- UNEQUAL EXCHANGE:

THEORY AND MEASUREMENT

UNEQUAL EXCHANGE: THEORY AND MEASUREMENT

By

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A Thesis

Submitted to the School of Graduate Studies

in Partial Fulfillment of the Requirements

for the Degree

Master of Arts

McMaster University

June, 1982

MASTER OF ARTS (1982)
(Geography)

McMASTER UNIVERSITY
Hamilton, Ontario

TITLE: Unequal Exchange: Theory and Measurement

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NUMBER OF PAGES: x, 188

ABSTRACT

This thesis examines the theory of unequal exchange - an application of the labour theory of value to international free-trade - arguing that increased trade will harm rather than improve economic and social disparities between the developed and Third World countries. The theory as put forward by Arghiri Emmanuel is first presented and criticised. Assumptions of capital mobility and labour mobility on a world scale are than examined. As a result of these analyses unequal exchange is found to be a process the magnitude of which is mediated by the historical development of technology and the increasing mobility of productive capital. Unequal exchange does not provide a monocausal explanation of uneven development in capitalism as dependency-like interpretations would suggest, though it does make a significant contribution to a multicausal explanation.

The existence of unequal exchange is shown, and its magnitude measured, empirically on the basis of Morishima's value system. Input-output accounts for Canada and the Philippines are used for 1961 to produce estimates of commodity values per dollar. It is found that exports from the Philippines sold at prices that were almost five times lower than exports from Canada of the same value. Unequal exchange therefore, is a significant counteracting influence to the tendency for the rate of profit to fall in developed sectors, reducing the rate of profit, and therefore the rate of

accumulation, in less developed sectors of production.

The results of this analysis provide for two policy suggestions. Firstly the need to extend the class struggle to an international scale. Secondly, whilst import substitution may not solve the problems of less developed countries, an increase in trade will only harm them further.

ACKNOWLEDGEMENTS

A. A. Milne's ship wrecked sailor had many things he wanted to do, but could never decide which should be done first. In the end he did nothing at all, but basked on the sand wrapped up in a shawl. Writing a thesis is similar to being ship wrecked. It is difficult to know where to start, or how to continue, and regularly tempting to bask. My deepest gratitude is owed to those who helped me to make the necessary decisions, and stirred me to action, during the past two years.

In particular, I wish to thank my supervisor, Michael Webber. His encouragement, suggestions and regular availability to give advice were greatly appreciated. Ruth Fincher was generous with her time to give additional advice, and often supplied the answer: "three". I am also grateful to Michael Dear without whose assistance I might not have stayed at McMaster beyond those difficult early months, and to Vera Chouinard and Peter Waylen for their helpful comments and encouragement.

Peter Waylen and Mr. A. Bhargava provided much needed advice on the workings of Minitab. Mary Grosvenor gave up two weekends to type most of the thesis. Don Rhynas gave invaluable assistance in the search for data.

Finally, thank you, in those now immortal words, to those who made the good times great and the bad times bearable.

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CHAPTER 1

INTRODUCTION

Social and economic deprivation are conditions that are far more abundant in Third World countries than in the developed nations of North America and Europe. Whether economic or social indicators are used the conclusions are the same. Furthermore, these conditions are becoming relatively worse, not better (Eban, 1975, p.3). Conventional policies aimed at reducing the problem include financial aid to ailing economies, investment in poor countries by multinational corporations to expand industrial production there, and increasing the amount of trade between poor and wealthy nations. This thesis focuses upon the third of these, examining in detail the impact of foreign trade upon uneven devlopment within the world capitalist system.

Ricardo's theory of comparative advantage, which suggests that specialisation and trade benefits trading partners, provides the theoretical basis for conventional economic policies that advocate trade as a solution to Third World backwardness. However, this theory has come under strong fire recently, particularly from Marxists. This attack was initiated by Arghiri Emmanuel (1972) in his theory of unequal exchange. Emmanuel's conclusion is diametrically opposed to that of Ricardo in that it emphasises the disadvantage to one of the parties resulting from trade. Far from being a solution to uneven development therefore, trade is seen as a primary cause of that condition.

The term "unequal exchange" has been used generally to refer to transfers of value, including those that result from various state established tariffs, taxes, subsidies and exchange rates (deJanvry and Kramer, 1979, p.4). However, the unequal exchange referred to in this thesis results directly from free trade - a transfer of value in the Marxian sense that takes place through the exchange of commodities at prices that do not coincide with their values. Thus a firm that produces a commodity sold on the market at a price below its value trades at a disadvantage with a firm that can sell products having prices higher than their values. If a particular region or country specialises in the production of commodities that sell below their values, then it can be shown that a geographical transfer of value will take place as a result of trade with firms in other locations. The rate of accumulation in disadvantaged firms will be slowed as a result of the value loss. This is the basis of the theory of unequal exchange and how free trade may cause or enhance uneven development.

Although this theory is drawn directly from Marx's reproduction formulae in volume II of Capital, and from his theory of profit equalisation in volume III of Capital, Emmanuel (1972) was the first to develop fully a Marxian theory of foreign trade. Emmanuel's theory of unequal exchange has since been expanded, most notably by Amin (1974, 1976, 1977), but also widely criticised, for example by Mandel (1978), Bettleheim (1972), Sayer (1977) and deJanvry and Kramer (1979). The result of the discussion on unequal exchange is general confusion. Two different views of unequal exchange appear to contradict each other and do not provide a conclusive "end of a debate" as Amin (1977) puts it. Any general or unqualified

reference to unequal exchange in the literature conveys a different meaning to different people.

The research aims of this thesis are as follows. Firstly it is intended to examine critically the issues raised by Marxists about Emmanuel's inconsistent application of the law of value to international trade. It is hoped that this examination will help to furnish a theory of international unequal exchange that will avoid the usual confusion. Secondly the thesis considers the relevance of a theory of unequal exchange within a general theory of uneven development. Previous writers, particularly Emmanuel (1972) and Amin (1974), have attached far too much importance to the geographical transfer of value in explaining international uneven development. The third research aim is to provide empirical evidence of the existence and magnitude of unequal exchange. The use of Morishma's model of value calculation (1973) and the input-output accounts of two countries are used to provide a link between the theoretical abstraction and reality in accordance with Marx's historical materialist method.

The three research aims will be dealt with in four sections, each section constituting a chapter of the thesis.

Chapter 2 will outline the theory of unequal exchange as derived from Marx's theory of profit equalisation and as suggested by Emmanuel. Unequal exchange in the first case is a result of different organic compositions of capital (c/v+s) or more simply different levels of technology in trading industries. (c = constant capital, v = variable capital, s = surplus value.) For Emmanuel the cause of unequal exchange is different wage levels in different industries. The weaknesses in Emmanuel's

thesis will then be examined, his major failing being the adoption of wages as an independent variable which is contrary to Marx's dialectic method of analysis. Wages should be seen within Marx's labour theory of value as developing within and as part of the development of productive forces, resulting therefore from the contradictions between labour and capital within the mode of production.

Chapter 3 will re-examine the problem that Emmanuel tackled, namely the application of the labour theory of value to a theory of international trade, a problem that Marx never considered. Essentially this entails the extension of the assumption of capital mobility to the international scale, the consideration of different rates of surplus value in different countries, and discussion about the value of non-specific commodities (those produced in both trading countries) sold on the world market. This analysis represents a lowering of the level of abstraction and an inclusion of real historical developments in an attempt to extend Marx's theory of unequal exchange to international trade. The result of this analysis suggests a single type of unequal exchange, the magnitude of which is regulated by the level of technological development in the industries of respective countries, and the rates of surplus value. These levels are closely intertwined in the dialectical development of productive forces and may vary according to particular historical periods.

The importance of unequal exchange as a theory for the explanation of uneven development will be examined in chapter 4. Emmanuel presents unequal exchange in his thesis as a primary determinent in uneven development (1972, p.140). It will be argued here that such a conclusion is the result of a misconception of the role of space in capitalist development,

an over-emphasis of the process of exchange above the process of production, and a linear view of history. Such deviations from a Marxist approach have much in common with the arguments of dependency theorists such as Andre Gunder Frank (1969).

Having developed what is considered to be a more consistent Marxian theory of international trade, and having placed that theory in perspective with other Marxian explanations of uneven development (for example by Walker, 1978), chapter 5 will present an attempt to provide empirical support for the theory of unequal exchange. From the input-output accounts for Canada and the Philippines in 1961, figures for the values of commodities produced in different sectors can be calculated using Morishima's method of value calculation (1973). An estimate of the magnitude and direction of unequal exchange obtained in this way has three purposes. It provides some empirical support, evidence in reality, for a theory of unequal exchange. It gives the theory some measurable weight as a contributory factor in the explanation of uneven development, and it results in a far more legitimate estimate of the geographical transfer of value than Amin's calculations (1974, Vol.1, pp.58-59) which are based simply on a set of assumptions, not factual data.

A brief summary of Marx's method is now presented in order to place in perspective the arguments that appear in the following chapters.

As with any scientific model, Marx's theory of capital is based upon an abstraction from reality. The categories used in his model are theoretical ones derived by an historical materialist method. Thus Marx's categories are not conjured out of thin air, but emerge from an historical analysis of particular material objects at the level of

appearances. "What I start from is the simplest social form of the product of labour in present day society, and that is the "commodity". That is what I analyse, and I analyse it initially in the form in which it appears" (Marx, Marginal notes to A. Wagner, cited by Mandel, 1978, p.18). The choice of the commodity is a deliberate one for the historical change in its mode of production provides the distinguishing social characteristic of capitalism. In pre-capitalist modes the commodity was exchanged by its maker for other commodities equal to it in terms of the labour time spent in their production. The production sequence is different in capitalism. The maker of the commodity must sell his labour to the owner of capital, but now in exchange for commodities the value of which are below the amount of time worked by the labourer (Mandel, 1971). The very choice of the commodity as an object for analysis thus enables Marx to demystify the relations of exchange in the capitalist mode of production, the major aim of his analysis of capital (Amin, 1977, p.183). Exchange, apparently always an equal operation in the realm of prices, hides the reltionship between labour and capital, the underlying social structure in the capitalist mode of production.

The contradiction between labour and capital, first identified by an historically derived abstraction from reality, explains the dynamics of the capitalist mode of production.

> Marxists have generally stressed the importance of elaborating a theory of the underlying structures of social relations, of the contradictions embedded in those structures, of the ways in which those underlying structures generate the appearances which people encounter in everyday life... One can very easily <u>predict</u> exchange relations by simply investigating characteristics operating at the level of the market (indeed, this is one of the essential projects of neoclassical economics) but in order to <u>explain</u> them it is necessary to explore the dynamics embedded in production relations themselves (Wright, 1979, p.12).

Central to Marx's exploration of the dynamics of production relations is the use of the dialectic method of analysis. This method views the contradictions within the social structure, of which that between labour and capital is the predominant one, to be the driving force behind the development of the mode of production. The determination of elements of the social structure is in this sense never simply dependent on or independent of other developments, but is entirely tied up within the whole development of social relations. "The verb 'depend' in itself always betrays the absence of true dialectical thinking" (Amin, 1977, p.186). It is this that causes Amin, at least in his more recent work, to criticise Emmanuel for his view of wages as the independent variable in the system. Instead wages are tied up with the development of accumulation through the contradictions inherent in the mode of production; they are in no way independent of such developments.

Yet such deductions and theories, formed at a high level of abstraction, must be shown to bear relation to historical reality. A theory that attempts to explain reality yet cannot find demonstration in reality is of very little use at all. "The rejection of a mediated unity between theory and history, or theory and empirical data, has always been connected in the history of Marxism with a revision of Marxist principles" (Mandel, 1978, p.20). Thus an analysis of social relations in reality and of their developments through history is just as important a part of Marxist research as the development and extension of Marxist theory. Indeed theory cannot be developed in isolation from reality, but only in relation to it, or in mediation with it. This is implicit in an historical materialist approach.

Yet, the mediation between theory and reality is no easy operation. "General maxims about moving from the concrete to the abstract and back to the concrete are not very helpful. The problem is how to move from the concrete to the abstract, and how to move back" (Wright, 1979, p.12). Not least amongst these problems is how to use Marx's theoretical categories in concrete research. While labour and capital are easily identifiable in theory, this is not so in reality. A knowledge of how to transform theory on the basis of concrete research is necessary, as well as which controlling principles are not subject to transformation by historical investigation, and which propostions are (Wright, 1979, p.13). No easy answers are provided here. However, an attempt is made in this thesis to mediate theory and reality in a manner consistent with Wright's sentiments, providing for a logical development of Marxist theory in international trade. The argument begins at a high level of theoretical abstraction, but progresses through a relaxation of assumptions, particularly regarding capital mobility, as a result of historical developments in reality. The empirical work at the end of the thesis is designed to provide the final link between theory and reality, supporting the abstractions and giving them weight within an explanation of uneven development.

CHAPTER 2

THE THEORY OF UNEQUAL EXCHANGE

1. Introduction

Richardo's theory of comparative advantage is still the most generally accepted theory of foreign trade. Its major conclusion is that both parties benefit from specialisation and exchange. The almost universal acceptance of this principle finds illustration in international politics where the call for "trade not aid" as a solution to Third World poverty and underdevelopment is regularly heard. Throughout the nineteen seventies and nineteen eighties however, a growing criticism of this theory has emerged.

Though Richardo based the majority of his economic theories upon the classical labour theory of value, he clearly omitted to do so in his consideration of foreign trade (Shaikh, 1979). It was expressly to remedy this situation that Emmanuel (1972) developed his theory of unequal exchange. "In short, I have undertaken to attempt the task that Ohlin reproached the supporters of the labour theory of value for neglecting: the task of integrating international value in the general theory of value" (Emmanuel, 1972, p.xxxiv).

The theory of unequal exchange finds particular representation as an alternative to Richardo's theory of comparative advantage, for it emphasises the disadvantages that can accrue to interested parties in exchange. A consensus has not been reached however, and little but

confusion reigns in the debate regarding the role or relevance of unequal exchange to the questions of regional and Third World underdevelopment. Emmanuel (1972), Bettleheim (1972), Mandel (1978), Becker (1977), de Janvry and Kramer (1979), B. Gibson (1980) and Sayer (1977) cannot agree upon what exactly unequal exchange is or how it operates, while Shaikh (1979, 1980) denies its relevance to underdevelopment altogether.

This chapter comprises an outline of the theory of unequal exchange as far as it has been developed in the "broad" sense (to relate to inter-regional exchange) and in the "narrow" sense (as applied by Emmanuel to international trade) and finally a critique of Emmanuel's work, based largely upon the comments of Bettleheim (1972), Sayer (1977), and Mandel (1978).

2. Unequal Exchange in the "Broad" Sense

"Unequal exchange in the broad sense"is distinguished by Emmanuel from what he calls "Unequal exchange in the narrow sense". The distinction between these two types will become evident in the discussion that follows. The use of the terms here however, is not meant in any way to convey the thesis that one type or the other is "broad" or "narrow", but is only intended to be consistent with Emmanuel.

2.1. Assumptions of the model

The theory of unequal exchange is derived directly from Marx's analysis of profit equalisation between production departments in volume three of Capital. In accordance with this it is normal to utilise the reproduction models when explaining the process of unequal exchange. While the use of these models maintains consistency with Emmanuel's

analysis, it also permits a thorough critique of his theory, for it is through the misuse of these models that Emmanuel makes his most crucial errors.

Marx's reproduction models are defined by a number of assumptions that set the analysis at a high level of abstraction. A single economy is considered with two departments of production, one the means of production and the other the means of consumption. This economy is worked by a completely mobile and homogeneous labour force. Capital is also completely mobile and completely used up during the cycle of production, which can be taken as one year. The conditions of immobility allow the assumptions of equal rates of surplus-value and equal rates of profit respectively in the two departments. Robinson (1966, p.16) can apparently find no reason for Marx's assumption of an equal rate of surplus-value in volume one of Capital, but it is a perfectly logical deduction given a mobile and homogeneous labour force which allows the theoretical comparison of hours of labour time.

On the basis of these assumptions various conclusions regarding the laws of development of the capitalist mode of production can be drawn. As the level of analysis is lowered in further sections the consequences of the relaxation of certain assumptions can be appreciated.

2.2 Different organic compositions of capital

Throughout volume one of Capital, Marx assumes that commodities exchange at their values. This is not to deny that fluctuations in supply and demand are responsible for day to day fluctuations in prices, but it is suggested that over long periods of time the price of commodities will tend towards their values, and find their equilibrium

positions when they are equal to their values. Thus the exchange values of commodities are in general dictated by the amount of socially necessary labour time that went into their production. Under certain circumstances however this price equal to value equilibrium may not hold. In particular a deviation of price from value can arise as a result of technological development at a higher level in one department than the other.

The value composition of capital is the ratio between the value of constant capital and the value of labour set in motion by that constant capital. The organic composition of capital is the same as the value composition in so far as it reflects changes in the level of technology, changes in the mass of constant capital in relation to a given amount of labour time. With equal organic compositions of capital, c/v, in each department, and equal rates of surplus-value, s/v, the rate of profit, s/c+v, or the ratio of surplus-value to capital advanced, is the same in each department. The selling prices of commodities in this case are the same as their values. Figure 2.1 illustrates this situation.

	c	v	s	Value	s/v	s/c+v	Price
Dept.I	60	40	40	140	100%	40%	140
Dept.II	60	40	40	140	100%	40%	140

Figure 2.1. Equal organic compositions of capital

Suppose now a total capital outlay of 100 units, or 100 hours worth of crystallised and living labour, in each department. This capital takes a different organic composition in each department, such

that in department one, 80 units of constant capital are applied to 20 units of variable capital, while in department two 50 units of each are used. The organic composition of capital is now higher in department one than in department two. This situation is illustrated in Figure 2.2.

	c	v	s	Value	s/v	s/c+v	Price
Dept.I	80	20	20	120	100%	20%	120
Dept.II	50	50	50	150	100%	50%	150

Figure 2.2 Different organic compositions of capital

The rate of surplus value remains the same as before, but this yields a total surplus value equal to 20 in department one, and 50 in department two.

Marx emphasises the significance of maintaining the assumption of equal rates of surplus-value at this stage, for if it were not so, "a change in the value of variable capital might eventually indicate nothing but a higher or lower price of the same mass of labour. But here where the rate of surplus-value and the working-day are taken to be constant, and the wages for a definite working period are given, this is out of the question "(Marx, Capital, III, p.146). Thus it is not a change in wages, the same here as a change in the rate of surplus-value, that is the cause of the different organic compositions of capital. Rather it is a change in the value composition of capital in so far as it reflects the different techniques adopted in each department that interests us here. Note that it is the assumption of an equal rate of surplus-value that allows the value of labour power to be directly correlated with the number of hours of living labour expended (Marx, Capital,Vol,III, p.147) and

it is this that allows the use of c/v as the ratio that denotes the organic composition of capital.

The rate of profit, s/c+v, is higher in the department with the lower organic composition of capital. But given the assumption that capital is mobile, Marx argues that it is impossible for such a situation to exist, at least in the long term. Capital will flow towards that department where the rate of profit is higher, until the rate of profit approximates the average profit (that accrues to capital of an average composition). This flow of capital to department two does not necessarily change the organic composition of capital there. Profit rates are equalised merely by an increase in the competition between capitals within a department experiencing an above average rate of profit that will cause a fall in the equilibrium selling price and thus the rate of profit.

An equal rate of profit can now be applied to all capital, whatever its organic composition. In our example the average rate of profit is equal to the average of the original rates of profit in the two departments. This is mere coincidence for amounts of capital in each

	c	v	s	Value	s/v	s/c+v	Price	P-V Deviation
Dept.I	80	20	20	120	100%	20% }35%	135	+15
Dept.II	50	50	50	150	100%	50%	135	-15

Figure 2.3 Profit equalisation

department are of the same size, both 100 units. If the total capital outlay in one department is larger than in the other, then that department would have more influence upon the average rate of profit than the

other. We are talking of the average rate of profit not as an average of all profit rates, but as that general rate that is realised by capital of the average composition in that economy. Thus the total sum of profit is still equal to the total sum of surplus-value in the economy.

2.3 Prices of production

The new situation as illustrated in Figure 2.3 contrasts dramatically with that in Figure 2.1. Marx's "prices of production", calculated by applying the general rate of profit to the constant and variable capital of each department now represent the level at which market prices will find their equilibrium. Prices and values no longer coincide. Commodities may exchange at prices that differ from their values, or conversely, commodities that possess the same value may sell in the market for different prices.

This is unequal exchange in the broad sense - the exchange of commodities at a price that deviates from value due to the equalisation of profit between departments with different organic compositions of capital.

It was in an attempt to provide a solution to the transformation problem that Marx calculated prices of production. The solution as given above is incomplete however and merely a first iteration. Sweezy (1970) and Johansen (1963) amongst others have made attempts to complete the transformation from values to prices in Marxist value theory. Nevertheless, the first iteration is sufficient to derive a theory of unequal exchange. While a complete transformation may change the magnitude of price/value deviation, it will not change the direction of unequal exchange nor eliminate its existence.

From this point we are faced with the task of developing the theory "ourselves", for Marx did not elaborate on the consequences of such a process for the dynamics of capitalist development. His interests in volume three of Capital were focussed more upon the transformation problem as far as the equalisation of the rate of profit was concerned, and upon the law of the tendency for the rate of profit to fall as a function of a rising organic composition of capital.

2.4 Regional underdevelopment

Unequal exchange has commonly been used in the analysis of uneven development simply by the association of different departments of production with particular regions. (See for example Becker, 1977, p.168; Gibson, 1980, p.21; Kidron, 1974, p.95.) In accordance with this association if the production of the means of production takes place say in southern Ontario, while the production of the means of consumption takes place in the Atlantic Provinces of Canada, the former using a higher organic composition of capital, then trade between the two will take place on terms that benefit southern Ontario. Prices of products in southern Ontario will be higher than products of an equal value in the Atlantic Provinces, and thus a transfer of value is said to take place as a result of trade between them.

The expanding reproduction of capitalism, the same as capital accumulation (at least in a purely economic sense), takes place as a result of re-invested surplus-value. (See Hadjimichalis, 1980, p.169.) From this it can be inferred that a transfer of value from one department to the other results in a retarded rate of accumulation in the former, an enhanced rate in the latter. The suggestion is that these different

rates of accumulation widen the gap in development between the departments, the underdeveloped region being caught in a position in which trade with developed regions may actually worsen its plight relatively rather than improving it.

