inelasticity of supply of most raw materials is familiar. This condition, imposed by the period that it takes to bring new capacity into production, may extend to five years or more, as in the case of coffee trees. Often an increase is not reversible or is only very slowly reversible. Elasticity in the face of a price drop becomes very small."³

The consequence of low price elasticity of supply is the inability to produce the quantity required at the right time. This arises from the nature of the decision making process determining export production in the developing countries. "For many primary commodities, the production structure is composed of a multiplicity of small scale producers or peasants whose decisions to produce, which often have to be made long in advance of sales — are often based on scant knowledge about actual or prospective market conditions and tend to be guided by past, not prospective prices. This may give rise to the familiar seesaw pattern of behaviour between production and prices - producers react to high

3. Jime Love, "Export Inilabilily Ph. D. Thesis, p. 35.

31Wallich, Slabllization of Proceeds ,p. 349.

price in one period by over producing in the subsequent period, whereupon prices fall and producers react by under producing in the next period whereupon prices rise, and so on."³²

Whether it is vanability in supply or variability in demand which is dominant in determining the fluctuations of exports is a question still very much under debate. Wallich, for example, is of the opinion that "... in principle, demand fluctuations are a source of more serious instability ... than supply fluctuations".³³ Nurkse is of the same opinion when he states that, "the export fluctuations of primary producing countries originate in the world industrial centres" Similarly M. Bye argued that, "fluctuations of activities in the leading economies are the original cause of fluctuations in the receipt of "poor countries," as countries and of producer - exporters in poor countries, as an **economic group**".³⁵

This view has not been unchallenged. The United Nations argued that "The assumed dominance of demand conditions doubtless draws much of its strength from experience in the interwar period when the very large fluctuations in industrial activity certainly had considerable impact upon the stability of trade in almost all commodities. In the more bouyant economic conditions of the post war years, however, the fluctuations in industrial activity have assumed much smaller dimensions. The influence of supply conditions upon the short-period variations in price and volume of trade have become much more readily apparent"³.

This view has also been supported by J. Adler who argues that, "In the 30's ... The decline in effective demand in the importing countries was largely responsible for the substantial and in many ways catastrophic fall in the prices of primary commodities, and for the drop in quantities taken off the market. The world wide depression of the thirties, and the ensuing collapse of commodity prices, can now be safely regarded as events sui generis, not likely to recur. This is not to say that we have come to live in a Marshallian world, where the trend of production and

32 United Nations, *World Economic Survey*, 1958, p. 43.

33 Ibid., p. 350.

34 R. Nurkse, *Trade Fluctuations and Buffer Policies of Low-Income Countries*. Kyklos, Vol. XI, 1958, p. 141.

35 M. Bye, Comments on Professor Nurkse's paper, *Kyklos*, Vol. XI, 1958, p. 180.

3. United Nations, *World Economic Survey*, 1958, p. 64.

employment is invariably and inevitably up, and that deviations from the trend can be safely disregarded as essentially self correcting. But I do mean to suggest that downward shifts of the demand curves are likely to be small and short-lived, that declines in quantities demanded are **therefore** likely to be of much smaller proportions than they were in the thirties. This way of looking at the problem . . . has the advantage of permitting us to focus on the supply side".³⁷

The conclusions which may be derived from the above views are that it is difficult to determine in broad terms whether demand or supply factors are the more dominant in causing export fluctuations, but it is quite clear that the relative importance of supply and demand differs from time to time and from commodity to commodity. This study will, therefore, look at the supply and demand of the major export products of Sarawak, each in turn. But before going into this we should also look at the other factors which have also been thought to explain export instability. These are the three forms of concentration, i.e. primary products, commodity and geographic concentration.

3.1.2 Concentration of Exports

The prevailing view is that the susceptibility of exports to fluctuate is exacerbated by their concentration, a concept which may be equated to that of putting all one's eggs in one basket. Three forms of concentration may be distinguished, that is, primary product, commodity and geographic concentration.

Primary product concentration means the specialization on the part of developing countries in the export of primary commodities. It is argued that developing countries suffer greater export fluctuations than developed countries because their exports consist mainly of primary products which are subject to greater instability in export earnings than manufactured products exported by developed countries.

According to MacBean, "An explanation of the extra instability experienced by underdeveloped countries in terms of their specialization in the export of primary products makes two assumptions. First it assumes that the typical underdeveloped country is specialized in this way and, second, it assumes that receipts from the export of primary products are inherently subject to greater short term fluctuations than are receipts from the export of **manufacturers**".³⁸ MacBean went on to say that, "The first assumption is clearly realistic" and that although

37 J. Adler, Comments on Professor Nurkse's Paper, *Kyklos*, Vol. XI. 1958, p. 155.

38 MacBean, *Export Instability and Economic Development*, p. 40.

Australia, New Zealand, Denmark, Ireland and Finland also fall into the categories of countries whose exports consist mainly of primary products, "it is clear that the typical underdeveloped country is much more heavily specialized in primary product exports than is the typical developed country"³⁹ Several other authors⁴⁰ have come to the same conclusion and one may conclude that the assumption is satisfactory.

The second assumption, however, is still debateable. In **his** study, Coppock⁴¹ found out that (world) trade in manufactures has a **higher** degree of instability than trade in primary products over the period 1948-1958. And when the overall indices for trade in manufactures and **for** trade in primary products were broken down into instability indices for different categories of manufactures from individual products on the overall indices, Coppock found out that some primary products were more unstable than some manufactured goods, but he also found out that some manufactured products were more unstable than some primary products.

A study by MacBean casts further doubts on the validity of this second assumption. His cross-sectional correlation analysis of the **relationship** between the proportion of primary exports and the degree of export instability experienced revealed that very little, if any, of the variations between export instability can be explained by the ratio of primary products exports to total exports." Essentially the same conclusion was reached by S. Naya⁴³ in his study of Asian economics: "The view that export instability results from too much specialization in primary products and too little diversification has little support here at least as far as Asian countries are concerned".

Commodity concentration or specialization on only a few commodities has also been advanced as an explanation of export instability.

³⁹ Ibid.

⁴⁰ S. D. Coppock, *International Economic Instability*, New York, McGraw Hill, 1962, p. 102, 1. Pincus, *Trade, Aid and Development: The Rich and Poor Nations*, Council on Foreign Relations/Atlantic Policy Studies McGraw Hill, 1967. pp. 252-254.

⁴¹ S.D Coppock, *International Economic Instability*.

⁴² Essentially similar results were found by B.F. Massell in the first of his two studies ("Export Concentration and Fluctuations in Export Earnings: A Cross-section Analysis"), *American Economic Review* 54, (March 1964), pp. 47-63.

⁴³ S. Naya, "Fluctuations in Export Earnings and Economic Patterns of Asian Countries", *Economic Development and Cultural Change*, Vol. 21, 1973, p. 639.

"Concentration on a few products reduces a country's chances of having fluctuations in one direction in some of its exports effect ameliorated by counter-fluctuations or stability in others"⁴⁴ This reasoning has also been stated by Massell, "The instability of total export receipts depends not only on the instability of individual items, but also on the correlation between receipts from different pairs of goods. Receipts from goods that are affected by similar market forces will tend to move together. Receipts from items that are dissimilar may fluctuate independently. In some cases fluctuations in receipts from different goods may even affect each other. A country with a large share of its exports derived from a single food or from several closely related goods will tend to experience greater instability than a country with a widely diversified export base".⁴⁵

This means that a country's total export proceeds will tend to be more stable, the more diversified are its exports, i.e. the larger the number of goods its exports, the more dissimilar these products are and the more equal are their proportions of total exports.

Despite the force of this argument, however, the hypothesis that commodity concentration leads to instability of the export earning of less developed countries has little support in terms of empirical evidence. Coppock, in his attempt to explain the instability of export earnings used forty independent variables, one of which was the index of commodity concentration, and the result of Coppock's multiple correlation was insignificant. A similar conclusion was suggested by M. Michaely whose principal concern was not with the relationship between commodity concentration and fluctuations in export earnings, but with the relationship between commodity concentration and fluctuations in export prices. Michaely found out that fluctuations in prices were positively correlated with concentration of exports and with the primary product-ratio, taking each independent variable separately. On the basis of partial correlation analysis, however, Michaely concluded that the simple relationship between export instability and the primary product ratio was "solely due to the strong association between commodity concentration and the extent of specialization in primary goods"⁴⁶

⁴⁴ MacBean, *Export Instability and Economic Development*, p. 43.

⁴⁵ Massell, *American Economic Review*, September 1970, p. 622.

⁴⁶ M. Michaely, *Concentration in International Trade, Contribution to Economic Analysis*, North Holland, Amsterdam, 1962, pp. 6- 13.

Tests by Massell and MacBean point to the same conclusions. Massell's partial correlation analysis indicated a positive but insignificant correlation between fluctuations in export proceeds and commodity concentration and he concluded that, "it is clear that the relationship between instability of export earnings and concentration of exports is a tenuous one indeed".⁴⁷ MacBean's conclusion noted the similarities in the results obtained by the different authors and he says, "All the correlation analyses yielded roughly the same answer of a very weak, if any, association between commodity concentration and export fluctuations. Since none of the samples is quite identical to another, the possibility that the results are seriously distorted by the presence of a few countries whose concentration ratio is incorrect in relatively small".⁴⁸

The conclusions ~~above~~ are further supported by a more recent study by S. Naya⁴⁹ who was concerned with the developing countries of Asia which he found to suffer from greater exports instability than other developing regions. Of his seven independent variables, Total Exports (X), Primary Product Ratio (P), Food Ratio (F), Raw Materials Ratio (R), Commodity Concentration (C), Geographic Concentration (G), Intra-Regional Export Ratio (T), only X and T were significantly related to export instability. The remaining more traditional ones are not significant.

The final form of concentration which is suggested as an explanation of export instability is geographic concentration which refers to the concentration of the export of the developing countries on a narrow group of developed countries. Massell explains that, "High geographic concentration is likely to imply greater dependence on economic conditions in one or a few countries. Fluctuations in demand in any recipient country will then have a more pronounced effect on receipts of the exporting country than if receipts were more diversified among recipients. so If exports were regionally diversified, fluctuations in demand in one region could be offset by contrary changes in demand in another consuming country.

47 Massell, *Export Concentration and Fluctuations in Export Earnings A Cross Section Analysis*, A.E.R. Vol. IIX, 1964, p. 61.

48 MacBean, *Export Instability and Economic Development*, p. 41.

49 S. Naya *Fluctuations in Export Earnings and Economic Patterns of Asian Countries*, Economic Development and Cultural Change, Vol. 21, 1973.

50 Massell, *American Economic Review*, 1970, p. 622.

But statistical analysis fails to substantiate the theory. The correlation coefficients for association between export instability and geographic concentration of export destination are actually negative, and none is significant These correlations indicate some, though rather weak, tendency for geographical concentration to be associated with less rather than more instability of export proceeds.⁵¹

Coppock⁵² and Massell⁵³ also tested this theory and produced findings similar to those of MacBean, "All their results", MacBean argues, "show that if any association exists between geographical⁵⁴ concentration and export fluctuations it is negative". In a later study Massell⁵⁵ found that geographic concentration was unimportant as an explanatory variable of, but not negatively related to, export instability. The study by S. Naya on developing countries of Asia has the same conclusion, "The regression coefficients of geographic concentration (G) have the third highest significance level in all five results, though only about equal to their standard errors. A tendency, albeit a rather weak one, is indicated that direction a large part of one's exports to a small number of trading partners give less, not more, export fluctuations".⁵⁶

The observations above indicate that export concentration is not, as frequently supposed, an important factor in export instability. However, these observations are only general observation and we are really interested in the causes of export instability in one particular country, that of Sarawak during a particular period 1960-1973. The next section, therefore, examines the various export commodities of Sarawak and their relations to total export instability.

⁵¹ Ibid., p. 44.

⁵² Coppock, *International Economic Instability*. p. 105.

⁵³ Massell, *American Economic Review*, p. 64.

