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Technological Change and Industry Structure
in the Philippines: 1969-1985

by

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ABSTRACT:

This paper outlines the results of Stage I of a research program into *The Relationship between Technological Change and Economic Development: A Case Study of the Philippines*: Part I of this paper outlines the analytical framework adopted for the analysis which focuses upon changes in the vector of technical coefficients derived from the Philippines' I-O tables for 1969-1985 relating the observed pattern of change to one of the 'stylized facts' of economic development - the "increasing roundaboutness of production". The results of the analysis suggest that over this period, the changes in the technical coefficients were largely inconsistent with that standard of development. It is suggested that this outcome is largely the result of weak organisational and technical skills at the level of the firm which then manifest themselves in inappropriate responses to changes in the level of activity - particularly apparent in the case of manufacturing industries. By highlighting the interdependence between production processes it is possible to determine where weak development in one sector - such as food processing - in inhibiting the development of others - such as agriculture. A major problem stressed with the current policy of improving agricultural productivity is the lack of a reasonably up-to-date I-O table from which problems associated with that interdependence can be gauged.

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A computer is a great device becuse it enables you to do anything ....
you don't need need your understanding for. Understanding is outside
a computer. It doesn't understand. (Sir Roger Penrose)[1].

Part I: Theoretical Basis

I. Conceptual Framework

In trying to understand the nature of growth/development, it is necessary to abandon much of economic growth theory. Even recent models of growth embodying increasing returns, such as Romer's model of endogenous technological change (1990), are couched in optimising terms which rest on the classical physics assumption that initial conditions are independent of the laws of motion (Prigogine & Stengers, 1985, p.61) which in this case means the economic forces propelling the economy along its growth path. This assumption is simply an artifice to allow the physics metaphor to be employed in an area where it is not applicable and as such constitutes mere computation, not understanding. To understand the nature of growth/development it is necessary to discard this inappropriate assumption and try to discern the path dependent growth pattern which will emanate from the interaction between the initial conditions and the economic forces. However, in order to do that, it is necessary to recognise the role that structural transformation plays in economic change which in turn requires breaking away from a mechanistic interpretation of that change. Incidently, this approach helps economics conform with the late 20th Century perception of science as an "explanation of underlying structures" (Bronowski, 1976, p.112) rather than being locked into a mid 19th Century view.

The starting point of the program is with the work of Kuznets (1971) and subsequently Chenery and Syrquin (1988(a), 1988(b)), Chenery, Robinson and Syrquin (1988). Growth is not simply an increase in a unitary output but needs to focus on the changes in sectoral composition - not only of the output but also the inputs. They labelled this change as structural change and suggested it was both a cause and an effect of increases in domestic product (Syrquin, 1988). However, to understand the role that structure plays in growth/development it is necessary to: -

(A) Specify it independently from behavioural relationship[2] at the 'fundamental particle' level of production processes, viz the level of detailed inputs.

(B) Specify growth/development as a 'living' not mechanical process: one of differentiation and diversification from an initially undifferentiated state.[3]

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[1] Quotation from an interview published in the *New York Times* and reprinted in *Today*, February 2nd, 1999, page 6.

[2] These are the fundmental relationships - such as price-quantity, interest-investment, income-expenditure of economic theory.

[3] This is why growth and development are not distinguished. They are simply different ways of viewing the same process.

(A) The Model

To establish the structure of an economy independently of any behavioural relationships, it is defined as the set of technical coefficient vectors of an I-O table. viz.

$$\begin{vmatrix} a_{1j} \\ b_{2j} \\ \vdots \\ \vdots \\ a_{nj} \\ b_{lj} \\ b_{lj} \end{vmatrix}$$

Although this study does not adopt the standard Leontieff assumption of constant input ratios (its focus is on the pattern of change in those coefficients) using the vector of technical coefficients as the definition of structure does imply that substitution amongst inputs due to relative price changes is of little importance compared with the technical requirements of a production process. The output of an industry j described as a Cobb-Douglas function may be seen as: -

$$Q_j = a_j f(K_j^{\alpha} L_j^{\beta}) \quad is \quad det\,er\min ed \quad by \quad \begin{vmatrix} a_{1j} \\ b_{2j} \\ \vdots \\ \vdots \\ a_{nj} \\ b_{lj} \\ b_{lj} \end{vmatrix}$$

Where α and β can be $< 1, = 1$ or > 1

Now a change in the vector can affect a, $\alpha + \beta$, α or β.

Using Solow's (1957) model of neutral technological change an economy at time t may then be seen as

$$Q_t = A_t f(K_t L_t) \quad \in \quad \begin{vmatrix} a_{1j} \\ b_{2j} \\ \vdots \\ \vdots \\ a_{nj} \\ b_{lj} \\ b_{lj} \end{vmatrix}_t$$

Where $\in$ means the vector is an element of a set.

i.e productivity is a function of the way all inputs - primary as well as intermediate - are organised at the industry or rather process level and development/growth becomes a function of the way those inputs are re-organised over time. Using a Solow type function confuses cause and effect: a policy directed at increasing capital within an industry when it is the organisational and technical skills which are required to increase productivity, is obviously not going to work. This approach also gives a microeconomic basis for macro behaviour.

Obviously this relationship is very different from the way the relationship between output and inputs is seen in microeconomic theory. The production function is seen as a deterministic relationship existing ex ante thereby permitting the application of the maximising principle. As already pointed out this implies that the forces pushing the economy along its growth path are independent of the initial conditions those forces are purported to react upon. However, within this model, outcomes are an emergent property of the way the whole structure of a firm's production can be transformed and are therefore not knowable ex ante. The entrepreneur may respond to a particular set of circumstances either by trying to establish market share within a niche specialisation (a "gambler") or conversely by incorporating more backward linkages within a production process seek to protect his source of supply (a"belts and braces" mentality). But essentially the outcome of these steps is unknowable so that he is not behaving as a profit-maximiser. This implies that the forces are not independent of the initial conditions so that growth/development becomes a path dependent process: the theoretical search for an optimal production technique is not applicable.

(B) The Process of Growth/Development.

Growth is not seen as a more or less deterministic relationship between inputs and outputs but a process of spinning-off a particular activity from a parent industry, enabling a new entity to specialise in that activity and as it does so, develop the complementary assets with which it can work. The parent industry then buys back the particular services the new entity specialises in, but the cost of those new services must be less than the reduction in primary input costs to the parent industry, for this new organisation to be more productive - one of the 'stylized facts' of economic development. When such a transformation takes place, if this productivity gain is sufficient it then becomes irreversible so that unlike in an optimisation model, the economy can then evolve.

Using this approach it is possible to avoid the purely mechanical nature of the relationships between output and inputs, not only implicit in the aggregate and micro production functions but also in the concept of substitution. Because of its greater specialisation, the 'new entity' is likely to exhibit a higher level of K:L than its parent company simply because of the greater asset formation which is possible. This has nothing to do with any increase in the marginal physical product of capital: it would be a purely technical relationship between the specific inputs required to produce the projected output. Once one moves away from defining factors such as capital as K, i.e as a point function, one can see the changes in factor composition which are necessary to bring about the change in factor mix. Thus the 50% decline in the labour coefficient and the 14 1/2% increase in the capital stock which occurred in U.S. agriculture from 1947-58 (Carter, 1970, Tables C5 & C6) can not be understood as simply a substitution of capital for labour. To understand that change it is necessary to understand the organisational developments - the marked increase in modal unit size as well as the movement to family farming- and technical developments - the new equipment such as the combine harvester - which made the organisational changes possible. An overall increase in capital does not explain this process: that capital needs to be embodied in the technically appropriate equipment and be manned by an appropriately skilled labour force if the process is to be understand. If the relationship between inputs and outputs is going to be used to

study growth/development "it must be disaggregated to exhibit the structure of production as a set of relationships between technologically specific inputs and outputs .... with the result that the notion of a marginal physical product of capital must be discarded as meaningless" (Nell, 1971, p.196).

Now not only is this model very different from the neo-classical formulation of a production function but it is also used in a very different from the way the I-O model is normally used. The I-O model normally focuses upon the changes in total output required to meet changes in Final Demand i.e.

$$X = [I - A]^{-1} Y$$

$[I - A]^{-1}$ represents the Leontieff inverse matrix embodying only the intermediate inputs. Structural change in terms of this model is limited to changes in the Intermediate Inputs matrix - all other changes are defined as changes in Final Demand. Increases in the sales of motor vehicles as a result of Ford's development of the model T would be largely interpreted as an increase in consumer demand.

The main differences in the approach adopted in this study to the standard I-O approach to technological change, may be summarised as follows:

(i) Changes in the total output required to meet changes in any aspect of final demand are of no concern. Even total input requirements are not relevant as they are not an appropriate indicator of change in a production process, "they tend to obscure the primary locus of change" (Carter, 1970, p.26). The focus of concern is with the process of change taking place over time in the complete structure of the technical vector - primary as well intermediate. In this particular context, the consistency conditions governing equilibrium within the I-O model are totally irrelevant.

(ii) The approach imputes an organisational cause which in turn determines the supply of which will be available within a economy, rather than a demand based explanation for structural change.

Thus to summarise the main points of this conceptual framework: -

(i) Development is essentially a change in the way output is produced - although this obviously has implications for product/income distribution.

(ii) That change is essentially the outcome of an entrepreneural reorganisation of the underlying production processes.

(iii) Technological Change is therefore seen as the reorganisation of a production process which facilitates the introduction of technical improvements enabling a more productive use of inputs.

2. Organisation and Economic Theory

Economies has found it difficult to incorporate a role for corporate organisation within the body of theory. It was not until Williamson specified the conditions under which the market could generate excessive transaction costs that the firm was accepted as an alternative mechanism for the allocation of resources. It was Williamson's work which then become the basis for what was called the "new theory of the firm". Unfortunately Williamson's theory lacks any explanation of innovative behaviour as is obvious from the facile explanation for Du Pont's adoption of a new organisational form. As Medema (1994) stressed, "development of such a theory requires more than trying to wedge these factors into a transaction costs framework." (p.38).

In fact it was the business historians, especially Chandler (1962, 1977, 1990), who initially demonstrated the significance of a firm's organisational characteristics in moulding innovative behaviour. Chandler (1989) emphasised the importance of hierarchical management, together with a plant of sufficient size to embody the economies of scale and scope made available from innovations within industries. However, being an historical account it only explains a particular process within a particular period: a period in which rapid adaptation of the production process was not particularly important.