It is in this form that the theory of unequal exchange provides its clearest challenge to Ricardo's theory of comparative costs, and gives grounds upon which to question a "trade not aid" policy as a solution to underdevelopment. Nevertheless, the somewhat casual use of the term "transfer of value" and its connection with an explanation of uneven development in the manner outlined above, are both severe simplifications. Writers on unequal exchange commonly treat the spatial transfer of value as a determinant factor in explaining uneven development, without analysing further the precise manner in which underdevelopment in particular countries results from unequal exchange. The consequence is that unequal exchange becomes a core-periphery type of theory, a point of view that is clearly implied by the suggestion in the previous paragraph, and one that has much in common with dependency theory. The works of Emmanuel (1972), Kidron (1974), de Janvry and Kramer (1979), B.Gibson (1980) and many others are framed within this approach.

Amin (1974) has taken the core-periphery nature of unequal exchange to its logical conclusion by asking, "...should not the world system be analysed in terms of bourgeois nations and proletarian nations ..."(Amin, 1974, p.22)?

Amin suggests here an exploitation of nations by other nations in some way similar to the exploitation of labour by capital. Yet this runs contrary to the law of value within which the theory of unequal exchange

is firmly based by implying an exploitation by labour and capital in one nation of labour and capital in another.

Neither is it clear that the "transfer of value" referred to necessarily causes underdevelopment, though it may help to perpetuate it. With the equalisation of profits between departments, for example, the actual rate of accumulation must be the same in both, given equal consumption by capitalists. The theory of unequal exchange cannot be utilised to explain a more rapid accumulation in developed countries, only a higher rate than would have been possible without such a value appropriation. Similarly the rate of accumulation in underdeveloped countries can only be reduced by unequal exchange, but can never be reduced below the rate of accumulation in developed countries unless profit rates in the former actually drop below those in the latter. In this context unequal exchange can only explain a widening of the gap in uneven development in terms of absolute amounts, not relative amounts of capital accumulation.

Finally it should be noted that it is competition, not trade, that causes profit equalisation. It is therefore theoretically possible for rewards to capital to be equal everywhere without any trade, without any unequal exchange, having taken place at all. It is not due to unequal exchange in the first instance that rates of accumulation are enhanced or restricted, but due to profit equalisation resulting from capital mobility. Unequal exchange represents a transfer of value through trade, a monetary cheapening of imports from underdeveloped to developed countries, but this is something separate from, though a result of, foreign capital investment and profit equalisation. (See Dobb, 1972, p.227.) Nevertheless, as Dobb points out, this cheapening of imports

may also, though as a separate process, result in a rise in the rate of profit in the advantaged country. The distinction between these two different processes, capital movement and unequal exchange and their effects on the rate of profit, is not usually made by proponents of the theory of unequal exchange. It is an important distinction however, for it gives unequal exchange a secondary or accessory role rather than a determining one.

These are major problems to be resolved. Most of chapter 4 is devoted to their further consideration.

3. Emmanuel and Unequal Exchange in the Narrow Sense

The theory of unequal exchange, as outlined in section 2, received little attention in the literature until Arghiri Emmanuel's book, Unequal Exchange: A Study of the Imperialism of Trade, appeared in 1969, (English edition 1972). This work, regularly hailed in terms such as "path-breaking" (Shaikh, 1980) has managed to stimulate a mass of discussion in the field. However, Emmanuel's thesis has not been met with universal approval, his most noteable critics being Mandel (1978), Bettleheim (1972) and Sayer (1977). The majority of this criticism centres upon his use of wages as the independent variable within Marx's reproduction formulae.

3.1. Equivalent exchange

Emmanuel agrees that trade transfers value under the conditions of unequal exchange in the broad sense, but argues that it is misleading to call this a process of unequal exchange - it is rather an exchange of equivalents (pp.161-163). This view is derived from a redefinition of the meaning of unequal exchange however, which does not necessarily entail

the inequality of value and price.

Liossatos (1980, p.4) makes this point when he writes:

> It is paradoxical that so much attention has been given to Emmanuel's work and yet the subtle points of his theory have been overlooked. It is true that in the Emmanuel system wage-rate differences between advanced and peripheral countries effect an "unequal exchange in the strict sense". But the latter is not expressed by Emmanuel in terms of value-price inequalities as it is widely believed.

And Emmanuel himself emphasises this point, in his reply to Bettleheim's criticisms:

> I think I was explicit ... when, of the two inequalities, between values and prices of production, on the one hand, and between national and international prices of production on the other, I retained only the latter (Emmanuel, 1972, pp.324-325).

However, Liossatos's comments and Emmanuel's assessment of his own theory are wrong. In comparing different prices of production it is necessary to have some index of comparison by which they vary. Otherwise it is mere tautology to say that 2 is not equal to 3. Emmanuel clearly implied that the different payment (wages) for a similar quantity of labour in the two instances is the differing factor. This is implicit in his use of Marx-like reproduction formulae, and his comment on page 164 that refers to a transfer of surplus-value. The index of comparison that Emmanuel uses is labour time, the different wages paid for that time in different places resulting in different prices of production. The values of the commodities in terms of labour time are the same, the prices are different. How else can his analysis be other than in terms of value-price inequalities?

3.2 International factor mobility

Arguing that unequal exchange in the broad sense is an exchange

of equivalents, Emmanuel turns the discussion to unequal exchange in the narrow sense. His theory is presented at the level of international as opposed to intranational exchange, thus introducing trade between departments of production in different countries. Indeed for Emmanuel departments now become synonymous with countries (pp.90-91), (a conversion that leads to a flagrant misuse of Marx's reproduction formula).

The two original assumptions concerning the mobility of the factors of production, capital and labour, must now be reconsidered. This is fundamental to the application of a theory of unequal exchange to international trade, for if either of the factors is immobile the theory can no longer hold in its previous form. If capital is immobile profit cannot be equalised and thus unequal exchange in the broad sense must be absent altogether. The question of immobility of labour forces us to consider the possibility of different rates of exploitation within different countries.

There has been much debate regarding the question of factor mobility, amongst both neo-classical economists and marxists. (The main issues relating to the question of international capital mobility are presented in chapter three.) Emmanuel himself regards the assumption that capital is mobile internationally to be a valid one, but thinks that labour cannot be assumed to be mobile on an international scale.

Assuming an international equalisation of the rate of profit therefore, Emmanuel now puts himself to the task of dealing with the problem of different rates of surplus-value in the sectors of production in the two countries (one developed and one underdeveloped). He chooses to analyse the immobility of labour however as a matter of different

monetary wage rates rather than different levels in the value of labour-power (that is the value of commodities required for the reproduction of labour). Indeed Emmanuel supplies the fact that wages differ between nations as evidence that labour is immobile.

Emmanuel tells us that Cairnes found monetary wages to be 25% to 50% higher in the U.S. than in Great Britain in 1874, "while in certain eastern countries, such as India and China, the difference would probably be fourfold or fivefold"(Emmanuel, 1972, p.46). Yet he also points out that International Labour Office figures for 1955 show a six-fold difference in wages between the U.S. and Italy, and Emmanuel suggests that an extension to the Third World would show divergencies in Asia, Africa, the Middle East and Latin America to be twenty to forty-fold. The wages gap appears to have widened.

3.3 Wages and prices of production

This difference in wages forms the basis for Emmanuel's modification of price of production in international exchanges. Prices of production have so far been calculated assuming equal rates of surplus-value. To illustrate the effect that different wage rates have therefore, Marx's reproduction formula must be reconstructed so that the organic compositions of capital in the two countries are once again equal, while the wage rates and the rate of surplus value are varied.

The commodity produced in one country now costs more than the commodity with the same value produced in the other, even though both use the same level of technique. (See Figure 2.4.) The determining factor in this difference is apparently the wage rates of the two countries. Trade takes place to the advantage of the country with high wages, for

	c	v	s	Value	s/v	s/c+v	Price	P-V Deviation
Country I	100	100	20	220	20%	10% } 50%	300	+80
Country II	200	40	200	440	500%	83%	360	-80

Figure 2.4 Different rates of surplus-value due to different wage rates. Equal organic compositions of capital

commodities of the same value produced in the low wage country cost the former less to buy, and vice versa. As Liossatos (1980) points out the consequence for labour in the two countries takes the form of differential purchasing power over the product of society, even though their contribution to its production has been the same.

This is Emmanuel's unequal exchange in the strict or narrow sense. He gives two reasons for emphasising this in preference to the original type, the continued existence of which on an international scale he does not dispute.

The first reason is that nonequivalence in the broad sense is not a phenomenon peculiar to foreign trade. Guinea and France are clearly distinct from each other in that they are separate countries with no free movement of labour between their production branches. If this were not the case then unequal exchange in the narrow sense would vanish. On what grounds could Guinea "complain about the mere transformation of values into prices of production when this same transformation takes place inside each country's economy" (p.163)? The deduction is that international underdevelopment is the result, in that it is distinct from regional underdevelopment, of a process that is specifically international in its operation.

The second reason is concerned with Emmanuel's interpretation of increasing organic composition of capital as a "structural necessity for the development of capitalism" (p.163). If prices remained equal to values even though commodities were produced in departments of different capital composition, then a premium would be placed upon non-mechanisation. This, Emmanuel argues, is because the return on total capital investment in a high organic composition department would be less than the return in a department of low organic composition. Because returns on the capital investment in any department are the same after profit equalisation, regardless of organic composition, Emmanuel regards unequal exchange in the broad sense to be merely an exchange on equal terms. Differences in organic composition are seen as an objective condition of capitalist production. Even though returns on investment in each department are the same while the rates of surplus-value are different, it is because wages are apparently an institutional factor that unequal exchange can be considered unequal. "When a low-wage country pours away abroad the extra surplus-value that its enterprises have extracted from its own workers, this does not correspond to any sort of rationality or any sort of progress" (Emmanuel, 1972, p.164).*

The two reasons given by Emmanuel for emphasising unequal exchange in the narrow sense are not convincing. There seems no reason to exclude unequal exchange in the broad sense just because it is not

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*What this pouring away of value certainly does correspond to however is a price deviation from value, for a value transfer could take place in no other way. Emmanuel therefore contradicts himself on pages 164, and 324, explaining unequal exchange as a price-value deviation on the former, but as a national price of production - international price of production deviation on the latter. See section 3.1.

specific to the international level. It is likely to be of far greater importance on an international level than on a regional level, where the differences in technological development are potentially far greater. Secondly, as we shall see in due course, wages are no more an independent or institutional factor than the organic composition of capital. There are therefore no grounds here upon which to distinguish between the two types of unequal exchange.

3.4 Confusion in the theory of unequal exchange

It is unfortunate that while Emmanuel's theory has produced a wealth of discussion, it has also led to a wealth of confusion. Some writers regard unequal exchange in the narrow sense to be important in explaining uneven development. These include Amin (1974), who has extended the theory while remaining consistent with Emmanuel's approach, Kidron (1974), B. Gibson (1980) and Liossatos (1980). Other writers, particularly Mandel (1978), Becker (1977), Sayer (1977), and Bettleheim (1972) take the opposite point of view, that it is different levels of organic composition of capital that are the real cause of unequal exchange. The result is that there are no common terms of reference against which to base any further discussion of the theory. The debate, regarding the exchange of non-specific commodities, between Alain de Janvry and Frank Kramer (1979), and Bill Gibson (1980) in the Review of Radical Political Economics suffers from the fact that each is writing about the other type of unequal exchange. We are left with a branch of Marxist theory that has not been clearly synthesised, its consequences for uneven development remaining obscure.

It is hoped that the ensuing discussion of Emmanuel's thesis,

utilising criticisms by Mandel, Bettleheim and Sayer will help to clarify this situation.

4. Emmanuel and the Labour Theory of Value

The following critique of Emmanuel's work concerns itself particularly with several misconceptions on his part regarding the labour theory of value. In general these problems lie at the very basis of his thesis and thus severely challenge its credibility.

4.1. Wages and the value of labour power

Throughout his narrative Emmanuel fails to distinguish clearly between the terms wages, real wages and the value of labour-power. Sayer (1977) refers to this as "an irritating failure... even though they frequently vary inversely", but if indeed they do vary inversely it would appear to be a serious rather than an irritating failure. Yet the distinction between these three categories is quite clear. Real wages differ from money wages in that the former give expression to the mass of commodities that the labourer is able to buy. Although paid much less in money wages a worker in Newfoundland for example may earn the same real wage as a worker in southern Ontario if the cost of living in the latter is much higher.

Both of these terms, money and real wages, may be distinguished from the value of labour power. Labour power is that activity the labourer sells to the capitalist. It can never be paid at the same level as the value that it creates, for then no surplus would be produced and the reason for capitalist production would vanish. So although a value equivalent to $12 is produced the labour power that produced it only possesses a value of say $6 if the rate of surplus value is 100%. These

$6 will of course buy in the market place goods that were produced by a certain amount of expended social labour. Thus though a labourer may work for say 12 hours, payment may only be sufficient to allow the consumption of commodities produced by 6 hours of socially necessary labour-time.

The actual monetary amount or monetary equivalent of value can, however, only be applied as absolutely equivalent in the case of simple reproduction and equal organic compositions of capital. Once these assumptions are relaxed it no longer follows that money wages may be equivalent to the value of labour power. $6 used in the purchase of commodities produced in a high composition department will purchase a much smaller value form than $6 spent on commodities produced in a low organic composition department. A money wage in Africa that is twenty times lower than a wage in North America conceivably may command the same or a greater value of commodities. Marx referred to this situation when he wrote:

> ... the daily or weekly wage in the first (more developed) nation is higher than in the second, whilst the relative price of labour, i.e. the price of labour as compared both with surplus-value and with the value of the product, stands higher in the second than in the first (Marx, Capital, Vol.I., p.560).

Emmanuel also fails to account for international exchange rates. Wages compared on the basis of international exchange rates may hardly be expected to convey a realistic impression of comparative real wages. Thus if the exchange rate between England and Germany is one Pound to four Marks, this may not represent the relative purchasing power of the Pound or the Mark in their respective countries at any given time. It is

only a measure of the purchasing power of each in the other country.

> The relative value of money will ... be less in the nation with more developed capitalist mode of production than in the nation with less developed. It follows, then, that the nominal wages, the equivalent of labour-power expressed in money, will also be higher in the first nation than in the second; which does not at all prove that this holds also for the real wages, i.e., for the means of subsistence placed at the disposal of the labourer (Marx, Capital Vol.I., p.560).

Emmanuel provides empirical evidence that money wages vary by as much as forty times between developed and underdeveloped countries. Given the difference between money wages and the value of labour power however, it is ridiculous to insert these figures in Marx's reproduction formulae as if they represented the value of labour-power. This mistake must stem in part from a fundamental midunderstanding on Emmanuel's part of the difference between empirical and theoretical categories.

Emmanuel is far from being alone in this assertion. Alain de Janvry and Garramon (1977) for example argue that, "with the internationalisation of the price and value of wage goods, real wages become unambiguous indicators of the value of labour-power. And there is no question that real wages in the exporting sectors of centre and periphery are markedly different. As a result the rate of surplus value in the periphery is many times higher than in the centre" (1977, p.36).

Alain de Janvry and Garramon would appear to suggest that if there is a rate of surplus value of 100% say in the United States, and the value of labour power in India is one twenty fourth of that in the U.S. (de Janvry and Garramon - cited International Labour Office, Yearbook of Labour Statistics 1973, 33rd Issue, Geneva 1973) then there is a rate of surplus value equal to 4,700% in operation in India. If this is

the case, why has "capital not decamped on a massive scale from countries with high wages to countries with low wages" (Mandel, 1978, p.353)? Apparently the prospects for the valorisation of capital are 47 times higher in India than in the United States. Emmanuel and de Janvry appear to have explained the very impossibility of underdevelopment rather than its cause.

4.2 Wages - An independent variable in cycles of reproduction

Emmanuel's assertion that wages are the independent and determining variable in the production process stems to some degree from this failure to distinguish between money wages and the value of labour-power. His deduction is, by his own admission, purely "empirical and intuitive" (p.64), but we have already seen the failings of using empirical measures of wage levels to show the relationship of the value of labour-power in the production process.

If Emmanuel had pursued his analysis consistently on the basis of Marx's reproduction formulae he would surely have seen this. However, by abandoning the use of departments for the sake of countries in his thesis, the whole worth of these formulae is lost. It is impossible to show for example how the value of labour power can be increased, as in order for a certain value of commodity to be consumed during one cycle, it must first have been produced. Thus the mass of consumption commodities produced in one cycle is directly dependent upon the mass of the relevant means of production available for input, the latter having been produced in the previous cycle. Wages are in this sense totally bound up in the relations of the production process and cannot take on an apparent life of their own. The relationships inherent within the laws

of motion of the capitalist mode of production are precisely the relationships that Emmanuel fails to acknowledge. Of course it is not suggested that the law of value is "sacred" but it is a mistake to use the reproduction formulae in total disregard for their internal logic.

> If we "withdraw" from the formulas the theoretical setting that supports them, we alter their function in a fundamental way. They cease to be the arithmetical or algebraic representation of concepts relating to theoretical objects, thanks to which, through and beyond the "appearances" of immediate reality ... we can grasp the real movement...We cannot here employ " independent variables", for within a complex structure all change is governed by laws. It is for this reason that a theoretical structure that is constructed scientifically produces not "assumptions" but knowledge, that is it can grasp the real movement of things (Bettleheim, 1972, pp.282-284).

Neither is it suggested here that the determination of the value of labour-power is entirely dependent upon the structure of the mode of production. For Marx it also includes a moral and historical element. Therefore at any particular moment the value of labour-power may be influenced not only by historical developments, but also by the condition of the class struggle, the political and ideological as well as the economic relationships between capital and labour. In addition the existence of non-capitalist modes of production, for example in the form of sectors of privately owned and operated agricultural units, and their articulation with the dominant capitalist mode of production may significantly alter the forces acting upon the reproduction and development of a given society. Only "in the last analysis" can the value of labour power be regarded as determined at the economic or structural level. As Bettleheim (1972, p.288) puts it:

> This means that wages, though not wholly determined by one particular level of the structure,

> are nevertheless entirely integrated in the complex structure of a concrete social formation and are thus in no way "independent" of this structure.

The natural deduction to be made when assuming wages to be the independent variable is that if it were at all possible for some reason to raise the level of wages, then the underdeveloped countries would be released from the bonds of unequal exchange and "rapid" development would be the result. Emmanuel indeed makes this deduction and carries it through in taking South Africa as an example. Why is it, he wonders, that of the United States, Canada, Australia, New Zealand and South Africa, five of Britain's major settlement colonies, the first four are now the richest per capita countries in the world while South Africa remains on a par with Greece and Argentina? The reason given by Emmanuel for this is that in the first four the indigenous population was largely exterminated, whereas in South Africa it was employed by the colonists at low wage levels. Exterminate the Bantus, he suggests, and due to an increase in the general wage rate, South Africa will benefit in the long run.

Such a suggestion is unfounded for it fails to see wages in their true relationship within the production process. It is a mono-causal explanation for underdevelopment. Particularly when carried to its extreme by Emmanuel, unequal exchange supposedly, "explains, broadly at least, the differences in development between different regions within a country" (Emmanuel, p.140). (In this regional context the wage differences are a function of the organic composition of labour.)

Mandel provides a more acceptable explanation for U.S. development in the nineteenth and twentieth centuries in comparison with South

America where development was in some sense "blocked" by the existence of large agricultural hacienda. The social formation in the north was better suited to, and receptive of, the forces acting towards capitalist development. The already high subsistence wage and the shortage of labour produced an incentive to mechanisation and in due course industrialisation, a process which appeared once the supply of land to the west became limited enough to prevent flight from competition, and once immigration had begun from Europe providing a labour supply for factory operation (Mandel, 1978, p.367). This multi-causal argument gives an indication of the likely impact of the existence of non-capitalist forms of society upon the development of underdevelopment.

4.3 The organic composition of capital

Emmanuel has often been criticised for his treatment of the organic composition of capital, particularly in the examples he gives where the organic compositions are supposed to be the same in both countries but the rates of surplus-value different (see Figure 2.4). For example Sayer (1977, p.4) criticises Emmanuel for, "his curious assumptions about the relative values in his formula, e.g. often the (underdeveloped country) has a higher organic composition of capital than the industrial country, and also a higher rate of surplus value." This is because Sayer is using the ratio c/v to represent the organic composition of capital. The use of this ratio is perfectly legitimate in examples where the rate of surplus value is the same in both departments (countries). It is the assumption of equal rates of surplus value that allows the use of variable capital as an index of the amount of labour set in motion by a given amount of constant capital. However, once this

assumption is relaxed, as it is by Emmanuel, changes in the value composition will no longer reflect just changes in the technical composition, but also changes in the rate of exploitation. Thus it can be seen in Figure 2.4 that even though the amount of labour set in motion by constant capital is the same in both countries, the ratio of c/v is not the same. This results from a change in the rate of surplus value, and it is for this reason that Sayer interprets Emmanuel's example as showing a higher organic composition of capital in the less developed country. In fact the organic composition of capital can only be given expression by the ratio c/v+s when the rate of surplus value is allowed to vary. This ratio will only change in response to changes in technical composition, and indeed it can be seen that c/v+s is the same for both countries in Figure 2.4. Meanwhile this ratio is still a relative measure of the hours of labour, living and crystallised, that are expended in production, the same as the organic composition of capital.

5. Summary

The theory of unequal exchange provides a critique of Ricardo's theory of comparative advantage by suggesting that, far from benefiting both partners in exchange, trade may actually result in a transfer of value from underdeveloped countries to developed countries.

Emmanuel's work has been the catalyst to a flood of discussion on the subject of unequal exchange. The criticisms presented above however, are quite fundamental ones that call into doubt the validity of his thesis as an application of the law of value to foreign trade. This is not to say that it has no value in itself for it is indeed a path-breaking work.

Chapter 3 will examine in more detail some of the problems

associated with an attempt to apply the law of value to foreign trade, making use of the theory of unequal exchange in its broad sense.

CHAPTER 3

THE EXTENSION OF UNEQUAL EXCHANGE IN THE "BROAD" SENSE TO THE INTERNATIONAL SCALE

1. Introduction

Having rejected the theory of unequal exchange in the "narrow" sense, because it is not consistent with Marx's labour theory of value, the theory of unequal exchange in the "broad" sense, previously dealt with on an intranational scale, must now be extended to the international scale. (The term "unequal exchange" is henceforth used to refer to unequal exchange in the "broad" sense.)