⁵⁴ MacBean, *Export Instability and Economic Development*, p. 44.

⁵⁵ Massell, *American Economic Review*, 1970, p. 628.

⁵⁶ S. Naya, "Fluctuations in Export Earnings and Economic Patterns of Asian Countries", *Economic Development and Cultural Change*. Vol. 21, 1973, p.639.

3.2 CAUSES OF EXPORT INSTABILITY IN SARAWAK

3.2.1 Sarawak Export Products and Their Share of Instability

The major exports of Sarawak for the period 1960-1973 are petroleum (and petroleum products⁵⁷), timber (and timber products⁵⁸, rubber and pepper. Together, these four main commodities account for more than 90% of total exports (the average for the period is 93.6%). The biggest share belongs to petroleum (and petroleum products) which alone account for more than 50% on average for the same period. This is followed by timber which makes up 22%, rubber (J 1%) and pepper (7.2%). Other exports include sago flour and coconut oil. Exports of major commodities from Sarawak are shown in Table (33).

The relatively large share of petroleum, timber and rubber in the total exports of Sarawak suggests that the causes of export instability are to be found in these commodities.

The contribution of each commodity to total export instability, however, does not depend on the percentage share of each commodity in total export alone. It depends also on the instability index of each commodity. Thus to get the contribution of each commodity to total export instability it is necessary to weigh the percentage commodity distribution of exports by the instability index of each commodity. This is done below and the resulting index for each commodity is expressed as a percentage of the sum of the products for all the commodities.

According to the index of export instability rubber exhibits the most violent fluctuations while petroleum displays the least fluctuation (Table 34). However, when the percentage share of each commodity in total export is also considered the commodity which contributes most to total export fluctuation is timber followed by rubber and petroleum and pepper. As is shown in Table (35) fluctuation in timber contributed as much as 32.9% of total export fluctuation while rubber contributed 26.5% and petroleum 10.7%. Pepper and "other products" also make a significant contribution to total export fluctuations.

57 Petroleum products include Petroleum partly refined, motor and aviation spirit, kerosene, diesel and fuel oil and lubricants. These products form only a small percentage of total petroleum exports and it is convenient to leave them out.

s8 Timber products include mouldings and dowels, plywood and veneer and wood-chips. Their share in total export of timber is small.

TABLE 33 EXPORT OF MAJOR COMMODITIES FROM SARAWAK 1960-1973 (%)

Year	Petroleum And Peroleum Products	Timber And Timber Products	Rubber	Pepper	Sago Flour	Coconut Oils	Other Exports
1960	56.9	8.9	25.1	3.5	0.6	0.2	4.8
1961	54.0	10.5	20.9	7.2	0.8	0.4	6.0
1962	55.6	0.0	7.8	5.9	1.0	0.3	9.6
1963	53.9	4.4	8.6	6.3	1.5	0.4	5.0
1964	52.7	16.2	5.9	6.4	2.0	0.4	6.2
1965	50.6	20.6	3.8	9.7	1.3	0.4	3.5
1966	52.3	25.2	0.0	7.1	1.0	0.4	3.9
1967	52.5	29.4	6.4	7.1	0.9	0.5	3.3
1968	49.6	32.8	4.4	5.6	0.8	0.5	5.2
1969	47.2	32.7	7.8	8.3	0.6	0.5	2.9
1970	48.7	33.1	3.6	8.4	0.6	0.5	5.2
1971	60.9	25.3	2.1	7.9	0.4	0.4	2.8
1972	53.2	28.8	2.4	9.6	0.4	0.3	5.4
1973	47.0	31.1	6.8	7.9	0.4	0.5	6.3

TABLE 34: SARAWAK EXPORT VALUE INSTABILITY INDICES BY COMMODITIES

Commodity Ranked By Value in Column (2)	%Of Total Exports*	Instability Index	Ranked by Value In Column (3)
(1)	(2)	(3)	(4)
Petroleum	53.5	2.2	6
Timber	22.3	16.3	4
Rubber	11.1	26.4	1
Pepper	7.2	14.8	5
Sago Flour	0.9	23.4	2
Coconut Oil	0.4	21.7	3
All Exports	100.0	11.9	

*1960-1973 Average.

TABLE 35: PERCENTAGE DISTRIBUTION OF SARAWAK INSTABILITY AMONG COMMODITIES 1960-1973

(1)	(2)		(3)	
Commodity Ranked By Value In Column (2)	%Of Total Export(a) By Commodity Cumulative		%Of Export Instability(b) By Commodity Cumulative	
Petroleum	53.5	53.5	10.7	10.7
Timber	22.3	73.8	32.9	43.6
Rubber	11.1	86.9	26.5	70.1
Pepper	7.2	94.1	9.7	79.8
Sago Flour	0.9	95.0	1.9	81.7
Coconut Oil	0.4	95.4	0.8	82.5
Others	4.6	100.0	17.5	100.0

This section will therefore examine the causes of fluctuations in the export of these commodities.

Timber and Timber Products

Timber and timber products exported from Sarawak may be divided into three groups: Round Timber (Logs). Sawn Timber and Timber Products such as veneer and plywood. The details of these are given in Table (36) below.

TABLE 36: TIMBER AND TIMBER PRODUCTS EXPORTS **1960-1973**
\$000

Year	Round Timber	Sawn Timber	Timber Products
1960	12.9	30.7	-
1961	18.4	23.2	-
1962	23.8	17.1	—
1963	30.8	22.9	
1964	30.4	31.9	-
1965	47.3	35.2	6.6
1966	82.5	26.3	5.5
1967	99.8	36.2	11.6
1968	138.7	42.4	16.6
1969	143.4	43.2	22.4
1970	148.4	49.8	23.7
1971	120.3	47.1	31.7
1972	83.5	50.9	39.3
1973	123.9	86.9	48.3

From this table it is clear that round timber dominates the export of timber and timber products. Calculation on the basis of percentage share of total export of timber and timber products and the index of instability suggests that the export of timber and timber products. Because of its large share and high instability it contributes as much as 63% of the instability of this group of exports (See Table 37). Timber products exports by themselves, are relatively more stable with an instability index of 11.4. Thus, fluctuations in this group of exports must be attributed to the factors behind the changes in the export of round timber.

TABLE 37: EXPORT INSTABILITY OF TIMBER AND TIMBER PRODUCTS

Timber Type	% of Total Timber Exports	Instability Index	% of Instability of Timber Exports
Round	56.1	21.2	62.8
Sawn	27.6	18.8	27.4
Products	16.3	11.4	9.8

.1960-1973 Average.

Supply, Demand and Prices of Sarawak Timber

Fluctuations in round timber exports can be attributed to the supply and demand factors.

The export of round timber seems responsive to price changes as can be seen from the regression analysis below. The responsiveness is estimated by regressing export volume against export value, and using the simple linear equation,

$$Q_t = a + bP_{t-1}, \text{ where } Q_t \text{ is}$$

quantity exported in the current year, and P_{t-1} is the export unit value for the previous year. The lag of one year is in consideration of the time lag between change in price and corresponding change in exports. One year is the usual period taken from the time orders are received (and price is determined) to the time the timber is exported. The result of the regression is as following: -

$$Q_t = -2533.8 + 48.0 P_{t-1}$$

(t value = 5.297) $r = 0.837$ $r^2 = 0.76$

The correlation is significant at 0.5%

The positive relationship between export quantity and price would in fact be stronger if not for the fact that in the last years of the period under consideration price and quantity tended to move in opposite direction because of the expiration of the licences which slowed down logging particularly in 1972 and 1973. Many licences expired at the beginning of 1973 and no new licences were issued for a period of five years to 1974. Thus despite higher prices in 1973 the volume of timber exported fell from its 1971 and 1972 levels. In addition 1973 was also the year when restrictions on the export of Ramin (a very popular species) logs were started.

Price elasticity of supply of timber is to be expected in view of the nature of the timber industry in Sarawak. In the first place the forest resources which were licenced for logging had more than sufficient timber resources to meet the increase in demand in the period till 1973. The average yearly production (exports) for the period 1960 to 1973 was 1.37 million cubic feet whereas the estimated potential log flow from the Peat Swamp forest alone was 1.41 million cubic meters per year on a rotation basis of a 60 year cycle.⁵⁹ This figure does not include the 1.8 million acres of peat swamp which is outside the Forest Department Management. Nor does it include the Hill Dipterocarp Forests which are dry land forests covering an area of 30,819 sq. miles or 63.8% of the land surface. During the period under discussion the Hill Forests have not yet been licenced.

On top of this, production (supply) can be regulated in a short period simply by engaging additional logging crew or additional loggers or by retrenching them. The system of logging used is very labour intensive. Because of the peculiar physical structure of the peat swamps, their surface cannot withstand the high pressures per unit area which are exerted by conventional logging equipment. The use of a labour intensive system is almost inevitable. The logging system can be divided into the two major activities of extraction and transportation. Both are normally undertaken on a contract basis by logging crews. Normally each logging crew comprises one family or one particular village. The logger who may be the licencer or a subsidiary, entering into a verbal contract with the crew chief. These contracts are normally based upon a substantial advance payment which is distributed to crew members. Final payment is made on the basis of volume extracted from the contracted stock. One crew consists of 8 to 14 men depending on work habits.

From the forests the logs are taken to a river by railway tracks which are laid (by contractors) on pole sleepers. The railway line is normally about 1 meter gauge and of 9.5 kilogram steel. The contraction is quick and crude and costs are minimal since usually secondhand materials are used. At times rails may be rented from dealers, with the operators supplying all the line construction material such as spikes and roots to the contractor. The locomotives used are small, slow second-hand diesel-powered four wheel drive machines of some 25 horsepower.

On arrival at the railhead, the logs are usually dumped into specially constructed log ponds in the rivers, where they are assembled into rafts for towing to their destination. Towing is contracted and is usually by boats of a type which are meant for uses other than towing.

This system of logging enables supply to be easily regulated. When there is increased demand, the logger simply engages more loggers and other contractors. There is no difficulty in getting workers since there is a high level of rural unemployment or underemployment. Alternatively, production can be cut down simply by reducing the workforce.

Supply responsiveness to price has also been encouraged by the fact that it is in the interests of the licencees to quickly harvest his area when the price is high. Harvesting is not restricted by any need to conserve a certain area within any time limit. The area licenced is divided into blocks and as soon as certain blocks have been harvested the licensee can move to another set of blocks.

Availability of resource and the system of logging in Sarawak permit changes in supply in response to price changes. But these factors are not the actual causes of the response. They permit and promote the response. The actual cause may be attributed to the element of uncertainty which prevails in the timber industry. This uncertainty arises from the system of forest licencing.

Under the Sarawak Land Code all forests in Sarawak belong to the government unless the land on which it is growing has been alienated which is rarely the case. Two broad categories of forest form the forest resources of Sarawak, namely the Permanent Forests and the Stateland Forests. The Permanent Forests comprise Forest Reserves, Protected Forests and Communal Forests. The rest are Stateland Forests. Only Forest Reserves and Stateland Forests are licenced out for logging. **Licences** for logging are issued to private enterprises, individuals or companies, and so far are mostly centred around family units. Two types of licences are issued; long term (up to 10 years) which may be renewed, and annual licences which are granted in Stateland Forests.

Every licensee is in frequent doubt as to whether his licence will be renewed or not. The assumption seems to be that there will be no renewal or that renewal will be difficult and costly. A licensee is therefore under the pressure to harvest as quickly as he can. And when the price is high it becomes more profitable to increase the number of logging contractors.

From the analysis above the supply side does not seem to be a dominant factor in timber export fluctuations. "If movements on the supply side were the dominant factor in the export trade of primary

producing countries, the export prices and quantities would tend to fluctuate inversely".⁶⁰ The relationship between export quantities and prices is a positive one and for this reason demand instead of supply may be the dominant factor.

As was mentioned elsewhere timber production in Sarawak is largely for export. Local consumption is negligible. The largest buyer of round timber from Sarawak has been Japan. Over 60 per cent of the round timber **exported** during the 1960-1973 period went to Japan. In fact, as can be seen from Table (38), Japan has not only been the largest market but is also won the largest share of log exports from Sarawak.