What the Japanese auto industry in subsequently showed, (Womack, Jones & Roos, 1991) was that the requirements of innovative adaptation were quite different from those suggested by Chandler. Firstly, teams incorporating management and engineers as well as factory operatives carried out the work. Work was therefore coordinated horizontally not hierarchically. (Aoki, 1990). The basis for their coordination was the sharing of information learnt on sight - not a detailed program worked out in advance. Secondly, this meant that on the job learning was critical to the operation of the firm so that little interest was shown in an applicant's particular skills. Firms were looking for particular plant related problem-solving and communication skills: these are seen as a firm-specific asset so that promotional incentives were tied to these abilities. These characteristics of innovative adaptation again highlight the inapplicability of marginal productivity theory to this type of behaviour. The replacement of special skills with in-house learning suggests that the supply of and demand for those skills are no longer independent: the supply becomes a function of their demand through the training opportunities provided by the firm. Also, given the emphasis upon team involvement in the production process, it is team not individual productivity which is crucial for performance. These two conditions strongly suggest the indeterminate nature of income when viewed in terms of a market auction system. (Thurow, 1983)

From this Japanese experience it can be seen that it is not simply at the corporate level that a firm's organisation impacts upon its propensity to innovate: *it must impact directly upon behaviour at the process level*. Corporate learning - the basis for innovational behaviour - is connected with production processes through the way those activities are linked together in the organisation of the firm. It is therefore the firm's internal organisation - informal as well as formal - *which will determine its innovative capability*. Now it is precisely these organisational skills, related to the firm's technical competence, which underpin its ability to successfully move into related fields. It was Du Pont's organisational skills which together with the expertise in nitrocellulose production which enabled it to move into a wide range of related chemical areas - not the removal of a fictitious "opportunism". Perhaps even more fascinating was the movement of the very minor Minnesota, Mining and Manufacturing Co. from the supply of abrasive sand for metal casting manufacturing back at the turn of the century, firstly into adhesives (gummed paper) and then into tapes (masking tapes initially) for which 3M as it was re-christened, became a house-hold name. (Jacobs, 1972). This ability to move into related areas of production is now usually referred to as corporate coherence (Teece et al, 1994) but it is suggested that this is simply the revealed expression of technological change as defined in this paper. Again to emphasise it is a path-dependent process: the learning associated with innovative behaviour tends to be cumulative; what is learnt in one period is absorbed into the learning process in the next. However the converse of that implies a failure to learn in one period is likely to be built into the firm's organisational behaviour pattern in future periods, thereby continuing to limit its technical competence.

The conceptual point I would like to emphasise in Part I is that marginal product theory is not applicable to this process of growth/development and hence that the interdependence of factor/product markets is no longer relevant. Interdependence within the production process needs to become the focus of attention so that equilibrium is then seen as a relationship between the pattern of production and the pattern of inputs required to maintain it at its current level.

This analytical framework will now be applied to a number of Philippines industries listed in Table 1 over the period 1969-85.

Table 1

Sample of Philippines Industries included in the Analysis.

A. Agriculture

4 Crops:
> Palay, Bananas, Sugarcane and Coconut

2 Livestock:
> Hogs and Poultry

B. Manufacturing

3 Food Processing:
> Rice and Corn Milling, Sugar Milling and Refining and
> Coconut and Other Oils

4 Chemical: Basic Chemical:
> Fertilizer, Drugs and Medicines,
> Soap and Synthetic Detergents

2 Non-durable Consumer Goods:
> Textile and Knitting Mill Products and Wearing Apparel

2 Durable Consumer Goods:
> Motor Vehicles and Household Electrical Appliances

2 Producer Goods:
> Basic Iron and Steel, Tractors and Agricultural Machinery

C. Non-Manufacturing Industrial and Services

2 Non-Manufacturing Industrials:
> Construction, Electricity Generation and Distribution

4 Services:
> Wholesale Trade, Communication, Banking and
> Professional Services

Part II: Structural Change in the Philippines Economy

This section will focus upon
    1. What was the nature of the change in the technical coefficients which took place and did it reflect the usual pattern of economic development - the 'stylized fact', referred to as 'increasing roundaboutness of production'.
    2. If this change does not reflect this pattern of economic development what are the likely reasons for it not doing so.

3. Pattern of Coefficient Change

A. Descriptive Analysis

(i) Agriculture

Over the whole term all crops other than Coconut showed an increase in intermediate inputs but only Palay showed a reduction in primary inputs (labour) which more than compensated for the increase in intermediate inputs. This pattern of change by Palay reflects the effect of the "Green Revolution" but some doubts have been expressed as to its irreversibility although some of these may be the result of excessive aggregation of the industry. The other crops, traditional as well as new - showed significant increases in intermediate inputs but little or no decrease at all in primary inputs. Coconut showed marked declines in intermediate inputs sufficient to offset the increase in primary inputs. Such a pattern of coefficient change is inconsistent with the specialisation and asset generation necessary for economic development and reflects a perverse pattern of productivity change. It is usually the sign of an industry in severe economic difficulties.

In the case of both pig and poultry farming, there were sharp declines in the unit costs of labour but not sufficient to offset the dramatic increases in intermediate inputs - mainly manufactured feedstocks. These dramatic increases reflected a movement from agricultural to manufactured sources of feedstocks, a necessary move to take advantage of the potential economies of scale available within these industries. The increases in manufactured feedstocks reflect a sharp increase in their price and highlights an all too frequent problem with achieving structural transformations of Philippines' industries: the inability for supply industries to increase output without a sharp increase in prices. The overall pattern of change tends to be in one direction over the whole term, although to some degree modified by the recession in the third period: Pig farming showed increases in agricultural feedstock but decreases in manufactured feedstocks. Palay: decreased, fertiliser and pesticides (the fall in pesticides was marked in all crops).

(ii) Manufacturing Sector

The selected Manufacturing industries tended to show a much more diverse pattern of coefficient change, although all displayed an unremittingly poor productivity performance when viewed from the 'stylized fact' adopted as the standard for development. However, all of the Food Processing industries showed a decline in intermediate inputs which was more than sufficient to offset the increases primary inputs and therefore reflected a similarly perverse development pattern to Coconut. This pattern of change was not

consistent across each period for two of these industries. In one, intermediate inputs rose sharply in the second period, associated with a significant but smaller decline in the unit costs of labour, while in the second primary and intermediate inputs tended to move together.

With three of the four Chemical industries there was again an inconsistent pattern of coefficient change reflected to some degree in most of the other Manufacturing industries (other than Food Processing). In the first period these appeared to be an increase in specialisation associated with increases in own sector or other closely related chemical inputs and a decline in primary sector inputs. This change was also associated with a sharp fall in the unit costs of labour. This pattern tended to be reversed in the second and third periods, with less own sector inputs, a significant reduction in the share of inputs coming from manufacturing and an apparent increased emphasis upon up-stream links in the production process.

However, in the Non-durable Consumer Goods industries, Textiles behaved somewhat differently appearing to maintain its focus on core activities in the third period. Nevertheless labour unit costs as well as intermediate inputs increased, suggesting that this specialisation simply reflected more purchases between the integrated and non-integrated mills rather than any increased specialisation within the separate components of spinning, weaving and finishing, carried out in integrated mills. Wearing Apparel on the other hand after moving away to some degree from textiles inputs towards own sector and other fibre inputs showed a strong swing back to textiles in the third period. In the case of the Durable Consumer Goods industries, because of the change in industry definition in 1974 it was not possible to compare the changes in the Household Electrical Appliance's coefficients over the whole term. However, it is unlikely that the upsurge in intermediate inputs in 1979 was the outcome of the Local Content Plan as it probably was in the case of Motor Vehicles. The pattern of own sector input changes was quite different in each case.

In the case of Producer Goods industries both showed an increase in intermediate inputs which was greater than the decline in the unit costs of labour. This reflected a steady deterioration from the first period when the increase in intermediate inputs was less than the decline in the unit cost of labour - markedly so in the case of Agricultural Machinery.

(iii) Non-Manufacturing Industrials and Services

This sector showed a similar pattern of coefficient change to that of Manufacturing: a tendency for those patterns to be reversed over the whole term. There were however a number of differences. Firstly, the changes in the coefficients were markedly smaller. Secondly, the change in the Communication industry's technical coefficients represented the clearest example of an irreversible structural transformation compared with all other industries. The unit costs of labour fell by 72.6% declining quite steadily over the boom and subsequently recession periods and by more than the increase in intermediate inputs in every period.

In the case of the Non-Manufacturing Industrials, Construction showed a small increase in intermediate inputs but a marked increase in primary inputs - especially of capital services (depreciation) which rose 6.4 times that of labour unit costs. Electricity although the decline in unit labour costs was greater than the increase in intermediate inputs the marked increase in capital services unit costs swamped the decline in labour, so that primary as well as intermediate costs, rose. Increase in intermediate costs was largely the effect of a sharp rise in the unit costs of fuel - largely a price effect - which generated a significant shift to coal-powered generation in the third period and a marked increase in capital charges.

In the case of the services, although the increase in the unit costs of intermediate inputs in the Wholesaling industry was less than the decline in primary inputs this did not reflect a sustained transformation of the industry. The result was that it remained a significant input cost i.e. more than 1% of the total cost structure, in all industries in 1985 and more than 10% of the total cost structure in three manufacturing industries. This was more than five times the level of that input cost for the same industries in Japan. As already pointed out the change in the Communication industry was a clearer case of structural transformation than in any other industry. Banking industry showed little sign of transformation: intermediate and primary inputs tend to move together, so that the increase in intermediate inputs over the whole period was associated with an increase in primary inputs. There was a dramatic increase in own sector inputs probably reflecting the cross-financing of banks experiencing severe profitability/solvency problems on the recession.

The Professional Services industry was selected both because of the significance Anne Carter placed on it as a key industry reflecting the "increasing roundaboutness of production" and because of its significance in economic development patterns in U.S. urban areas. (Little & Carter, 1979). Although this industry showed marked increases in intermediate inputs over the whole term these were more than compensated for the declines primary inputs. Nevertheless this pattern of change was not consistent - much of the decline in the unit costs of labour occurring in the first period so the dramatic increases in intermediate inputs in the third period were associated with small increases in primary inputs both of labour and capital services.

Table 2

Standard Deviation of the Changes in Technical Coefficients,
Weighted by their Share of Total Intermediate Inputs in the Basic Year

1974-69			1979-74			1985-79			1985-69		
AGRI	NON-MFR	MFR	AGRI	NON-MFR	MFR	AGRI	NON-MFR	MFR	AGRI	NON-MFR	MFR
0.3942	0.9478	1.7730	0.5740	0.3290	1.3912	0.3807	0.2701	0.2934	0.6990	0.3587	2.8864
0.2688	0.2753	1.0795	0.6680	4.0581	1.6972	0.5193	1.5555	0.3574	0.8014	3.9754	0.3699
0.6463	0.3423	7.2341	0.2832	0.0670	2.4395	0.6759	0.3831	0.9651	0.8102	0.2964	4.9951
0.3206	0.3018	0.2431	2.0992	0.1574	0.5434	1.9982	0.4924	1.2758	4.5340	0.4352	1.7736
1.0492	0.5502	2.1049	3.9744	0.1563	0.7994	1.7994	0.7354	2.1394	3.1395	0.8929	1.2582
1.6376	0.1031	0.4397	1.3452	0.3158	0.6027	2.9505	0.6657	0.9096	4.4608	0.4820	0.3880
		1.2930			1.2962	2.3604		1.2287			1.2500
		0.5902			0.7255			2.0236			1.9891
		0.4409			0.5620			2.9955			3.1640
		1.5410			0.5955			3.4104			5.1220
		93.2912			2.4866			3.6217			1.5244
		2.6361			0.9195			0.6778			2.7248
		0.07162			3.9751			10.1115			

	74-69	79-74	85-79	85-69
Average Coefficient				
Manufacturing	8.6722	1.3872	2.3085	2.2871
Agriculture	0.7195	1.4907	1.5263	2.4075
Non-Manufacturing	0.4201	0.8473	0.6837	1.0734
Variance				
Manufacturing	649.8691	1.0629	6.7440	2.4582
Agriculture	0.2850	1.9071	1.0118	3.4648
Non-Manufacturing	0.0874	2.4845	0.2122	2.0652

B. Statistical Analysis

An attempt was made to statistically compare the variability of the different sector's technical coefficients. This was done by taking the standard deviation of the changes in unit input costs for each industry, weighted by each input's share of intermediate inputs in the base year. The average as well as the variance of these coefficients was then calculated for each sector both for each period as well as for the term as a whole. The results of the steps are outlined in Table 2 and confirm those found in the descriptive analysis; in both Manufacturing and Non-manufacturing there is a tendency for pattern of coefficient change to reverse between periods whereas with Agriculture changes tend to be more consistent and therefore cumulative.