Mandel (1978) has made this extension, but a general disagreement on certain fundamental issues still remains. Firstly the international mobility of capital is accepted by Emmanuel (1972) and Strachey (1959) but rejected by Mandel (1978) and Sweezy (1970). Secondly the question of differing general rates of exploitation in different nations has received only limited attention (Mandel, 1978; Sayer, 1977), and is regularly assumed, for example by Emmanuel, to be higher in underdeveloped economies than in developed economies. Finally the possibility of value transfer within sectors of production is emphasised by Shaikh (1980) and Bill Gibson (1980) but denied by de Janvry and Kramer (1979). These points of contention are examined in this chapter in order to extend the theory of unequal exchange to the world scale.

2. The International Mobility of Capital

Equalisation of the rate of profit, which is dependent upon the mobility of capital, is a precondition for unequal exchange. It is

questionable whether the assumption of capital mobility can be extended to the international scale.

2.1 The tendency for the rate of profit to equalise

At the intranational scale the process of equalising the rate of profit takes place between production sectors as distinct from within them. Indeed the making of this distinction is the specific theoretical purpose of "sector" as a category in Marx's economic theory. The adoption of a new technology by one firm within a sector raises the rate of profit accruing to that firm in the short term due to the fact that the original price for the same commodity which is now produced more cheaply, is still received. In the long term, however, as all firms in the same sector adopt the new technology, so the market price falls towards the newly reduced market value. The rate of profit in the sector as a whole will, in the long run, tend to fall as a result of this technological development, a rise in the organic composition of capital.

In the long run therefore, the rate of profit in high organic composition of capital sectors falls relative to the rate of profit in less developed sectors. Capital is thence attracted to sectors of low organic composition where the rate of profit is higher, the resultant increase in competition there forcing the rate of profit down. (Note that there is not necessarily a rise in the organic composition of capital in the less developed sectors. It is an increase in competition that results in an increased supply so reducing commodity prices and the rate of profit.) The movement of capital between sectors therefore results in a movement towards profit equalisation between sectors. "What competition, first in a single sphere, achieves is a single market-value and

market-price derived from the various individual values of commodities. And it is competition of capitals in different spheres which first brings out the price of production equalising the rates of profit in different spheres" (Marx, Capital, Vol.III, p.180).

The competition in the two different spheres provides the means for a tendency towards and a counter tendency away from an equalisation of profit rates between sectors. While competition between sectors provides a movement towards profit equalisation, the technological advances encouraged by competition within sectors is responsible for changing organic capital compositions which result in widening profit rates between sectors. Since, as this analysis shows, the equalisation of the rate or profit between sectors is a result of the historical development of capital flows and technological advances, and not a point of departure in itself (Marx, Capital, Vol.III, p.174), it can only be viewed as a tendency. In other words it is not supposed that profit rates in different sectors are ever equal in reality. Only as a theoretical simplification is this a legitimate abstraction, and then only so long as the tendency generally outweighs the counter-acting influences. In theory equal profits may be assumed, though in reality the rate of profit only tends towards equalisation between sectors.

Marx makes clear the theoretical use of "tendencies" in Capital, Vol.III, (p.175), in this case specifically with reference to a general rate of surplus-value:

> Such a general rate of surplus-value - viewed as a tendency, like all economic laws - has been assumed by us for the sake of theoretical simplification. But in reality it is an actual premise of the capitalist mode of production, although it is more or less obstructed by practical frictions causing more or less

> considerable local differences ... But in theory it is assumed that the laws of capitalist production operate in their pure form. In reality there exists only approximation ...

There is every indication that, in tune with times of crisis and restructuring in capitalist accummulation, periods of capital mobility and technological advance may fluctuate. As Bill Gibson (1980, p.23) points out, "capital may be mobile, yet fail to move." A need to move is required as well as the ability, and these needs may be stronger at times of downturn and upturn in particular economies. Bluestone and Harrison (1980) in their analysis of the ways in which productive capital is able to move, provide support for this view, for it is at times of crisis and recession that many of the smaller and weaker capitals are driven out of business. The largest corporations are able to use such times to their advantage by acquiring or merging with other firms. During upturns there is an increase in plant openings, but the latter now in the hands of a smaller number of large corporations who are more able to choose the most favourable location (Bluestone and Harrison, 1980, p.7). Fluctuations in the mobility of capital may thus appear with attendant changes in the tendency for the rate of profit to equalise.

Although Marx assumed that capital was mobile on an intranational level, he never examined in detail the validity of the assumption on an international scale. Nevertheless certain comments of his can be cited which support the idea that he certainly did not consider such movement as impossible. For example: "If capital is sent abroad, this is not done because it absolutely could not be applied at home, but because it can be employed at a higher rate of profit in a foreign country" (Marx, Capital, Vol.III, p.256). Yet it is not clear whether Marx regarded these

different rates of profit in foreign countries as merely a condition of reality, or whether he felt that it was inaccurate to assume theoretical profit equalisation at the international scale (due to the limits on international capital mobility at the time).

It is the imprecise nature of Marx's concept of international capital mobility, along with the very obvious barriers that exist in reality(though in different forms in different periods) to the international mobility of capital (State policies designed to regulate capital export, and geographical distance are two examples) that confuse the issue. Mandel, for example, finds that"the hypothesis of international equalisation of the rates of profit cannot be sustained either theoretically or empirically" (Mandel, 1978, p.352), while Emmanuel (1972) and Amin (1974, Vol.1) come to the opposite conclusion.

2.2 The capital mobility debate

Mandel argues that international equalisation of the rate of profit "presupposes perfect international mobility of capital - in effect the equalisation of all economic, social and political conditions propitious to the development of modern capitalism on a world scale" (Mandel, 1978, p.352, my emphasis). Yet it is not necessary to show perfect capital mobility, a condition that does not exist even within the most developed capitalist economy, before a tendency towards equalisation of profit rates can be assumed. All that is required is sufficient mobility to result in competition. Any discussion that concerns itself with showing perfect mobility or immobility of capital is not useful when questioning the validity of an assumption of profit equalisation.

Mandel is also concerned about the contradiction that arises

from the thesis of equal rates of profit internationally and the even rhythms of accumulation that would result, for this situation is not consistent with the existence of uneven development. This is central to his rejection of profit equalisation as a phenomenon on the international scale. He does not reject the hypothesis of profit equalisation intra-nationally however, even though uneven development exists on this scale also. In addition Mandel fails at this point in his discussion to acknowledge the historical improvement in the mobility of capital particularly of productive capital, since the Second World War. This improved mobility means that a tendency towards international profit equalisation is likely to have developed and intensified with the emergence of late capitalism.

It would be misleading to take Marx's consideration of international capital mobility as final when examining the world economy some 120 years after he wrote. As Günther Kohlmey observes (Emmanuel, 1972, p.97), "In Marx's time, when the capitalist world economy had not yet been completely formed, obstacles to the movements of capital were greater than in the age of imperialism, with its worldwide trade and export of capital." Kohlmey subsequently concludes that equalisation of profits between countries must still be excluded. The suggestion that obstacles to capital movements have been reduced is further developed by Palloix (1977), Walker (1978) and Bluestone and Harrison (1980).

Palloix traces a clear progression of the internationalisation of the self-expansion of social capital through three stages (K. Gibson, 1980). These stages are: first, the internationalisation of commodity capital during the period of 'competitive capitalism', secondly of money capital during the period of imperialism, and finally the international-

isation of productive capital itself in the current phase.

Palloix refers to these three parts of the cirulation of social capital as quite distinct increments in the internationalisation of capital. The first, the internationalisation of commodity capital refers simply to the development of international commodity trade, not through the method of colonial appropriation but as the first stage of circulation in the capitalist mode of production - the purchase of commodities from foreign markets. The internationalisation of money capital refers to the growth of foreign investment, the flow of money capital realised by capitalists in one country into the production process in foreign countries. This is distinguishable from the third stage, the internationalisation of production itself in which the whole process of circulation, M-C ... P ... M'-C', is carried on in a foreign country, but under the ownership and control of captialists in the home country. This shift of the production process does not necessarily entail the physical movement of plant and machinery from an old site to a new (Bluestone and Harrison, 1980). The significant development is the concentration of control over the production process, illustrated by the fact that the largest 650 world industrial firms were responsible for 39% of world G.N.P. in 1971 (Palloix, 1977, p.8). The internationalisation of production from the U.S. has advanced to such a stage that the international production of U.S. controlled firms abroad in 1971, amounted to some four times the dollar value of U.S. exports in the same year.

By moving productive capital itself, the owners of capital are able to gain a most significant advantage in the class struggle. Bluestone and Harrison (1980, p.4) emphasise the impact that withdrawl of

productive capital can have upon the gains in monetary and social wages won by organised labour. The threat to move, or a move itself, can undermine the bargaining position of labour, enabling capital to make even bigger profits. Walker (1978, p.30) explains this phenomenon in terms of movement to locations where land has a greater use-value by virtue,at least in part, of its cheaper labour.

The majority of work in this sphere has been done with reference to the relocation of productive capital to the sun-belt of the U.S. from the traditionally developed North Eastern states (e.g. Bluestone and Harrison,1980). But Bluestone and Harrison also emphasise the equally significant movement of capital to other countries, including those of the Third World. Thus,for example, the Ford Motor Company, as a reaction to a number of serious labour strikes in Europe in the late 1960s, introduced the Fiesta in 1976, the first "world car" (Bluestone and Harrison, 1980). Its various sections are built in different countries, but each section produced simultaneously in two different countries. In this manner the effectiveness of any labour unrest can be greatly reduced by the increase of production in the other country.

Central to such a development in capital mobility across the barrier of space have been the revolutionary advances made in transport and communications during the later parts of this century. The development of huge cargo planes and giant ocean freighters has enabled the movement of productive and semi-finished commodity capital from country to country. Computerisation and satellite communications are instrumental in allowing company managers to direct with ease the co-ordinated operation of the various branches of multinational corporations spread across the world (Walker, 1978, p.31; Bluestone and Harrison, 1980, p.107).

While the evidence to suggest that international capital mobility has increased is abundant, it is not so easy to show profit equalisation. As with attempts to measure empirically the falling rate of profit however, there are many problems encountered when trying to link observed profit rates to the hypothesis of profit equalisation. To show for example that profits made in the banking sector in one national economy one year were far higher than in any other sector, does not prove that no profit equalisation exists. The only thing that such data show is a misunderstanding of what Marx meant by the equalisation of the rate of profit. It should not be expected that at any one time the rate of profit in every department, sector, branch or even company should be the same. Empirical evidence seen in the light of such an assumption can only confuse the issue.

Empirical work that refers to international profit equalisation must overcome further complicating issues. Either through false profit declarations or the addition of risk factors in politically unstable countries, published data on profit rates in foreign countries rarely give a realistic indication of real profits made by multinational companies operating in the Third World (Ledogar, 1978).

Mandel uses data supplied by E.L. Nelson and F. Cutler, (Mandel, 1978, p.353) who give the rates of profit for U.S. foreign investments in 1970, 1971, and 1972 as 20.1%, 21.8% and 22.3% in the semi-colonies and 13%, 13.5% and 15% in the imperialist countries. These figures are based on declared profits only. It is common practice for branches of multinational corporations to make high profits, but to avoid paying taxes to the host country by making various transfer payments to the

parent company. These usually take the form of inflated prices paid by the subsidiary to the parent for a commodity or material input. One branch of the foreign owned pharmaceutical industry in Columbia declared an average rate of profit between 1966 and 1970 of 42.8%, but after consideration of overpricing on imports was estimated to be operating with a real profit rate of 272.6% (Lall, 1980, p.126). This is by no means uncommon for subsidiaries of multinational corporations located in underdeveloped countries. (See Ledogar, 1978, for numerous examples). On the basis of such data, Mandel rejects the hypothesis that profit rates are equalised between countries.

Despite the seemingly high rates of profit in Third World countries, three arguments challenge Mandel's rejection.

First the profits made on foreign investments do not accurately indicate the general rate of profit in underdeveloped countries. Short term high rates of profit are made by any company that manages to make a technological advance. Only in the long term is the rate of profit equalised across that branch of production, and across an entire economy, subsequently at a lower rate than the pre-innovation level. This is the nature of the contradiction in the expansion of capital - that in order to remain competitive it must seek new and more efficient methods of production, this leading ultimately to a fall in the rate of profit.

When a multinational corporation invests productive capital plant in a foreign economy, this inevitably takes the form of an injection of a superior technology. It must be so for otherwise this new factory would not be competitive. The result is short term rates of profit that are higher than the rates of profit pertaining to indigenous capital in these countries, particularly in underdeveloped countries.

To furnish figures of profit rates in different countries realised on the foreign investments only, does not provide conclusive evidence to show the general rate of profit in that economy. Large variations in the rate of profit may exist at any one time between indigenous and foreign invested productive capital in an underdeveloped country.

Secondly, rates of profit in politically unstable countries include a risk premium. Even where perfect mobility exists between one country and another, resulting in perfect competition, profit rates may not equalise due to the addition of a risk premium in the politically and socially less stable country. Given a flow of capital from low to high profit countries, "the rates of profit will now tend towards a single level, allowing as always for necessary risk premiums" (Sweezy, 1970, p.292). It is no easy exercise to estimate the costs of such premiums, nor the various costs that may accrue to the parent company as a result of relocation abroad, costs that may not show up in the profits made in these new branches. Nevertheless the omission of these factors reduces the significance of the figures provided by Mandel.

Finally, it is simply not true that empirical evidence shows conclusively a higher rate of profit on foreign investments in underdeveloped countries than in developed countries. Dutt (1953, p.57) makes the same mistake as Mandel in this sense when he refers to the rate of profit for British investments, "primarily in the Empire", in 1951 as being 47%, whereas for companies operating within Britain the figure was only 34%. Strachey (1959, p.179) points out that the same figures for 1950 would have been 29% and 25% respectively. Emmanuel (1972, p.44) continues this discussion at some length providing examples of many years

in which rates of profit were only marginally different in developed and underdeveloped countries. Though "bringing the theory to bear on the history is (in fact) an extraordinarily difficult task" (Harvey, 1981, p.108), the apparent fluctuation in comparative profit rates in different countries may reflect oscillations in capital mobility that respond to periods of crisis in accummulation. Harvey (1981, p.104) shows that such oscillations during the late nineteenth century, "moved inversely to each other in Britain and the United States." The result was "a roughly balanced growth through counterbalancing oscillations of the parts all encompassed within a global process of geographical expansion" (Harvey, 1981, p.104). These inverse oscillations did not however continue through the global crises of the 1930s and 1970s, a situation that would be consistent with observed fluctuations in international profit rates. The profit rates supplied by Mandel and Strachey may be in response to periods of low capital mobility.

So long as capital mobility results in a tendency towards profit equalisation, the empirical existence of capital movement to which Harvey refers provides additional evidence in support of an hypothesis of profit equalisation and against its rejection by Mandel. Palloix (1977) also provides conclusive evidence of substantial present and past capital mobility. It should, however, be remembered that, as with other economic laws, the development of profit equalisation results from the interaction of tendencies and counter tendencies. While capital mobility results in a tendency towards profit equalisation, so continuous technological developments in particular sectors result in counter tendencies to profit equalisation.

2.3 The continued validity of the assumption

The preceding discussion shows that it is possible to assume capital mobility and profit equalisation when examining exchange on an international scale. The consequences of capital migration for underdevelopment are fundamental in themselves, and should more properly be identified with the process of capitalist development rather than underdevelopment (Walker, 1978). For the moment however, the consequences of capital mobility for unequal exchange will be focused upon.

The assumed international equalisation of the rate of profit enables the calculation of international prices of production as before (section 2.3 in Chapter 2). Equalisation does not have to be perfect however. Any fluctuations that occur in the degree of profit equalisation are reflected in the degree of unequal exchange. So long as the rate of profit tends away from that rate that would be found in individual branches of production with different organic compositions of capital and towards equality, unequal exchange will take place. Only the magnitude of unequal exchange will be affected by a change in the degree of profit equalisation. The magnitude of unequal exchange fluctuates with capital mobility and the rate of technological advance - the interaction between the tendency to profit equalisation and the counter-acting influences.

Figure 3.1 illustrates a complete equalisation of profit between the branches of production introduced in Figure 2.2. Figure 3.2 shows only a partial equalisation between the same branches of production. Unequal exchange still takes place, but its magnitude is not as great as in the situation illustrated in Figure 3.1.

	c	v	s	Value	s/v	s/c+v	Price	P-V-Deviation
Country A	80	20	20	120	100%	20% → 35%	135	+15
Country B	50	50	50	150	100%	50% → 35%	135	-15

Figure 3.1 Perfect profit equalisation

	c	v	s	Value	s/v	s/c+v	Price	P-V-Deviation
Country A	80	20	20	120	100%	20% → 30%	130	+10
Country B	50	50	50	150	100%	50% → 40%	140	-10

Figure 3.2 Some profit equalisation

Unequal exchange may vary in magnitude therefore as a mechanism for the transfer of value, depending upon the degree of capital mobility, the rate of technological development and the stage of crisis at any one time. This variation and its consequences will be examined in section 4 of Chapter 4. For the moment however, we will continue to assume perfect equalisation of the rate of profit internationally, for it is the existence, not the magnitude, of unequal exchange that interests us at this point in the discussion.

3. The International Mobility of Labour and National Rates of Surplus Value

Marx employs the assumption of equal rates of surplus value throughout his analysis of capital, and it is this assumption that limits the cause of different rates of profit in different branches of industry to changing organic compositions of capital. Equal rates of surplus value result from the assumed mobility of labour (Marx, Capital, Vol.III,p.175), though just as equal rates of profit are a theoretical simplification, so

the equalisation of the rate of surplus value is only a tendency.

It is generally accepted that labour mobility is more limited between than within national economies. Holland (1976) for example refers to the "spatial inelasticity of labour", though this is not specifically limited to the international realm, and illustrates that many economists, both Marxist and otherwise, are reluctant to assume labour mobility within national boundaries. "The main Keynsian argument against neoclassical models challenges the assumption of 'perfectionism' in competition, mobility, information, etc" (Hadjimichalis, 1980, p.142). While labour can move internationally (the enormous migrations to the U.S. during the nineteenth and twentieth centuries and to Britain during the 1960s in order to provide a labour supply and maintain the reserve army of labour are examples), it cannot be considered mobile enough to uphold the assumption of an equal rate of surplus value.

> It should be noted that international equality of profit rates does not imply international equality of rates of surplus value. So long as free mobility of labour across national borders is restricted, for whatever reason, the workers of some countries will continue to be more exploited than others .... (Sweezy, 1970, p.292).

It is the fact that labour is immediately restricted by the existence of a national boundary that reduces its mobility internationally in contrast with its mobility intranationally. Exceptions do occur, for example between the members of the European Economic Community, but this is not the general rule. Different national rates of surplus value must therefore be assumed, a new assumption that forces a reconsideration of the theory of unequal exchange.

3.1 Unequal rates of surplus value

Marx states (Capital, Vol.III, p.151) that "Different national

rates of profit are mostly based on different national rates of surplus-value". However, he never specifically relaxed the assumption that rates of surplus-value were the same, even though this is a change that fundamentally alters the labour theory of value and its application to capitalist production and exchange on a world scale

It was this "task of integrating international value in the general theory of value" that Emmanuel attempted to perform (Emmanuel, 1972, p. xxxiv). Unfortunately he made various mistakes, as noted in the previous chapter, that were directly contrary to the already-formulated general theory. Of particular note in this instance is Emmanuel's confusion between wages and the value of labour power, which enables him to use data showing substantially lower monetary rewards to labour in Third World countries as evidence of international immobility of the labour factor (p.46). But Emmanuel misses the point here,for it is not the level of wages but the value of labour-power and the rate of surplus-value that concerns us. It is in fact quite possible for wages and the value of labour power to vary inversely. As Sayer points out (1977, p.4), "Interpretation is difficult...beacause of..Emmanuel's apparent reluctance to acknowledge that the value of labour power in high wage regions will very probably be lower than that of low wage regions."

Mandel is also clear on this point. "He (Emmanuel) does not even mention the one working assumption that is in keeping with the spirit of Marx's Capital - namely that a far smaller mass of capital exists in underdeveloped countries, a much lower organic composition of capital and a lower rate of surplus-value ...." (Mandel 1978, p.354).

The assertion made by Mandel, and by Sayer, that the rate of surplus-value in a developed economy is likely to be higher than in an

under-developed country, is consistent with Marx's treatment both of the changes that take place in relative surplus value with accumulation. and of the increase in relative surplus value as a counter to the tendency of the rate of profit to fall (Dobb, 1972, p.97).

Absolute surplus-value is the term by which Marx refers to the total surplus-value produced during the working day - that amount that results from the prolongation of the working day beyond the period it takes to produce the labourer's means of subsistence. Relative surplus-value expresses the ratio between the two components of the working day, the part devoted to production for the capitalist and that to production of the means of subsistence. Changes in relative surplus-value arise from alterations in the respective lengths of the two components of the working-day. With the increase in productivity that is a necessary outcome of the competition between different capitals, the value of a given mass of goods, and thus the value of a given means of subsistence, falls. The result is a reduction in the number of hours, the proportion of the working day, that labour must work in order to produce its means of subsistence, and thus an increase in the number of hours worked for the capitalist, an increase in the rate of surplus-value. Of course an increase in productivity in the department of production of the means of consumption results in a direct reduction in the value of labour power, but similarly an increase in productivity in the production of the means of production results in a reduction in the value of a given input of constant capital effecting in this manner an indirect reduction in the value of labour power (Marx, Capital, Vol.I, p.315).

The increase in the rate of surplus value is also referred to by

Marx specifically as a counteracting influence to the tendency for the rate of profit to fall. Marx discusses the various methods by which labour is intensified; the increased velocity of machinery which enables an increased consumption of raw materials in the same time; the prolongation of the working day; and the introduction of female and child labour. All of these, assuming a given mass of the means of subsistence, lead to an increase in the rate of surplus value (Marx, Capital, Vol. III, p.233).

However, the mass of the means of subsistence, the bundle of goods consumed by the worker, is not a constant. While technological advance may be responsible for a reduction in the value of a given mass of goods, other forces act to increase the real wages earned by a worker. It will be recalled that Bettleheim (1972, p.287) draws attention to the fact that wages are subject to "a certain number of other determining elements", by which he means that the value of labour power includes an "historical and moral element" (Marx, Capital, Vol.I, p.171). "These include the effects of the class struggle and the effects of the different instances in a complex social fomation. On the one hand it means that wages are indeed subject to determination from the ideological and political levels, and, on the other, it means that at the economic level itself wages are subject to determination both by variations in the productivity of labour and by noncapitalist production relations" (Bettleheim, p.267).