TABLE 38: DISTRIBUTION OF SARAWAK ROUND TIMBER EXPORT (%)

Year	Japan	Taiwan	Hongkong	Korea	Australia	Italy
1963	44.4	n.a.	37.3	n.a.	2.9	9.4
1964	51.2	0.9	30.0	2.3	2.6	7.6
1965	58.8	3.3	20.0	0.8	1.9	6.3
1966	74.2	3.4	11.3	4.4	1.2	4.6
1967	69.3	5.2	8.2	9.3	1.1	4.0
1968	68.5	9.4	5.5	8.3	0.9	3.5
1969	65.3	7.3	10.5	10.9	0.7	0.9
1970	62.1	11.3	13.0	11.3	0.6	0.2
1971	54.4	17.3	15.6	7.6	0.2	n.a.
1972	70.0	13.1	12.1	0.1		
1973	16.5	7.6	10.8	2.1	0.2	

The log market is clearly determined by Japan. In fact Japan has monopoly power, not only over log exports from Sarawak, but from the ASEAN Region. The price structure of the log export trade is largely dictated by Japanese buyers who are controlled by the Japanese Trading Houses which negotiate bulk purchases through the entire (ASEAN) region. These Trading Houses, by virtue of their size and financial resources, are in a position to manipulate the log market to their advantage through the provision of credit to the log suppliers, distributors and wholesalers and by the withholding of purchases. The Trading Houses finance many logging operations in the region, and thus firmly control the purchase and distribution of logs to Japanese industry, including the control of shipping. It appears that the Japanese market sets a price structure which is accepted by other buyers.

RUBBER

It was shown earlier that rubber is the most unstable of all the export commodities of Sarawak and its share in total export instability comes second only to timber. The reasons for this instability will now be examined.

Supply Factors

Regression analysis between rubber exports and prices indicates that export is responsive to price both in the long run and in the short run. The results are as follows:-

(i) For the long run,

$$Q_a = 4.76 + 0.02 P_a \quad (t \text{ value} = 4.326)$$

$$r^2 = 0.78 \quad r^2 = 0.61$$

where Q_a = quantity exported yearly (000 tons)
and P_a = average yearly price.

(ii) For the short run,

$$Q_b = 690 + 0.204 P_b \quad (t \text{ value} = 5.85)$$

$$r^2 = 0.81 \quad r^2 = 0.74$$

where Q_b = quantity exported monthly and
and P_b = average monthly prices.

Both of these equations show that there is a reasonably close and significant relationship between volume of exports and prices. The relationship is slightly stronger for the monthly figures. This high price elasticity of supply may be explained in terms of the conditions under which rubber is produced in Sarawak.

Natural rubber is produced from the latex which issues from the bark of *Hevea brasiliensis* as a result of bark incision. The production involves simple processes ranging from planting to drying the coagulated latex to produce crude rubber. Rubber trees require a heavy and well distributed rainfall of about 100 inches a year and high temperature of about 80- 90° Fahrenheit. Thus rubber grows well in the tropics. Rubber growing involves a long gestation period, since it takes about 7 years for the plant to be ready for tapping. It also involves a long term investment, as the economic span of the trees exceeds 30 years and can extend even to 40 years. Once matured, the trees can be tapped every day except during heavy rain.
heavy rain.

The first rubber trees in Sarawak were planted in 1876, but it was not until 1910 that Sarawak shipped her first consignment of 160 "piculs" (about one ton). Thereafter rubber rapidly become one of the major exports of Sarawak. Today there are 196,810 hectares of land under rubber and in 1973 Sarawak exported 41,337 tons of rubber valued at \$56,719,000.

The acreage of rubber in Sarawak has been increasing consistently as a result of increased planting and the planting of new high yielding varieties. The estimated acreage of rubber as shown in Table (39) illustrates the growth of rubber planting in Sarawak. 1960 is the earliest year for which data is available.

TABLE 39: ESTIMATED ACREAGE OF RUBBER (ACRES)

Year	Seedlings	High Yielding	Total
1960	300,000	57,500	357,500
1961-	300,000	57,500	357,500
1962	299,491	70,356	369,847
1963	299,062	81,947	381,009
1964	298,419	100,366	398,785
1965	296,623	119,362	415,985
1966	294,873	133,798	428,671
1967	293,242	147,036	440,278
1968	290,633	160,568	451,201
1969	286,410	175,286	461,696
1970	278,375	191,540	469,915
1971	271,068	205,597	476,665
1972	270,576	206,089	476,665
1973-	270,576	206,089	476,665

-There was no official planting in 1961 and in 1973.

It is assumed that planting outside the Scheme is negligible. Thus the acreage for these periods is assumed to remain at the previous years levels.

With such an increase in acreage, especially of the high yielding type, one would expect that production would also increase. This, however, has not in fact been the case. Production figures are not available. Official estimates nonnally refer to export figures. We may **however**, derived productions figure by adding to export figure the changes (+ or -) in stock. This would give production figure since there is no local consumption. Stock figures are available only since 1964 but they

clearly show that production has a tendency to decline. Similarly exports have declined except in 1969 and 1973. (See Table 40).

The discrepancy between increased acreage on the one hand and decreased production (and exports) on the other can be explained by the fact that there is no relationship between acreage (or new planting) and production in the period under consideration. Increased acreage was the result of the Rubber Planting Scheme which was started by the Department of Agriculture in 1956. Planting outside the scheme was negligible.

TABLE 40: ACREAGE, PRODUCTION AND EXPORTS OF RUBBER

Year	Acreage (Acres)	Production (Tons)	Export (Tons)
1960	357,500	-	49,949
1961	357,500	-	46,904
1962	369,847	-	43,796
1963	381,009	-	44,834
1964	398,785	41,902	42,959
1965	415,985	40,297	40,034
1966	428,671	29,463	33,589
1967	440,278	35,358	28,445
1968	451,201	17,394	23,794
1969	461,696	45,040	38,729
1970	469,915	11,677	21,460
1971	476,665	18,798	19,279
1972	476,665	18,719	19,623
1973	476,665	45,394	41,337



The objective of the scheme was to help rehabilitate the rubber industry in Sarawak by subsidizing farmers in their new planting and replanting work. The cultivation of rubber is a smallholder industry and prior to 1956 there was little technical advance in methods of cultivation, use of high-yielding clones or the manufacture of high grade sheet. The opinion then was that the mainstay of the country's economy was largely based on rubber and steps had to be taken to modernize the industry. The scheme provided generous subsidies. Under "Scheme A", which was to assist small holders (10 hectares or less), medium holders (over 10 and under 40 ha) and estates (40 ha and over), the Department of Agriculture provided planting materials,

fertilizers, weedicides and pesticides and cash to a total value of \$600.00 per acre (0.4 hal for replanting and \$400.00 per acre (0.4 hal new planting).

The fanners took this opportunity, not so much with a view to actually producing rubber, but largely as a means of getting cash. Many, in fact, sold the fertilizers given to them and pocketed the cash. And many regarded the opportunity as a means of acquiring land, for planting land with rubber under their names meant that the land, whose ownership might have been in dispute, virtually became theirs and in any case planting rubber trees raised the value of the land. Thus increased hectarage bore no direct relationship to production. It does, however, increase capacity in the next season.

Rubber holdings in Sarawak are officially categorized into three types, estates (40 hectares and more), medium holders (over 10 hectares and under 40 hectares) and small holders (10 hectares and less). This classification is in fact rather inappropriate because the average size of the smallholdings, which constitute the largest category, is extremely small. No data is actually available on this but most holdings seem to be in the region of 2 hectares. The estates range from 125 to 1250 hectares in size and there are 20 estates altogether. It seems more appropriate to divide the holdings into estates and small holdings. Thus, for the purpose of this study, the holdings are categorised into small holderings and estates only. The medium holdings are regarded as small holdings.

The predominance of small holdings is indicated by Tables (41) and (42).

Both in terms of acreage and in terms of production small holdings predominate. The output of estates is negligible. Thus fluctuations in the production and export of rubber must be related to the small holdings and not to the estates. Consequently, in attempting to examine the causes of export instability with respect to rubber this study will concentrate on small holdings.

The result of the Rubber Planting Scheme was not only to increase the acreage of rubber but also the acreage of high yielding rubber. This meant that the production capacity of rubber was much higher than actual production. Figures on the extent of rubber tapped are not available. One third of total acreage is the popular guess. But a survey by the Department of Agriculture of 74 small holdings under the Rubber Planting Scheme revealed that only 10 holdings were tapped regularly indicating that production is well below capacity.

TABLE 41: RUBBER ACREAGE BY TYPE OF HOLDINGS

Year	Small Holdings		Estates		Total
	Acres	%	Acres	%	
1965	408,175	98.1	7,810	1.9	415,385
1966	420,266	98.0	8,405	2.0	428,671
1967	432,619	98.2	7,659	1.7	440,278
1968	443,263	98.3	7,938	1.8	451,201
1969	453,902	98.3	7,794	1.7	461,696
1970	462,404	98.4	7,511	1.6	460,915
1971	469,267	98.4	7,398	1.6	476,665
1972	454,938	95.4	21,727(a)	4.6	476,665
1973	458,943	96.3	20,733(a)	3.7	476,665

(a) Includes land settlement scheme.

TABLE 42: PRODUCTION BY TYPE OF HOLDINGS

Year	Small Holdings		Estates		Total
	Tons	%	Tons	%	
1966	32,953	98.2	636	1.8	33,589
1967	27,957	98.3	488	1.7	28,445
1968	23,369	98.2	425	1.8	23,794
1969	38,233	98.7	496	1.3	38,729
1970	21,046	98.1	414	1.9	21,460
1971	18,888	98.0	391	2.0	19,279
1972	18,781	96.0	842	4.0	19,623
1973	39,551	95.5	1,786	4.5	41,337

Excess capacity means that production of rubber can be increased by simply tapping more trees and/or tapping them more frequently, i.e. more days per week. There is no constraint to this because of a high level of disguised unemployment. Both women and children can be engaged whenever the need arise. There is also no additional cost involved since additional labourers are normally members of the family for which no cash wages are paid. Wherever paid workers are involved the payment normally takes the form of "product sharing", (i.e. They receive a share of the crop as wages) in the proportion of usually one to three, one part to the tapper and two parts to the owner. Similarly, to decrease production is equally simple. There are no fixed costs involved. Tapping simply requires labour, and postponement of tapping

does not incur any cost. The small **holders** are not tied down to rubber. Rubber tapping is only one of their several activities, and they can turn to other activities whenever necessary.

Production is determined by the price and in much the same way as described by Sulti Ortiz for Columbian Indians⁶¹. According to Ortiz, "Prices are taken into amount as factors in decision making only when they fall below the lowest expected revenue".

It is difficult to determine what is the lowest expected revenue of the rubber small holders, but a rough guide seems to be the minimum wage for unskilled labour which is about \$4.00 to \$5.00 per day in most rural areas. It seems that unless by tapping rubber he can made at least between \$4.00 to \$5.00 per day, a farmer would consider it is not worth his while, for in his judgement he could work elsewhere and get more. This means that the price below which the farmer **considers** it unprofitable for him to tap his rubber is 30 to 40 cents per pound. The average output per **person** per day is about 14 pounds (10.8 katis)⁶² so that to get an income of \$4.00 to \$5.00 per day the price per pound must be between 30 to 40 cents per pound.

The lack of suitable data makes it difficult to fully substantiate this view. Besides, the rubber small holders are by no means homogeneous in their productivity and alternative occupations. However, comparison between prices per pound and production figures seems to suggest that this view is correct. The production figures used are those calculated by adding to export the difference between current and previous year's stock. The figures for prices are the Kuching prices minus 10 to 12 cents which is the difference between Kuching price and prices in the rural areas. Prices in rural areas are relevant here because the small holders are largely in rural areas. Table (43) gives the comparison.