As may be seen from Table 2,

> (i) In both the first and the third periods, the variance in Manufacturing tends to be considerably greater than either Agriculture or Non-manufacturing. Even when the somewhat anomalous value for Motor Vehicles is omitted the variance of the Manufacturing sector remains more than 13 times that of Agriculture.
> (ii) In the second period the variance of Non-manufacturing in greater than either Manufacturing or Agriculture. Non-manufacturing's relatively high variance is largely the result of the increase in the Electricity industry's unit costs of fuel with a high weighting in 1974.
> (iii) Over the whole term, the variance of the Agricultural sector is greater than either the Manufacturing or Non-manufacturing sectors.

This over all picture is supported by the relative pattern shown by individual industry coefficients. The only agricultural industry to have a higher weighted standard deviation for an individual period than for the whole term was the Hog industry reflecting the movement away from manufactured feedstocks in the third period after the marked increase during the second. Conversely only three of the twelve Manufacturing industries Rice and Corn Milling, Basic Chemicals and Wearing Apparel show a higher weighted standard deviation for the whole term than for any individual period. Even Coconut and Other Oils as well as Motor Vehicles which have higher a weighted standard deviation for the whole term than any of the other 22 industries, have significantly higher weighted standard deviations for at least one of the periods.

4. Possible Explanations for the Patterns of Change

A. Relative price changes

It would take a quite different exercise to assess the extent to which changes in all of the technical coefficients resulted from relative price changes. In the standard Leontieff model intermediate inputs are assumed not to be substitutable and my model extends this convention to include primary inputs. It was therefore felt desirable to compare the relative changes in intermediate input and labour prices, where the decrease in the unit costs of labour was greater than the increase in the unit costs of intermediate inputs, notably in the first period. This included eight industries with increases in thirteen intermediate inputs as shown in Table 3, the increase in labour costs over this period was 35% for skilled labour and 39% for unskilled, which was markedly less than the increase in all of the intermediate input prices - one of which rose almost 5 fold. These marked increases were probably the result of the boom conditions prevailing at the time. However, before it is possible to argue that the movement in the technical coefficients reflects an increase in more expensive at the expense of cheaper inputs, it is necessary to determine whether in the light of the increased prices

Table 3

The Relative Price Movements Associated with an Increase in Intermediate Inputs and a More Commesurate Decrease in Labour Inputs, experienced by Industries 1969 - 1974

Industry/Inputs	Expenditure		69-74 Δp	Deflated 1974 Exp.	Change in q
	1969	1974			
Palay					
Fertilizer	36,645	238,066	4.83	49,289	34.5%
Hogs					
Manufactured Feed	47,602	162,516	2.56	63,483	33.4%
Basic Chemicals					
Other Chemicals	368	3,111	3.44	904	145.8%
Fuel	4,051	35,548	4.40	8,079	99.4%
Soap					
Other Chemicals	26,217	32,770	3.13	10,470	-60.1%
Non-Metallic Min. Prod.	133	1,000)	3.01)	1,628	11 1/4 Fold
		4,113)	3.17)		
Iron and Steel					
Own Sector	14,120	904,166	4.25	212,745	14 Fold
Agricultural Machinery					
Primary Metals	688	10,695	4.25	2,516	2 2/3 Fold
Wholesale Trade	779	13,349	2.44	5,471	6 Fold
Transport & Storage	158	4,928	1.68	2,933	17 1/2 Fold
Business Services	0	2,934	1.44	2,038	∞
Electricity					
Fuel	74,511	470,396	4.40	106,908	43.5%
Professional Services					
Paper/Products	6,889	33,618	3.61	9,312	35.2%
Money Wage Rates					
Skilled Laborers	85.3	115.1	1.35		
Unskilled Laborers	79.7	110.8	1.39		

the quantities of the inputs actually increased[4]. As Table 3 shows, despite the marked increases in the prices of the intermediate inputs, quantities purchased increased significantly for all except one of those inputs - other chemicals in the Soap and Synthetic Detergents industry. There is therefore little reason for rejecting non-substitutability based on relative price movements.

B. An Over-valued Peso

A particular variant of the price distortion argument sometimes advanced for the dramatic decline in productivity, is the overvalued peso. This could lead to an increase in imported intermediate inputs, thereby reducing their partial productivity. If at the same time there is pressure to maintain employment then could be similar effects upon labour with perhaps significant declines in productivity overall.

There are however serious difficulties with this argument: it suggests that those inputs would be mainly from the manufacturing sector, as inputs from the primary and services sectors are unlikely to be traded. However, only eleven of the twenty five industries used in the sample showed an increase in the sectoral share of their inputs coming from manufacturing. Even in the case of those industries which did show such an increase, these was little suggestion that it involved an increased propensity to import. In the case of Agriculture, the increased purchases on manufactured inputs were all very heavily of domestic origin. Of the Manufacturing industries which increased their share of input expenditure on manufactured inputs, only one showed a tendency to derive an increasing share of its inputs from overseas sources in a way consistent with an overvalued peso thesis. Also in the case of the Non-manufacturing industries the only exceptions to increasing domestic sources of supply for increasing manufactured intermediate input purchases were the increased in fuel and electrical equipment purchases by the Electricity industry which were unrelated to an overvalued peso.

C. "Misdirection in Policies and Poor Public Management of the Economy" (Oshima, 1983, p.89)

So often repeated as the explanation for the poor productivity performance during the 60s and 70s it reminds one of Pope's lines.

> "What's now Apocrypha, my wit
> In time to come may pass for holy writ"

Apart from the obvious criticism that inter-industry resource misallocation cannot explain intra-industry resource miscallocation, this explanation of poor productivity performance displays a typical confusion of the ex ante with the ex post situation. A government scheme to support a relatively unproductive industry - e.g. the introduction of guaranteed prices in US agriculture or the international support for the introduction of the "Green Revolution" in Philippines' agriculture - can lead to a transformation of those industries as it did in both examples. Support per se does not constitute resource misallocation it is the reasons why an industry - such as the Philippines Textile industry - is unable to transform itself when given that support, that needs to be understood.

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[4] I am grateful to Dr. Mendoza for this point.

Oshima was making a similar criticism of the poor public management explanation suggesting instead it was the lack of ability to modify post war institutions and develop new ones, that lay at the basis of this problem.

D. A Lack of Corporate Coherence Reflected in the Lack of Technological Change

As pointed out in Part I, Corporate Coherence reflects the tendency and ability for firms to move into areas closely related to their core activities and that the organisational and technical skills which underpin that ability are the same as those underpinning what I have defined as technological change. It was also emphasised that the path dependent process of corporate learning, which is the basis for those organisational and technical skills, involves organisational rather than individual skills (Dosi, et al, 1992, p.191) and this means that the enterprise's attitude to innovation and risk-taking will have a significant effect upon the nature of the learning process which evolves. This 'culture of change' which imbues many Japanese enterprises has sometimes led to management conflicts within Japanese-Filipino joint ventures. (kumio, 1985, p.73).

It appears from the results of this and other studies (Hooley, 1985; IBRD, 1980) that the skills and complementary assets developed from Filipino organisational and technical experience are extremely weak indeed. The consequent lack of ability to successfully develop related areas of activity is reflected in the dozen "overcrowded" Mechanical Engineering industries in terms of their capacity utilisation listed by the World Bank in its country report (IBRD 1980 Statistical Appendix, Annex vi-2, p.215). Nine of the twelve industries involved components of the Household Electrical Appliances and Motor Vehicle industries already referred to in 3(A)(ii). However, it also includes the Household Sewing Machine industry which perhaps makes the point even more clearly. By the late 70s the local sewing machine industry had the capacity to produce 85,000 units per annum but no capacity to build either a simple household model for export or an industrial machine suitable for use in the small and medium sectors of the Wearing Apparel industry. Nor was there any attempt to build, in conjunction with Wood Products industries, a sewing machine cabinet for export (ibid, Main Report, p.80). This latter inability compares with the Singer Sewing Machine's move into furniture manufacturing from its sewing machine cabinet manufacturing, which was itself designed initially to help in the sale of the sewing machine (Teece et al, 1994, p.20).

The inability to develop complementary assets within the major fields of production such as agriculture, food processing or the chemical industries, is particularly marked. The extremely underdeveloped state of capital goods industries is reflected in the a very minor proportion of capital inputs provided domestically - only 6% for Food Processing, while none at all were provided for the chemical industries over the period 1969-75 (IBRD, 1990, Annex V1-2, Table 1.3,p.202 and Table 3.3, p.214). In the case of agricultural machinery the development of IRRI tiller (Ibid, Main Report, p.85) was probably the major complementary asset, although this was not of course the result of industry initiatives and skills. In marked contra-distinction, one of the lessons of late 19th and the 20th Century industrialisation was the role played by the development of complementary assets to a core activity which then evolved into their own industry (Chandler, 1990). In the U.S. this was sharply highlighted in the steam engine and machine tool skills which evolved as an auxiliary activity in the Textile Mill industry, subsequently to provide the basis for the country's locomotive industry.

Nevertheless despite this obvious lack of adaptive coherence this does not mean that a firm will not necessarily attempt to reposition itself in the light of changing levels of economic activity. It may try to focus itself more sharply in response to an upsurge in activity or protect its source of intermediate supplies by incorporating upstream stages of production, during a down turn. The problem is if the firms do not have the organisational and technical skills required to adapt coherently to these changed economic conditions, those responses are likely to be unsuccessful.

The issue now becomes, what do the different patterns of response shown by each sector tell us about their coherence? Although there is no simple causal relationship, the different patterns do tell us something: -

(i) The first point is to dispel any suggestion that the volatility of the agricultural coefficients has been constrained by the more limited possibilities for generating backward linkages in those industries. This cannot be a complete explanation: the tendency for the majority of agricultural industries (excluding Coconut of course) to increase their own sector inputs even during the third period - similar to all the service industries - is consistent with continuing structural change not with an inability to change simply because of exogenous constraints.

(ii) The most unproductive performance over the whole term are in the industries showing only cumulative change, such as bananas or banking: they show no tendency to alter their pattern of coefficient change but remain consistently unproductive. However, some of the manufacturing industries, like Agricultural machinery which show marked productivity gains in the first period then show even more marked losses in subsequent periods. Nevertheless, those earlier gains do to some extent offset the losses despite the fact that they obviously reflect a Ricardian disequilibrium so that the pattern of inputs generated in one period are not sustainable in the next. I am therefore not sure what the levels of the productivity change for the whole term actually mean.