Thus while the increased productivity of labour may reduce the value of a given mass of the means of subsistence and increase the rate of surplus value, ideological and political class struggle, for example through the increased organisation of labour, may effect an increase in that given mass of the means of subsistence. Wages become, "an expression

of the superior development of the productive forces and the accumulated effects of victories of working class pressure to raise real wages" (Sayer, 1977, p.4). At any one moment in history therefore the value of labour power and the rate of exploitation can be seen as the product of the dialectical interaction between the two classes, labour and capitalist, each attempting to benefit from a larger portion of the working day.

To suggest that labour is at any time in a position to hold capital to ransom in this struggle would be misleading. As Marx points out, any reduction in the rate of profit that results from a reduction in the rate of exploitation will result in a slackening of accumulation; "But with its (accumulation) lessening, the primary cause of that lessening vanishes, i.e., the disproportion between capital and exploitable labour-power." (The re-appearance of the reserve army of labour.) "The mechanism of the process of capitalist production removes the very obstacles that it temporarily creates. The price of labour falls again to a level corresponding with the needs of the self-expansion of capital, whether the level be below, the same as, or above the one which was normal before the rise of wages took place" (Marx, Capital, Vol.I, p.619). "The rise of wages therefore is confined within limits that ... leave intact the foundations of the capitalist system" (Marx, Capital Vol.I, p.620).

Thus the material improvements achieved by class struggle merely force capitalists to "restructure their production in order to enable those improvements" (Sayer, 1977, p.4), (or in the stage of late capitalism, as we have already seen, to relocate production in order to avoid these improvements). Suburbanisation is an example of such a restructuring process. New life styles and locations channel demand into branches

of new technology, in particular the car industry, thus satisfying the needs of capital while increasing the mass of the means of subsistence (real wages). But this increase in real wages does not take place independently of the production relations that exist within capitalism. The determination of the rate of surplus value is not simply a function of technological advance, nor just a result of the ability of labour to increase its real wages. It depends upon the stage of development of the productive forces at any one time, and in any one economy. Unqualified support for the assertion that the rate of exploitation is higher in a developed economy than in an underdeveloped one is therefore impossible.

3.2 Increasing or decreasing exploitation?

The question regarding the level at which the value of labour power finds itself after an increase in productivity is of fundamental importance. It asks to what extent the "historical and moral factors" are capable of counteracting the rise in the rate of surplus-value that results from increased productivity? To what extent is the tendency to increase the rate of surplus value opposed or even overcome by the counteracting influences? There is no definitive answer to this question, the situation depending upon the particular time and the relations between the factors that exist at that moment. The fact that it is impossible to predict a rising rate of surplus value with development of capitalist production is one of the reasons, Dobb suggests,why Marx was unclear as to whether the counteracting influences could ever succeed in cancelling out the tendency of the rate of profit to fall. "Marx undoubtedly conceived the situation as one in which the actual value-changes that emerged were resultant of an interaction of technical changes and the particular configuration of class

relations which prevailed at the given time and stage. The whole emphasis of this approach was on the dominating influence of the latter in shaping the "law of motion of economic society" (Dobb, 1972, p.109).

Although it may be impossible to say for certain whether the rate of surplus-value may be higher or lower in a developed than an underdeveloped country, it may be possible to suggest under which conditions a particular level might be likely. Dobb emphasises the impact that a "relative over-population" may have in this respect (p.110), a large reserve army of labour severely limiting the bargaining power held by labour in the class struggle, at least at the point of production. Marx suggests that with capitalist development, more and more labour will be released from the production process, increasing the reserve army of labour (Marx, Capital, Vol.I, p.631). This implies a weakening of labour's position in the class struggle with the development of the capitalist mode of production, and hence a generally increasing rate of surplus-value. It is probably for this reason that Marx assumes that a higher rate of surplus value exists in European countries than in Asian countries (Marx, Capital, Vol.III, p.150). This is also compatible with Marx's treatment of the increase in the rate of exploitation as a real counteracting influence on the tendency of the rate of profit to fall.

Mandel and Sayer both take this as conclusive evidence from Marx that the rate of surplus-value in Third World countries will likely be lower than that in developed nations. The reserve army of labour is far larger in underdeveloped nations however, contrary to what Marx suggests The disintegration of non-capitalist modes of production in these countries continually frees extra supplies of labour for use in the capitalist mode. The value of labour power in this instance is not only depressed by the

large amount of reserve labour, but also by the low material expectations of a labour force recently "liberated" from a pre-capitalist formation (Lipietz, 1980, p.63 and 65). The earlier assumptions took as implicit the purity of the laws of the capitalist mode of production. "In reality there exists only approximation; but, this approximation is the greater, the more developed the capitalist mode of production and the less it is adulterated and amalgamated with survivals of former economic conditions" (Marx, Capital, Vol.III, p.175).

The existence of dual economies in the Third World leads us to the conclusion that Sayer's and Mandel's assertion that the rate of surplus-value is lower in these countries is a dubious one. It may be that the rate of surplus-value is lower in underdeveloped countries in some instances, but we cannot say that this is necessarily so. The actual situation can only be a function of the technological, historical and social conditions that exist in any given time and place.

3.3. Unequal exchange and the rate of surplus value

We have established that labour is immobile internationally, and therefore that rates of surplus value vary between countries. So modifications must be made to the theory of unequal exchange. It will be argued that since a change in the rate of surplus value may alter the rate of profit prior to profit equalisation, so different rates of surplus value in different countries may affect the magnitude of unequal exchange flowing between the sectors of production (or more accurately the capitalists) in those countries.

Emmanuel assumes an increased rate of surplus value in Third World countries, though as we have seen for entirely the wrong reasons.

A low organic composition of capital and a high rate of surplus value in country I, and a high organic composition of capital and a low rate of surplus value in country II, result in a significant difference in the rate of profit, and thus a high degree of unequal exchange after profit equalisation. (See Figure 3.3.) If the rate of surplus value had been the same in both countries, the magnitude of the price value deviation would not have been so large. (Remember that the organic composition of

	c	v	s	Value	s/v	Profit s/c+v	Price	P-V-Deviation
Country I	80	40	80	200	200%	67%	157	-43
Country II	280	60	60	400	100%	18% } 30%	443	+43

Figure 3.3 Organic composition of capital and rate of surplus value both contributing to a large price-value deviation.

capital in this case can only be expressed by the ratio c/s+v. See section 4.3 of Chapter 2.)

In contrast, Mandel assumes there to be a lower rate of surplus value in the less developed country, country I, than in the more developed country, country II. (In country II the higher rate of surplus value acts as a counteracting influence to the tendency for the rate of profit to fall.) The influence of the rate of surplus value in this instance on the rate of profit in both countries is opposite to the influence of the organic composition of capital. In other words if the rate of surplus value in the less developed country is lower than in the more developed country, the effect of this will be to reduce the magnitude of unequal exchange between them. (See Figure 3.4)

Mandel assures us that the rate of surplus-value can never rise so far in the developed country to be sufficient to cancel out unequal ex-

	c	v	s	Value	s/v	Profit s/c+v	Price	P-V-Deviation
Country I	80	60	60	200	100%	43% } 30%	183	-17
Country II	280	40	80	400	200%	25%	417	+17

Figure 3.4 Impact of organic composition of capital on the magnitude of unequal exchange moderated by rate of surplus value.

change resulting from the high organic composition of capital (Mandel, 1978, p.354). There would seem to be no reason for this assertion. It is quite possible for particular sectors in underdeveloped countries to be just as productive as some sectors in developed nations, and in this case unequal exchange may flow to the advantage of the underdeveloped country if the rate of surplus value there is lower. While it is unquestionably more likely that the transfer of value should generally be from underdeveloped to developed nations, there is no theoretical necessity for this conclusion so long as it is possible for the rate of surplus value to be much higher in the developed nation than in the underdeveloped one.

Emmanuel distinguished two types of international unequal exchange, one caused by different levels of technology, the other by differences in wage levels. There is no need for this distinction since neither factor is independent of capitalist relations of production. In fact there is only one type of unequal exchange. The direction of flow of surplus value that results will almost certainly be from the technologically less developed to the technologically developed sector, though on an international scale its magnitude is a direct result of the interaction between two factors, the level of the organic composition of capital and the rate of surplus-value. These factors may appear in

different configurations as a result of the technological, historical and social conditions that exist at a single conjuncture - a result of the constant struggle between the classes over the division of the working day, and also upon the degree of approximation that various parts of the capitalist world market show to the pure theoretical form.

4. Social Value and Intra-Sector Exchange

A fundamental assumption of Emmanuel's thesis is that all commodities produced in the two countries under consideration, one developed and the other underdeveloped, are specific to those economies. According to this assumption, all commodities exchange as if between different sectors of production located within one country but not the other. In reality few commodities are specific to one national economy. Only those commodities the production of which is limited by physical geographic factors such as climate or geology fall into this category. Cocao beans, bananas and bauxite are specific products to a few countries. Shoes can be and are, produced in any and every country. This section will examine the position taken by Emmanuel in this respect with reference to arguments made by deJanvry and Kramer (1979) and Shaikh (1980).

4.1 The realisation of social value in exchange

de Janvry and Kramer (1979) find the assumption of complete specificity to be a major flaw in Emmanuel's thesis. The social or market-value of every unit of output produced within one sector of industry, they argue, is the same. The value of a commodity is not measured by the amount of labour invested in its production, but by that amount of labour that is necessary for its production. The measure of value being socially necessary labour is emphasised by Marx (Capital, Vol.I, pp.536-537).

> The value of a commodity is determined not by the quantity of labour actually realised in it, but by the quantity of living labour necessary for its production. A commodity represents, say 6 working-hours. If an invention is made by which it can be produced in 3 hours, the value, even of the commodity already produced falls by half. It represents now 3 hours of social labour instead of the 6 formerly necessary. It is the quantity of labour required for its production, not the realised form of that labour, by which the amount of the value of a commodity is determined.

Acceptance of this principle, the calculation of the social value of commodities on an international scale, would, according to de Janvry and Kramer, eliminate most unequal exchange. All commodities other than those specific to a particular country would now exchange at prices equal to values. The social-value of a shoe produced in an underdeveloped country with a low organic composition of captial would be identical to the social value of a shoe produced in a developed country with a high organic composition of capital. Given an equal international selling price for shoes, no unequal exchange takes place, for at all times shoes of the same value exchange at the same price. The shoe manufacturer working at a low organic composition of capital receives a relatively low rate of profit, but this does not represent any inequality in exchange which depends upon profit equalisation. Profit equalisation does not take place between firms producing the same commodity but with different techniques, only between different sectors of production.

Shaikh (1980) takes a view that is diametrically opposed to that of de Janvry and Kramer. "The very formation of an industry's social value implies transfers of value within an industry, since the social value is itself the average of the individual values of different producers within the industry" (Shaikh, 1980, p.48).

The process that Shaikh refers to can be understood by considering an example of two firms operating within one sphere of industry, say in the production of the same type of building brick. If firm "A" adopts a new technology, the value of a brick produced by this firm is now less than the value of a brick produced by firm "B". All bricks however are equal when they reach the market place, and are equal in value and in price. The true social value of the commodity is that which is realised in the process of exchange. Shaikh interprets this as representing a transfer of value from the less efficient to the more efficient firm, the products of the former selling below their value, the products of the latter selling above their value.

However, this is a false interpretation. The value of the bricks produced by the less efficient firm "B" has fallen along with the value of those produced by firm "A". The technological advance in firm "A" has rendered the extra labour used in firm "B" unnecessary and therefore non-contributary of value. The higher rate of profit in firm "A" results from a reduction in costs only, and is therefore only a short term phenomenon. It does not represent a transfer of value.

Marx deals with this problem on page 180 of Capital,Vol.III. It is clear that what he is concerned with here is the determination of an average or general rate of profit for a given sector, which does not imply a profit equalisation. This is a necessary step prior to an examination of the equalisation of the rate of profit between sectors.

Liossatos (November, 1980), in like manner to de Janvry and Kramer, emphasises the social value of a commodity, the fact that its value is not determined simply by the amount of labour time contained therein, but by the social practice of exchange.

This is a situation which applies only to identical commodities produced under different techniques, for being identical commodities when exchanged they must hold the same social value. That commodity produced by the less developed technique was therefore produced with a certain amount of socially necessary, and a certain amount of socially unnecessary labour.

The monetary constraint to which Liossatos refers takes the form of an equality between the total money supply in society and the value created over a given period. Under conditions of equal organic composition of capital, the same equation holds for all sectors of production so that in every case price equals value. But under conditions of different organic compositions of capital this condition no longer holds, and unequal exchange results. This is not to deny that the price and value of the identical commodities are the same in the market-place, but it does deny that the price of one type of commodity is necessarily equal to its social value.

The monetary constraint applies therefore to each branch of industry but in each branch it takes a different magnitude. The social value of a commodity is equivalent to its monetary form, though this equivalence is not the same in every branch of industry. (Liossatos, November 1980, p.22). Note that this emphasises the possibility of unequal exchange between sectors, but not within them.

4.2 Social value and international exchange

de Janvry and Kramer's conclusion that because unequal exchange cannot take place within sectors, value transfer is limited to sectors that are regionally and nationally specific, is an invalid one on two counts.

First, though all commodity types may have international social values, still shoes may be produced at a much lower organic composition of capital than automobiles. Thus automobiles will sell at a price that is above their social value, shoes at a price below their social value. (This assumes that all shoes and automobiles are one type only - the product of particular and distinct branches of industry.) If one region specialises in the production and export of shoes and another in automobiles, unequal exchange may still take place between them as before. The fact that these commodities are non-specifics does not eliminate their role in unequal exchange.

Whether or not such a regional or national specialisation in export commodities exists in reality is a matter of debate. Amin (1974, Vol.I, p.57) claims that in 1966, $26 billion of the $35 billion of exports from the underdeveloped nations came from the ultramodern capitalist sector, in which he includes oil, mining and primary processing of minerals and modern plantations. These figures support Emmanuel's thesis, for they emphasise different rates of surplus value (wages in Eammanuel's interpretation) rather than differences in organic composition of capital.

Amin's assertion is dubious however. He does not indicate which countries are regarded as underdeveloped nor does he list a source for his data. Above all there is no attempt to measure productivity, and thus little justification for his assumption that industries in the export sectors of the Third World are on the whole as productive as those in the export sectors of the developed countries. The traditional exports of developed countries are machinery, equipment and highly fabricated products, whereas those from underdeveloped countries have been primary in nature; less

fabricated, unprocessed minerals and foods. In many cases the tariff policies of developed nations specifically exclude the products of technologically advanced industries in developing countries from their markets. Evidence suggests that industrialisation in the Third World is taking place at a low level of technology, often with out-dated, cast-off machinery from developed countries (Mandel, 1978, p.361 and p.369 and Fenster, 1969).

The second criticism of de Janvry and Kramer's thesis concerns the questionable existence of sectors of production, that is groups of identical commodities, that transcend national boundaries. If we adhere to their interpretation it is necessary to assume that potatoes, shoes, meat and numerous other commodities that go to make up the subsistence wage, are identical commodities in India and the United States and therefore possess the same social value. Since the mass of the means of subsistence is very much lower in India than in the U.S., it can now be said that the value of labour power must also be many times lower. In this case money wages and the value of labour power become more closely associated. Of course the extra money wage in the U.S. is spent in part upon commodities produced in high organic composition of capital sectors so that in this example the value of labour power will rise more slowly than the rise in wages. Nevertheless the value of labour power will rise.

It is misleading however to consider at least the vast majority of production sectors to be international for production conditions in different countries are vastly different. The development of a new technique in a developed country may be quite inapplicable to production of a similar commodity in a Third World country, for a number of reasons. The small size of the domestic market and the enormous industrial reserve

army are both factors that Mandel emphasises as limiting the usefulness of new technology in the Third World (1978, p.368). The absence of a large market in many countries reduces the potential of scale economies, eliminating the possible use of technology that operates only on a large scale. The enormous industrial reserve army in less developed countries contributes to keeping the real wage level low and thus reduces the impact of labour-saving new technology.

The monopoly held by developed nations in the production of high technology (machinery and equipment), high organic capital composition industries, also ensures that the sale of this technology to firms in less developed countries takes place at a price that is above its value. This means that the monetary cost of machinery is high, whereas due to low productivity in consumption goods industries there the mass of the means of subsistence is low.

Technological advances therefore provide little incentive to the capitalists in underdeveloped countries in terms of reduced costs, and the failure to advance does not pose much of a threat to their rate of profit. In other words due to the differences in production conditions it is possible for production of the same commodity to take place with a much lower level of technology in an underdeveloped than in a developed country, but at the same rate of profit. This is the same as assuming that even in the production of an identical article by a firm in a Third World country and one in a developed country, we can assign these firms to production in different sectors. Unequal exchange <u>does</u> take place between them.

5. Summary

The extension of the theory of unequal exchange to the international

sphere required the consideration of three main issues; the international mobility of capital, the international mobility of labour and the specialisation of production sectors in different countries.

It has been shown that the assumption of capital mobility can be continued on an international scale. The fact that profit equalisation is no more than a tendency, profits never being equal in reality, does not eliminate the possibility of unequal exchange. However, fluctuations in the degree to which equalisation takes place in response to oscillations in the movement of capital during periods of crisis and restructuring, may impact upon the magnitude of unequal exchange.

Since labour cannot be treated as a mobile factor on the international scale, it is no longer possible to work with the assumption of equal rates of surplus value in different countries. In much the same way as argued by Emmanuel, a difference in the rates of surplus value may contribute to unequal exchange between nations, though the direction of this contribution is not inevitably to the disadvantage of underdeveloped countries.

Unequal exchange within nations is limited in its spatial application to the specialisation of certain regions in the production of commodities with different organic compositions of capital. Certain arguments have been put forward in this chapter however which suggest that sectors of production cannot transcend national boundaries, so that it is meaningful to refer to all commodities produced in different countries as being specific. Cotton produced in India therefore may be of a higher value than the same amount of cotton produced in the United States, assuming that the organic composition of capital in the production of Indian cotton is lower. This is an important distinction for if the

values of identical commodities in different countries were the same, then there would be no difference between real wages and the value of labour power.

The consideration of these three main issues show that unequal exchange in the broad sense may be a significant process for the transfer of value on an international scale. The magnitude and direction of this transfer depend on the organic composition of capital in different sectors of production, the extent to which profit is equalised between the sectors, and the existence of different national rates of surplus-value. All of these factors may vary in time with the dynamics of the development of the capitalist mode of production.

CHAPTER 4

SPACE, CAPITAL MOBILITY, AND CLASS STRUGGLE

1. Introduction

A rigorous examination of the theory of unequal exchange has emphasised surplus-value transfers at the inter-sectoral level, resulting from different organic capital compositions within those sectors. What remains unclear is the impact that these transfers have upon the growth of uneven development, so an attempt will be made in this chapter to clarify the theory of unequal exchange in this respect.

It has been assumed previously that there is a specialisation of technologically advanced sectors in developed countries and technologically backward sectors in less developed countries, which implies a general flow of value from the latter to the former. This approach is consistent with Emmanuel (1972), Amin (1974) and Kidron (1974), though it is wage rather than technological differences that generally receive greatest emphasis in these works, a view that has been discredited. This blatant conversion from an analysis of departments of production or sectors of production, which is consistent with Marx, to an analysis of exchanges between countries as if they were the same thing (Emmanuel, 1972, pp.90 - 91), represents more than just a flirtation with spatial fetishism. Amin (1974) carries Emmanuel's analysis truly into this sphere by examining unequal exchange in the narrow sense in terms of a relationship between bourgeois nations and proletarian nations. The inference clearly is of spatial relations, in which some countries exploit others, to run along-side, or even dominate, class relations.

This approach leads the proponents of unequal exchange towards conclusions similar to those of dependency theorists such as Frank (1969). With surplus-value flowing from less developed to developed nations, in this interpretation of unequal exchange, development in the former is said to be blocked. The process speeds accumulation in core nations, slowing it in periphery nations where the plight of ever-worsening relative poverty deepens. Nations are viewed as in conflict, the resulting struggle between spaces determining the progression of capitalist reproduction in much a similar way as the class struggle does for Marxists. This conclusion exposes the theory of unequal exchange to the same criticisms that are made by Marxists of dependency theory.

Dependency theory suffers from three major weaknesses. The first is its conception of space, the second its emphasis of exchange relations over and above those of production, and finally its linear view of history (Browett, 1980). Emmanuel's interpretation of unequal exchange as a monocausal theory of uneven development results from his failure to overcome these weaknesses. This chapter will analyse these three problems in detail and attempt to place unequal exchange within a theory of uneven development that avoids such weaknesses. The following three sections will examine the problem of space within Marxist analysis, the mobility of capital and spatial uneveness of production, and the historical context within which unequal exchange should be viewed.

The conclusions drawn from these analyses lead to an interpretation of unequal exchange as a process secondary to that of capital mobility, since captial mobility is a prerequisite for unequal exchange. Whilst important in terms of value transfer across space unequal exchange

holds less power than Emmanuel suggests in the explanation of uneven development. Though clearly having effect upon the determination of the rate of profit and upon rates of accumulation in trading sectors, it can never be held responsible for holding these sectors to specific places. Unequal exchange can only be seen as an historically specific phenomenon, tied up with development of the mode of production and the development of capital mobility. It should not be viewed therefore, as a monocausal theory of uneven development, but as a contributory factor in a multi-causal theory of uneven development.

2. Social and Spatial Dialectics

In attempting to outline the role played by unequal exchange in the growth of uneven development it is first necessary to place the theory of unequal exchange within a theory of space more consistent with its Marxist derivation.

2.1 The problem of space in Marxist geography

The fact that structures and social formations are distributed unevenly through space is an inevitable result of nature. So long as factories, residences, communications networks and social classes exist, so they must adopt different locations. However, it is not this issue of contextual space, or space per se, that concerns us here, but created space. In other words we are interested in the configuration of production and social formations in time and space as created by human activity. (See Soja, 1980.) In marxist geography we are therefore concerned not simply with the economic, political and ideological relationships between classes in the process of reproduction, but also the spatial relationships within this process.