According to Table (43) in the years when prices are less than 40 cents per pound the production of rubber falls far below the average yearly output of 29,126 tons. On the other hand whenever price is more than 40 cents per pound the output of rubber are very high, as in 1964, 1965, 1969 and 1973. Thus it seems certain that when expected revenue falls below \$5.00 a farmer finds no incentive to tap his rubber.

61 S. Ortiz, "The Structure of Decision Making Among Indians of Columbia", In Themes in Economic Anthropology, Edited by Raymond **Firth** Tavistock Publication, 1967, p. 217.

62 Local measurement of weight.

TABLE 43: PRODUCTION AND PRICES OF RUBBER

Year	Production (Tons)	Price (¢perlb)
1964	41,902	40.8
1965	40,292	41.9
1966	29,463	39.9
1967	35,358	28.2
1968	17,394	28.2
1969	45,040	41.5
1970	41,677	31.7
1971	18,798	20.5
1972	18,719	40.1
1973	45,394	40.1

Table (43) indicates that the price of rubber fluctuated and tended to decline in the 1960's. The low price has turned farmers away from rubber. Those who tapped their rubber in this period of low price did so reluctantly and only to the extent of getting enough to meet their daily need, which could not be satisfied through the income from any other job. They tapped their trees to get enough money to buy sugar or other small needs. (Rubber sheets can be sold on a daily basis to shopkeepers or middlemen). This practice of tapping to meet immediate small needs is described locally as "Semadi", an activity which is done with reluctance, minimum effort and for no other reason than lack of anything better to do.

There is no statistical evidence to prove that low price has turned farmers away from rubber, but it is a known fact that in the latter part of the sixties many rubber gardens were abandoned and that many of these farmers, especially Chinese, did turn to pepper farming instead. As for the native farmers, the temporary departure from rubber (when price is low) has been described by the word "bejalai" meaning journey. This refers to going elsewhere temporarily for a job. It is this situation that enables rubber farmers to respond to price changes.

The neglect of rubber in times of low prices has been encouraged by another factor peculiar to rubber tappers in Sarawak. This is the belief that continued tapping would wear off the bark of the trees and this would gradually lead to the lessening of the quantity of latex from the tree. They are therefore willing to wait and save the

latex for the time when the price goes up and the fluctuations in rubber prices have given the farmers consistent hope that sooner or later price **will** go up.

However, neglect and deferment of rubber production can only be possible if there are alternatives available to the farmers. In Sarawak small holders do not rely solely on rubber. The agricultural sector is still largely a subsistence sector. A small holding of rubber usually has rice, pepper, coconut and livestock. Recent figures to show the extent of these crops in each small holding are not available. The latest figures are those from the 1960 census on which Table (44) is based.

TABLE 44: NUMBER OF HOLDINGS BY CROPS (1960)

	Total Holdings	Rubber Only	Rubber And Padi	Rubber And Coconut	Rubber And Livestock
Number	29,384	9,179	12,372	1,931	15,498
%		31.2	42.1	6.6	18.7



Even in 1960 when the price of rubber was still relatively high most (69%) rubber holdings have other crops as well. The picture has changed since then especially with the emergence and growth of pepper productions. A study of the Miri-Bintulu area of Sarawak⁶³ shows that a typical holding has the following pattern of activities: -

Activity	Range In Size (Acres)
Crops: Padi-wet	1.5 to 4.5
Rubber	1.0 to 10.0
Pepper	0.2 to 0.4
Annual Crop	0.5 to 1.1
Perennial	0.1 to 3.0
Livestock: Poultry	5 to 25 birds
Pigs	2 to 9 heads

⁶³ Miri-Bintulu Regional Planning Study, Supporting Report No.2, Appendix VI, 1974, p. 187.

The stock of rubber trees, the availability of alternative crops the high dependence on rice as well as subsistence living and the social attitude of the agricultural sector of Sarawak are the major determinants of the supply of rubber in Sarawak.

We must now examine the demand side in order to determine the causes of fluctuations in the export of rubber.

Demand Factors In Sarawak Rubber

The export of rubber from Sarawak comprises only a small proportion of total world supply of natural rubber. This is obvious from Table (45).

TABLE 45: RUBBER PRODUCTION

Year	World (Metric Tons 000)	Sarawak (Metric Tons 000)	Sarawak (%)
1961	2,140	46.9	2.2
1962	2,170	43.8	2.0
1963	2,220	44.8	2.0
1964	2,320	42.9	1.8
1965	2,400	40.0	1.7
1966	2,470	33.6	1.2
1967	2,490	28.5	1.1
1968	2,640	23.8	0.9
1969	2,890	38.7	1.3
1970	2,940	21.5	0.7
1971	3,030	19.3	0.6
1972	3,070	19.6	0.6
1973	3,450	41.3	1.2

Therefore, changes in the supply of Sarawak rubber cannot affect total world supply and Sarawak is unlikely to have any influence on the world market price of rubber. Instead prices of Sarawak rubber are strongly affected by external factors, the more so because rubber production in Sarawak is exclusively for export. There is no local consumption.

Changes in the price of rubber are affected by changes in the price of rubber in West Malaysia and Singapore.⁶⁴

64 West Malaysia and Singapore have a common price operated through the Singapore and Malaysian Rubber Exchange.

This is illustrated by the strong correlation between Singapore and West Malaysian rubber prices and the Kuching rubber prices. The relevant equation is as follows: -

$$Y = - 3.46 + 0.82X$$

$$r = 0.99$$

$$r^2 = 0.98$$

$$t = 17.1$$

where Y = The price of Rubber in Kuching

X = Singapore and Malaysian Rubber Exchange prices.

The use of the Singapore and Malaysian Rubber Exchange price is appropriate here because the bulk of Sarawak's export of rubber goes to Singapore, and it can be assumed that it is the rubber price in Sarawak. Furthermore, West Malaysia is the world largest single producer of rubber (See Table 46) and world price is affected by the changing supply of Malaysian rubber.

**TABLE 46: WORLD PRODUCTION OF NATURAL RUBBER
(000 METRIC TONS)**

Year	World Total	Malaysia	Indonesia	Thailand	Sri Lanka
1953	1,755	623 (35.5)	706 (40.2)	97(5.5)	100 (5.7)
1963	2,220	865 (40.0)	582 (20.0)	180 (8.1)	104 (4.7)
1965	2,400	949 (39.5)	717 (29.9)	216 (9.0)	118(4.9)
1966	2,470	998 (40.4)	716 (28.9)	207 (8.4)	131 (5.3)
1967	2,490	948 (40.1)	760 (30.5)	214 (8.6)	143(5.7)
1968	2,640	1,100(41.7)	750 (28A)	259 (9.8)	143 (SA)
1969	2,890	1,268 (43.9)	790 (27.3)	282 (9.8)	148 (5.1)
1970	2,940	1,270 (43.2)	780 (26.5)	287 (9.8)	151 (5.1)
1971	3,030	1,324 (43.7)	834 (27.5)	316 (IOA)	141 (4.7)

It is necessary therefore to look into the reasons for changes in the Malaysian and Singapore Rubber Exchange prices.

These changes may be explained in terms of supply and demand factors. MacBean has pointed out that low price elasticity of supply combined with uncontrolled variability in demand, supply or both, "provide an entirely credible explanation for sharp instability in both

prices and proceeds of primary products".⁶⁵ Available evidence suggests that these characteristics of supply and demand are present in the rubber industry of West Malaysia.

Wharton has found the price elasticity of supply among the rubber estates of West Malaysia to be insignificant statistically.⁶⁶ Using annual data for 1948-1961 he obtained values that varied between - 0.03 and - 0.01. When monthly data were used on the assumption that annual production figures would neutralize any short run responses, the elasticities were again not statistically significant. Very much the same conclusion was reached for the responsiveness of the small holders, for only one of the elasticities obtained was significant and this, at 0.37, clearly shows lack of response. The results are more or less the same when composition, nature, acreage and trend variables were introduced into the estimating equation. The highest value was 0.12 which again was not statistically different from zero.

The price elasticity of demand for rubber was also found to be very low. Table (47) shows that the price elasticity of demand for rubber for the world is not statistically different from zero. It also has the unexpected positive sign. Of the price elasticities of demand for the six major consuming countries only those for Japan and West Germany are statistically significant and these, at - 0.2653 and -0.2758. Respectively, indicate a relatively small degree of price responsiveness.

TABLE 47: PRICE ELASTICITIES OF DEMAND FOR RUBBER 1953-1966

United States	0.0356 (0.1760)
United Kingdom -	0.0051 (0.0660)
West Germany	0.2758 (0.1410)
Japan	0.2653 (0.0910)
Italy	0.0618 (0.1360)
France -	0.0815 (0.0530)
World	0.0167 (0.0570)

Source: K. A. M. Aliff, *Export Trade and The Malayan Economy* (Monograph, University of Malaya, Kuala Lumpur, 1972)

⁶⁵ A. I. MacBean. *Export Instability and Economic Development* (London, Allen and Unwin Ltd., 1966) p. 25.

⁶⁶ C. R. Wharton, Jr., "Rubber Supply Conditions", Some Policy Implications in T. H. Sicook and E. K. Fisk and *The Political Economy of Independent Malaya* (London, Angus and Robertson, 1963).

Low price elasticities of supply and demand are plausible in the rubber production in West Malaysia. The production of rubber is very inelastic in the short run, since it involves a gestation period of about seven years between planting and maturity. Unlike in Sarawak, the rubber trees in West Malaysia are fully tapped so that variations in the short run output are too negligible to have any appreciable effect in the short run supply elasticity. Exit out of rubber is extremely difficult since it involves heavy capital losses, which the estates⁶⁷ have invariably incurred.

The low price elasticities of demand have been attributed to the fact that rubber as material input forms only a small proportion of total cost of the product. Consequently, changes in the price of the raw materials scarcely affect the price of the final product. The development of synthetic rubber, which is increasingly a true substitute for natural rubber, has enhanced this low price elasticity of demand.

Given the low price elasticities of supply and demand, any change that affects either supply or demand or both will inevitably generate extreme price instability. In the case of Malayan rubber output variation due to weather and similar factors is small. Hence it is largely the changes in demand which send the price up and down. Further supply being inelastic in the short run, there happen to be stock holdings of commodities in the world market giving rise to intensive speculative activities which amplify the price oscillations.

The demand for rubber is a derived demand, hence cycles in the industrial output of the economically advanced countries tend to produce corresponding cycles in the price of rubber. Because of the size of the rubber export of Malaya in comparison to total world supply, it does not require a severe reduction in the imports of the industrialized countries to cause a marked fall in the price of rubber. Industrialized countries need only sneeze and Malaysia would catch a cold.

Further, the income elasticity of demand for rubber has been noted to be quite high. Belessa⁶⁸ discovered, in a cross sectional study, an income elasticity of demand for rubber of around 1.25. It is not surprising that the price of natural rubber has suffered violent fluctuations as can be seen from Table (43) above.

67 In Peninsular Malaysia rubber is planted in very large estates (more than 5,000 acres).

68 Belessa, B., *Trade Prospects for Developing Countries*, (Homewood, Illinois, 1964), pp. 414 and 433.

PEPPER

Pepper has been cultivated in Sarawak and exported to world markets for several decades but it was mainly in the last twelve years that the cultivation and export of Sarawak pepper gained much prominence. In terms of export earnings, pepper now ranks third in Sarawak after petroleum and timber. The area of pepper currently cultivated in Sarawak is estimated at 8,100 hectares (20,000 acres). About 20,000 farmers, supporting a farm population of about 100,000 persons, are directly engaged in the cultivation of pepper.

As was shown earlier the contribution of pepper to the total export fluctuations is not very significant (9.7%) because the share of pepper in total export is still relatively small. It is clear, however, that **this** commodity is of increasing importance and the fact that Sarawak is one of the two leading producers of pepper make it appropriate to examine the nature and causes of instability in the export of this commodity.