(iii) What I am much more comfortable with is the claim that the high levels of coefficient change tend to reflect problem industries. As can be seen from Table 4:

(a) The top three were industries displaying reverse patterns of development.

(b) Three of the next four industries were undergoing marked changes reflecting dramatic price and demand increases for their most significant intermediate input.

(c) The next eight industries were either reverse development (2) or rather poor productivity performing manufacturing industries.

Now it is this latter group of industries, 2/3 of which showed improvements in productivity in the first period and were then lost in subsequent periods, which highlight the problems of coherence. It is this disequilibrating response in the first period, followed by similarly disequilibrating responses in the following periods, that is strongly suggestive of the lack of organisational and technical skills on which coherence needs to be based.

Table 4

24 Industries Listed by Rank Order of their Whole Term Weighted Standard Deviation

5.1220	Motor Vehicles		
4.9951	Coconut and Other Oils		
4.5340	Coconut		
4.4608	Poultry		
3.9754	Electricity		
3.1640	Wearing Apparel		
3.1395	Hogs		
2.8864	Rice and Corn Milling		
2.7248	Agricultural Machinery		
		Ave. Coefficient Agriculture	2.4075
		Ave. Coefficient Manufacture	2.2971
1.9891	Textiles		
1.7736	Basic Chemicals		
1.5244	Iron and Steel		
1.2582	Fertilizer		
1.2500	Soap and Synthetic Detergents		
		Ave. Coefficient Non-Manufacturing	1.0734
0.8929	Banking		
0.8014	Bananas		
0.8012	Sugar Cane		
0.6990	Palay		
0.4820	Professional Services		
0.4352	Communication		
0.3880	Drugs and Medicines		
0.3699	Sugar Milling and Refining		
0.3587	Construction		
0.2964	Wholesale Trade		

5. Conclusion

It is therefore concluded that the Philippines' abysmal productivity performance during the 70s is the outcome of a particular corporate learning process rather than poor public management or centralised decision-taking. If this conclusion is correct then the marked improvements in public management which have taken place since 1985 are unlikely to have induced any significant increase in structural transformations. Industry structures are likely to remain unproductive relative to similar industries in a more developed economy.

Similarly increasing direct foreign investment is unlikely to have any significant impact, as these industries are rarely establish from the viewpoint of improving industry inter-dependence. Rather they tend to be enclaves, importing most of their supplies and having only limited links with other sectors in the economy. The need is to infuse management and technical skills within existing enterprises - akin to the proposed management takeover of PAL by Cathay Pacific - at the same time focusing upon key industries. Such a program is required to break the continuing path dependency cycle of yesterday's innovational performance recreating the conditions for poor innovational performance today. However, in the light of this analysis it is difficult to see what role opening the retail trade industry to foreign investors might usefully play in improving the interdependence between sectors unless it was accompanied by similar moves into the wholesale trade industry. Retail trade was only of minor importance to the vast majority of industries where as wholesale trade has constituted a significant cost in all and a major cost in a number of industries. However, it is accepted that the most recent table on which this analysis was conducted is almost 15 years old, so it may have little relevance to current conditions.

By focusing on the interdependence between production processes this analysis helps to show how the chronically weak pattern of development in certain sectors - such as food processing - then affects the development of other sectors - such as agriculture. This suggests a major problem for government in establishing a policy framework for improving productivity in agriculture. The most up-to-date benchmark I-O table, from which that interdependence can be guaged, is more than 10 years old and even then was never published (for whatever reason). Greater priority therefore needs to be accorded the completion of the 1994 I-O table, which NSO/NSCB have been working on to my knowledge, for at least three years.

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Appendix

Derivation of the Technical Coefficient Vectors

The appendix describes in tabular form the vector of technical coefficients derived from the NSO-NSCB's bench-mark I-O tables for 1969, 1974, 1979 and 1985. The particular sectoral breakdown adopted for each year was as follows.

1969-1974	120 sector tables which were virtually the same.
1970	127 and 195 sectors. Where the latter model has been used, an attempt has been made to adjust industry input structures to the 127 sector totals.
1985	186 industry sector by 426 commodity sector table.

The appendix tables are ordered and numbered according to the ordering in the analysis carried out in part II. viz.

A number of points needs to be made regarding the use of these tables,

(a) No attempt has been made to adjust these tables for price changes as is intended in comparing the 1994 with the 1985 table. Attempts to undertake the necessary adjustments for 1969-85 are beyond the resources of this program, even assuming the data would still be available. Some element of coefficient change may therefore simply reflect price changes, although some attempts were made to adjust or price increases in a number of individual instances (e.g. Table 3). However, these adjustments, together with the observation that even in the case of fuel costs there was only an extremely limited number of cases (2) in which it showed a uniform tendency to increase over this period, suggest that price changes are unlikely to constitute a serious limitation to the conclusions.

b) There has been a major change in the format of the tables between 1979 and 1985. In the 1985 the traditional industry by industry format has been replaced by two matrices:

(i) an industry by commodity matrix showing which industries 'make' which commodities; and

(ii) a commodity by industry matrix which show the commodities 'used' by industries in the manufacture of their output ie the intermediate input matrix.

The 1985 table therefore differs from the previous tables in showing the commodity rather than industry input mix in the intermediate input matrix. Nevertheless at the level of 'make' and 'use' table the identity of total output and total inputs is maintained in the sense that the row total of the Make table is equal to the column total of the Use table, for a particular industry (defined by the row and/or column headings). Thus at the Make/Use level secondary output remains included in the output of the industry producing it and in this sense is the same as the pre-1985 tables.

(c) The third point is that the classification of industries has changed over the 1969-85 period with the introduction of an amended Philippine Standard Industrial Classification code in 1977. However, of the selected industries the only one to be affected by the reclassification was the Household Electrical Appliances industry. Air conditioning and refrigeration appliances were reclassified into the Machinery (non-electrical) sector in the 1977 code and this was reflected in the drop in the industry's share of sector output in 1979. As the air conditioning and refrigeration appliances was shown as a separate sub-sector in 1974, it was able to be deleted from the inputs of the other sub-sectors in that year so that comparisons could be made with 1979 and 1985. There are therefore two sets of inputs shown for 1974 - the first including the air conditioning and refrigeration appliances and the second excluding that sub-sector.

Table 1(a)

Agricultural Crops

PALAY

I-O Years	1969	1974	1979	1985
Inputs from Own Sector	0.02581	0.03229	0.03116	0.05518
Other Agricultural Services	0.01400	0.01490	0.03112	0.02010
Packaging Materials	0.01285	0.00063	0.00072	0.00146
Fertilizers	0.01751	0.04846	0.08845	0.07530
Pesticides	0.00462	0.00695	0.03219	0.00934
Fuel	0.00099	0.00205	0.00196	0.00070
Agricultural Machinery	0.00079	0.00229	0.00259	0.00054
Miscellaneous Manufactures	0.00000	0.00179	0.00000	0.00000
Wholesale Trade	0.00739	0.01355	0.03404	0.02817
Transport and Storage	0.00407	0.00131	0.00461	0.00155
Financial Services	0.00418	0.00087	0.00138	0.00773
Real Estate	0.00422	0.00000	0.00000	0.00000
Business Services	0.02029	0.00369	0.01438	0.00157
Private Medical	0.00065	0.00008	0.00000	0.00000
Entertainment/Personal Svcs.	0.00000	0.00000	0.00000	0.00132
All Intermediate Inputs	0.11737	0.12947	0.24532	0.20300
Compensation	0.50501	0.43066	0.37400	0.35933
Depreciation	0.01007	0.02419	0.02094	0.02000
Taxes - Subsidies	0.00791	0.01359	0.01791	0.02100
Other Value Added	0.35964	0.40210	0.34183	0.39667

BANANAS

I-O Years	1969	1974	1979	1985
Forestry and Logging	0.00069	0.00000	0.00000	0.00000
Inputs from Own Sector	0.02377	0.02365	0.08740	0.07829
Other Agricultural Services	0.01458	0.01207	0.00380	0.00456
Packaging Materials	0.01202	0.01683	0.03838	0.02786
Fertilizers	0.01339	0.04168	0.04748	0.05119
Medical Preparations	0.00222	0.00000	0.00000	0.00000
Pesticides	0.01005	0.01063	0.01513	0.01068
Fuel	0.00101	0.00355	0.00407	0.00132
Miscellaneous Manufactures	0.00000	0.00000	0.00014	0.00000
Wholesale Trade	0.00624	0.01235	0.03128	0.06310
Transport and Storage	0.00775	0.00161	0.00332	0.00274
Financial Services	0.00238	0.00141	0.00048	0.00773
Real Estate	0.00574	0.00033	0.00000	0.00000
Business Services	0.00556	0.00351	0.00469	0.00084
Private Medical	0.00065	0.00006	0.00000	0.00000
Entertainment/Personal Svcs.	0.00018	0.00000	0.00000	0.00015
All Intermediate Inputs	0.10943	0.12858	0.24040	0.26909
Compensation	0.29997	0.35065	0.33247	0.34000
Depreciation	0.01586	0.02948	0.03335	0.03500
Taxes - Subsidies	0.00634	0.03871	0.06274	0.07000
Other Value Added	0.56840	0.45258	0.33104	0.28591

Table 1(b)

Agricultural Crops

SUGARGARCANE					COCONUT				
I-O Years	1969	1974	1979	1986	I-O Years	1969	1974	1979	1986
Forestry and Logging	0.000876	0.000000	0.000000	0.000000	Inputs from Own Sector	0.20938	0.19483	0.11998	0.02994
Inputs from Own Sector	0.009162	0.031209	0.030684	0.091164	Other Agricultural Services	0.01537	0.00449	0.00939	0.00175
Other Agricultural Services	0.019565	0.009764	0.010599	0.007843	Packaging Materials	0.00369	0.00036	0.00019	0.00001
Packaging Materials	0.000781	0.000549	0.000560	0.000032	Fertilizers	0.00012	0.00745	0.01983	0.00345
Fertilizers	0.043991	0.084190	0.100833	0.080162	Pesticides	0.00444	0.00960	0.01003	0.00156
Pesticides	0.024713	0.018090	0.019038	0.007941	Fuel	0.00080	0.00114	0.00135	0.00009
Fuel	0.009601	0.010809	0.009150	0.002996	Agricultural Machinery	0.00025	0.00039	0.00070	0.00006
Agricultural Machinery	0.002771	0.000000	0.000270	0.000052	Wholesale Trade	0.01314	0.00579	0.02296	0.01699
Utilities	0.004324	0.000942	0.000000	0.000339	Transport and Storage	0.01071	0.00037	0.00095	0.00026
Wholesale Trade	0.013133	0.019295	0.040271	0.044636	Financial Services	0.00502	0.00106	0.00117	0.00773
Transport and Storage	0.011429	0.001773	0.022549	0.010310	Business Services	0.00172	0.00000	0.00008	0.00001
Financial Services	0.007289	0.001541	0.001006	0.007732					
Real Estate	0.007391	0.000000	0.000000	0.000000	All Intermediate Inputs	0.26695	0.22592	0.16710	0.06188
Business Services	0.037424	0.003987	0.003937	0.000054	Compensation	0.29572	0.29497	0.29969	0.30000
Private Medical	0.001022	0.000000	0.000000	0.000000	Depreciation	0.00227	0.02524	0.02643	0.02700
Entertainment/Personal Svcs.	0.003188	0.000000	0.000000	0.000000	Indirect Taxation - Subsidies	0.01764	0.02443	0.02559	0.02300
					Other Value Added	0.42742	0.43955	0.48101	0.58812
All Intermediate Inputs	0.198681	0.182526	0.240518	0.253300					
Compensation	0.392562	0.405194	0.379519	0.380000					
Depreciation	0.050069	0.056825	0.052357	0.053000					
Indirect Taxation - Subsidies	0.010583	0.129937	0.033625	0.035000					
Other Value Added	0.348096	0.325518	0.283980	0.278700					