Marx never fully integrated his theory of capitalist accumulation and reproduction with space. This has provided Marxist geographers with a most complex problem, one that is still far from being resolved. Points of view range from those who advocate the adoption of a spatial dialectic in which defined spaces are seen to play a primary role in the reproduction of capitalist social relations (for example Peet, 1979), to those who see space as something which has use-value for capitalist reproduction and is, therefore, placed at a much lower level of determination than the relationship between classes, the real driving force behind the development of the mode of production (for example Walker, 1978). The second view is adopted here and can be explained as follows.

It is implicit in Marx's theory of capital accumulation that reproduction will take place on an ever-expanding scale. The competition between capitals forces the re-investment of surplus-value and the modernisation of production techniques in an attempt to achieve a higher rate of profit. "Accumulation for accumulation's sake, production for production's sake," is the "historical mission of the bourgeoisie" (Marx, Capital, Vol. I, p. 595.)

The process of production is only one part of capitalist reproduction, for although surplus-value is created at this point, it can only be reinvested in the process of accumulation once it has been realised through exchange. Space is a barrier to the circulation both of capital and commodities, a barrier that capital is constantly striving to overcome in an attempt to speed up the process of reproduction (Walker, 1978, p. 31). This struggle finds expression most particularly in efforts by capital to develop new and better methods of transport and

communications, developments which facilitate both a centralisation of production sectors that are not tied by nature to particular locations and, through the "annihilation of space with time," the geographical expansion of the capitalist mode of production (Harvey, 1977, p. 272).

As a result of this geographical expansion and centralisation of capital, certain core-periphery relationships develop. Marx refers to this in terms of the emergence of a geographic division of labour which serves the purposes of capitalist accumulation (Harvey, 1977). Since centralisation of industrial production reduces the time and cost of circulation, enhancing accumulation, so specialisation in industrial production takes place in particular places, other areas being left to the production of material resources.

> A new and international division of labour, a division suited to the requirements of the chief centres of modern industry springs up, and converts one part of the globe into a chiefly agricultural field of production, for supplying the other part which remains a chiefly industrial field (Marx, Capital, Vol. I, p. 451).

The spatial specialisation of production gives a meaningful spatial characteristic to unequal exchange. With the more rapid development of technology in sectors producing industrial goods than in sectors producing material supplies (Becker, 1977, p. 169) so unequal exchange is said to take place between sectors of production that are specialised in certain geographic locations. If such a specialisation can be shown to exist between two countries then, "The favoured country recovers more labour in exchange for less labour..." (Marx, Capital, Vol III, p. 238), as a result of trade.

2.2 Spatial dialectics

The whole of Emmanuel's thesis rests upon the association of particular sectors of production with particular countries. For Emmanuel, sector specialisation is specifically national to the extent that the word "branch" can be replaced by "country" (Emmanuel, 1972, p. 91). The present analysis finds no particular problem with this assumption, for no branches of production transcend national boundaries. The problem arises out of the use to which Emmanuel puts this assumption.

It is the progression from a theory of sector spatial specialisation to a theory in which space is fetishised that is questionable. Spaces are seen to exploit spaces, countries to exploit countries, an idea that mystifies production relations in a way similar to the mystification of exchange by prices. Emmanuel's fetishisation of space has resulted in further confusion in the interpretation of unequal exchange. Whereas his assumptions with regard to the independence of wages and his misuse of Marx's reproduction formulae result in confusion about the causes of unequal exchange, so his use of space leads to confusion about the results of unequal exchange and its effects on uneven development.

Emmanuel's conception of space, carried to its extreme by Amin in his labelling of bourgeois and proletarian nations, has much in common with that of Peet's spatial dialectic. In this approach spatial relations reflect social relations (Peet, 1977, p. 255): just as one class exploits the other, so spaces or nations exploit other nations. A spatial dialectic gives explanatory power to a contradiction between spaces. Just as the classes struggle for a share of the value produced

by labour during the working day, a struggle mediated by political and ideologicial factors, and one by which capitalism progresses dialectically, so spaces, developed and underdeveloped, struggle for a share of the surplus-value created within their boundaries. The resulting geographical transfer of value determines the spatial development of capitalism through the enhanced or retarded rates of accumulation that result. "Space becomes an autonomous or quasi-autonomous entity, explaining the variable outcome of the capital-labour relationship in the real world. Spatial process is given explanatory power..." (Eyles, 1981, p.1377).

Critiques of this position have been many, Smith (1979, 1981), Eyles (1981) and Walker (1978) producing the most notable examples. As we have already seen, the development of centralisation, concentration and expansion of capital are necessary results of accumulation, the social process of reproduction. As such, spatial uneven development is a consequence of the central contradictions in capitalism, those between labour and capital and between capital and capital (Harvey, 1977, p.272 ; Hadjimichalis, 1980, p.169; Wright, 1979, p. 113). It is this that prompts Eyles to take the view that, "space and society are not two discrete entities, they are in relation, albeit an unequal relation, with space (that is, spatial organisation, the use of nature) being determined by social organisation and relations and not vise-versa" (Eyles, 1981, p.1377). Similarly Smith (1979, p.376) writes: "far from being different relations, the social and the spatial are different aspects of a single relation." By separating created space from social relations, Peet and others relegate the class dialectic from its central position within Marxist theory.

Soja also shows an appreciation of the nature of the problem when he writes that, "Once it becomes accepted that the organisation of space is a social product - that it arises from purposeful social practise - then there is no longer a question of its being a separate structure with rules of construction and transformation which are independent from the wider social framework" (Soja, 1980, p.210). The introduction of a Socio-spatial dialectic by Soja as a solution to the problem however is as dubious as a spatial dialectic, for such a concept gives created space, subsequent to its emergence from the social relations of production, an equal role to class differences in the dialectical development of those relations. The distinctions between different approaches become somewhat confusing at this level of analysis, but it certainly appears that Soja, in attempting to overcome a very real problem, merely returns to the theoretical position that he begins by criticising (Archer, 1982). In addition Soja attempts an oversimplified amalgamation of international, regional and urban spatial theories, an amalgamation that Massey (1978, p.109) regards as impossible because it ignores, for example, the differing strength of the State as a focus for class relations at the regional and national levels.

In interpreting the impact of unequal exchange on uneven development therefore, it is argued that a theory of space that emphasises the different use values to capital of different locations (Walker, 1978) should be adopted. This avoids the suggestion that unequal exchange results in a transfer of value between spaces which are fixed in time, but emphasises exchange between capitals - capitals that may <u>change</u> in

their relative development and location in accordance with the development of productive forces at different historical times.

2.3 Space, exchange and history in dependency theory

The use of a theory of space similar to that suggested by Peet results in an interpretation of unequal exchange as a process that "blocks" the development of less developed nations. Just as the proletariat continues to be exploited so long as the capitalist mode of production continues to exist, so too do less developed countries. This is a position that has much in common with the dependency paradigm, in particular the theories of Andre Gunder Frank.

The major distinction made by Frank (1969, p.4) is that between the terms undeveloped and underdeveloped. Undeveloped refers to the pre-development stage of countries that are advanced today. The development of todays backward countries is, according to Frank, restricted or "blocked" both by a political and ideological domination by the centre, and by a transfer of value through unequal exchange and by other means. The development of underdevelopment, the position of economic, political and ideological dependence in the periphery, through which the core never passed, is a condition that dependency theorists view as indispensable for capital accumulation in the centre to continue smoothly (Browett, 1980, p. 97).

Although quite easily integrated with elements of Marxist theory (Harvey, 1977, p.286), there are numerous Marxist critiques of the dependency paradigm. These can be grouped into three sections: The treatment of space; the emphasis upon exchange rather than production relations in determining the cause of capitalist development; and the "Linear conception of history" (Browett, 1980).

The first has already been dealt with, for Frank's treatment of space is similar to that of Peet's except that for Frank, "the colonial structure - relations of transfer of value across space - is maintained in a position of pre-eminance over class structure - relations of exploitation among social classes" (Browett, 1980, p.105). The idea that all classes may exploit and be exploited is directly opposed to Marx's theories of class formation and class conflict. It totally ignores the fact that through the geographic transfer of value the "excess is pocketed, as in any exchange between labour and capital, by a certain class" (Marx, Capital, Vol.III, p.238). The use to which capital puts space in affecting class consciousness and in the class struggle in contemporary capitalism is ignored completely (Soja, 1980, p.207).

Secondly, dependency theory places the determining responsibility for uneven development primarily in the hands of exchange processes rather than production processes. Yet reproduction is dependent both upon the production of surplus-value and upon circulation - its realisation through exchange. It is the conflicts between labour and capital that emerge from the mode of production, from the process of production, that provide the driving force behind the development of capitalism. By emphasising world trade as a determining factor behind capitalist development, dependency theory diverts attention away from the production processes that are central to the progressive expansion of capital accumulation. In addition this direction of approach allows Frank to assume purely on the basis of the exchange relations of the time, that Latin America was capitalist from the sixteenth century onwards (Browett, 1980, p.106).

The articulation of modes of production is consequently relegated to an insignificant position in the explanation of uneven development. (The question of whether such societies can be viewed as having a dual economy or a purely capitalist one is not the point here. The problem with Frank's argument is that he chooses the second alternative simply on the basis of exchange relations rather than production relations.)

Finally, dependency theory presents a "linear conception of history" (Browett, 1980, p.103). In other words this theory takes a distorted view of change, capitalist development in dependent countries being a process that is supposed to be "blocked". Dependency theory ignores the waves of crises and restructuring in capitalist accumulation and the changes in the spatial divison of labour that result (Massey, 1978, p.115). While it may be capable of accommodating one particular historical situation therefore, this approach is not able to account for change - neither for the historical development of capitalism in certain areas, nor the decline of previously dominant centres such as parts of Britain and the north eastern United States. "Fresh room for accumulation can be created by a variety of stratagems in actual historical situations" (Harvey, 1977, p.286).

Emmanuel's interpretation of unequal exchange, due in large part to his treatment of space, can be criticised in much the same way as pure forms of dependency theory. Emmanuel's fetishisation of space, the primary position that he gives to exchange relations in the determination of uneven development and his failure to recognise the relationship of unequal exchange itself with the historical development of the capitalist accumulation process, results in the conclusion that unequal

exchange is the primary cause of uneven development. In the discussion that follows it is argued that unequal exchange is merely one of a number of causes, though an important one, of uneven development, and thus a far less powerful factor than Emmanuel suggests. Section 3 examines the international expansion of capitalist accumulation while section 4 puts unequal exchange into historical context.

3. Capital Mobility and The Use of Space

3.1 Regional definition

In any study of the processes responsible for the growth of uneven development it is essential that the spatial unit used in the analysis should be the result rather than the cause of theory. It is common in regional analysis for the regions themselves to be the starting point for examination, for example, Phillips (1978), in his analysis of disparities in Canada, chooses to use the ten provinces as the units of comparison. He is clearly aware of the weaknesses of starting from this position, for he writes:

> What we are really talking about when we speak of the have-not regions in Canada is the area of the country reduced to an economic hinterland, supplying the resources and buying the products of the industrially developed heartland of Central Canada. But because our statistics are collected on a provincial basis, it is only possible to measure the degree of disparities by using provinical boundaries. If we could separate the country into hinterland and heartland regions, it is almost certain that the disparities would be even more graphic (Phillips, 1978, pp.8-9).

Nevertheless, Phillips continues to use the Canadian provinces throughout his analysis in apparent total disregard of his earlier comments. Any resultant theory about the cause of regional disparities inevitably

takes provincial divisions as central factors. This approach also ignores the fact that disparities within provinces may be far greater than between provinces, a very common problem in regional analysis in Canada, and elsewhere. (See for example Economic Council of Canada, 1977.) It is these problems to which Massey refers when she argues that:

> ...regions must be constituted as an effect of analysis; they are thus defined in relation to spatial uneven development in the process of accumulation and its effects on social (including political) relations. Thus the analysis of the production of uneven development does not imply a pregiven regionalism (Massey, 1978, p.110).

In a similar way it is necessary to derive the spatial units used in an analysis at the international scale from theory as opposed to prior to it.

3.2 National definition

Although disparities within nations are potentially greater than disparities between nations, still there are numerous reasons resulting from Marx's theory of capital accumulation, particularly economic and political reasons, why nations should be treated as autonomous spatial units.

By its very nature a nation is defined by a political and economic barrier which restricts the movement of production factors. Tariff barriers, aid programmes and other trade regulations are administered on a national basis under the control of the capitalist state. These policies limit effectively the export of technology to indigenous foreign capitalists (Hayter, 1971; Yeates, 1974). They also contribute to the formation within state boundaries of the different production conditions previously referred to in the consideration of national separation between branches of production.

While capital is seen to be increasingly mobile across national boundaries - the political and economic barriers to circulation that they represent becoming ever more pervious to capital - labour movement continues to be rigorously restricted at national borders. Naturally there are exceptions to this, large numbers of immigrants having been allowed at periods in history when the reserve army of labour was especially low in particular nations. Nevertheless it is the effective political and often cultural limit upon labour movement that makes possible a distinct difference in the rate of surplus value and level of money wages between nations over and above the variations that exist at the regional and sectoral levels.

It is therefore at the national level that differences in capital and labour mobility, central factors to accumulation, become clearly differentiated, the former remaining relatively more mobile than the latter.

3.3 International factor mobility and class struggle

A spatial framework that emphasises national space is more clearly derived from a theory of capital accumulation than the spatial framework used by Phillips. The use of national space gives emphasis to the historical development of capital mobility, so important for the expansion of capitalist accumulation, in contrast with labour immobility at the same spatial and political scale. Multi-national capital is able to strengthen its position in the class struggle by "running away" from organised, but immobile, labour forces (Walker, 1978; Bluestone and Harrison, 1980). Increasingly capital can break down national barriers, partly due to transport and communications developments and partly as a result of playing off different states competing for investment one against

the other in order to induce reductions in trade and production regulations (Holland, 1976, p.154; Cohen, 1981, p.291). An increasing ability also to penetrate the remnants of non-capitalist modes of production in foreign countries - releasing large quantities of surplus labour (Lipietz, 1980, p.65) and increasing the size of the reserve army of labour - contrasts with the continued attachment of labour to particular locations.

The working class is weakened economically as "capital invariably creates for itself a reserve of places, in a fashion analogous to the creation of an industrial reserve army of workers. Just as more workers than necessary are potentially available to capital, in order that the reserves may be thrown into the breach as needed or that workers' wage-demands may be kept in check, so more places than necessary are potentially available to capital" (Walker, 1978, p.32). The political implications are just as important here. Although exploitation takes place solely between capital and labour, distance has the ability to mystify such relations, turning them into relations of place versus place. Workers in different regions or nations are forced to compete for the attention of capital. "This is one of the biggest barriers to class consciousness and political organisation" (Walker, 1978, p.33), for it distracts the struggle by labour away from fundamental interests for the sake of immediate interests (Wright, 1979).

These phenomena are evident on a regional scale, as shown by Bluestone and Harrison (1980) and Clark (1981) with reference to development of the U.S. sun-belt. Theoretically there is more potential for capital on an international scale where labour is more immobile and divided.

> Firms moved overseas to counterpoise the challenge of well-organised labour and government regulations with much more highly profitable operations that were subject to far less government regulation and usually manned by labourers whose output and cost compared most favourably with the situation in developed nations. Such 'run-away' shops did much to weaken the power that existing labour organisations had over investment decisions by corporations in the context of national economies, and forced organised and unorganised labour to face a drastically altered economic world (Cohen, 1981, p.291).

National space therefore, takes on a real relevance in an analysis of the expansion of capitalist accumulation - social reproduction- a relevance that is an "effect of analysis" rather than being pre-given to that analysis. Nevertheless, even though nations can in this way be treated as legitimate"regions" for analysis, they cannot be given an autonomous identity with explanatory power in capitalist accumulation. (The only exception to this is the effects of state policy, though this should not properly be interpreted simply as the action of spaces, rather as the collective actions of the dominant classes within a given nation.) Nations as spaces can only be viewed as possessors of "use-value" for capital within the class struggle. "The main forces translating social divisions into spatial divisions are capitalist competition and class struggle, in which the actors in the capitalist drama actively use space as a factor for their advantage" (Walker, 1978, p.30).

Because capital is increasingly mobile it may no longer be possible to associate the welfare of a given area closely with the location of capital there. Partly due to the decentralisation of multi-national capital, it is less certain that surplus-value produced will remain in the vicinity of the production area. Development may be transient, areas competing for the privilege of being "struck by the lightning of outside

capital," capital that is quite capable of moving on again if conditions dictate that it should. "This brings us back to the impossibility of a single piece of the capitalist mosaic generating economic development of a rich self-sustaining sort" (Walker, 1978, p.32).

The points raised in the preceding discussion lead to conclusions that are radically opposed to those drawn by Emmanuel from his theory of unequal exchange. This is especially evident in Walker's comments, for it is the self-sustaining nature of development that is proposed by Emmanuel's theory. In other words unequal exchange, according to Emmanuel is supposed to sustain certain developed areas and block development in others. But since capital is mobile, development in most areas is only semi-permanent.

4. The Historical Context of Unequal Exchange

Section three, in emphasising the process of production as well as circulation in the development of capitalist accumulation, and placing this within a spatial framework that is in keeping with Marxist theory, provides, in brief, an alternative theory of uneven development to Emmanuel's dependency-like interpretation of unequal exchange. This does not deny the existence of unequal exchange, but relegates it to a secondary position in the explanation of uneven development, a relegation that becomes more apparent as the result of an historical analysis of capitalist development.

By viewing unequal exchange in a particular historical context, the third criticism of a dependency-like interpretation of the transfer of value can also be dealt with. Emmanuel's failing in this respect is to portray unequal exchange as a static, modern form of the direct value

transfers that took place during the colonial period. During this early period in the development of the world capitalist system, when financial and productive capital were internationally immobile, such transfers represented a most significant drain from the economies of developing countries. However, being a result itself of capital mobility, unequal exchange cannot simply be interpreted as a similar process to colonial transfer. Instead it is tied up with the historical development of capital mobility and with the historical development of the international division of labour. Thus the magnitude and direction of flow of unequal exchange will change through time, while its impact upon uneven development will be mediated by the historical progression of a new international division of labour - the changing location of productive and financial capital. It is this process of historical change that Emmanuel ignores, so that his theory is only capable of explaining a rigid pattern of uneveness, accentuated and crystallised by unequal exchange.

The development of social reproduction, and hence uneven development, in Marx's view of capitalism, is implicitly historical. The dialectic method of analysis specifically views the development of social relations as taking place through the contradiction between the classes of labour and capital. The law of the tendency of the rate of profit to fall explains how through accumulation capital defeats itself and only through successive periods of restructuring is it able to survive. (See for example Mandel, 1978; Shaikh, 1978; Wright, 1979.) The evolution of a new spatial division of labour can be viewed as one part of the restructuring process (Massey, 1978, p.115). The way in which capital mobility and industrial relocation may in this context be linked

historically to the incidence of crises has already been explained in section 3, with reference to the work by Bluestone and Harrison (1980).

Unequal exchange is a process that depends upon the historical development of capitalist accumulation. Without any previously given technological and spatial differentiation between sectors of production the geographical transfer of value through the medium of unequal exchange is impossible. Only once such a differentiation emerges therefore, can unequal exchange become a factor potentially important to uneven development. In like manner, the magnitude and impact of this transfer depends upon the tendency for the rate of profit to equalise, which may vary with crises and waves of accumulation and as capital's desire and ability to move fluctuates.

The sections that follow comprise a brief analysis of the historical development of international specialisation and of capital mobility, and the impacts of these developments upon unequal exchange.

4.1 International specialisation

The emergence of the capitalist mode of production in its embryonic stage depended upon the development of an alliance between capital and the landed classes, a situation that existed in Britain (Mandel, 1978, p.365). Non-capitalist formations elsewhere, for example in South America, provided disadvantageous conditions for the accumulation of capital. In this period (eighteenth and nineteenth centuries) certain specific functions were "assigned" (Amin, 1974, Vol.I, p.86) to those countries in which industrialisation was not taking place, functions that predominantly took the form of material suppliers. During the first round of capitalist expansion (1815 - 1840) much of this was American and Indian

cotton (Amin, 1975, p.4; Mandel, 1978, pp.345, 365) though until these independent social formations were fully integrated into the world market much of this "trade" was realised through direct plundering (Amin, 1974, Vol.I, p.87). It was in this manner that the international division of labour first emerged. So long as a higher organic composition of capital existed in the sectors of developing industry in the centres of capitalist growth than in the material supplying and as yet predominantly pre-capitalist branches in other countries, then the first condition for unequal exchange on an international scale was satisfied.

The growth of international unequal exchange would have a marked effect upon the terms of trade between countries. The cheapening of commodities produced in less-productive branches of industry with an equalisation of the rate of profit would be reflected through time as a worsening of the terms of trade for these branches, so long as they become relatively less productive than other branches during that period. Although unequal exchange is not the only factor that may affect the terms of trade in this way - various monopoly practices may contribute in a similar way - it nevertheless allows the use of measures of the terms of trade as a "gauge" (Mandel, 1978, p.345) of the growth of unequal exchange.

Although the first condition for unequal exchange (international specialisation in branches of different technology) developed through the nineteenth century, the terms of trade up until 1880 did not deteriorate at all (Mandel, 1978, p.346). Amin (1974, Vol.I, p.84) even suggests that they improved for the less developed countries as productivity increased in the developed countries. An absence of unequal exchange at this time corresponds with the lack of capital mobility, the second condition. Until 1880 international capital mobility was very limited.

4.2 The growth of capital mobility and unequal exchange

It was only after 1880 that capital exports from the "oldest centres of capitalism" (Amin, 1974, Vol.I, p.102) became really significant. At this time the development of imperialism as "the highest stage of capitalism" (Lenin, 1975) became evident. Export of capital becomes possible to those countries already drawn by commodity trade into the "capitalist intercourse". "The necessity for exporting capital arises from the fact that in a few countries capitalism has become "overripe" and (owing to the backward stage of agriculture and the impoverished state of the masses) capital cannot find a field for'profitable' investment" (Lenin, 1975, pp.73-74). Amin has collected a convincing range of figures that show a significant expansion of capital exports from Britain, France, Germany and the United States from 1880 onwards: for example $500 million from the United States in 1896, $1.5 billion in 1914, $18.6 billion in 1922 and $25.2 billion in 1933 (Amin, 1974, Vol.I, p. 102).