Pepper is produced from the berries of pepper vines **which** grow up on pepper post of about 3 metres (10 feet) **high** and are spaced out at 2 metres (6 feet) distance. The vines are usually allowed to fruit eighteen months after the planting of the cuttings only. The whole process from the clearing of the land to harvesting are all done by hand and require a great deal of labour. Pepper cultivation in Sarawak is done throughout Sarawak on small holdings and by family units, with no paid **labourers** except for some female labourers employed at harvest time. The average size of the pepper farms per family is less than half a hectre and farming is intensively done.

The pepper crop in Sarawak is harvested between May and August each year. Upon harvest, the green berries may be dried in the sun and turned into black pepper; or soaked in water for a few days to dislodge the pericarp and then dried to be turned into white pepper.

Pepper berries, processed into black and **white** pepper are disposed of by farmers through rural shopkeepers, river-traders, town shopkeepers and exporters who are based in **Kuching**, Sarikei, Sibul, Binatang and Miri. These persons specialize in the export of pepper and some other agricultural produce.

The pepper is sold to almost all the principal pepper importing countries in the world, except the USSR, but the bulk of **this** trade is directed from Singapore. About 800/0 of Sarawak pepper is repacked (cleaned, mixed, blended and graded) and then reexported to the terminal markets particularly the EEC and Scandinavian countries, the United States, Japan, Hongkong, Morocco and countries in the Middle East. The grades in which Sarawak pepper is thus exported are determined in

Singapore, not Sarawak, and are not clearly specified though they go under designations such as Sarawak ASTA Black, Sarawak Special Black and Sarawak White. Sellers and buyers, however, are familiar with the different grades through long years of trading. Nevertheless it is not unusual for the quality of the same grade to differ between different markets.

The 20% of the Sarawak pepper which is not exported to Singapore is shipped directly to terminal markets by exporters in Sarawak, principally from the ports of Kuching, Sarikei and Sibul. The pepper is shipped mainly to Germany, Japan, France, Hongkong and Sweden. At present such pepper is under grades called "Sarawak Government Sealed Quality" or "Sarawak White FAQ". A small amount of pepper is also shipped to customers' specifications. Government Sealed Quality, applied to white pepper only, depicts a grade which has been visually examined against a standard sample and sealed thereafter by the customs department. It is regarded as a special quality product meeting certain European requirements. The bulk of the pepper, however, is sold as fair average quality (FAQ) black or white pepper, which unfortunately is not very consistent in quality as it is shipped at present. This is because there is no standard or grade against which FAQ are prepared for shipment.

Supply Factors

Under the (past and) present condition pepper production is rather price inelastic in the short run. Several reasons account for this inelasticity. In the first place the production of pepper requires a long gestation period. Eighteen months are required from the time of planting to the **first** harvest. Secondly pepper producers are short of land. About 90% of the pepper farmers are non-natives who are allowed to occupy only Mixed-Zone Land. Furthermore, entry into the industry is not easy. Pepper cultivation requires a good deal of experience. It also requires heavy capital expenditure (for pepper posts and fertilizer). Thus many natives, even though they have land, are unable to go into pepper cultivation..

Similarly, any reduction in price would not cause an immediate fall in production. Two reasons explain this. Firstly, the berries have to be harvested; otherwise they would just rot. As long as the price is high enough to recover cost of harvesting and some of the capital invested (pepper is capital intensive, e.g. fertilizer, pepper posts) it is worthwhile to keep the pepper fruiting and to export the pepper. In this way at least loss would be minimised but, in fact, price has never fallen below this level.

The other reason is the heavy reliance of most pepper farmers on pepper as a cash crop. This is clearly indicated by the data from the Agriculture Department as given in Table (48).

The dependence on pepper is measured by means of a Single Crop Reliance Index. The index for eight different areas in Sarawak is given, together with the land use index and acreage of pepper planted.

TABLE 48: SINGLE CROP RELIANCE INDEX

	SCRI	Land Use Index	Acreage Of Pepper
Lundu	49	71	0.54
Bau	43	86	0.64
Kuching	66	70	0.86
Serian	37	64	0.77
Simanggong	15	n.a.	0.53
Sarikei	40	81	0.66
Sibu	16	89	0.28
Miri	40	n.o.	0.58
Sarawak	40	89	0.66



Source: "The Production and Marketing of Sarawak Pepper". A Report prepared by the Agricultural Economics Section of the Research Branch, Department of Agriculture, Sarawak, 1965, Parts I and II p. 55.

The report says, "Read in conjunction with the average acreage of pepper and the land use index these figures (SCRI) provide a good guide to the extent to which the farmer is dependent on pepper, though it must not, under any circumstances, be concluded that a single crop reliance index of 50% implies that the farmer derives 50% of his income from pepper. In almost all cases pepper will account for a larger proportion of the family's income than the single crop reliance index indicates, the exception being in those farm families where one or more members carry on full time employment in a wage earning activity. There is no doubt from Table (48) that there is a heavy dependence on pepper in all the major areas except from Sibu and Simanggong. This was the situation in 1965. Presently the dependence is even greater in view of the increasing popularity and higher price of pepper. No figures, however, are available to prove this.

Given price inelasticity of supply, the changes in export must be accounted for by some other factors. The main determinants of the level of exports from year to year are: -

- (i) technical factors (weather and disease which determine the overall size of the crop, and
- (ii) the extent of storage which determines the proportion of the crop released for export.

In Sarawak weather and diseases play a great part in determining pepper production. A long spell of hot weather or wet weather harms the plants for they require a consistent amount of water and drainage. This is difficult because there is no artificial supply of water or drainage. Both depend on nature. Thus a long spell of hot weather would dry up the plants while wet weather would rot the roots and bring in several types of diseases. Pepper is subject to attack by insect pests and diseases at all stages of growth, on root, stems, leaves, spikes, etc. Diseases commonly occurring are footrot, white root and thread blight, caused by fungi. With an outbreak of any of these diseases, production could drop by as much as 20% to 40%, as was the case in 1971.

As was mentioned earlier, it is usual for the pepper farmers to stock a part of their pepper harvest (as a form of savings) to be sold when cash is required. No information is available on stocks of pepper but it can be deduced that a substantial quantity of stocks does exist. Stocking presents no problems in terms of facilities. Farmers normally store their pepper in a shed which costs little to build, and shopkeepers have their shops in which to store their pepper. Similarly, the exporters have their own shops in which to store their pepper prior to export. There is no commercial storage place since there is no need for it. Further, pepper can be stored for a long time without fear of being eaten up by pests or getting rotten. For the exporters the frequently fluctuating price is a further incentive to stock with at least some pepper before exporting, in case its price should go up.

The practice of significant stocking is evident by the large and sharp increase in exports during 1969, which must have been due to release of stocks in response to the high price of September – October, 1969. This is further confirmed by the fall in export in 1970 as compared to 1969, as is shown in Table (49) below, which gives the volume and value of pepper exports for the period 1960-1973.

TABLE 49: PEPPER EXPORTS IN VALUE (\$M) AND QUANTITY (000 TONS)

	1960	1961	1962	1963	1964	1965	1966
Value	17.2	28.6	24.2	23.4	24.2	41.7	33.0
Quantity	4.1	10.9	11.5	11.4	12.1	17.6	13.1
	1967	1968	1969	1970	1971	1972	1973
Value	35.4	24.7	52.9	56.2	62.8	58.1	66.3
Quantity	195	22.8	28.6	24.0	26.5	25.8	22.5

PUSTAKA
NEGERI
SARAWAK

Source: Annual Bulletin of Statistics, Sarawak, various years.

Stocks, therefore, play an important part in the changes of volume of pepper exports.

Demand Factors

Most pepper is consumed in its raw state and little progress has so far been made in discovering new uses. Virtually all pepper is traded as peppercorns, either black or white and further processing, mainly grinding and oleoresin extraction is carried out in the importing countries. The pattern of final use varies from one country to another but generally domestic householders and food industries account for about 80% of consumption. The main importing countries are the United States, U.S.S.R., West Germany, France, the United Kingdom, Italy, Canada, Morocco and Japan which together account for about 75% of the total demand.

In all these countries the price elasticity of demand for pepper has been very low. According to one FAO Study⁶⁹ a ± 20 per cent difference in prices has a limited impact on the demand for pepper. Income elasticity of demand is also very low and the gradual increases in consumption have been due more to population growth rather than to income. On the demand side, the gradual increase in world requirements has resulted mainly from the growth of imports into the centrally planned economies, particularly in recent years, although some increases have also taken place among the importers of North America and Europe, which take the bulk of pepper imports. The expansion of consumption in the latter countries is expected to come primarily from the growth of population, with only limited increases stemming from higher consumption per head.

Low income and price elasticity of demand means that variations in export volume result from variations in supply leading to fluctuations in prices. These latter fluctuations have often been accentuated by speculation on the part of the trading countries. The FAO states, "that the fluctuations in prices consequent on year to year changes in supply, resulting from weather conditions, have on occasion been accentuated by the operations of speculators".⁷⁰

Speculation is one of the major characteristics of the Singapore pepper traders who handle more than 80% of the pepper export of Sarawak. It was seen earlier that Singapore's role in the trading of Sarawak's pepper is that of a selling agent and as such it has the sole authority to decide when and at what price to sell. This means that the price to be paid to Sarawak exporters is determined by the Singapore traders. The results in a constant fluctuation both in terms of prices and volumes, leading to greater fluctuations in export proceeds.

3.2.2. Concentration of Sarawak's Exports

It was discussed earlier that export concentration has often been put forward as an important factor in causing export instability. However, although the theoretical arguments for this hypothesis are convincing,

⁶⁹ *FAD, Trends in consumption of pepper in the main importing countries, CCP: PE 72/3 (Rome).*

⁷⁰ *FAO Committee on Commodity Problems, Fourty-Third Session, Recent Trends in The Pepper Economy, p. 1.*

empirical evidence has not provided sufficient support for a safe generalization. It is necessary therefore to examine the concentration of Sarawak's exports and to determine the extent of its contribution, if any, to export fluctuations. Three kinds of concentration have been distinguished, namely primary product, commodity and geographic

Primary Product Concentration

The argument that primary product concentration causes export instability is based on two consumption:-

- (i) that the percentage of primary product export to total export is large and
- (ij) that primary product exports actually fluctuate more than manufactured goods.

With regards to Sarawak there is no doubt that exports, consist largely of primary products. This is illustrated in Table (49) which shows the composition of exports between 1960- 1973. Primary products formed, on the average, as much as 95% of total exports.

TABLE 50: COMPOSITION OF SARAWAK'S EXPORTS (1960-1973)



Year	Commodity	Manufactured Goods	Miscellaneous	Others
	Primary Product		Manufactured Goods	
1960	97.2	0.2	0.1	2.6
1961	96.7	0.5	0.4	2.3
1962	96.8	0.8	0.4	1.9
1963	96.7	1.0	0.7	1.4
1964	95.6	1.4	0.5	2.5
1965	96.1	1.6	0.2	2.1
1966	95.9	1.9	0.2	2.0
1967	95.6	2.4	0.3	1.9
1968	93.8	2.9	0.2	3.1
1969	93.8	3.6	0.1	2.5
1970	94.5	3.6	0.3	1.5
1971	94.0	4.2	0.1	1.7
1972	89.9	7.0	0.3	2.8
1973	91.7	6.1	0.4	1.8

However, as far as the fluctuations are concerned, comparison between the instability indices of primary product exports and manufactured product exports indicate that the latter are more unstable, the relevant indices being 12.4 and 20.1 respectively. The higher instability of manufactured products exports, however, has not contributed much to total instability. This is because its share in total export is insignificant. The calculation of the contribution of each category of export products' instability to total instability (multiplying the share of each category of products by its instability index and expressing the product as a percentage of the sum of total products for all categories) indicates a contribution of only 4.7 from manufactured products, but as much as 95.3% from primary products. This results are summarised in Table (SO).