Table 1(c)

Animal Husbandry

HOGS					POULTRY				
I-O Years	1969	1974	1979	1986	I-O Years	1969	1974	1979	1986
Forestry and Logging	0.00064	0.00000	0.00000	0.00000	Inputs from Own Sector	0.02764	0.07370	0.09627	0.06010
Inputs from Own Sector	0.01851	0.05510	0.08042	0.17208	Animal Feed from Agriculture	0.11577	0.02039	0.00289	0.00777
Animal Feed from Agriculture	0.08929	0.02924	0.00000	0.01179	Other Agricultural Services	0.00316	0.00081	0.00000	0.00299
Other Agricultural Services	0.00407	0.00565	0.00000	0.00259	Manufactured Animal Feeds	0.13676	0.15061	0.22683	0.36906
Manufactured Animal Feeds	0.07539	0.09512	0.37295	0.28498	Packaging Materials	0.00012	0.00180	0.00184	0.00032
Packaging Materials	0.00108	0.00042	0.00054	0.00002	Medical Preparations	0.02248	0.03229	0.02281	0.00338
Medical Preparations	0.00600	0.02218	0.01722	0.01267	Fuel	0.00298	0.00714	0.00697	0.00030
Pesticides	0.00028	0.00000	0.00000	0.00000	Agricultural Machinery	0.00035	0.00000	0.00000	0.00000
Fuel	0.00122	0.00224	0.00242	0.00007	Utilities	0.00335	0.00239	0.01072	0.00036
Agricultural Machinery	0.00052	0.00000	0.00000	0.00000	Wholesale Trade	0.02770	0.04357	0.06000	0.02676
Utilities	0.00303	0.00167	0.01196	0.00100	Transport and Storage	0.00654	0.00636	0.01289	0.00279
Construction/Materials	0.00086	0.00242	0.00000	0.00000	Financial Services	0.00549	0.00177	0.00159	0.00009
Wholesale Trade	0.01908	0.02672	0.02434	0.02696	Business Services	0.00054	0.00103	0.00503	0.00072
Transport and Storage	0.00540	0.00293	0.01051	0.00304					
Financial Services	0.00639	0.00101	0.00097	0.00000	Intermediate Inputs	0.35743	0.34534	0.45797	0.47695
Real Estate	0.00035	0.00000	0.00000	0.00000	Compensation	0.27433	0.22402	0.18697	0.16939
Private Medical Services	0.00015	0.00254	0.00000	0.00000	Depreciation	0.01806	0.05614	0.04626	0.04383
Business Services	0.00312	0.00022	0.00034	0.00026	Indirect Taxation - Subsidies	0.00367	0.01716	0.01752	0.01841
					Other Value Added	0.34650	0.35735	0.29138	0.29142
Intermediate Inputs	0.24164	0.24836	0.52428	0.51552					
Compensation	0.40727	0.39304	0.25045	0.24050					
Depreciation	0.05410	0.04207	0.02873	0.02100					
Indirect Taxation - Subsidies	0.00358	0.02547	0.02244	0.01800					
Other Value Added	0.29341	0.29103	0.17610	0.20498					

Table 2(a)

Food Processing

RICE AND CORN MILLING

Type of Input	1969	1974	1979	1985
Agricultural Inputs	0.82278	0.73733	0.68699	0.67813
Packaging/Printing/Textiles	0.00020	0.00022	0.00587	0.00112
Tires/Other Rubber Products	0.00030	0.00027	0.00030	0.00003
Chemicals	0.00001	0.00001	0.00001	0.00000
Fuel	0.00354	0.00682	0.01662	0.00103
Construction Materials	0.00047	0.00057	0.00064	0.00000
Fabricated Metal Products	0.00000	0.00000	0.00003	0.00000
Machinery	0.00068	0.00018	0.00049	0.00010
Transport Equipment/Repairs	0.00020	0.00002	0.00042	0.00001
Miscellaneous Manufacturing	0.00011	0.00001	0.00005	0.00000
Construction	0.00017	0.00014	0.00042	0.00001
Utilities	0.00029	0.00055	0.00095	0.00022
Transport and Storage	0.01075	0.00363	0.00591	0.00193
Communication	0.00029	0.00044	0.00064	0.00004
Wholesale Trade	0.06564	0.09908	0.06239	0.04456
Finance	0.00305	0.00028	0.00091	0.00000
Insurance	0.00028	0.00118	0.00273	0.00002
Real Estate	0.00068	0.00342	0.00038	0.00003
Health	0.00035	0.00003	0.00004	0.00001
Entertainment/Personal Svcs.	0.00055	0.00081	0.00073	0.00024
Business Services	0.00173	0.00059	0.00068	0.00002
Total Intermediate Inputs	0.91215	0.85765	0.78703	0.7275
Compensation	0.00744	0.03804	0.06332	0.1115
Depreciation	0.01133	0.02246	0.03295	0.0084
Taxes - Subsidies	0.00616	0.01280	0.01214	0.0068
Other Value Added	0.06291	0.06924	0.10456	0.1479

SUGAR MILLING AND REFINING

Type of Input	1969	1974	1979	1985
Agricultural Inputs	0.49694	0.43978	0.53351	0.51332
Own Sector	0.04805	0.01081	0.00624	0.02576
Other Food Manufacturing	0.00009	0.00000	0.00000	0.00000
Packaging/Printing/Textiles	0.01346	0.00244	0.00168	0.00401
Tires/Other Rubber Products	0.00013	0.00007	0.00000	0.00002
Chemicals	0.00210	0.00169	0.00194	0.00309
Fuel	0.01427	0.01976	0.03389	0.01970
Construction Materials	0.00065	0.00049	0.00053	0.00000
Fabricated Metal Products	0.00070	0.00017	0.00118	0.00053
Machinery	0.00093	0.00025	0.00042	0.00189
Transport Equipment/Repairs	0.00020	0.00001	0.00134	0.00010
Miscellaneous Manufacturing	0.00206	0.00335	0.00124	0.00000
Construction	0.00022	0.00009	0.00209	0.00007
Utilities	0.00128	0.00278	0.00601	0.00087
Transport and Storage	0.02019	0.00615	0.00940	0.00008
Communication	0.00101	0.00001	0.00072	0.00009
Wholesale Trade	0.01068	0.07988	0.04895	0.04529
Finance	0.00688	0.00180	0.00225	0.00000
Insurance	0.00099	0.00237	0.00336	0.00037
Real Estate	0.00206	0.00273	0.00117	0.00003
Health	0.00058	0.00002	0.00003	0.00028
Entertainment/Personal Svcs.	0.00377	0.00223	0.00192	0.00000
Business Services	0.00370	0.00300	0.00348	0.0005
Total Intermediate Inputs	0.63114	0.57979	0.66422	0.6199
Compensation	0.09534	0.07961	0.11843	0.0998
Depreciation	0.03531	0.05349	0.08549	0.0671
Taxes - Subsidies	0.02042	0.04408	0.01766	0.0186
Other Value Added	0.20980	0.24302	0.11420	0.1943

Table 2(b)

Food Processing

COCONUT AND OTHER OILS				
Type of Input	1969	1974	1979	1985
Raw Material	0.73243	0.33265	0.48493	0.44534
Non-Metallic Mining	0.00000	0.00000	0.00001	0.00423
Own Sector	0.00896	0.00000	0.11669	0.19017
Other Food Manufacturing	0.00316	0.00039	0.00083	0.00001
Packaging/Printing/Textiles	0.00101	0.00034	0.00088	0.00016
Tyres and Other Rubber	0.00131	0.00058	0.00001	0.00000
Fabricated Plastic	0.00000	0.00000	0.00054	0.00006
Chemicals	0.00126	0.01704	0.02533	0.01096
Fuel	0.00874	0.01617	0.02743	0.00687
Construction Materials	0.00025	0.00016	0.00018	0.00001
Fabricated Metal Products	0.00433	0.00762	0.00259	0.00084
Machinery	0.00035	0.00011	0.00067	0.00105
Transport Equipment/Repair	0.00032	0.00003	0.00031	0.00001
Miscellaneous Manufacturing	0.00018	0.00003	0.00032	0.00000
Construction	0.00000	0.00011	0.00014	0.00000
Utilities	0.00354	0.00144	0.00309	0.00091
Transport and Storage	0.02224	0.00988	0.01274	0.00571
Communication	0.00080	0.00024	0.00023	0.00007
Wholesale Trade	0.04640	0.05687	0.06123	0.02321
Finance	0.00654	0.00088	0.00257	0.00000
Insurance	0.00167	0.00555	0.00576	0.00008
Real Estate	0.00492	0.00022	0.00060	0.00003
Health	0.00113	0.00056	0.00088	0.00001
Entertainment/Personal Services	0.00265	0.00094	0.00116	0.00063
Business Services	0.00727	0.00855	0.00526	0.00060
Total Intermediate Inputs	0.86042	0.46058	0.75520	0.69100
Compensation	0.03530	0.16150	0.05995	0.10286
Depreciation	0.01369	0.05371	0.05912	0.03079
Taxes - Subsidies	0.00404	0.03819	0.00638	0.03405
OVA	0.08654	0.28601	0.13923	0.14197

Table 2(c)

Chemical Industries

BASIC CHEMICALS

Type of Input	1969	1974	1979	1985
Forestry	0.00000	0.00000	0.00000	0.00130
Mining	0.01299	0.00633	0.00679	0.00208
Food Manufacturing	0.00186	0.00121	0.00126	0.00081
Timber Products	0.00000	0.00344	0.00543	0.00421
Paper and Printing	0.00494	0.00522	0.00499	0.00198
Tires and Other Rubber Products	0.00000	0.00269	0.00006	0.00099
Coconut and Other Oils	0.01810	0.00000	0.06866	0.06319
Fabricated Plastic	0.00000	0.00000	0.00000	0.01579
Own Sector	0.18427	0.18674	0.15772	0.04909
Other Chemicals	0.02256	0.03954	0.01463	0.17202
Fuels	0.04908	0.08474	0.05153	0.10671
Non-Metallic Mining	0.01752	0.01824	0.00559	0.00805
Primary Metals	0.00000	0.00000	0.00000	0.00036
Fabricated Metals	0.01016	0.01794	0.03364	0.00623
Machinery	0.00225	0.00142	0.00113	0.00110
Electrical Equipment	0.00000	0.00000	0.00000	0.00414
Motor Vehicle/Transport/Repairs	0.00137	0.00039	0.00030	0.00001
Miscellaneous Manufacturing	0.00224	0.00077	0.00500	0.00014
Utilities	0.03252	0.02761	0.04024	0.02004
Construction	0.00000	0.00000	0.00060	0.00009
Wholesale Trade	0.05736	0.05027	0.09660	0.10013
Finance	0.00737	0.00129	0.00302	0.00000
Insurance	0.00493	0.00579	0.00733	0.00097
Real Estate	0.00000	0.00454	0.00278	0.00106
Transport and Storage	0.02165	0.01815	0.01584	0.01105
Communication	0.00285	0.00205	0.00124	0.00048
Health Education Services	0.00793	0.00342	0.00285	0.00150
Business Services	0.01632	0.01601	0.01199	0.00319
Entertainment/Personal Services	0.01022	0.00348	0.00186	0.00536
Total Intermediate Input	0.49645	0.50480	0.54218	0.58000
Compensation	0.20237	0.09508	0.11908	0.13330
Depreciation	0.05435	0.05523	0.05893	0.05451
Taxes - Subsidies	0.04579	0.05531	0.03582	0.03099
Other Value Added	0.20104	0.28958	0.24399	0.20120