The development of financial capital mobility was a response to the higher rate of profit obtainable in the colonies and also a search for new markets for the produce of developed capitalist formations. The result for the colonies at this stage was not the development of accumulation for themselves, "for a substantial part of the surplus-value capitalistically produced in these countries was siphoned out of them back to the metropolitan countries, where it was either used to boost accumulation or distributed as surplus revenue" (Mandel, 1978, pp.344-345). The introduction of capital mobility provides the second condition for unequal exchange. It is not entirely clear however, to what extent the mobility of finance capital, synonymous with Palloix's money capital

was able to effect a tendency toward profit equalisation. Without meaningful empirical evidence it seems probable that the direct appropriation of surplus-value was still prevalent over the transfer of value through free-trade. "Although it is difficult to make statistical calculations, it is nonetheless clear that both before the First World War and in the inter-war period unequal exchange was quantitatively less important than the direct production and transfer of colonial surplus profits" (Mandel, 1978, p.345). Such a conclusion assumes that finance capital mobility was capable only of effecting a minor movement towards profit equalisation, resulting in only a small amount of unequal exchange.

The emergence of unequal exchange as a significant process can only be explained historically with the development of the third stage of capital's self-expansion, in Palloix's conception the internationalisation of productive capital (Palloix, 1977, p.11), this providing the means by which a substantial move towards profit equalisation may take place. The terms of trade which, according to Amin (1974, Vol.I, p.84), worsened for the developed countries until about 1880, subsequently improved. Mandel provides numerous sources of evidence (1978, p.346) showing a deterioration in the terms of trade to the detriment of the Third World of 40% between 1880 and 1938, and 68% for Latin America for the period 1928-65. Deterioration in the terms of trade for the Third World has been estimated at 19% for the period 1954 to 1965 alone.

Amin resorts to Prebish's explanation of this progressive deterioration in the terms of trade (Amin, 1974, Vol.I, p.84) in which the growth of monopoly capital towards the end of the nineteenth century is seen to have arrested the fall in prices in the capitalist countries

that resulted from technological advance. But with the high level of competition between multi-national capitals on the international market, it becomes problematic to use the emergence of monopoly capital as the sole explanation of this deterioration. Although it cannot be denied that monopoly practices are responsible for part of the worsening of the terms of trade for the Third World, unequal exchange must have contributed increasingly to this decline. Amin (1974, Vol.I, pp.58-59) estimates a transfer of value from "the periphery to the centre" in the order of $22 billion a year during the 1960's, in contrast with an income of $12 billion from private foreign capital investments in 1964 (Mandel, 1978, p.346). These figures have little substance since they are based upon assumed rather than measured organic capital compositions and rates of surplus-value. Empirical evidence presented in chapter 5 however, suggests that unequal exchange was responsible for far more than $22 billion of income in 1961, thus providing for the vast majority of value transfer at this time. A large amount of unequal exchange in the 1960's contrasts with what was probably an insignificant amount in 1880 before capital, particularly productive capital, became mobile internationally.

4.3 Emmanuel's ahistorical interpretation of unequal exchange

The previous section shows, at least theoretically, an historical development and intensification of the transfer of value through unequal exchange. It is this historical change, along with the development of capital mobility and its impact on uneven development that Emmanuel ignores.

Capitalist production originated first in certain discrete areas, forcing the role of material suppliers upon as yet pre-capitalist formations.

This "national" specialisation allows the development of a theory of unequal exchange between countries, the view to which Emmanuel subscribes. But this is only possible because the more advanced centres of accumulation and thus the location of technologically advanced sectors originally developed only in specific countries, production in colonial non-capitalist countries continuing at a low level of productivity. This international specialisation, in so far as it is continued today, is merely a remnant of processes that no longer exist. The development of the mobility of productive capital has now changed the relationship between capitalists of different nations and changes the dynamics of capitalist accumulation on a world scale.

The theory of unequal exchange as interpreted by Emmanuel and Amin, while quite applicable to a period prior to major international capital movements, has been catapulted into the present, in some way to take the place left by the relative decline of colonial control and appropriation, and imperialist siphoning of surplus-profits.

By placing the emphasis upon the process of circulation in this theory, Emmanuel fails to comprehend the impact of the very factor that is instrumental in causing unequal exchange - the internationalisation of productive capital. While unequal exchange is held largley responsible for a flow of value in one direction, the flow of value in the opposite direction that inevitably takes place through the transfer of productive capital to profitable locations in the Third World, and the impact that this has on development there, is ignored. Thus the ahistorical nature of Emmanuel's thesis which fails to acknowledge a change in capitalist development since the one-way value flow of the colonial period, results once more

in the exaggerated importance of unequal exchange in the explanation of uneven development.

5. Capital Export and The Falling Rate of Profit

Although it is argued in chapter 3 that capital has become increasingly more mobile, one part of capital, its control over the production process, has become more concentrated with the development of capitalism. "While centres of production have arisen in developing nations, centres of corporate strategy formulation and international finance have not. Particularly in light of the recent evolution of the corporation, this development bodes ill for the ability of the developing nations to control their own future" (Cohen, 1981, p.293). Cohen emphasises in this context the enhanced significance of centres such as London, New York and Zurich in the new world order. Decisions about the movement and relocation of capital are made in centres like these, far removed from the scene of production. This contributes further to the transient nature of development to which Walker (1978) refers. With greater concentration of control the needs and demands of labour become increasingly divorced from the level at which investment decisions are made (Bluestone and Harrison, 1980).

The distinction between indigenously owned capital and foreign owned capital in less developed nations is an important one. Two new questions raised by this distinction are briefly considered in this section. Firstly, what is the impact of profit repatriation by multinational corporations on developing economies? Secondly, what part of the export market of developing economies comes from multinational subsidiaries and what is

the effect of this upon unequal exchange? The distinction between the two types of ownership also gives rise to a distinction between two types of value transfer: direct profit repatriation and unequal exchange. It is argued that these correspond to two of Marx's counteracting influences to the tendency of the rate of profit to fall (Dobb, 1972). The correct way in which to interpret the impact of unequal exchange on rates of accumulation is as a cheapening of the elements of constant capital input to developed sectors. This more detailed analysis of the process of unequal exchange is an improvement on studies which merely refer to a transfer of value enhancing rates of accumulation (for example Becker, 1977).

Finally in this section it is argued that a monocausal theory of uneven development such as that proposed by Emmanuel is inappropriate. Theories of unequal exchange, while significant contributions to explanation in this field, are insufficient on their own.

5.1 Profit repatriation and multinational exports

It is inferred in the preceding sections of this chapter that while unequal exchange may cause a value transfer away from less developed areas, the relocation of productive capital actually plays a more important part in the changing pattern of development. Whether this is to the advantage or detriment of the locality to which this capital moves however, is questionable. For example, it has been argued by Amin (1974, Vol.I, p.117) that the repatriated profits of multinational capital far outweigh the sums originally invested in developing countries. In 1974 some $16 billion were repatriated by multinational corporations from developing nations compared with a $7 billion investment (Frank, 1980, p.30). As Frank

points out however, such figures may be misleading. Profits in one year do not simply correspond to investments in that year. Even if large profits are extracted by multinational capital, the stimulation of local industrial development may still be significant. For U.S. controlled manufacturing subsidiaries in Latin America in 1966, 82% ($5,369 m) of supplies for production was bought locally (Vernon, 1971, p.100), suggesting a substantial increase in local business as a result of multinational investment.

What impact the re-location of productive capital has upon unequal exchange is also a confusing issue. As we have already seen in chapter 3, the majority of industrialisation in the Third World is taking place with obsolescent equipment, not ultramodern machinery (Mandel, 1978, pp.368-369; Fenster, 1969). But is it true that commodities exported from Third World countries are produced in sectors with low organic compositions of capital? Amin argues that it is not. "The exports of the Third World are not in the main agricultural products from backward sectors with low productivity. Out of an over-all total of exports from the underdeveloped countries of $35 billion (in 1966), the ultramodern capitalist sector provides at least three-quarters, or $26 billion" (Amin, 1974, Vol.I, p.57). (Of course, if 75% of exports by price are from ultramodern sectors, this does not mean that 75% of the value of exports will be from ultramodern sectors.)

A distinction here should be made however, between exports from foreign owned capital and indigenously owned capital. Export sales by U.S. owned subsidiaries from Latin American in 1968 amounted to $750 million. This figure represented more than 40% of all Latin American exports of manufactured goods in that year (Vernon, 1971, pp.102-103). It is

logical to assume that these exports did indeed come from ultra-modern sectors of production, for while the usefulness of modern technology in production of commodities for domestic sale is generally limited by the small market size, there is every reason why multinational subsidiaries should produce commodities for export as efficiently as possible. Indeed the exports of U.S. controlled companies from Latin America in 1974 included office machines, telecommunications and motorcycles, all "products of industries...in which successful marketing required a relatively advanced degree of sophistication and control. Increasingly, the destination of (these) products have been the markets of advanced countries" (Vernon, 1971, p.104). This suggests that a sizeable portion of Third World exports from ultramodern sectors come from foreign owned subsidiaries, and therefore, that a sizeable portion of exports from indigenously owned capital in Third World countries, particularly in value terms, came from technologically backward sectors. Therefore, the majority of value extraction due to unequal exchange comes from indigenously owned production. In any case any unequal exchange that resulted from trade between a subsidiary and its parent company would be indistinguishable from the practice of transfer pricing. Such a value flow could quite easily be reversed by a capital transfer at the whim of the company concerned.

The transfer of value through unequal exchange between the indigenous capitals of different countries is a significant counter-acting influence to the tendency for the rate of profit to fall in the more developed trading sectors. This supplements the high rate of profit obtained by investment abroad by multinational corporations.

5.2 Two counteracting influences to the tendency for the rate of profit to fall

Two distinct sources of surplus profit for the capital of developed sectors can be indentified internationally. The first of these is through direct capital investment abroad where a higher rate of profit is available. The second comes through unequal exchange, the purchase of commodities at a price below their value. These two sources are directly comparable with two of the counteracting influences to the tendency for the rate of profit to fall to which Marx refers in Capital, Vol. III; foreign trade and the cheapening of the elements of constant capital.

The movement of capital abroad has two initial effects. Firstly, it is successful in earning a higher rate of profit there than if it had remained at home. This leads to a second development, a rise in the general rate of profit at home, resulting partly from a reduced competition between capitals, and partly, due to an increase in the reserve army of labour, from an increase in the competition between labours and thus an increase in the rate of exploitation (Dobb, 1972, pp.226-227). This is a process, entirely separate from unequal exchange, which results in a movement towards the equalisation of the rate of profit. But, in turn, this fall in the general rate of profit in the developing country and rise in the general rate of profit in the developed country, lead to a relative fall in the price of commodities produced in the less developed country. Unequal exchange results, the elements of constant capital imported from low productivity sectors in developing countries selling at a price below the amount of labour time put into their production. This represents a cheapening of the elements of constant capital.

By receiving constant capital and subsistence commodities cheaper than it could produce them, the more advanced country can further enhance its rate of profit, but this effect of unequal exchange is only secondary to and dependent upon the initial movement toward profit equalisation that results from foreign capital investment. The same is true, but in reverse, for inefficient sectors of production in developing countries which must purchase expensive machinery produced efficiently in developed nations. The impacts of these price variations are likely to be great upon development in countries with low-productivity indigenous sectors for while imports from the Third World to advanced countries represent 2 or 3% of their gross internal product, these exports represent 20% of the product of Third World nations (Amin, 1974, Vol.I, p.59).

The mass of the means of subsistence, which has been shown to be different for the same value of labour power in different countries due to general national variations in the productivity of consumer goods industries, represents a difference in the relative purchasing power of labour in different nations in comparison with an equal contribution in terms of hours of labour to the total product (Liossatos, 1980). Liossatos is quite correct when he points out that this has nothing to do with unequal exchange. The impact of unequal exchange in cheapening the means of subsistence is far less dramatic. In effect the import of cheapened means of subsistence by capitalists in developed countries allows the supply of the same mass of the means of subsistence as before but at a lower price, or similarly a greater mass of the means of subsistence but at the same price as before. This gives capital an enhanced position in the effort to reduce the cost of labour in developed sectors,

and to increase the rate of exploitation, a third counteracting influence on the rate of profit.

5.3 A multicausal theory of uneven development

It is in a constant effort to avoid crises arising from the contradictions of accumulation and reproduction that capital searches out new locations. In so doing capital is able to win a round in the class struggle with labour, at least temporarily disuniting labour economically, politically and ideologically. The movement of capital to nations where productivity is generally low, the reserve army of labour large and hence the rate of exploitation potentially high, results in a higher rate of profit than before. Unequal exchange, a secondary process resulting from a movement towards profit equalisation between sectors of different productivity implies a further movement towards profit equalisation through the cheapening of the elements of constant capital purchased by capitalists operating in productive sectors. It is a secondary process rather than a primary one in that its magnitude and direction are mediated by contradictions and tendencies inherent to the capitalist mode of production. Unequal exchange, interpreted as a counteracting influence is itself tied up with the development of productive forces.

Unequal exchange can never be responsible for lowering the rate of profit in less productive sectors below the rates of profit in more productive ones for long. Such a situation would induce a flow of capital in the opposite direction from before, reducing the amount and impact on the rate of profit of unequal exchange. So long as the level of the organic composition of capital is the primary determinant of the rate of profit, there can be no reason for the rate of profit in high

capital-intensive sectors to be higher than in low-capital-intensive sectors. Conditions for accumulation must always be more favourable in the latter than in the former, and we must therefore turn to factors other than unequal exchange for a primary explanation of uneven development.

Much of this chapter has concentrated on a criticism of a dependency-like interpretation of unequal exchange. Such is Emmanuel's interpretation and it emphasises unequal exchange as the primary process in the development of uneven development - a monocausal theory (1972, p.140). According to the interpetation in this chapter unequal exchange may provide an important counter to the tendency of the rate of profit to fall in technologically advanced sectors (and vice-versa) but it is nevertheless only one factor in the growth of uneveness in capitalism. "The geographic uneveness of capitalist development has many sources. Mono-causal theories are no more apt or in the spirit of Marx's analysis of capital - here than, for example in the case of crisis theory" (Walker, 1978, p.28).

The following four factors referred to below do not comprise an attempt to provide a definitive multi-causal theory of uneven development. There may be others. They are supposed however, to re-emphasise the weaknesses in Emmanuel's thesis by outlining various important factors that he does not consider. The first three are ignored by Emmanuel as a direct result of his dependency-like approach. The fourth is unequal exchange which, when included with the others is seen in its correct position as a contributory factor to uneven devlopment.

First, is the historical development of the capitalist mode of production in specific locations, the plunder of non-capitalist modes and the resulting imposition of an international division of labour. Although always changing, the pattern of uneveness at any one time is

partly determined by the development of previous patterns. The pattern of uneveness today owes much to the fact that capitalism first developed in Britain and Western Europe.

Second is the mobility of capital. This mobility has enabled capital, through the process of expansion, to use space to its advantage in the class struggle. At the same time it reduces the "identification of capital with the welfare of a given locale" (Walker, 1978, p.32). A new international division of labour is the result of this growth in the mobility of production and the restructuring of the world economy. This is a factor of change which Emmanuel fails to acknowledge as a result of his emphasis on exchange relations.

Third is the impact of pre-capitalist modes of production upon the process of accumulation. In pre-capitalist modes of production the need to accumulate for accumulations sake (for example) may be absent. Thus although surplus may have been produced in colonial and semi-colonial countries, this surplus may simply have been consumed unproductively (Mandel, 1978, pp.366-367). In these places "the extension of the capitalist mode of production continues to be motivated from without; this is a capitalism that spreads only to the extent allowed by an "international specialisation" in which the periphery remains passive" (Amin, 1974, Vol.I, p.177). The result of the existence of pre-capitalist modes therefore, is to reduce the drive towards autonomous productive accumulation, development being imposed from outside, or in, "a 'top-down' character based on decisions of national corporate capital to move into one locale or another, rather than a 'bottom-up' character based on regionally self-generated growth" (Walker, 1978, p.32).

Unequal exchange is the fourth factor. It further reduces the potential for regionally self-generated growth in less developed countries for it is primarily against indigenous capital that it operates; unequal exchange further reduces the rate of profit in less developed sectors and is a counteracting influence to the tendency for the rate of profit to fall in developed sectors.

Viewed in this manner unequal exchange is seen correctly as a contributory factor in a multi-causal theory of uneven development, not as the primary factor in a mono-causal theory. But the argument above is purely an economic one. The theory of unequal exchange also expresses a social relation, though not one that is separate from the economic relation for in Marxist theory they are totally related.

6. International Class Struggle

It is insufficient to talk of unequal exchange simply in terms of a transfer of surplus-value through trade, a transfer that may retard or enhance accumulation through its impact on the rate of profit. Many non-marxist economists agree (though many others don't) that the terms of trade have deteriorated for the raw-material producers of the Third World and that aid policies and tariff barriers further tap the resources of developing economies, restricting the potential for the growth of efficient and productive industry. The difference of a Marxist analysis is that it is a class analysis. Above all the transfer of surplus-value, a flow of value between trading capitalists, refers to a relationship between capitalist and labouring classes, an appropriation of time spent labouring in the production process. In the consideration of a single firm, the

relationship is expressed through the division of the working day between labour and capital and the struggle between these classes to obtain as large a part of the product of the working day as possible. Unequal exchange shows how, through the process of exchange, a part of the value created by labour is not only appropriated by the capitalist who owns the means of production in that firm, but another part may be taken by the capitalist who buys the product in the market. Though this may not be of direct detriment to labour, for the value of labour power is not directly reduced by this process, it nevertheless extends the relationship of exploitation and thus the direction in which class struggle should be concentrated, towards all capitalists. On an international scale labour in one sector in one country now has reason to struggle not only against the capitalist that owns the means of production, but also the capitalists in other countries who take part of the value of labours' creation for their own advancement.

As Marx is careful to point out, "The favoured country recovers more labour in exchange for less labour, although this difference this excess is pocketed, as in any exchange between labour and capital, by a certain class" (Marx, Capital, Vol.III, p.238). Nor, therefore, does labour that works within a high-capital-intensive sector benefit from trade with low-capital-intensive sectors, for the benefit is expressed as a higher rate of profit.

But just as in a purely economic study, unequal exchange as an expression of social relations takes on a secondary importance, for it depends upon a far wider reaching social development in the internationalisation of capital. The same is true here, that the internationalisation

of capital is not merely an economic development through history, but also a development in and extension of the class struggle to a world scale. The movement by capital, through the processes of expansion and centralisation, across spaces that cannot be traversed by labour, the continued removal of the capitalist class from the point of production even on a continental scale, and the resultant fetishisation of space: all these are amongst "the biggest barriers to class consciousness and organisation" (Walker, 1978, p.33). "The class struggle conducted by capital takes place throughout the world, and the proletariat can no longer ignore this fact" (Palloix, 1977, p.16).

Palloix's comment suggests the inherent link that exists between any Marxist analysis and a particular political stance. Indeed for Wright this link is the most important reason for carrying out any such analysis. "Above all, it matters for developing a viable social politics...how its (the working class) relationship to other classes is understood" (Wright, 1979, pp.30-31). Clearly the developing international class relationships outlined in this thesis suggest a social politics that will emphasise the international unity of labour in the class struggle.

CHAPTER 5

MEASUREMENT OF UNEQUAL EXCHANGE

1. Introduction

The theoretical basis of unequal exchange and its position within theories of uneven development, have been the major issues discussed in the preceding chapters. The existence of unequal exchange in reality rather than in theory is something which has only been shown by Amin (1974, Vol.I), Bill Gibson (1980) and Marelli (1981). The first of these suffers from a total lack of factual data, the second from an incorrect theoretical basis. Marelli's work is a significant advance, but is confined to an analysis of unequal exchange between regions in Italy.

Using the theoretical analysis provided in this thesis as a starting point, an attempt to show empirically the existence and magnitude of international unequal exchange is presented in this chapter. After a discussion about the relevance of empirical research to Marxist analysis, a method of value measurement derived from the work by Morishima (1973) and Marelli (1981) and using national input-output accounts, is proposed. The results of an analysis using the input-output tables of Canada and the Philippines, showing that exports from the Philippines fetch a price roughly one fifth that of Canadian exports of the same value, are given, though it is argued that the accuracy of these figures is limited by a series of major assumptions.

2. Empirical Analysis in Marxist Research

It was pointed out in the introduction to this thesis that Marx's method encompasses a two-way process between the concrete and the abstract. The categories that are used in abstraction are theoretically derived from an historical analysis of commodity production. This is the movement from the concrete to the abstract. Marx concentrates in Capital on the nature of the relationships between these theoretical categories, but he is also careful to relate the conclusions, drawn from this theoretical analysis, back to reality. Examples can be found in chapter ten of Capital, Volume I, in which Marx presents numerous illustrations of the extension of the working day in nineteenth century industrial England. This represents a movement back from the abstract to the concrete.

The formation of theoretical categories was largely completed by Marx, though he never finished examining the nature of the relationships between them. Much of the recent work on Marxist theory has been in an attempt to fill some of the gaps in this respect, for example in attempts to formulate Marxist theories of the state and theories of foreign trade. Chapters two and three of this thesis have been aimed specifically at providing a theory of international unequal exchange that is more consistent with Marxian categories than previous formulations. But in so doing only half of Marx's scientific method has been carried through. A return to the concrete is a necessary part of the analysis, and one which in the field of unequal exchange has as yet been done infrequently, and with a singular lack of success. As Sayer (1979) writes, "Both capital logic and Castells' approach share the deficiency of making claims about the concrete without adequate empirical research to supplement

abstract comments..." (p.40). In so far as theories of unequal exchange are a branch of "capital logic", they most definitely lend support to Sayer's comments, for they suffer from this deficiency.

2.1 Attempts at empirical research in unequal exchange

Three attempts to measure unequal exchange will briefly be considered: those by Amin (1974), B. Gibson (1980), and Marelli (1981). As far as I am aware no other attempts have been made, except by Wolff (1979) and Candela (1977), though both of these bear much resemblance to the work done by Marelli.