TABLE 51: INSTABILITY INDEX OF PRIMARY AND MANUFACTURED GOODS

Commodity Category	%Of Total Export	Instability Index	%Of Total Export Instability
Primary Products	94.9	12.4	95.3
Manufactured Goods	2.9	20.1	4.7

These results do not enable us to draw conclusions one way or the other about the instability of primary products exports vis-a-vis manufactured products. But they do indicate that as far as Sarawak is concerned primary product exports have been the major sources of instability.

It should also be mentioned that the primary product exports in Sarawak include petroleum. And it is important to note that although petroleum is in fact the major component and has shown high stability, the over-all fluctuations were still considerably high.

Geographic Concentration

The concentration of exports on a small number of foreign markets is often thought to be an important cause of export instability, as it means that export proceeds are dependent on the economic conditions in only a few countries and that changes in receipts from one of these sources may not be counter-balanced by changes in receipts to another trading partner or from the other trading partners as a group. Consequently, fluctuations in earnings from one source may lead to

fluctuations in total earnings. Similarly, for an individual product exported by a particular country, changes in receipts from one trading partner may lead to changes in total proceeds.

To establish whether or not geographic concentration is an important element in determining export instability one must first of all measure the degree of concentration and then relate it to instability.

The degree of geographic concentration of export proceeds is usually calculated using the Gini-Hirshman coefficient of concentration which defines geographic concentration as

$$C_{jx} = 100 \frac{\sum_{i=1}^n (x_{ij})^2}{X_j}$$

where c_{jx} is the geographic concentration of total export proceeds of country j ; x_{ij} represents the value of exports of country j to country i ; X_j represents the value of total exports of country j .

The Gini-Hirshman index may be used to measure also the degree of geographic concentration of export earnings from individual export commodities and this may be done when the terms in the above formula are redefined such that jx represents the coefficient of geographic concentration of commodity j ; x_{ij} represents the value of exports of commodity j to country i and X_j represent the total value of exports of commodity j .

With respect to total export earnings, this formula indicates that the coefficient of geographic concentration will be higher, the lower the number of countries to which country exports and the more uneven the distribution of export earnings among these countries. In the extreme case where all export receipts come from one trading partner, the coefficient will equal 100, its highest possible value. On the other hand, the coefficient will be lower, the greater the number of countries to which country j exports and the more evenly exports are distributed among the trading partners.⁷¹ By the same reasoning, the index for an individual commodity is determined by the number of countries to which the commodity is exported and by the distribution of export receipts.

The coefficient of geographic concentration for total export earnings takes into consideration the coefficients for individual commodities and will be influenced, therefore, by the geographic concentration of the more important export products. If, for example, total export earnings

71 If n is the largest number of countries to which j may potentially export and if exports are divided equally among all trading partners, the lowest possible coefficient is 100

rely largely on receipts from one commodity, the coefficient for that commodity will have a strong bearing on the coefficient for total export earnings. The fewer the countries to which the major export item is exported and the more uneven the distribution of earnings among the trading partners, the higher will be the coefficient of geographic concentration for total export earnings.

The Gini-Hirshman coefficients are used here to measure the degree of export concentration both for the total export earnings of Sarawak and for earnings from her individual export commodities. In calculating these coefficients, export earnings from certain sources were excluded. The first group of countries omitted from the calculations were composed of those markets which represented less than 1.0% of total export earnings from a particular commodity. The estimation of the Gini-Hirschman coefficient involves summing up the squares of the proportions of total export proceeds from each source, but a trading partner which **makes** up less than 1.0% of total earnings will contribute little to an index constructed in this manner. The second group of countries excluded from this calculation comprise those trading partners included in the broad category of "other". This category represents the summation of export earnings from countries which would be excluded on the above criterion and it is not legitimate to include these countries as a group, since the square of the sum of the proportions which they represent of total proceeds would exceed the sum of the squares of these proportions. The coefficients are presented on Table (51).

According To Table (51) the coefficient for the earnings from individual commodities is very high which means there are very high geographic concentrations in the export of these commodities. The coefficients for total export earnings, however, are lower than for those of the individual commodities. with the exception of a few years for timber. This suggests that total exports are more dispersed than individual exports.

When the coefficients of geographic concentration are related to the indices of instability. however, no conclusion can be derived. There is no systematic relation between instability indices and the coefficients of geographic concentration. For example, although the coefficient of geographic concentration is lowest for timber (which averaged 43.5) it has the second highest instability index. This finding is not surprising when it is realized that: -

- (a) a unique relationship between a given index of concentration and the degree of export instability *does not* exist, and

- (b) a higher concentration coefficient *does not* indicate a higher degree of export instability.

These are the observations of a study by J. Love⁷² who concluded that a given coefficient does not indicate a unique relationship between geographic concentration and export instability.⁷³ According to J. Love, "a given value of the Gini-Hirschman coefficient may be associated with a significant relationship between geographic concentration and export fluctuations in one instance but not in another, due to differences in the relative importance of the trading partners and that higher coefficient do not necessarily indicate higher degrees of instability. Analyses such as those of Massell and MacBean, which were founded on the requirement of a direct relationship between Gini-Hirschman coefficient and instability indices, do not provide, therefore, a satisfactory approach to an investigation of the effects of geographic concentration on export fluctuations".⁷⁴

As an alternative approach to determine the relationship between export concentration and instability, this study assesses the relative contribution of each export market to total export earnings. To do this it is necessary to consider both the magnitude of each export market's instability and the relative importance of the export market to the total value of exports in the given period. A method of computing the relative contribution of each export market is to multiply the instability index of each export market by its relative contribution to total exports, add the resulting products and then express the relative contribution to total exports, of each export market as a percentage of the summed products.

The instability indices percentage share in total Sarawak export earnings, and the relative contributions to the export earnings instability of the State by export markets for the period 1960- 1973 are given in Table (52).

72 J. Love *Instability : The Case of Ethiopia*", Phd. Thesis.

73 J. Love, p. 178.

74 J. Love, p. 180.

TABLE 52: THE COEFFICIENTS OF GEOGRAPHIC CONCENTRATION
OF TOTAL EARNINGS AND EXPORT EARNINGS FROM INDIVIDUAL COMMODITIES
(1960 - 1973)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1960 - 1973 Average	Instability Index
Total Exports	53.0	46.8	43.1	44.7	47.7	51.9	47.5	44.5	41.6	49.6	39.7	41.1	48.7	52.1	46.6	11.9
Pepper	90.9	79.6	74.8	60.7	77.8	85.3	82.5	87.2	87.7	92.2	90.4	85.8	84.4	80.1	82.3	14.8
Petroleum	50.6	48.9	49.1	49.7	53.3	58.3	56.7	56.7	61.9	54.8	52.8	44.7	62.2	69.9	54.8	2.2
Rubber	72.0	77.4	69.1	70.3	75.6	87.7	78.7	77.6	67.0	69.4	64.0	55.1	75.8	79.7	72.3	26.4
Timber	44.0	40.9	37.8	39.2	35.4	45.2	56.2	50.8	58.8	33.7	50.3	40.1	37.8	46.2	43.5	16.3

TABLE 53: GEOGRAPHIC SOURCES OF SARAWAK'S EXPORT EARNINGS INSTABILITY

Export Market	Instability Index	% Share of Total Exports'	Relative Contribution To Export Instability
West Germany	26.07	2.45	2.63
Italy	37.77	1.19	1.85
Netherland	43.24	1.57	2.80
United Kingdom	49.36	5.15	10.69
Philippines	30.43	5.06	6.35
Singapore	12.59	38.87	20.17
Thailand	115.54	0.94	4.48
West Malaysia	116.84	2.70	13.01
Sabah	35.96	1.24	1.84
Brunei	22.72	0.99	0.93
Hongkong	26.15	2.17	2.34
Japan	23.35	18.73	18.01
Australia	30.23	8.22	10.24
New Zealand	58.02	0.69	1.65
U.S.A.	32.20	2.27	3.01

• Average for 1960- 1973.



The index of instability of the export markets ranged from a low of 12.59 for Singapore to as high as 116.84 for West Malaysia. An assessment of relative contributions to total earnings instability indicates that Singapore has the highest share, followed by Japan. These are countries which have the largest shares of total export. This implies that the two major geographic sources of Sarawak's export instability (39.72%) are Singapore and Japan, which absorb a total of 56.7% of Sarawak's total exports. From this it may be concluded that the concentration of Sarawak's exports on the markets of Singapore and Japan has been responsible for a large part of its export earnings instability.

Commodity Concentration

The argument that commodity concentration tends to produce instability in total export proceeds is premised on the assumption that fluctuations in export earnings from a narrow range of commodities will be such that it is unlikely that fluctuations in export earnings from different commodities will offset one another.

Conventionally, commodity concentration, like geographic concentration, is measured using the Gini-Hirschman coefficient but the shortcomings of this index as mentioned above also apply to the measurement of commodity concentration. According, an alternative method, that of computing the relative contribution of each commodity to total exports is used for geographic concentration. This, in fact, was done in Chapter 3.2.1 where it was found that timber and rubber, which comprised 11.1% of total exports, contributed almost 60% to total export instability. In comparison petroleum, although comprising more than 50% of total exports, contributed only 10.7% to total export earnings instability. In comparison, petroleum, although comprising more than in the case of Sarawak exports, is a cause of export instability.



POLICY IMPLICATIONS AND CONCLUSION

4.1 STABILIZATION POLICIES

The finding of this study is that the fluctuations in the export earnings of Sarawak, although fairly high by conventional standards have not had adverse effects on its economic performance. However, the agricultural producers are adversely affected. Since this group comprises a high percentage of the total population and belongs to the lowest income group, the problem of fluctuations had significant political, social and economic implications. It is therefore imperative that some measures be taken to reduce the fluctuations in exports and, especially, to protect agricultural producers from the adverse effects of export fluctuations.

4.1.1. Diversification of The Economy

One measure which has frequently been suggested as a remedy for export instability is that of diversification of the economy. The rationale of diversification is that of the proverbial wisdom of putting the eggs in several baskets. Heavy dependence on a few commodities means that fluctuations in these commodities could not be compensated. In the context of Sarawak it implies that export diversification, by expanding the shares of commodities other than timber, pepper and rubber, would reduce the magnitude of export instability.

It does not follow, however, that diversification of every kind will help reduce export instability. In order that diversification would stabilize export proceeds the expanding commodity must fulfil either of two conditions:-

- (a) it must be characteristically stable in prices and proceeds; or
- (b) its price and proceeds must generally move in the opposite direction to those of the main export products.

The stabilizing effect of diversification will thus clearly depend on the choice of commodities for expansion. The basic underlying objective of diversification is implicitly the stabilization of the export earnings of the economy. Such diversification will not stabilize the income of an average peasant farmer unless mixed farming is widely practised.

In Sarawak, the tendency is to specialize either in rubber, pepper or coconut and, recently, in cocoa. The reasons have been either lack of land or capital or both. Thus diversification of products is not appropriate to Sarawak since the problem is the stabilization of the income of the small holding peasant farmers rather than the stabilization of the economy.

The peasant farmer's income may, however, be stabilized through two strategies: one is the establishment of effective marketing boards and the other industrialization, i.e. the establishment of agriculture-based manufacturing industries which utilize local agricultural commodities as raw materials for their finished products.

4.1.2 Marketing Boards

Marketing Boards are independent statutory bodies with monopolistic powers designed to act as the middlemen between the local producers and the foreign buyers. In theory, given precise directives, marketing boards can effectively function as instruments of stabilization of commodity prices or producers incomes. The mechanism is as follows. The local commodity prices can be stabilized through monopsony buying so that price swings in the world market are not reflected in the prices received by the producers; the producers incomes can be stabilized by adjusting the prices in such a way as to offset variation in output. Since the proceeds of the marketing boards tend to fluctuate while the payments to the producers are fairly stable, the 'earnings' of the boards will have to absorb the entire impact of world price volatility with surpluses and deficits. In effect, the surpluses and deficits are tantamount to export taxes and subsidies, respectively.

Marketing Boards are especially appropriate to Sarawak because of the lack of sophistication on the part of agricultural producers, who are mostly illiterate. At present they are at the mercy of buyers who dictate the terms and conditions of sales.