FERTILIZER AND LIME

Type of Input	1969	1974	1979	1985
Mining	0.21982	0.15017	0.07162	0.138…
Textiles	0.00000	0.00169	0.00215	0.094…
Paper and Printing	0.00665	0.00376	0.00473	0.001…
Tires & Other Rubber Products	0.00047	0.00014	0.00001	0.000…
Coconut and Other Oils	0.00000	0.00000	0.00990	0.000…
Fabricated Plastic	0.00000	0.00000	0.00000	0.004…
Own Sector	0.00000	0.00000	0.00544	0.003…
Other Chemicals	0.12454	0.32181	0.31254	0.161…
Fuels	0.02456	0.04665	0.09087	0.093…
Non-Metallic Mining	0.00000	0.00000	0.00059	0.000…
Fabricated Metals	0.00032	0.00012	0.00000	0.000…
Machinery	0.00066	0.00017	0.00064	0.000…
Electrical Equipment	0.00026	0.00008	0.00009	0.000…
Motor Vehicles/Transport/Repairs	0.00115	0.00011	0.00000	0.000…
Miscellaneous Mfr.	0.00658	0.00491	0.00184	0.000…
Utilities	0.04263	0.01273	0.01963	0.006…
Construction	0.00000	0.00000	0.00017	0.000…
Wholesale Trade	0.03201	0.07778	0.07307	0.108…
Finance	0.00791	0.00119	0.01341	0.037…
Insurance	0.00192	0.00642	0.02075	0.006…
Real Estate	0.00711	0.00648	0.00550	0.001…
Transport and Storage	0.01478	0.01329	0.01729	0.010…
Communication	0.00568	0.00067	0.00100	0.000…
Health Education Services	0.00365	0.00113	0.00185	0.000…
Business Services	0.02657	0.01006	0.01267	0.002…
Entertainment/Personal	0.00895	0.00125	0.00121	0.005…
Total Intermediate Input	0.53938	0.66101	0.66722	0.677…
Compensation	0.10875	0.08962	0.08470	0.12…
Depreciation	0.03543	0.04587	0.06835	0.05…
Taxes - Subsidies	0.01135	0.03627	0.05942	0.01…
Other Value Added	0.30509	0.16762	0.12031	0.133…

Table 2(d)

Chemical Industries

DRUGS AND MEDICINES					SOAP AND DETERGENTS				
Type of Input	1969	1974	1979	1986	Type of Input	1969	1974	1979	1986
Crops	0.00000	0.00000	0.00000	0.00226	Crops	0.00000	0.00000	0.00000	0.20055
Mining	0.00006	0.00000	0.00002	0.05528	Food Manufacturing	0.00852	0.00056	0.00039	0.00043
Food manufacturing	0.01199	0.01209	0.01154	0.02602	Timber Products	0.00060	0.00010	0.00000	0.00011
Timber Products	0.00091	0.00081	0.00000	0.00001	Paper and Printing	0.07535	0.07388	0.01104	0.00285
Paper and Printing	0.04825	0.05315	0.03682	0.03302	Tires/Other Rubber Products	0.00103	0.00515	0.00000	0.00000
Tires and Other Rubber Products	0.00351	0.00371	0.00055	0.00033	Coconut and Other Oils	0.24809	0.14887	0.23951	0.31900
Coconut/Other Rubber Prod.	0.01513	0.01249	0.00026	0.00006	Fabricated Plastic	0.00000	0.00000	0.00079	0.00012
Fabricated Plastic	0.00000	0.00000	0.00000	0.00578	Own Sector	0.00224	0.00066	0.04418	0.00059
Own Sector	0.18521	0.22455	0.27309	0.20788	Other Chemicals	0.10567	0.14686	0.09063	0.02962
Other Chemicals	0.01049	0.02208	0.03691	0.08224	Fuels	0.01066	0.01301	0.00082	0.00879
Fuels	0.01001	0.02288	0.02597	0.02090	Non-Metallic Mining	0.00054	0.02291	0.01688	0.00060
Non-Metallic Mining	0.02367	0.04046	0.02192	0.03499	Fabricated Metals	0.00110	0.00614	0.01780	0.00018
Fabricated Metals	0.00664	0.00679	0.00392	0.00018	Machinery	0.00065	0.00150	0.00049	0.00012
Machinery	0.00053	0.00028	0.00034	0.00036	Electrical Equipment	0.00302	0.00032	0.00000	0.00039
Electrical Equipment	0.00081	0.00054	0.00082	0.00217	Motor V./ Transport/Repairs	0.00083	0.00010	0.00010	0.00001
Motor Vehicles/ Transport/Repairs	0.00074	0.00016	0.00056	0.00014	Miscellaneous Mfr.	0.00269	0.02121	0.01555	0.00007
Miscellaneous Mfr.	0.02291	0.01215	0.00849	0.00158	Utilities	0.00854	0.01133	0.00567	0.00084
Utilities	0.00638	0.01377	0.01442	0.00917	Construction	0.00092	0.00093	0.00026	0.00001
Construction	0.00126	0.00041	0.00053	0.00005	Wholesale Trade	0.07166	0.06178	0.07963	0.02234
Wholesale Retail	0.06471	0.06106	0.08960	0.09262	Finance	0.00929	0.00120	0.00318	0.00000
Finance	0.02379	0.00127	0.00485	0.00000	Insurance	0.00349	0.00691	0.00415	0.00026
Insurance	0.00266	0.00722	0.00952	0.00999	Real Estate	0.00821	0.01009	0.00535	0.00005
Real Estate	0.01269	0.00896	0.00810	0.00350	Transport and Storage	0.01800	0.01767	0.01574	0.00216
Transport and Storage	0.02186	0.01795	0.01675	0.01493	Communication	0.00131	0.00300	0.00141	0.00008
Communication	0.00433	0.00368	0.00395	0.00191	Health Education Services	0.00195	0.00177	0.0015	0.00005
Health Education Services	0.00287	0.00154	0.00174	0.00000	Business Services	0.03973	0.10153	0.00363	0.00124
Business Services	0.05124	0.06109	0.08379	0.04521	Entertainment/Personal	0.00622	0.01180	0.00220	0.00045
Entertainment/Personal	0.01642	0.03280	0.00618	0.00854					
					Total Intermediate Input	0.63090	0.67089	0.56154	0.59091
Total Intermediate Input	0.55177	0.62359	0.64156	0.66046	Compensation	0.11812	0.07520	0.07189	0.09178
Compensation	0.16464	0.10499	0.11162	0.13482	Depreciation	0.04259	0.02626	0.06092	0.03736
Depreciation	0.04299	0.03673	0.04778	0.03370	Taxes - Subsidies	0.02934	0.03680	0.04327	0.09088
Taxes - Subsidies	0.00645	0.02700	0.02451	0.02621	Other Value Added	0.17904	0.19084	0.26238	0.18907
Other Value Added	0.23415	0.20768	0.17453	0.14491					

Table 2(e)

Non-Durable Consumer Goods

TEXTILE AND KNITTING PRODUCTS

Type of Input	1969	1974	1979	1985
Abaca and Other Fibers	0.01393	0.08178	0.07202	0.05010
Food Manufacturing	0.00163	0.00458	0.00512	0.00009
Textile & Knitting Mill Products	0.25802	0.30268	0.24449	0.40174
Other Textile Goods	0.00018	0.00130	0.00054	0.00268
Wearing Apparel	0.00000	0.00000	0.00139	0.00000
Wood Products	0.00139	0.00104	0.00000	0.00000
Paper and Printing	0.00528	0.00875	0.00335	0.00170
Tyres & Other Rubber Products	0.00189	0.00175	0.00000	0.00041
Chemicals	0.12853	0.13438	0.12429	0.06283
Fabricated Plastics	0.00000	0.00000	0.00000	0.00029
Fuel	0.02087	0.03801	0.04937	0.03305
Fabricated Metal Products	0.00008	0.00005	0.00005	0.00018
Machinery	0.00048	0.00022	0.00075	0.00067
Electrical Equipment	0.00023	0.00019	0.00016	0.00026
Transport Equipment & Repairs	0.00045	0.00012	0.00009	0.00182
Miscellaneous Manufacturers	0.00216	0.00397	0.00300	0.00061
Utilities	0.01865	0.01150	0.01225	0.00966
Construction	0.00041	0.00005	0.00005	0.00003
Wholesale Trade	0.05523	0.09868	0.05897	0.06728
Finance	0.00868	0.00262	0.00262	0.02527
Insurance	0.00029	0.00557	0.00558	0.0017
Real Estate	0.00336	0.00469	0.00000	0.00022
Transport Storage	0.00757	0.00848	0.01384	0.01083
Communication	0.00099	0.00070	0.00071	0.00025
Health	0.00358	0.00068	0.00071	0.00015
Business Services	0.01442	0.02036	0.00508	0.00354
Entertainment & Recreation	0.00133	0.00346	0.00060	0.00020
Total Intermediate Input	0.55004	0.73172	0.60311	0.67514
Compensation	0.15024	0.06323	0.15098	0.15041
Depreciation	0.06641	0.04861	0.05783	0.06824
Taxes - Subsidies	0.03407	0.02832	0.07635	0.02226
Other Value Added	0.19923	0.12811	0.11172	0.08395