Amin (1974, pp.58-59) estimates the transfer of value through unequal exchange during the 1960's to be in the order of $22 billion a year. Mandel uses this figure as empirical support for the thesis that unequal exchange in late capitalism is far more important than the direct income from foreign investments in the Third World which amounted to only $12 billion in 1964 (1978, p.364). Amin's estimate is far from being empirical however. It is an estimate based on an assumed rate of profit of 15% everywhere, an equal organic capital composition in all sectors, and two countries with wage rates in one five times those in the other. The wage differences yield a rate of surplus value of 100% in one country and 900% in the other. None of these figures are empirically derived. Different figures could just as legitimately be used yielding completely different results. Mandel's use of Amin's rather meaningless estimate is misleading at best.

Some comment must be made on Bill Gibson's "attempt to asses the empirical relevance of unequal exchange" (1980, p.15), although his understanding of the term 'unequal exchange' is somewhat different from our own. The first thing that Gibson does is to extricate the theory

from what he calls, "the confusing and irrelevant environment of the labour theory of value" (1980, p.16). His empirical conclusions drawn from input-output data for Peru and the United States in 1963, show that if equal wages had been paid in both countries the "periphery" could have imported some 37.7% more of each commodity without increasing its exports. These conclusions are fairly useless in the context of this thesis, for they merely illustrate confusion over the difference between wages and the value of labour power and the independence of the wage factor. The adaption of a core-periphery framework in Gibson's analysis is a direct result of his abandonment of the labour theory of value.

The most useful work to date is that by Marelli (1981). He has successfully operationalised Morishima's model of a Marxian system using input-output data for regions in Italy. This method, using a Leontief-type system of inputs to all sectors of production, makes it possible to calculate the values of commodities, and subsequently the rate of surplus vale, the organic composition of capital for each sector, and the value rate of profit for each sector. This method is the one used in the empirical work to be presented below and will be explained and elaborated in detail. Wolff (1979) has also contributed a similar study, though his main concern is with the falling rate of profit in the United States, whereas Marelli's work is directly concerned with sharing empirically a geographcial transfer of value through unequal exchange.

While the work of Morishima and Marelli is viewed as a great advance in the development of Marxist analysis, it must be realised that the empirical measurement of Marxist categories is not always viewed as a legitimate operation. Sayer (1977, 1979) in particular has emphasised

the care that must be taken when attempting to measure theoretical categories in reality. The problem in the present analysis with this respect is in assuming the sectors in input-output tables to correspond with the sector as a theoretical category in Marx's analysis. Also the row for wages in the input-output tables is taken to represent the earnings of productive labour. There is little basis for assuming that the working class can so easily be defined. These problems are examined further in sections that follow.

2.2 Concrete Marxist research

Sayer's arguments about concrete Marxist research centre on three main types of analysis: 1) what he calls a "naming of parts", 2) the measurement of Marxist laws or tendencies, his views here differing markedly from Mandel's and 3) the measurement of value. Sayers initial dissatisfaction with early empirical Marxist work is that it amounts to little more than a "naming of parts". In this approach certain concrete phenomena are simply pidgeon-holed under certain pre-given theoretical headings (Sayer, 1979, p.37). Attempts to categorise individuals as members of particular classes, though potentially important in the formation of a political stance (Wright, 1979), may be interpreted as an example of a "naming of parts"type study. (See Duncan and Ley, 1982, pp.47-48, for an example of this view.)

Sayer is equally dubious about attempts to show Marxist laws empirically. As we have seen, all Marxist laws are portrayed merely as tendencies, so that "they have a 'transfactual status' whereby they may operate in most situations without being revealed at the empirical level" (Sayer, 1977, p.1). This is not a weakness of value theory, but its

very strength, for it reveals a social relation within capitalist production that is concealed by prices. Thus the tendency for the rate of profit to fall is a law that expresses a social relation in production, and need not necessarily be evident at the empirical level. If no fall in profits should be found empirically over a period of say 100 years, this does not mean that the tendency does not exist as a social relation, but only that the counter-acting tendencies have overcome it during this period. Calculations of the rising organic composition of capital encounter similar problems, but "some would argue (controversially) that this is a necessary tendency which can be deduced from more basic elements of marxist theory" (Sayer, 1979, pp.40-41). There exists theoretically therefore, a law which states that the rate of profit in capitalist production must fall, but over a given period of time the development of social relations may determine that it shouldn't. The expansion of foreign trade is just one counter-acting factor that may obscure in reality the operation of the law.

Mandel takes a different point of view when he writes that "tendencies which do not manifest themselves empirically are not tendencies at all" (Mandel, 1978, p.20). From one standpoint he may be correct, for if in reality the rate of profit never falls (in the long run) there seems little point in paying much attention to an abstract law that says it will. "As soon as laws of development come to be regarded as so abstract that they can no longer explain the actual process of concrete history, then the discovery of such tendencies of development ceases to be an instrument for the revolutionary transformation of this process" (Mandel, 1978, p.20). Unfortunately, Mandel appears to correlate the empirical manifestation of a law with its ability to explain the actual process of concrete history.

This is not a valid conclusion for data may show no fall in the rate of profit, because either 1) the tendency does not exist or 2) the counteracting influences were sufficient over this period to obscure the operation of the law in reality. If it is the latter then we are still left with a powerful explanatory law, but a great problem in showing its operation empirically.

A rather different problem is that of quantifying value, an abstraction (as distinct from laws, which are tendencies). Sayer also questions whether this can be done. There seems no doubt however, that the input-output models developed originally by Leontief (1966) and adapted for use in calculating Marxian values first by Cameron (1952) and then in far more detail by Morishima(1973) provides us with a method that might estimate them accurately This method is most applicable to the measurement of unequal exchange, for though dependent upon the tendency for the rate of profit to equalise, unequal exchange is not a tendency in itself. All that is necessary for unequal exchange to take place is that sectors of different organic composition of capital should exist and that there should be sufficient capital mobility to provide for a movement towards profit equalisation. Indeed unequal exchange will only cease altogether after a long period of capital immobility when profit rates fall back to a situation in equilibrium with particular organic compositions of capital and rates of surplus value, the position illustrated in Figure 2.2. We may expect unequal exchange always to be taking place, though in different magnitudes in different historical periods, and its measurement should thus present no problem.

The measurement of unequal exchange, using input-output data for the economies of Canada and the Philippines in 1961 using the method

developed by Morishima is presented below. The reasons for carrying out such an analysis are as follows. Firstly it provides the link between the abstract theory executed in the previous chapters of this thesis, and reality (at least empirical reality). Mediation between abstraction and the historical development of reality is a necessary process in the modification and development of theory. The measurement of unequal exchange in reality provides the support necessary to develop a consistent theory of foreign trade over 100 years after Marx. Secondly the measurement of unequal exchange gives relative significance to the process as a counteracting influence to the tendency for the rate of profit to fall. One cannot talk in abstract terms about the importance of different counteracting influences without evidence of their effect in reality. If a viable social politics is to be formulated which encourages concentration of the class struggle at significant points, it is important to know which are the most significant processes utilised by capital. If unequal exchange is shown to be a significant counteracting influence to the tendency for the rate of profit to fall, a weapon against periodic crises in capital accumulation, and therefore, a significant factor in the explanation of uneven development, then problems associated with capital mobility and the disunity of an immobile international work force become important areas of attention for working class struggle in reality. Attempts by Amin (1974) and B. Gibson (1980) to show the significance of unequal exchange are of limited use. The analysis presented below provides concrete empirical evidence of a significant flow of unequal exchange between less developed sectors in underdeveloped countries, and developed sectors in developed countries.

It should be remembered however, that the conclusions drawn from such an analysis are limited by the specific historical period to which it is relevant. Unequal exchange itself may fluctuate with time. The other categories that will be measured (rate of surplus value, rate of profit and organic composition of capital) are all associated with tendencies in Marxist theory, but nothing can be said empirically about these tendencies over such a short time period. A series of such studies may provide sufficient evidence to suggest empirical support for these laws. (The inclusion of such measurements in this study is meant only to provide some support for the theoretical argument that it is different organic compositions of capital that are the cause of inter-sector transfers of value.)

3. The Use of Input-Output Analysis in the Calculation of Value

Wassily Leontief (1966) first introduced the idea of using input-output accounts in economic analysis. His main purpose was to carry the science of economics away from its dependence on "professional intuition and sound judgement to establish the connection between the facts and the theory of economics" (p.14). Input-output accounts, a system that charts the total commodity inputs of a regional or national economy, provided the means by which economists could handle with relative ease the massive amount of data required in their scientific analysis. (An example of an input-output table appears in Figure 5.1.

This system was put to major use in economic forecasting and the planning of future input requirements. Nevertheless, it was pointed out as early as 1952 by Cameron that this system had potential for the

calculation of value. Cameron suggested that from an input-output account the equilibrium levels of output and price of commodities could be deduced. One of the results of this is that "the price of commodity i relative to that of labour is equal to the amount of labour time required for its production" (Cameron, 1952, p.193). This statement implies that wages are the independent variable, a deducation that cannot be derived by the use of input-output accounts alone. The important aspect is that this system allows the measurement of commodity values in terms of the hours of labour put in to their production. Yet it was not until 1977 that Morishima put this idea into a form that could be handled empirically.

3.1. Morishima's definition of value

Presented here is a simplified version of Morishima's model.

Imagine an economy in which two commodities are produced; corn (commodity 1) and iron (commodity 2). In order to produce corn a certain amount of corn is required, a_{11} (amount of corn required to produce a unit of corn), an amount of iron is required, a_{21} (amount of iron required to produce a unit of corn) and an amount of labour is required, ℓ_1 (amount of labour required to produce a unit of corn). The units of corn and iron may be bushels and tons, the units of labour are hours of socially necessary labour time. Now if the value of a unit of corn is λ_1 , and of iron λ_2 , then the value of corn may be expressed as follows;

(1) $$\lambda_1 = a_{11}\lambda_1 + a_{21}\lambda_2 + \ell_1$$

The elements of constant capital here are represented by the value of

material inputs, $a_{11}\lambda_1 + a_{21}\lambda_2$, and the elements variable capital and surplus value by ℓ_1 . Equation (1) may be simply expanded to apply to an economy that produces n commodities:

(2) $$\lambda_1 = a_{11}\lambda_1 + a_{21}\lambda_2 + \ldots\ldots + a_{n1}\lambda_n + \ell_1$$

and similar equations can be written to calculate the value of all commodities in the economy:

(3) $$\lambda_j = \sum_i a_{ij}\lambda_i + \ell_j \qquad i = 1,\ldots\ldots,n$$

We now have a series of equations

$$\begin{aligned}
\lambda_1 &= a_{11}\lambda_1 + a_{21}\lambda_2 + \ldots\ldots + a_{n1}\lambda_n + \ell_1 \\
\lambda_2 &= a_{12}\lambda_1 + a_{22}\lambda_2 + \ldots\ldots + a_{n2}\lambda_n + \ell_2 \\
&\quad\vdots \qquad\quad \vdots \qquad\qquad\quad \vdots \qquad\quad \vdots \\
\lambda_n &= a_{1n}\lambda_1 + a_{2n}\lambda_2 + \ldots\ldots + a_{nn}\lambda_n + \ell_n
\end{aligned}$$

which when solved simultaneously will provide values $(\lambda_1 ,\ldots,\lambda_n)$ for all commodities produced in the economy.

Expressed in matrix form these equations appear as

$$\begin{pmatrix} \lambda_1 \\ \lambda_2 \\ \vdots \\ \lambda_n \end{pmatrix} = \begin{pmatrix} a_{11} + a_{21} & \cdots & a_{n1} \\ a_{12} + a_{22} & \cdots & a_{n2} \\ \vdots \quad\; \vdots & & \vdots \\ a_{1n} + a_{2n} & \cdots & a_{nn} \end{pmatrix} \begin{pmatrix} \lambda_1 \\ \lambda_2 \\ \vdots \\ \lambda_n \end{pmatrix} + \begin{pmatrix} \ell_1 \\ \ell_2 \\ \vdots \\ \ell_n \end{pmatrix}$$

or simply

(4) $$\underset{\sim}{\lambda} = \underset{\sim\sim}{A}\underset{\sim}{\lambda} + \underset{\sim}{L}$$

Now solving for λ:

$$(\underset{\sim}{I} - \underset{\sim}{A})\underset{\sim}{\lambda} = \underset{\sim}{L}$$

$$\underset{\sim}{\lambda} = (\underset{\sim}{I} - \underset{\sim}{A})^{-1}\underset{\sim}{L} \tag{5}$$

However, the input-output tables for national economies do not appear in a form that is immediately translatable to the Morishima system. Inputs and outputs appear as prices rather than bundles (tons, bushels or otherwise) of goods, and are reported in gross form rather than as units input per unit of output. The labour element is expressed as money wages. Instead of equations in the form of (2) therefore, the data in input-output accounts appear as

$$T_j = \sum_i P_{ij} + w_j + s_j \qquad i = 1,\ldots,n \tag{6}$$

where

T_j = total price of output of commodity j

P_{ij} = total price of inputs of commodity i into production of commodity j

w_j = wages of labour used to produce total output of commodity j

s_j = various elements of surplus resulting from the sale of total output of commodity j

The major methodological problem therefore is to manipulate the data that appear in national input-output accounts so that they can be used in the calculation of values as proposed by Morishima. In order that this may be done a series of seven operations must be carried out. These will be considered in order as follows:

i) The conversion of prices to bundles of goods.
ii) The calculation of hours of labour input from wage data.

iii) The distribution of fixed capital inputs.
iv) Estimation of the values of imported commodities.
v) Sector aggregation.
vi) The exclusion of sectors which do not produce value.
vii) The assumption of equal prices.

It is the form in which the input-output data appear that presents many of the problems encountered in making them suitable for use in the Morishima system. In order that the reasons for carrying out these operations should become clear therefore, the data sets chosen for analysis will first be presented.

3.2 Data choice and data characteristics

The primary objective was to choose data from two countries, one of which might be expected to contain a large number of technologically advanced sectors - a developed nation - and one that might be expected to contain a large number of technologically backward sectors, an underdeveloped country. The choice of two countries which are likely to have production sectors at significantly different levels of technological advancement will yield the most satisfactory results in terms of illustrating a significant intersector transfer of value through unequal exchange.

The choice of particular nations depended largely upon the availability of data. Canada was an obvious choice. Input-output tables are available for the economy of Canada from 1960, and for every subsequent year (Statistics Canada, 1979), so this made it relatively easy to find data from a corresponding year for an underdeveloped country. (Input-ouput tables for those underdeveloped countries that produce them are not normally produced on a yearly basis. See the bibliography of known input-output accounts in: United Nations, 1973, pp.160-162.)

An input-output table for India was easily obtained, (Saluja, 1968) but these data proved unsuitable Only 67% of the Indian economy is covered by this table, which is produced for 1964-65, but in 1960-61 producers prices. Nor does it include a clearly defined wage sector.

The input-output accounts for the Philippines (Office of Statistical Coordination and Standards, Manila, 1969) proved to be both the most easily obtainable, and the most suitable to work with. Produced at 1961 producers prices, this table covers the entire Philippines economy, and does include a clearly defined wage sector. In addition sector aggregation in the Philippines accounts is on the basis of International Standard Industrial Classification, as is the sector aggregation in the Canadian accounts, thus making comparison and the valuation of imports to the Philippines relatively easy.

A detailed explanation of the data sources and estimation methods used can be found preceding each table in the references mentioned. A description of the commodities aggregated within each sector is available in the International Standard Industrial Classification Manual (Dominion Bureau of Statistics, 1960).

The general form taken by the accounts for both countries is the same, and can be summarised with reference to Figure 5.1. This figure is designed to give only a general idea of the table structure, there being three main matrices: 1) The industry input-output matrix, 2) the final demand matrix and 3) the matrix of primary inputs. Not all the sectors of final demand and primary input have been included. For example the Canadian accounts also provide four divisions of domestic consumption, two divisons of Government services, and two divisions of business services,

Outputs from ↓ / Inputs to →		Industry input-output matrix				Final demand matrix				Total input
		1	2	3	n					
	1	P_{11}	P_{12}	$P_{13}\cdots\cdots$	P_{1n}	k_1	d_1	m_1	e_1	T_1
	2	P_{21}	P_{22}	$P_{23}\cdots\cdots$	P_{2n}	k_2	d_2	m_2	e_2	T_2
	3	P_{31}	P_{32}	$P_{33}\cdots\cdots$	P_{3n}	k_3	d_3	m_3	e_3	T_3
		⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
	n	P_{n1}	P_{n2}	$P_{n3}\cdots\cdots$	P_{nn}	k_n	d_n	m_n	e_n	T_n
Wages		w_1	w_2	$w_3\cdots\cdots$	w_n					
Surplus		s_1	s_2	$s_3\cdots\cdots$	s_n					
		Primary input matrix								
Total output		T_1	T_2	$T_3\cdots\cdots$	T_n					

Where P_{ij} = price of total input of i into industry j

w_j = total wage bill of industry j

s_j = operating surplus (profit) in industry j

k_i = total price of goods produced by industry i consumed as fixed capital formation

d_i = total price of household consumption of goods produced in industry i

m_i = total price of industry i type goods imported

e_i = total price of exports from industry i

Figure 5.1 Example of the general form taken by the input-output accounts for Canada and the Philippines

while both countries provide information on inventory change and re-exported commodities. A sector of taxation is included in the primary inputs matrix of both sets of accounts. A complete break-down of industrial sectors 1 to n for both countries appears in Appendix B.

It should be noted that in the majority of input-output accounts the total inputs to each sector are identical in price to the total outputs of each sector. This is the case with the Philippines' accounts, but not with those for Canada. The difference stems from the fact that the main matrix in the Canadian accounts is not an industry-industry matrix, but a commodity-industry matrix. In other words, the input sectors are listed by commodity, not by industry, so that one commodity type that may be a product of two different industry sectors will appear in the same input row. In this system two tables are required, one commodity input table, and one commodity output table. The commodity input table for Canada is used in the analysis. The output table gives information on the industry sources of different commodities, and provides an almost perfectly diagonal set of data. In other words the majority of commodities of a particular type came from the same industrial sector. This suggests a negligible error as a result of assuming commodity rows to be the same as industry rows in the input table.

The axes on the input-output accounts are opposite to the axes of the matrices in the Morishima system. It is necessary therefore, to transpose the input-output matrix prior to value calculation. However, before these data are inserted into the value (or Morishima) matrix, a number of alterations have to be made.

3.3 Data manipulation

As they appear in the input-output accounts of Canada and the Philippines, the data are not in a suitable form to be inserted in the value matrix equation (5). Extensive alterations have to be made on the basis of various assumptions. These are dealt with in the following seven sections.

3.3.1 The conversion of prices to bundles of goods

In input-output accounts the sector industry inputs appear as gross prices. The Morishima system however, deals with bundles of goods, so that the value is calculated of a ton of coal, a bushel of wheat, metres of cloth or dozens of eggs. Conversion from dollars (or in the case of the Philippines from pesos) to bundles of goods would require an enormous amount of information on prices of commodities at the time for which the accounts were compiled. In addition, the majority of sectors would realise compatability problems, as for example in the case of farm produce where numerous different units may apply to various commodities in that category. It would be impossible to separate and calculate the values of all commodities, many of whose inputs, including labour, are listed jointly. This is a problem with regard to linking theory with reality. Marx's category "sector" properly refers to the production of individual commodities. The production of eggs is a different sector from the production of beef. In the input-output accounts these sectors are inseparable. They are often produced by the same firm (or farm) and the same labour may be used in the production of both commodities, but at varying times during the day.

These two problems (compatability between prices and bundles and between commodities in one input-output sector) can only be surmounted by using the following assumptions. Firstly a sector in the input-output accounts (say agricultural produce) is assumed to be the same as a sector in Marxist terms. Secondly one dollar (or one peso) is assumed to represent a given amount of goods. The second assumption requires elaboration.

Since each commodity has a price it is possible to say that a ton of coal is equal to for example \$10. Equally \$1 is equal to one tenth of a ton of coal. One unit of agricultural produce may be equal to \$5, so that \$1 is equal to one fifth of a unit of agricultural goods. It is now possible to talk of the value of a dollar's worth of commodity i ,

$$\lambda_i^* = \frac{\lambda_i}{p_i} \tag{7}$$

where λ_i^* = value of i in hours per dollar

λ_i = value of i in hours per unit

p_i = price of i in dollars per unit

Using the asterisk (*) after Marelli (1981) to designate the input-output system in money terms, we can now show the relationship in (7) as follows :

$$a_{ij}^* = a_{ij} \frac{p_i}{p_j} \tag{8}$$

where a_{ij}^* = dollars of i put into production of a dollar of j

Now from (3) we have

$$\lambda_j = \sum_i \lambda_i a_{ij} + \ell_j \qquad i = 1,\ldots,n$$

$$\frac{\lambda_j}{p_j} = \sum_i \frac{\lambda_i a_{ij}}{p_j} + \frac{\ell_j}{p_j}$$

$$\lambda_j^* = \sum_i \frac{\lambda_i}{p_i} \frac{p_i}{p_j} a_{ij} + \frac{\ell_j}{p_j}$$

$$\lambda_j^* = \sum_i \lambda_i^* a_{ij}^* + \ell_j^*$$

where $$\ell_j^* = \frac{\ell_j}{p_j} = \frac{\text{hours input per ton output}}{\text{price in dollars per ton}}$$

$$= \text{hours input per dollar output}$$

The actual data in the input-output table show the total price of labour inputs, w_j , not hours input per dollar output. So ℓ_j^* is estimated as

(10) $$\ell_j^* = \frac{w_j}{T_j \omega}$$

where ω = wage rate in dollars per hour

T_j = total dollars j produced

w_j = total dollars labour input to sector j

Similarly a_{ij}^* = dollars input of i per dollar output of j

but P_{ij} = total dollars of i put into total j produced

so a_{ij}^* is given as :

(11) $$a_{ij}^* = \frac{P_{ij}}{T_j}$$

The same operation must be carried out for k (inputs of fixed capital) in the input-output accounts (see Figure 5.1) :

$$k_i^* = \frac{k_i}{T_i}$$

We now have a set of equations such that

$$\lambda_j^* = \sum_i \lambda_i^* a_{ij}^* + \ell_j^* \qquad i = 1,\ldots,n \tag{12}$$

which can be solved simultaneously as

$$\underset{\sim}{\lambda}^* = (\underset{\sim}{I} - \underset{\sim}{A}^*)^{-1} \underset{\sim}{L}^* \tag{13}$$

By solving equation (13) the results will now be in the form of : value in hours per dollar of output for commodity j , for all j = 1,....,n . The problem of incompatibility between prices in the input-output accounts for Canada and the Philippines and bundles in Morishima's value system has been solved.