4.1.3 Industrialization

The other solution is industrialization. There are many persuasive arguments in favour of a general industrialization policy for Sarawak. The manufacturing sector is still a very small sector in the state's economy and is growing at a rate of only 3.3 per cent per annum. Sarawak has abundant natural resources which are necessary for viable industrialization, e.g. timber, rubber, oil and gas. It also has a high level of

unemployment together with rapid population growth, which would ensure low wages. There is also a high potential for the availability of hydrogenerated power.

The immediate industrialization policy appropriate to the reduction of the adverse effects of export instability on the agricultural producers would be to embark on the establishment of agriculturally-based manufacturing industries. The markets for manufactured good such as timber products and processed agricultural products are less concentrated and much more stable. The addition of resource-based manufacturing industries would also bring greater economic advantage in view of the higher utilization of raw materials, high value-added, high rate of employment generation, and high "linkage" effects.

4.2 CONCLUSION

The objective of the present study is to examine the causes and effects of the fluctuations in the exports of Sarawak on the domestic economy. Paucity of the necessary statistical data limited the nature and scope of the research. However, some interesting findings have emerged.

The limited number of major exports would indicate that the causes of instability were to be found in them. However, the findings of this study are that it is not so much the large percentage of individual petroleum exports, which comprised more than 50% of total exports but contributed only 10.7% to total export instability, whereas timber and rubber, which made up 22.3% and 11.1% of total exports respectively, contributed 33.9% and 26.5% of total instability respectively.

It is difficult to generalize as to the cause of instability of individual commodities. In most cases both supply and demand factors are at work. However, given the economic and geographical position of Sarawak, its dependence on a limited number of markets, particularly Singapore which is highly speculative in nature, accounts for a great deal of the instability. The level of instability, however, has been reinforcing rather than offsetting. But movements in the export proceeds of various commodities have not been additive. In fact Sarawak has been experiencing situations where a fall in the export proceeds from one commodity has been compensated by a rise in the proceeds from others.

With regard to effects, contrary to expectation, based on the prima facie case, export instability in Sarawak has not had any significant effects on the domestic economy, in term of macroeconomic variables. Fluctuations in export proceeds have not had significant adverse effects

on total income, expenditure, import and capital formation. However, the effects have been rather significant on several groups of people, notably those engaged in the agricultural sector, particularly the rubber small holders and the timber workers.

This is an interesting finding and has significant implications. Studies on export instability have traditionally focussed their attention on the effects of instability on economic development, defined in terms of macroeconomic variables and have not paid sufficient attention to the effects on individual groups of workers. From this study it seems that relating export instability to economic development may not be appropriate, since although there is no relationship between export instability and economic development, certain groups in the society could still be adversely affected by export instability. Studies of export instability should therefore also examine the effects and consequences of export instability on individual producers or traders as much as on the economy as a whole. In Sarawak, although the economy is relatively unaffected by export fluctuations in the short run, the majority of the working population has been adversely affected, which means that there will be adverse effects on the economy in the long run.

The point to note is that stabilization of the economy alone, when exports still suffer from fluctuations may not necessarily mean that every sector of the economy is protected. Stabilization of the economy as such is important in order to avoid disruptive effects on development, but there is also a real necessity for the stabilization of the income of those groups of people who are affected on the micro level.

STATISTICAL DATA



APPENDIX I: EXPENDITURE ON GROSS NATIONAL PRODUCT AT MARKET PRICES, SARAWAK

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
	\$ Million												
Private Consumption Expenditure	345	353	378	391	449	518	561	554	584	625	658	672	726
General Government													
Consumption Expenditure	53	60	72	85	93	111	119	118	126	130	135	174	211
Gross Capital Formation	108	96	111	132	162	178	156	172	175	106	134	211	239
Private	69	56	70	90	107	122	100	119	117	140	146	113	122
Public	39	40	41	42	55	56	56	53	58	66	88	98	117
Expenditure on Consumption and Gross Capital Formation	506	509	561	608	704	807	836	844	885	961	1027	1057	1176
Export On Goods And Non-Factor Services	404	415	397	437	484	519	539	638	684	741	822	653	804
Less Import of Goods And Non-Factor Services	421	409	408	450	505	558	591	637	655	748	788	568	679
Expenditure on Gross Domestic Product At Market Price	489	515	550	595	683	768	784	845	914	954	1061	1142	1301
Factor Receipts From Abroad	6	7	7	8	8	7	7	7	8	9	10	12	14
Less Factor Income Payments To Abroad	23	21	19	19	20	22	15	17	21	23	25	27	29
Expenditure On Gross National Product At Current Prices	472	501	538	584	671	753	776	835	901	940	1046	1127	1286
Population* (000)	761.8	781.7	804.6	825.9	850.9	876.1	901.7	923.6	944.0	967.3	994.5	1022.4	1063.3
Annual Rate of Growth of Population (%)	2.3	2.6	2.9	2.6	3.0	3.0	2.9	2.4	2.2	2.5	2.8	2.8	4.5
Per Capita GNP At Current Prices	619	641	668	707	788	860	861	904	954	972	1052	1102	1209
Annual Growth of GNP (%)	6.1	7.4	8.6	8.6	14.9	12.2	3.1	7.6	7.9	4.3	11.3	7.7	14.1

*Mid-Year Estimates.

APPENDIX 2: INDUSTRY ORIGIN OF GROSS DOMESTIC PRODUCT AT FACTOR COST, SARAWAK

	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
	\$ Million												
Agriculture, Forestry and Fishery	196	191	199	201	231	243	266	285	329	319	292	265	332
Mining and Quarrying	7	7	6	6	6	5	3	9	16	30	129	185	212
Manufacturing	51	59	62	70	78	101	68	71	78	81	81	83	85
Construction	17	20	23	26	32	39	34	39	42	46	56	52	58
Electricity and Water	5	5	6	7	9	10	9	10	11	11	13	14	15
Transportation and Communication	32	37	43	46	52	64	47	48	5	56	63	66	72
Wholesale and Retail Trade	52	53	57	64	79	89	94	115	115	116	119	123	127
Banking, Insurance and Real Estate	6	6	7	7	8	8	7	9	12	13	11	12	14
Ownership of Dwellings	20	22	23	25	27	30	38	51	51	53	54	56	57
Public Administration and Defence	21	27	34	42	42	52	44	39	45	45	47	64	64
Services	31	33	35	38	42	49	78	84	81	90	92	III	141
Gross Domestic Product at Factor Cost	438	460	495	532	615	690	688	760	831	860	957	1031	1177
Population* (000)	761.8	781.8	804.6	825.9	850.9	876.1	901.7	923.6	944.0	967.3	994.5	1022.4	1063.3
Per Capita GDP At Factor Cost (\$)	575	588	615	644	724	788	763	823	880	889	962	1008	1107
Annual Rate of Growth (%)		2.3	4.6	6.1	12.3	9.0	(-3.2)	7.9	6.9	1.0	8.2	4.7	10.0

*Mid-Year Estimates.

APPENDIX 3: LABOUR FORCE - POPULATION BY INDUSTRY, AGE 10 YEARS AND ABOVE
(1970 CENSUS)

Industry	Malay	Melanau	Sea Dayak	Land Dayak	Other Indigenous	Chinese	Other	Total
1 - Agriculture, Forestry, Hunting and Fishing	25,084	9,305	110,153	24,871	17,717	17,167	668	204,965
2 - Agricultural Products Requiring Substantial Processing	3,495	1,521	9,736	2,491	897	5,386	460	23,986
3 - Mining and Quarrying	320	15	61	194	119	386	13	1,108
4 - Manufacturing	3,878	2,137	1,254	169	254	9,183	128	17,003
5 - Construction	927	211	272	197	60	3,576	98	5,341
6 - Electricity, Gas, Water and Sanitary Services	584	76	133	65	18	483	51	1,410
7 - Commerce	1,679	511	515	204	161	13,949	297	17,316
8 - Transport, Storage and Communication	1,717	154	208	96	60	3,720	135	6,090
9 - Services	13,241	1,323	4,298	2,285	898	14,957	1,367	38,369
10 - Activities Not Adequately Described	1,635	249	2,292	1,114	404	1,895	95	7,684
11 - Not Working But Looking For Work/Blanks	4,100	990	4,331	3,080	968	9,008	260	22,737
TOTAL LABOUR FORCE	56,660	16,492	133,253	34,766	21,556	89,710	3,572	346,009

APPENDIX 4: AREA AND LAND USE IN SARAWAK

Land Use Classes	Percentage	Acres
Settlement and Associated Non-Agricultural Lands	0.1	32,128
Horticultural Lands (Mainly miscellaneous cultivation and including small areas of fruit trees)		19,776
Tree Palm and Other Permanent Crops (Rubber, Sago, Oil Palm, Coconut, Pepper)	3.1	930,368
Crop Land (Wet Padi and Hill Padi)	18.9	5,747,200
Unused Land (Sheet Lalang and Other Secondary Growth)	1.4	418,432
Swamp Forest (Mixed Swamp Forest, Alan and Padang Paya)	12.0	3,641,472
Dry Forest Land (Hill Forest, Kerangas Forest, Riverain Forest, Beach Forest)	63.1	19,237,248
Swamp (Paya) (Including Fresh and Salt Water And Mangrove and Nipah)	0.4	429,632
Total Land Use Classes	100.0	30,456,320



Source : Planimetric Measurement of Land Use Map, Land and Survey
Department, 1966.

APPENDIX 5: NET EXTERNAL TRADE IN RICE

Year	Export		Import		Re-Export		Net Import
	Tons	S	Tons	S	Tons	S	S
1963	0.23	84	58,092	22,275,156	-	-	22,275,072
1964	0.02	6	58,399	22,354,042	—	-	22,354,036
1965	-	—	57,819	21,672,614	1.00	500	21,672,114
1966	—	-	59,447	26,028,321	6.70	4,328	26,023,993
1967	—	1	60,944	33,018,227	11.69	7,561	33,010,665
1968	0.02	4	44,438	24,846,732	203.00	108,598	24,738,130
1969	-	5	54,809	25,314,043	205.08	109,423	25,204,615
1970	-	—	58,754	24,274,783	83.07	30,951	24,243,832
1971	—	3	59,220	21,159,582	216.86	76,984	21,082,595
1972	—	-	62,709	23,334,262	32.10	1,120	23,333,142
1973	—	5	69,933	42,881,462	976.25	712,541	42,168,916

Source: Department of Statistics.

Note: Quantity of rice exported, imported and re-exported include rice in husk (rice equivalent x.6), rice milled (broken), rice milled (whole), rice undermilled, (rice equivalent x.7), rice (parboiled), and rice glutinous (pulut).

APPENDIX 6: CALENDAR OF FARM OPERATIONS IN SARAWAK

Month	Pepper	Rubber"	Padi		Other Crops
			Wet	Hill	
Jan.	Drainage Weeding Applying Fertiliser	Tapping (8.2)	Weeding		
Feb.	Weeding	Tapping (11.6)	-	Harvesting	
Mar.	Weeding	Tapping (13.4)	Harvesting	Harvesting	
Apr.	Harvesting	Tapping (17.2)	Harvesting		
May	Harvesting	Tapping (20.2)	-	-	Off season cropping of some swamp padi areas with:
Jun.	Harvesting	Tapping (19.6)	-	Felling	- Soya bean
Jul.	Harvesting Processing	Tapping (14.2)	-	Felling	- Groundnuts
Aug.	Harvesting Weeding	Tapping (18.1)	Clearing	Burning	- Sweet potatoes.
Sept.	Weeding Adding Soil Applying Fertiliser	Tapping (17.9)	Clearing	Burning	
Oct.	Applying Fertiliser Adding Soil	Tapping (15.1)	Planting	Sowing Weeding	
Nov.	Applying Fertiliser Pruning Spraying	Tapping (11.8)	Planting Weeding	Weeding	
Dec.	Weeding Pruning	Tapping (10.8)	Weeding		

• Average days tapped in each month by sample of farmers as recorded by the survey 1968.