WEARING APPAREL

Type of Input	1969	1974	1979	1985
Abaca and Other Fibers	0.00000	0.00000	0.04001	0.00000
Food Manufacturing	0.00000	0.00000	0.00446	0.00005
Textile & Knitting Mill Products	0.27511	0.26483	0.27364	0.49854
Other Textile Goods	0.09020	0.05276	0.00233	0.02188
Wearing Apparel	0.00000	0.00000	0.03281	0.00000
Wood Products	0.00010	0.00002	0.00053	0.00000
Paper and Printing	0.00598	0.00910	0.00982	0.00335
Leather & Leather Products	0.00027	0.00020	0.00922	0.00000
Tyres & Other Rubber Products	0.00134	0.00104	0.00000	0.00000
Chemicals	0.00113	0.00129	0.00557	0.00085
Fabricated Plastics	0.00000	0.02780	0.01614	0.00451
Fuel	0.01408	0.00175	0.00014	0.00012
Fabricated Metal Products	0.00155	0.00041	0.00034	0.00008
Machinery	0.00068	0.00014	0.00018	0.00001
Electrical Equipment	0.00021	0.00022	0.00059	0.00008
Transport Equipment & Repairs	0.00085	0.01153	0.04695	0.00602
Miscellaneous Manufacturers	0.01007	0.00000	0.00000	0.00000
Scrap	0.00000	0.08769	0.00000	0.00000
Utilities	0.00475	0.00789	0.00879	0.00281
Construction	0.00000	0.00000	0.00013	0.00001
Wholesale Trade	0.04430	0.08592	0.06975	0.04987
Finance	0.00672	0.00217	0.00187	0.00000
Insurance	0.00118	0.00579	0.00284	0.00075
Real Estate	0.01145	0.01712	0.00232	0.00040
Transport Storage	0.01000	0.00750	0.01185	0.00606
Communication	0.00338	0.00228	0.00240	0.00058
Health	0.00094	0.00008	0.00017	0.00005
Business Services	0.00581	0.00725	0.00779	0.00165
Entertainment & Recreation	0.00096	0.00159	0.00222	0.00014
Total Intermediate Input	0.49148	0.5766	0.55268	0.60767
Compensation	0.25521	0.19767	0.19884	0.23957
Depreciation	0.01301	0.02899	0.02578	0.03898
Taxes - Subsidies	0.01806	0.02128	0.10431	0.01390
Other Value Added	0.22224	0.17545	0.11841	0.09990

Table 2(f)

Durable Consumer Goods

HOUSEHOLD ELECTRICAL APPLIANCES						MOTOR VEHICLES				
Type of Input	1969	1974A	1974B	1979	1985	Type of Input	1969	1974	1979	1985
Textiles	0.00004	0.00082	0.00116	0.00021	0.00003	Textiles	0.00057	0.00092	0.00001	0.00078
Wood Products	0.00972	0.00198	0.00277	0.00826	0.00112	Timber Products	0.00027	0.00029	0.00000	0.00066
Metal Furnishings	0.02192	0.00000	0.00000	0.00000	0.00000	Paper and Printing	0.00162	0.00151	0.00079	0.00048
Paper and Printing	0.00369	0.00978	0.01132	0.00929	0.00356	Tyres & Other Rubber Products	0.02264	0.01598	0.04376	0.03117
Tyres & Other Rubber Products	0.00092	0.00097	0.00095	0.00003	0.00661	Chemicals including paints	0.0029	0.00908	0.00761	0.03077
Fabricated Plastic Products	0.00000	0.00000	0.00000	0.00076	0.00131	Fabricated Plastic Products	0.00000	0.00000	0.00000	0.00709
Chemicals	0.01145	0.03486	0.04004	0.03534	0.01251	Fuel	0.00234	0.01403	0.00766	0.00884
Fuel	0.00818	0.02315	0.02164	0.02566	0.00731	Glass/Non-Metallic Mineral Products	0.00000	0.00024	0.00000	0.00025
Non-Metal Minerals	0.00061	0.00000	0.00000	0.00412	0.00000	Primary Metals	0.00171	0.07629	0.01188	0.18443
Primary Metals	0.03664	0.05979	0.04291	0.11034	0.03389	Fabricated Metal Products	0.00219	0.00112	0.00005	0.02113
Fabricated Metal Products	0.01101	0.01176	0.01475	0.00037	0.00461	Machinery	0.00042	0.00499	0.00098	0.00208
Machinery	0.00052	0.00177	0.00093	0.00209	0.00000	Batteries	0.00178	0.00049	0.00292	0.00724
Own Sector	0.22118	0.10797	0.12277	0.13316	0.03717	Other Electrical Equipment	0.00198	0.00102	0.00003	0.00308
Other Electrical/Semi Conductor	0.01466	0.01084	0.01436	0.13195	0.50043	Own Sector	0.41429	0.10349	0.33069	0.10960
Transport and Repairs	0.00042	0.00019	0.00019	0.00436	0.00012	Miscellaneous Manufacturers	0.00025	0.00305	0.0018	0.00072
Furniture and fixtures	0.00000	0.00000	0.00000	0.01958	0.00911	Utilities	0.00295	0.00408	0.00325	0.01193
Miscellaneous Manufacturers	0.00220	0.00746	0.00787	0.00297	0.00063	Constructions	0.00150	0.00139	0.00016	0.00000
Construction	0.00057	0.00000	0.00000	0.00131	0.00008	Wholesale Trade	0.08424	0.05338	0.06419	0.10138
Utilities	0.00755	0.00869	0.00848	0.01240	0.00476	Finance	0.00800	0.00290	0.00168	0.00000
Wholesale Trade	0.03397	0.07980	0.08268	0.06131	0.02698	Insurance	0.00242	0.00184	0.00107	0.00285
Finance	0.01047	0.01039	0.01029	0.00438	0.06271	Real Estate	0.00448	0.00282	0.00235	0.00247
Insurance	0.00321	0.00703	0.00627	0.00713	0.00025	Transport and Storage	0.00668	0.02328	0.02120	0.00792
Real Estate	0.00152	0.00297	0.00293	0.00533	0.00018	Communication	0.00230	0.00108	0.00102	0.00117
Transport and Storage	0.01619	0.01142	0.00954	0.02016	0.00455	Health	0.00138	0.00178	0.00169	0.00072
Communication	0.00057	0.00362	0.00406	0.00145	0.00012	Business Services	0.01585	0.01729	0.00754	0.00887
Health	0.00219	0.00048	0.00035	0.00062	0.00006	Entertainment and Recreation	0.00171	0.01060	0.00230	0.01812
Business Services	0.03421	0.03266	0.03453	0.02025	0.00312					
Entertainment and Recreation	0.00219	0.01289	0.01260	0.00644	0.00360	Total Intermediate Inputs	0.58479	0.35305	0.51483	0.58982
						Compensation	0.16067	0.21468	0.22250	0.21429
Total Intermediate Input	0.45735	0.44327	0.45551	0.63531	0.72601	Depreciation	0.03326	0.08629	0.05615	0.06091
Compensation	0.18401	0.12111	0.11379	0.12097	0.13271	Taxes - Subsidies	0.03358	0.06513	0.05611	0.02416
Depreciation	0.03580	0.05802	0.05852	0.04841	0.04219	Other Value Added	0.18769	0.28087	0.15041	0.13075
Taxes - Subsidies	0.01191	0.03942	0.03933	0.06827	0.03012					
Other Value Added	0.31092	0.33817	0.33284	0.12704	0.06897					

Table 2(g)

Producer Goods

BASIC IRON AND STEEL

Type of Input	1969	1974	1979	1985
Mining	0.00090	0.00325	0.08923	0.04341
Timber Products	0.00428	0.00000	0.00006	0.00000
Paper and Printing	0.00213	0.0006	0.00046	0.00043
Tyres	0.00103	0.00005	0.00002	0.00002
Fabricated Plastic Products	0.00000	0.00000	0.00005	0.00003
Chemicals	0.00377	0.00612	0.01409	0.01865
Fuel	0.03387	0.05434	0.05361	0.11913
Non-Metal Mineral	0.00085	0.00001	0.00143	0.00007
Own Sector	0.31816	0.50010	0.44791	0.42043
Non-Ferrous Primary Metals	0.03231	0.00731	0.00417	0.00143
Fabricated Metals	0.00184	0.00007	0.00098	0.00117
Machinery	0.00049	0.00003	0.00017	0.00020
Electrical Equipment	0.00026	0.00001	0.00043	0.00130
Motor Vehicle and Repair	0.00094	0.00008	0.00017	0.00003
Miscellaneous Manufacturers/Scrap	0.06057	0.00000	0.00016	0.00004
Utilities	0.01517	0.00787	0.01803	0.04568
Construction	0.00291	0.00257	0.00211	0.00010
Wholesale Trade	0.07638	0.06938	0.06053	0.08306
Finance	0.00774	0.00153	0.00435	0.00000
Insurance	0.00328	0.00374	0.00506	0.00606
Real Estate	0.00096	0.0006	0.00131	0.00090
Transport and Storage	0.01679	0.02422	0.01314	0.00685
Communication	0.00187	0.00098	0.00098	0.00091
Health	0.00149	0.00049	0.00041	0.00004
Business Services	0.00695	0.00844	0.00531	0.00325
Entertainment	0.00292	0.00050	0.00251	0.00609
tal Intermediate Input	0.60035	0.69241	0.72473	0.75930
Compensation	0.14611	0.04529	0.04148	0.04541
Depreciation	0.03621	0.05546	0.04909	0.07221
Taxes - Subsidies	0.01470	0.02628	0.08243	0.00485
Other Value Added	0.20264	0.18056	0.09327	0.11824

TRACTORS AND OTHER AGRICULTURAL MACHINERY

Type of Input	1969	1974	1979	1985 (c)
Timber Products	0.00000	0.00213	0.00000	0.00298
Paper and Printing	0.01525	0.01371	0.00041	0.00082
Tyres and Other Rubber Products	0.01486	0.01472	0.00011	0.00119
Chemicals	0.00526	0.01181	0.00216	0.02308
Basic Packaging	0.00000	0.00000	0.00076	0.00256
Fuel	0.01014	0.00906	0.00681	0.07532
Primary Metals	0.05324	0.06314	0.02392	0.31247
Fabricated Metals	0.05208	0.05569	0.54982	0.02412
Own Sector	0.15470	0.14848	0.00198	0.00000
Other Machinery	0.00518	0.00334	0.00197	0.01900
Electrical Equipment	0.02422	0.01912	0.00117	0.01925
Transport Equipment and Repairs	0.00488	0.00007	0.00022	0.00065
Miscellaneous Manufacturers	0.00627	0.00171	0.00000	0.00071
Utilities	0.01881	0.00592	0.00574	0.01386
Wholesale Trade	0.06028	0.07881	0.00103	0.09299
Finance	0.01300	0.00806	0.05910	0.07836
Insurance	0.00952	0.01178	0.00146	0.00193
Real Estate	0.00000	0.00305	0.00472	0.00206
Transport and Storage	0.01222	0.02910	0.01693	0.01096
Communication	0.00240	0.00205	0.00038	0.00099
Health	0.00929	0.00149	0.00000	0.00069
Business Services	0.00000	0.01732	0.00471	0.00287
Entertainment and Recreation	0.00000	0.00272	0.00162	0.00159
Total Intermediate Input	0.47462	0.50373	0.69727	0.68846
Compensation	0.29766	0.11098	0.10199	0.17793
Depreciation	0.04674	0.05168	0.04885	0.03378
Taxes - Subsidies	0.00890	0.02988	0.02764	0.00955
Other Value Added	0.17087	0.30374	0.13425	0.09028

Table 3(a)

Non-Manufacturing Industrials

CONSTRUCTION

I-O Years	1969	1974	1979	1985
Forestry/Logging	0.01533	0.00502	0.00937	0.01854
Non-Metallic Mining	0.01328	0.01913	0.01728	0.01556
Textiles and Clothing	0.00081	0.00039	0.00043	0.00016
Wood Products	0.04586	0.05761	0.06645	0.07797
Paper/Printing	0.00690	0.00462	0.00487	0.00134
Paints	0.01993	0.03312	0.02885	0.01816
Other Chemicals	0.00154	0.00133	0.00039	0.00535
Fuel	0.01833	0.02153	0.02148	0.02385
Tires/Other Rubber Products	0.00041	0.00278	0.00311	0.00077
Non-Metallic Mineral	0.08842	0.09789	0.07622	0.08762
Basic Metals	0.07107	0.04434	0.09208	0.10529
Fabricated Metal Products	0.06698	0.04324	0.05687	0.06405
Machinery	0.00000	0.00000	0.00172	0.00274
Electrical Equipment & Machinery	0.01722	0.01411	0.01434	0.01096
Transport Equipment	0.00038	0.00074	0.00097	0.00021
Miscellaneous Manufacturing	0.00255	0.00122	0.00134	0.00021
Utilities	0.00150	0.00247	0.00286	0.00151
Own Sector	0.01896	0.00769	0.00474	0.00004
Wholesale Trade	0.05522	0.04450	0.03665	0.06984
Finance	0.00823	0.00068	0.00319	0.00805
Insurance	0.00070	0.00552	0.00300	0.00223
Real Estate	0.00378	0.00072	0.00102	0.00038
Transport and Storage	0.01309	0.01230	0.01460	0.01050
Communication	0.00121	0.00310	0.00218	0.00089
Private Health	0.00157	0.00046	0.00058	0.00025
Business Services	0.04244	0.03964	0.0231	0.01451
Entertainment	0.00734	0.00385	0.00259	0.00097
Personal Services	0.00000	0.00000	0.00000	0.00134
Total Intermediate Inputs	0.52094	0.46970	0.48076	0.54786
Compensation	0.23720	0.20993	0.16743	0.25172
Depreciation	0.02720	0.04600	0.04572	0.12300
Taxes - Subsidies	0.01538	0.04764	0.02632	0.03534
Other Value Added	0.19928	0.22673	0.27977	0.04208

ELECTRICITY

I-O Years	1969	1974	1979	1985
Forestry	0.00292	0.00420	0.00640	0.02687
Paper and Printing	0.00715	0.00601	0.00028	0.00006
Footwear & Other Products	0.00318	0.00314	0.00000	0.00000
Tires and Other Products	0.00205	0.00151	0.00000	0.00003
Chemicals	0.00376	0.00389	0.00033	0.00009
Fuel	0.15092	0.25848	0.49464	0.41833
Non-Metal minerals & Basic Metal	0.01689	0.01402	0.00193	0.00008
Fabricated Metal Products	0.00551	0.00380	0.00366	0.00138
Electrical Equipment	0.00697	0.01278	0.01023	0.02337
Own Sector	0.12699	0.04601	0.00836	0.00198
Construction	0.00316	0.00128	0.00101	0.00003
Wholesale Trade	0.04247	0.05419	0.05473	0.02609
Finance	0.00979	0.00080	0.00028	0.0046
Insurance	0.00263	0.01226	0.00079	0.00024
Real Estate	0.00696	0.00813	0.00007	0.00006
Transport and Storage	0.01643	0.00580	0.00790	0.00290
Communication	0.00293	0.00200	0.00002	0.00001
Business Services	0.02169	0.02108	0.00389	0.00285
Entertainment & Personal Services	0.01093	0.00484	0.00035	0.00074
Total Intermediate Inputs	0.45279	0.46656	0.59546	0.50983
Compensation	0.18653	0.10859	0.09578	0.09833
Depreciation	0.07653	0.10270	0.07711	0.17895
Taxes - Subsidies	0.07354	0.10157	0.05964	-0.00961
Other Value Added	0.21061	0.22057	0.17201	0.22187

Table 3(b)

Services

WHOLESALE TRADE I-O Years	1969	1974	1979	1985	COMMUNICATION I-O Years	1969	1974	1979	1985
Textiles/Clothing	0.00263	0.00031	0.00027	0.00001	Paper/Printing/Textiles	0.02169	0.03237	0.02736	0.00578
Wood Products	0.00077	0.00098	0.00051	0.00028	Tires and Other Products	0.00150	0.00151	0.00138	0.00006
Paper Products	0.00417	0.01226	0.01084	0.00358	Chemicals	0.00593	0.00749	0.00705	0.00049
Printing	0.00151	0.00599	0.00453	0.00513	Fuel	0.00251	0.01377	0.01194	0.00917
Rubber Products	0.00250	0.00299	0.00284	0.00000	Basic Non-Ferrous/Other Metal Prod.	0.00491	0.00550	0.00584	0.00373
Plastic Materials	0.00194	0.00084	0.00075	0.00103	Electrical Equipment	0.04053	0.02451	0.02032	0.05649
Chemical Products	0.00180	0.00215	0.00194	0.00110	Utilities	0.01079	0.01053	0.00921	0.01939
Fuel	0.00317	0.01679	0.02288	0.02388	Construction	0.00202	0.00158	0.00138	0.00007
Non-Metallic Mineral	0.00153	0.00006	0.00007	0.00000	Wholesale Trade	0.01403	0.02012	0.01897	0.02167
Fabricated Metal Products	0.00036	0.00039	0.0004	0.00069	Finance	0.00835	0.00254	0.00488	0.00000
Machinery	0.00006	0.00049	0.00039	0.00115	Insurance	0.00485	0.01337	0.00870	0.00909
Electrical Equipment	0.00034	0.00021	0.00017	0.00020	Real Estate	0.00493	0.00453	0.00521	0.00678
Transport Equipment	0.00099	0.00018	0.00017	0.00018	Transport and Storage	0.02689	0.00460	0.00595	0.0065
Miscellaneous Manufacturing	0.00014	0.00034	0.00062	0.00084	Own Sector	0.00261	0.00499	0.03787	0.06819
Utilities	0.00354	0.02539	0.02289	0.07191	Business Services	0.03002	0.02442	0.02683	0.010290
Construction	0.00419	0.00462	0.00235	0.00043	Entertainment and Recreation	0.02543	0.00698	0.00650	0.002113
Own Sector	0.00343	0.00433	0.00395	0.01428	Health	0.00323	0.00113	0.00116	0.00059
Transport and Storage	0.03837	0.01031	0.01349	0.03082	Government Services	0.00000	0.00000	0.00000	0.00034
Communication	0.00825	0.00592	0.00573	0.01175					
Finance	0.02918	0.00596	0.01351	0.02845	Total Intermediate Inputs	0.21289	0.18111	0.20220	0.22423
Insurance	0.00154	0.01324	0.00669	0.01274	Compensation	0.49973	0.3302	0.30783	0.13698
Real Estate	0.02175	0.01512	0.01415	0.02777	Depreciation	0.08302	0.11591	0.13092	0.12401
Business Services	0.02536	0.02015	0.01896	0.01274	Taxes - Subsidies	0.02549	0.08581	0.08416	0.02956
Health	0.00134	0.00028	0.00028	0.00034	Other Value Added	0.19887	0.28696	0.27489	0.48653
Entertainment/Personal Services	0.02703	0.01091	0.00910	0.00984					
Actual Intermediate Inputs	0.18667	0.16224	0.15509	0.25885					
Compensation	0.33102	0.23311	0.30747	0.26073					
Depreciation	0.04598	0.04103	0.06156	0.03507					
Subsidies - Taxes	0.04983	0.05787	0.07248	0.04221					
Other Value Added	0.38651	0.50577	0.40340	0.40318					

Table 3(c)

Services

BANKING

I-O Years	1969	1974	1979	1985
Textiles and Clothing	0.00000	0.00122	0.00089	0.00026
Paper Products	0.00377	0.00511	0.00842	0.00714
Printed Materials	0.00498	0.01257	0.01344	0.01509
Tires/Other Rubber Prods.	0.00019	0.00078	0.00059	0.00000
Chemicals	0.01161	0.00317	0.00449	0.00060
Fuel	0.00471	0.00689	0.00074	0.01399
Fabricated Metal Products	0.00015	0.00017	0.00382	0.00000
Machinery	0.00103	0.00084	0.00105	0.00104
Electrical Equipment	0.00045	0.0008	0.00067	0.00009
Transport Equipment	0.00096	0.00014	0.00015	0.00027
Miscellaneous Manufacturing	0.00016	0.00183	0.00299	0.00252
Utilities	0.00545	0.00798	0.02012	0.05976
Wholesale Trade	0.00487	0.00581	0.00800	0.00986
Own Sector	0.00874	0.00380	0.00643	0.17997
Insurance	0.00321	0.00930	0.00710	0.01060
Real Estate	0.04949	0.01967	0.01142	0.02713
Transport and Storage	0.01869	0.00906	0.00391	0.00250
Communication	0.00847	0.00000	0.00941	0.00910
Business Services	0.07701	0.03227	0.04044	0.04918
Private Health	0.01051	0.00331	0.00329	0.00327
Entertainment/Personal Services	0.04647	0.03913	0.03144	0.04297
Actual Intermediate Inputs	0.26188	0.16461	0.18097	0.43551
Compensation	0.28767	0.2152	0.21007	0.31314
Depreciation	0.03364	0.04985	0.04658	0.04805
Taxes - Subsidies	0.08959	0.09422	0.09677	0.12976
Other Value Added	0.32723	0.47613	0.46560	0.07355

PROFESSIONAL SERVICES

I-O Years	1969	1974	1979	19
Textiles	0.000000	0.000000	0.000000	0.0035
Wood Products	0.000000	0.000000	0.001721	0.0010
Paper & Paper Products	0.006827	0.024541	0.023182	0.1105
Printing/Publishing	0.009105	0.003359	0.005842	0.0179
Rubber Products	0.002465	0.000088	0.002089	0.0000
Chemical Products	0.009377	0.002187	0.000170	0.0019
Fuel	0.002737	0.007685	0.002408	0.0163
Construction Materials	0.005030	0.010345	0.005287	0.0042
Machinery	0.000353	0.000604	0.000310	0.0008
Electrical Machinery	0.000320	0.000000	0.000465	0.0000
Transport Equipment & Repairs	0.001595	0.001698	0.000897	0.0000
Miscellaneous Manufacturing	0.006628	0.006103	0.005848	0.0047
Utilities	0.007684	0.012287	0.010062	0.0557
Wholesale Trade	0.006185	0.005869	0.015486	0.0226
Banking	0.001956	0.000583	0.005621	0.0000
Insurance	0.000618	0.007611	0.000142	0.0009
Real Estate	0.036493	0.048235	0.041348	0.0421
Trasnport & Storage	0.034208	0.007684	0.010107	0.0151
Communication	0.013745	0.020943	0.016983	0.0222
Own Sector	0.019115	0.040695	0.011734	0.0179
Other Business Services	0.006256	0.013179	0.051464	0.0179
Private Education Services	0.000000	0.000000	0.000251	0.0006
Private Health Services	0.000000	0.000453	0.000241	0.0007
Private Services	0.001329	0.001041	0.003760	0.0020
Restaurant/Hotels	0.021371	0.026349	0.027060	0.0197
All Intermediate Inputs	0.195819	0.241541	0.242287	0.3824
Compensation	0.469835	0.275556	0.248837	0.2569
Depreciation	0.040632	0.010132	0.019193	0.0285
Taxes - Subsidies	0.008535	0.050266	0.055370	0.0393
Other Value Added	0.285179	0.412505	0.434313	0.2926