APPENDIX 7: IMPORTS, EXPORTS AND BALANCE OF TRADE
(M\$ '000)

Year	Imports	Local Produce	Exports		Total Exports	Visible Balance Of Trade Surplus (+) Or Deficit (-)
			Re-Exports			
1960	444,923	337,507	150,783		488,290	+ 43,367
1961	411,739	284,718	112,516		397,234	- 14,505
1962	400,645	295,229	111,967		407,196	+ 6,551
1963	396,518	278,185	95,634		373,819	- 22,699
1964	429,741	278,205	102,895		381,100	- 48,641
1965	484,861	323,098	110,601		433,699	- 51,162
1966	525,710	361,559	102,015		463,574	- 62,136
1967	536,682	387,859	115,124		502,983	- 33,699
1968	574,788	447,222	157,097		604,319	+ 29,531
1969	579,764	487,397	154,612		642,009	+ 62,245
1970	660,422	495,044	176,239		671,283	+ 10,861
1971	693,213	464,862	322,681		787,543	+ 94,330
1972	470,823	501,929	101,555		603,484	+ 132,661
1973	599,516	743,483	90,978		834,461	+ 234,945

APPENDIX 8: CARGO LOADED AND DISCHARGED AT PRINCIPAL PORTS

Year	(‘000 Tons)									
	Kuching		Rejang		River Ports		Miri		Others(a)	
	Loaded	Discharged	Loaded	Discharged	Loaded	Discharged	Loaded	Discharged(b)	Loaded	Discharged(b)
1960	44	167	369	108	4,442	4,520	348	9	5,203	4,804
1961	47	192	432	108	3,987	3,725	359	10	4,825	4,035
1962	78	197	468	112	4,189	3,859	319	8	5,054	4,176
1963	51	210	516	122	3,390	3,408	292	9	4,249	3,749
1964	44	255	531	133	3,493	3,459	109	9	4,177	3,856
1965	45	303	561	126	3,812	3,860	109	11	4,527	4,300
1966	35	302	655	149	4,504	4,606	193	9	5,387	5,066
1967	45	285	697	169	5,329	5,013	216	17	6,287	5,484
1968	36	219	783	157	5,413	5,853	683	14	6,916	6,243
1969	45	247	938	164	6,210	6,053	272	8	7,465	6,472
1970	38	326	1,114	158	7,395	6,542	538	15	9,975	7,041
1971	34	389	929	168	9,057	6,247	452	31	10,472	6,835
1972	31	275	790	264	5,094	1,549	359	10	6,274	2,098
1973	45	378	753	234	5,355	1,178	324	19	6,477	1,809

Source: Department of Royal Custom and Excise.

(a)Include Lundu, Sejingkat, Bintulu, Umbang, Baram, Lawas, Sundar, etc.

(b)Includes crude petroleum piped from Brunei to Miri for refining.

APPENDIX 9: CAPACITY, GENERATION AND CONSUMPTION OF ELECTRICITY (a)

Year/Division	Generating Capacity (Kilowatts)	United Generated (KW-Hours)	Number of Consumers	Consumption		
				Lighting And Domestic Power (KW-Hours)	Industrial And Commercial (KW-Hours)	Total (KW-Hours)
1960	14,464	32,827,957	14,033	11,540,657	18,310,472	29,851,129
1961	15,181	38,560,310	15,051	12,364,754	22,108,709	34,473,463
1962	15,960	43,980,244	16,627	13,860,127	25,965,773	39,825,900
1963	17,759	49,094,597	17,924	15,368,556	28,278,331	43,646,887
1964	18,252	57,754,274	19,418	18,119,186	33,276,444	51,395,630
1965	22,891	68,490,547	21,843	20,149,908	40,214,668	60,364,576
1966	23,549	78,572,512	23,498	22,631,198	45,450,213	68,081,411
1967	30,331	80,634,392	* 25,751	23,034,603	46,565,231	69,590,834
1968	32,799	87,695,951	27,877	24,879,891	50,535,761	75,415,652
1969	33,222	95,725,187	31,653	26,076,810	55,037,712	81,114,522
1970	36,791	108,521,820	31,555	21,310,145	71,766,064(b)	93,076,209
1971	46,248	121,193,986	34,186	21,252,938	81,158,499(b)	102,411,437
1972	46,276	140,977,269	37,276	24,127,323	95,000,272(b)	119,127,595
1973	55,876	158,736,125	40,003	28,509,849	106,452,957(b)	134,962,806

Source: Sarawak Electricity Supply Corporation and Sarawak Shell Berhad.

(a) Figures refer to Sarawak Electricity Supply Corporation and Sarawak Shell Berhad only. Other sources of supply have not been included.

(b) Includes Public Street Lighting which from 1960 to 1969 was included under "Lighting and Domestic Power".

APPENDIX 10: RUBBER –

PRODUCTION, EXPORT AND STOCK

Year	Production (Tons)	Exports (Tons)	Stock (Tons)
1961	n.a.	46,916	1,214
1962	n.a.	43,806	1,307
1963	n.a.	44,845	1,348
1964	42,871	42,959	1,260
1965	40,355	40,034	1,281
1966	33,245	33,589	937
1967	29,021	28,445	1,513
1968	23,261	23,794	980
1969	38,838	38,729	1,089
1970	21,478	21,460	1,107
1971	19,239	19,279	1,067
1972	19,548	19,623	992
1973	41,675	41,337	1,330

Source: Annual Bulletin of Statistics,
Sarawak, various years.

APPENDIX 11 : PEPPER EXPORTS

Year	Value \$ Million	Quantity (000 Tons)
1960	17.2	4.1
1961	28.6	10.9
1962	24.2	11.5
1963	23.4	11.4
1964	24.2	12.1
1965	41.7	17.6
1966	33.0	13.1
1967	35.4	19.5
1968	34.7	22.8
1969	52.9	28.6
1970	56.2	24.0
1971	62.8	26.5
1972	58.1	25.8
1973	66.3	22.5

Source: Annual Bulletin of Statistics,
Sarawak, various years.

APPENDIX 12: FORMULAE FOR CALCULATION OF INSTABILITY INDEX

$$(1) \quad I_2 = \text{Antilog } \sqrt{V \log}$$

$$\text{where } V \log = \frac{1}{n-1} \sum (\log \frac{x_t + 1}{x_t} - m)^2$$

$$m = \frac{1}{n-1} \sum \log \frac{x_t + 1}{x_t}$$

i.e. $V \log$ is the logarithmic variance of the series.

$$(2) \quad I_2 = \frac{\sqrt{\sum (U_t)^2}}{Z}$$

$$\text{where } U_t = Z_t - (\beta_0 + \beta_1 t)$$

$$Z = \frac{\sum Z_t}{n}$$

i.e. the standard error of the estimates (the square root of the unexplained variance) is divided by the mean of the observation.

$$(3) \quad I_3 = \frac{\sum w_t}{n} \quad \text{where } w_t = \frac{U_t + 1 - U_t}{\text{Max. } Z_t, Z_t + 1}$$

$$Z_t = \beta_0 + \beta_1 t$$

$$U_t = Z_t - (\beta_0 + \beta_1 t)$$

i.e. the average annual percentage rate of change in the series, trend corrected.

$$(4) \quad I_4 = \frac{100}{x_{i/n}} \sqrt{\frac{\sum_{i=1}^n (X_i - \bar{X}^*)^2}{n}}$$

where $x = a(1+r)^t$ a and r are obtained by regressing the $\log X_i$ series over t by OLS.

where $x = a(1+r)^t$ a and r are obtained by regressing the $\log X_i$ series over t by OLS.

$$(5) \quad I_s = \frac{100}{\sum x_i / n} \sqrt{\sum_{x=1}^n (x_i - \bar{x})^2} \quad \text{where } X_t = a + bt$$

(6) 1_6 = Estimated standard Deviation of e_t where

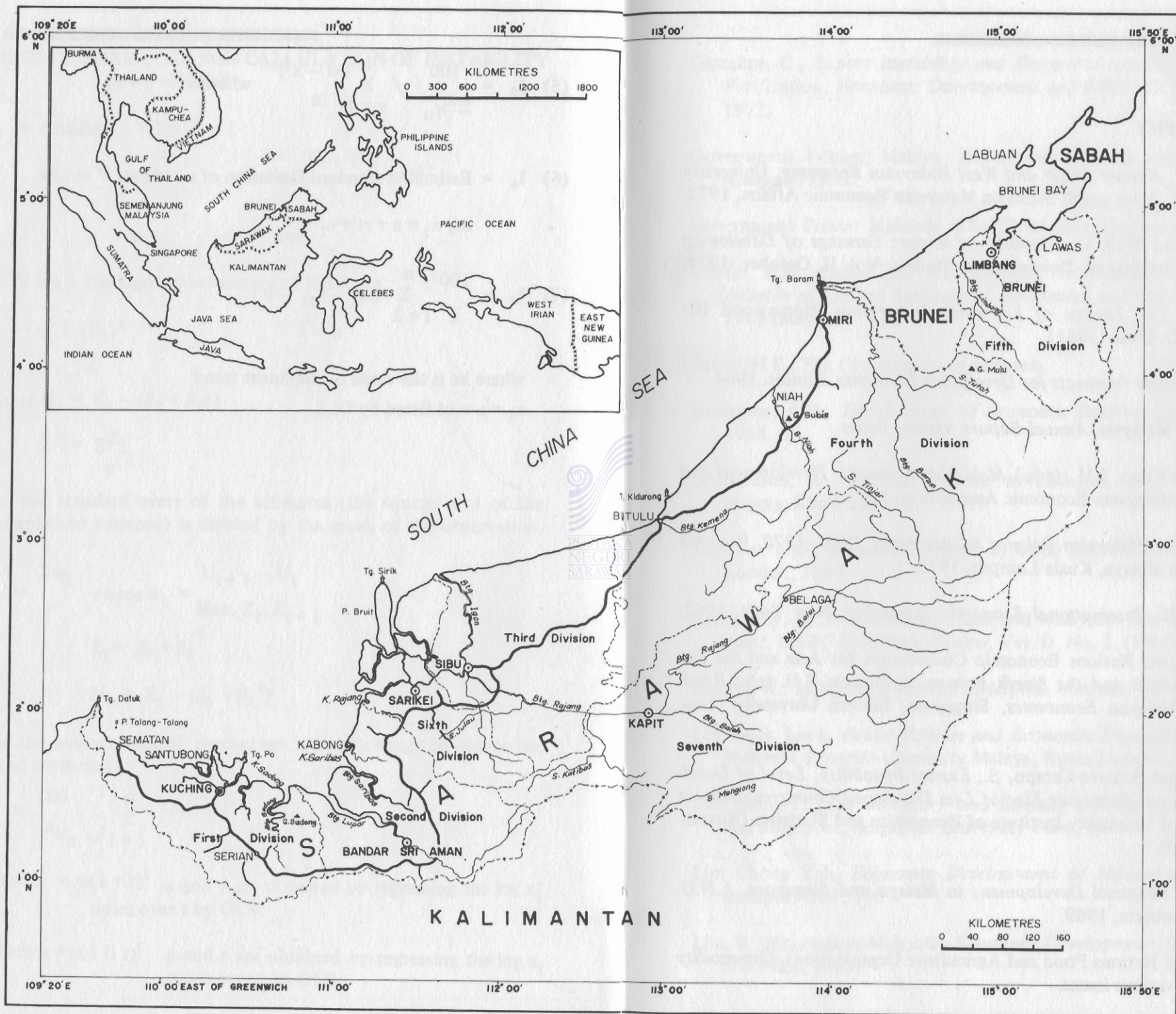
$$\log X_t = a + rt + e_t$$

$$(7) \quad I_s = \frac{100}{\bar{x}} \frac{\sum_{i=2}^n |X_t - X_{t-1} - b|}{n-1}$$

where bc is the slope of the linear trend

$X_t = a + bt$ fitted by OLS.





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