3.3.2 The calculation of hours of labour input from wages data

The category of simple socially necessary labour time is an abstraction from reality that Marx adopts. It is an abstraction that is central to all Marxist laws. The term 'simple' refers to a reduction of all labour types to a single level, so that an hour of labour by any worker is regarded as having the same value as any other worker, however skilled he may be. The term 'socially necessary' refers to the amount of labour required to work the average technology in a given sector. Thus if a particular company works with an out-dated technique that requires a larger work-force per unit of product than the average in that sector, then the extra labour used is deemed to be socially unnecessary and therefore not contibutary of value.

The data in the input-output accounts simply appear as 'wages

and salaries' in the Canadian accounts and 'compensation to labour' in the Philippines'accounts. No detail is supplied on skill levels or technology variations within sectors. Though these data are no doubt available in some form, at least for Canada, it would be an extremely laborious task to extract and utilise them properly. How different skill levels would be treated, for example, in terms of relative value is by no means clear. There is no precedent for measuring the contribution of a doctor's labour relative to that of a construction worker.

In order to overcome this problem, two assumptions must be made. The first is that all sectors use an average technology. This presents no problem, for while those firms that use a low technology use socially unnecessary labour, the advanced firms use less labour than is socially necessary. The second assumption refers to skill levels in different sectors. Braverman (1975) has shown that skill levels in industry fall with technological development, though Clark (1981) has shown that highly technologically developed industries remain in advanced regions (at least during the period in which new technology is being perfected) because of the highly skilled types of labour there. Exactly what type of skill distribution exists in different sectors is not clear. This problem can be overcome by assuming the higher wages paid to highly skilled workers to represent the extra value that they add. Therefore a worker who is paid twice as much as another worker is judged to have added twice as much value. If Becker's view of premium payments to skilled labour (1977, p.179) (that over-payments made to skilled workers keep labour divided) is adhered to then this assumption will inevitably lead to the overesti-

mation of the value contribution of skilled labour. Nevertheless, without detailed information this is the most reasonable estimate that can be made.

These two assumptions together allow the use of a single average national wage rate in terms of dollars (pesos) per hour in the estimation of ℓ_j^* . Obtaining such a figure however is not easy and presents further problems. In the case of Canada for example the average hourly wage in 1961 was $2.13 in the mining sector but only $1.07 in the service sectors. In Newfoundland the average wage was $1.71, in British Columbia $2.23 and in Saskatoon $69.67 per week, in Sarnia, Ontario, $101.28 per week (Canada Dominion Bureau of Statistics, 1963, pp.722-724). The average monthly wage in agriculture during 1961 was $167 , which, assuming a four week month, yields a relatively low weekly wage in this sector of $42 . While the average hours worked per week in non-agricultural sectors in Canada were 40.6 , no information was available for agricultural sectors (International Labour Office, 1967).

The data available are not conclusive. For example the adoption of $2.00 as an average hourly wage rate in Canada probably over estimates the agricultural wage by somewhere in the region of 100% . The result is that only a half of the agricultural labour force, in terms of hours of labour performed, will be included in the calculation of the value of agricultural goods. Alternatively an agricultural worker, being less skilled than others, adds half the value of an average worker in the same amount of time. A check on the average wage using an assumed average 40 hour week in Canada, a 48 week year, the total size of the labour-force (those holding full time employment) at just over 6 million (Can-

ada Dominion Bureau of Statistics, 1963) and the total Canada wage bill of just over $21 billion dollars from the input-output accounts, yields an average hourly wage of $1.9997 . On this basis $2.00 was adopted as the average hourly wage in Canada in 1961 and was used in equation (10) as ω to estimate ℓ_j^* . Nevertheless the need to use an average national wage rate limits the accuracy of the empirical work presented in this chapter. A test of the magnitude of error is presented in section 5.1 .

This problem is an even greater one with respect to the Philippines. The best data available for the Philippines give an average yearly wage of 2,028 pesos in non-agricultural sectors, and an approximate average of 50 hours per week worked. Assuming a working year of 50 weeks, this yields an hourly wage rate of 0.81 pesos. There are no data on agricultural sector wages or hours worked until 1971, when the rate of 3.55 pesos per hour compared closely with rates in other sectors at that time (International Labour Office, 1967, 1975). Using the same check as with Canada, the total labour force over age 10 being 9.25 million, assuming a 50 hour week and a 50 week year, the total wage bill on the input-output accounts being just over 5.5 billion pesos, the average hourly wage is only 0.25 pesos per hour. Nevertheless, it would appear that the labour-force figure of 9.25 million (International Labour Office, 1967) refers to everybody who works, or is available to work. The estimated labour force in 1965 for example, of 11.2 to 11.8 million, included between 918,000 to 967,000 unemployed and 1.8 to 1.9 million who were underemployed; i.e., working about half the time (Escultura, 1974). "Furthermore, extrapolating from available data, we estimate that, in addition to the unemployed and underemployed labour

force, there are about 8.6 million farmers and members of their families helping in farm operations who work only four months out of the year" (Escultura, 1974, p.54). It would seem likely therefore that of the reported agricultural and fishery labour force of 5.565 million in 1961, (International Labour Office, 1967) a figure that includes all workers of age 10 and over, a large proportion worked for only a short period of time. It is concluded that an hourly wage of 0.81 pesos provides a more accurate estimate than 0.25 pesos per hour from which to calculate the amount of labour applied to production in each sector of the Philippine economy. This figure, 0.81 , was used as ω in equation (10) for the estimation of ℓ_j^* for the Philippines.

3.3.3 The distribution of fixed capital inputs

Fixed capital formation is not included in the industry input-output matrix, but as a separate column in the final demand matrix. This means that although information regarding the amount of output from each sector consumed as fixed capital formation (this is a large figure in the case of construction, non-existent in the case of agricultural produce for example) is available, no information about sectors in which formation takes place is supplied. Yet fixed capital formation is clearly a major part of constant capital input, and must be included in the value matrix.

Information on how fixed capital input is distributed amongst sector columns is not available. It can only be assumed therefore that capital formation in each sector is proportional to yearly use of inputs. Thus the total fixed capital formation of commodity i is distributed such that

$$(14) \qquad k_{ij} = k_i \frac{P_{ij}}{\sum_j P_{ij}} \qquad j = 1,\ldots,n$$

This further implies that fixed capital formation for the year to which the input-output table refers is used up in that year. This is clearly not the case, though at the same time the input-output table fails to take account of fixed capital formation in previous years which is still contributing value to the production of commodities in the year to which the table refers. For an economy experiencing zero growth this assumption presents no problem, for the total fixed capital formed in one year will be the same as the amount used up. Consider however an economy experiencing a rate of growth of 3% say, with an average life of fixed capital of 10 years. In this case with fixed capital on average being about 4.5 years old, the amount of fixed capital formation in any one year will be about 15% greater than the amount used during that year. According to the input-output table for Canada, fixed capital formation accounts for some 12% of capital inputs (in price terms and excluding all elements of the final demand matrix from total capital inputs) during the year. Thus on the basis of the above assumptions on rate of growth and life of fixed capital the error on the amount used up in one year is in the order of 1.8% (12% of 15%), a negligible amount.

Equation (12) can now be re-written as :

$$(15) \qquad \lambda_j^* = \sum_i \lambda_i^*(a_{ij}^* + k_{ij}^*) + \ell_j^* \qquad i = 1,\ldots,n$$

3.3.4 Estimation of the values of imported commodities

Commodities imported appear as a column in the final demand matrix on the input-output accounts. Unlike the fixed capital format-

ion however, these figures are already included in the industry-industry input-output matrix, though once again their distribution is not known. For example if $1 million worth of transport equipment was imported, $3 million worth being produced and consumed at home, then all $4 million worth are included in the industry input-output matrix and in household and government consumption, but the sector input distribution of imports within this consumption is not given. In other words P_{ij} , k_i and d_i (see Figure 5.1) already include elements of m_i . Yet because they are imported, the values of all commodities m_i are not known.

Since 84% of Canadian imports are from other developed nations (United Nations, 1963),(the definition of developed used here is based on the list of developing countries in special table N, United Nations, 1980) the assumption is made that the the values of all Canadian imports (10% of gross domestic consumption) are the same as the values of commodities produced in Canada. Once again this assumption is one that may take us far from reality. There is no guarantee that imports from other 'developed' nations will necessarily come from sectors with high organic compositions of capital, nor that imports from'underdeveloped' countries will come from sectors with low organic compositions of capital. Nevertheless, without any prior information regarding the values of foreign produced commodities, the assumption that their values are the same as Canadian produced commodities is the only one that it is possible to make.

In the case of Canada therefore, no alteration need be made to the industry input-output matrix in respect of imports.

The Philippines however, also import a large proportion (90%)

of goods from developed countries (United Nations, 1963, 1980). The value of commodities imported by the Philippines therefore has been assumed to be equal to the value of the same commodities produced in Canada. Since imports are already included in the other elements of the industry input-output matrix and the final demand matrix, they must first be extracted from these elements. The original import input distribution is not known, so the elements m_{ij} are calculated in a similar manner to the elements k_{ij} :

$$m_{ij} = m_i \frac{P_{ij} + k_{ij}}{\sum_j (P_{ij} + k_{ij}) + d_i} \qquad j = 1,\ldots,n \tag{16}$$

The elements m_{ij} must then be extracted from equation (15)

$$\lambda_j{}^{*A} = \sum_i \lambda_i{}^{*A}(a_{ij}{}^* + k_{ij}{}^* - m_{ij}{}^*) + \ell_j{}^* \qquad i = 1,\ldots,n \tag{17}$$

where $\lambda_j{}^{*A}$ = value of one pesos'worth of commodity j produced in country A (the Philippines)

and then mutiplied by the commodity value in Canada (which is already known) and re-added to equation (17)

$$\lambda_j{}^{*A} = \sum_i \lambda_i{}^{*A}(a_{ij}{}^* + k_{ij}{}^* - m_{ij}{}^*) + \ell_j{}^* + \sum_i \lambda_i{}^{*B'} m_{ij}{}^* \tag{18}$$

where $\lambda_i{}^{*B'}$ = value of one peso's worth of commodity i produced in country B (Canada)

The rate of exchange used in these calculations is 2.75 pesos to $1 (International Monetary Fund, 1962) so that it can also be said that

$\lambda_i^{*B'}$ = value of \$0.36 worth of commodity i produced in Canada

where λ_i^{*B} = value of \$1 worth of commodity i produced in Canada

Equation (2) can also be re-written as follows;

$$(19) \quad \lambda_1^{*A} = (a_{11}^* + k_{11}^* - m_{11}^*)\lambda_1^{*A} + (a_{21}^* + k_{21}^* - m_{21}^*)\lambda_2^{*A} \ldots\ldots + (a_{n1}^* + k_{n1}^* - m_{n1}^*)\lambda_n^{*A} + \ell_1^* + m_{11}^*\lambda_1^{*B'} + m_{21}^*\lambda_2^{*B'} \ldots\ldots + m_{n1}^*\lambda_n^{*B'}$$

so that equation (4) becomes

$$(20) \quad \underset{\sim}{\lambda}^* = \underset{\sim}{A}^*\underset{\sim}{\lambda}^* + \underset{\sim}{L}^* + \underset{\sim}{M}^*$$

and equation (13) becomes

$$(21) \quad \underset{\sim}{\lambda}^* = (\underset{\sim}{I} - \underset{\sim}{A}^*)^{-1} (\underset{\sim}{L}^* + \underset{\sim}{M}^*)$$

where $\underset{\sim}{M}^*$ is the matrix of all $(m_{ij}^*\lambda_i^{*B'})$'s . (Note that $\lambda_i^{*B'}$ is already known.)

3.3.5 Sector aggregation

Because the matrix $(\underset{\sim}{I} - \underset{\sim}{A}^*)$ must be inverted, matrix $\underset{\sim}{A}$ must be a square matrix. In the case of the Philippines this presents no problem as the industry columns correspond with and are identical to the industry rows. With the Canadian input-output accounts however this is not the case. The output rows consist of 94 commodity classes, whereas the input columns consist of only 43 industry classes. It is possible however, using the detailed information on the original aggregation systems, to aggregate the commodity rows so that they correspond to the industry columns. (See Statistics Canada, 1979, for detailed aggregations for the Canadian input-output accounts.) In certain cases particular commodity

types were found to originate from more than one industry, in which cases the industry classes concerned were also aggregated. The original industry-commodity aggregations and final industry-commodity aggregations are listed in Appendix B. The final size of matrix $\underset{\sim}{A}$ for Canada is 28 rows by 28 columns, reduced from 94 rows and 43 columns.

The original input-output matrix for the Philippines is square, amounting to 50 rows and 50 columns. In order to make this matrix easier to handle, and to make the value of outputs from each country easier to compare, it was reduced to 23 rows by 23 columns. This aggregations also appears in Appendix B.

In the aggregation of rows and columns, or "simple" aggregation (Batten, 1981, P.105), there is an inevitable loss of information. By aggregating the first 13 sectors of the Philippine economy into one sector of agricultural production, for example, information on the individual value of a $1 worth of coconut (including copra) is lost. Some 284 million pesos worth of coconut were exported from the Philippines in 1961, 82% of agricultural exports, whereas total production of coconut represents only 16% (in money terms) of total agricultural output. If the production of coconut is carried out with a significantly higher organic composition of capital than the other 84% of agricultural production, then aggregation will result in a significant over-estimation of the value of a $1 worth of agricultural goods exported. Nevertheless, this is the most extreme case in the aggregations that have been carried out. Many of the sectors in the Philippine accounts reduced to 23 classifications are the same as those that apeear in the original 50 sector matrix. (See Appendix B)

Much of the work that has been done on problems of aggregation in input-output analysis aims at providing a logical basis on which to group firms into industries and sectors, and at assessing the effects of aggregation on any predictions of intermediate and final demand (Batten, 1981, p.105). The reconciliation of "row only" and "coloumn only" data in order to produce single input-output tables has been considered by Gerking (1976). While it is necessary to be aware of such problems there is little that can be done about them in an analysis at the present level. The data being handled have already been aggregated and reconciled to a considerable degree. In addition, while methods of estimating the effects of aggregation on intermediate and final demand may be available, no such methods have been developed for estimating the impact on value calculation. The aggregations that have been carried out within this study inevitably limit further the power and accuracy of the analysis, but were necessary in order, 1) to make commodity values in the two countries comparable enabling the estimation of the value of imports to the Philippines and 2) to reduce the data to a manageable size.

3.3.6 Productive and unproductive labour, and the exclusion of unproductive labour sectors

For Marx, productive labour is that which creates surplus value, while unproductive labour is itself supported out of surplus value previously created (Gough, 1973). Though Marx devoted the whole of chapter IV of part I of Theories of Surplus Value to a criticism of Adam Smith's interpretation of productive labour, marxists have since failed to agree upon a clear definition of, or distinction between, these two labour types. The distinction becomes particularly tenuous when an attempt is made to identify productive and unproductive labour in reality.

The theoretical debate centres around three main issues. First is the distinction between labour that is exchanged for capital, and labour that is exchanged for revenue. Second is the distinction between labour that works in the production process and labour that works in the process of exchange, and third the question of whether a final "use-value" has any necessity or social usefulness (Gough, 1973).

1) In the production process under capitalism, labour power is rewarded with wages that take the form of a capital investment in the production of a commodity. In certain sectors however, labour is not rewarded in this sense by capital, but by revenue generated in other industries. The clearest example of these sectors is the array of government services that are financed by taxation. Thus the labourers in the police force, the armed services, the fire service and administrative civil services are paid not as part of capital, but by revenue derived from other productive sources. These branches serviced by surplus-value produced originally by other workers are deemed to be unproductive.

2) Value is only produced in the process of production, not in the process of circulation. Thus workers in buying and selling sectors are not productive of value. These activities merely provide for the smooth running of the exchange process, but must be financed by the capitalist out of surplus value. "At all events the time consumed for this purpose (buying and selling) constitutes one of the costs of circulation which adds nothing to the converted values. It is the cost of converting them from the commodity-form into the money-form" (Marx, Capital, Vol.II, p.132). Yet the transportation of commodities, by changing their location, increases their use-value and thus is considered as a productive process,

even though it is a part of circulation. "Here a material change is effected in the object of labour - a spatial change, a change of place... and along with this goes a change in (the commodity's) use-value, since the location of this use-value is changed" (Marx, Theories of Surplus Value, Part I, p.412).

3) The third distinction is not one that is drawn by Marx himself, but has been introduced into the debate primarily by Baran (1957) and Sweezy (1970). It examines the dividing line between the necessity of the production of use-values, and the necessity of the use-value itself, a distinction that has arisen from the wastefulness of monopoly capitalism (Gough, 1973). While it is clear that a use-value must be produced in order for the labour involved to be productive, it is not clear whether this use-value should necessarily have any particular social usefulness. The constant changing of car models, the extravagance of packaging, the plagues of salesmen and the flood of advertising through newspaper, radio and television and duplication of transport networks are all examples of use-values that have doubtful social usefulness. "These activities are, as we know, a part of the process of production proper. But now they become expanded far beyond the limits of what would be socially necessary under competitive conditions. Under monopoly only a part of distributive activities can be considered as productive of value; the rest are essentially similar to selling in the strict sense and share with the latter the attribute of using up value without producing any" (Sweezy, 1970, p.282). These points, made relevant by the development of capitalism since Marx's time, though they are somewhat divorced from the central issue of the

distinction of production from circulation, raise questions with regard to the production of "entirely 'useless' goods and services (funeral parlours, poodle trimming boutiques, etc)" (Gough, 1973, p.64), all of which produce use-values.

These three main issues dividing productive from unproductive labour are not simply resolved. Yet it would be a mistake to include sectors of unproductive labour in the calculation of commodity values. Certain sectors have therefore, been excluded from the calculation altogether, and they are listed in Appendix B. Their exclusion inevitably includes an element of subjectivity on the part of the analyst, partly because the issues discussed above have not been resloved. In addition there are few sectors which, on the basis of the original aggregation, can be considered entirely unproductive. An example is retail trade, a sector primarily engaged in buying and selling, but one that is also involved in the movement of commodities and therefore, engaged in both productive and unproductive activities.

3.3.7 Equal price assumption

In computing values from bundles of goods measured by their prices, an assumption is implicitly made that each bundle of goods fetches the same price everywhere in the economy. In reality regional price variations do exist resulting in a deviation, for example, of money from real wages in different areas. Nevertheless, we are not directly concerned with such deviations in an analysis on the international scale, and so long as the input-output tables use an average price, thus representing input bundles to all sectors that are proportional to input prices to those sectors, no problem is encountered. We assume therefore, that $100 of

iron represents 10 tons of iron input into all sectors, whether in the production of steel or of corn.

More important is an assumption of equal prices on export goods. If $100 worth of iron is exported from Canada, the assumption is made that 10 tons of iron are exported. Although world and domestic market prices on many commodities tend to be the same (note that taxes and subsidies are separate primary inputs in the input-output tables, the prices of commodities in the industry-industry matrix being those at the point of production), trade between branches of multi-national firms is, as we have seen, often done at prices that deviate substantially from market prices (transfer pricing). The result may be a distortion in the estimates of imported values in the input-output analysis. If certain commodities are sold to the Philippines at a price inflated above that at which they are sold in Canada, then the value imported will appear to be greater than it really is. As an example in 1971 the oil cartel in the Philippines bought crude oil from its subsidiaries at $2.40 per barrel, while Russian oil was available at less than half the price (Escultura, 1974, p.74). Of course, Russian oil may not be of the same value (it is probably higher) as Canadian, but the example is a clear suggestion that the Philippines bought oil at an inflated price. The overall impact on the estimates of imported values may be significant, but since imports are a relatively small part of total inputs this is not thought to be an important factor in the calculation of commodity values.

Transfer pricing on exports may distort the final calculation of unequal exchange. If $100 of chemicals is exported from the Philippines at a deflated price, it may represent a much higher value of commodity than

$100 is found to represent in the input-output calculation. While it is difficult to obtain information on the proportion of exports from the Philippines that came from foreign owned industries, it is known that in 1970, U.S. monopolies controlled the oil, tyre, rubber, drug, fertilizer, chemical, mining, heavy equipment, marketing, transport facilities and other industries (Escultura, 1974, p.64). These sectors were responsible for approximately 30% of exports, in price terms, in 1973 (World Bank, 1979, p.2) though on the basis of the 1961 input-output table only about 17%. The impacts of transfer pricing upon the calculation of value exported are limited, therefore to about 20% of the total exports.

With the extreme difficulty in obtaining relevant information on industry ownership, import and export practices and transfer pricing procedures, it is impossible to measure accurately the effect of an equal price assumption on the calculation of commodity values. The examples and data given above merely "suggest" that this problem, at least in 1961, was of limited significance.

The seven data operations outlined above, (the seventh is merely an assumption which does not imply an alteration of the data) when carried out on the original input-output matrices, result in data sets that can be used in equations (21) and (13) to calculate the values of commodities produced in Canada and the Philippines. The final matrices $\underset{\sim}{A}^*$, $\underset{\sim}{M}^*$ and $\underset{\sim}{L}^*$ for the Philippines and $\underset{\sim}{A}^*$ and $\underset{\sim}{L}^*$ for Canada are printed in Appendix A.

4 Calculation of Results

The input-output method of value measurement can be used to calculate the price/value deviation on exported commodities, the general rate

of surplus value in the economy, the organic composition of capital in each sector, and the value rate of profit in each sector.

4.1 Commodity values and unequal exchange

The results obtained by solving equations (13) and (21):

(13) $$\underset{\sim}{\lambda}^* = (\underset{\sim}{I} - \underset{\sim}{A}^*)^{-1}\underset{\sim}{L}^* \qquad \text{(Canada)}$$

(21) $$\underset{\sim}{\lambda}^* = (\underset{\sim}{I} - \underset{\sim}{A}^*)^{-1}(\underset{\sim}{L}^* + \underset{\sim}{M}^*) \qquad \text{(Philippines)}$$

appear in the form of hours per dollar values for commodities in sectors j for $j = 1,\ldots,n$ in Canada, and in hours per peso values for commodities in sectors j in the Philippines. These results appear in Figure 5.2 for Canada and Figure 5.3 for the Philippines. When multiplied by the total dollar (peso) exports for each sector, the total value in hours of exports is obtained:

(22) $$E_i = \lambda_i e_i \qquad i = 1,\ldots,n$$

where E_i = total hours worth exported from sector i

By dividing the total value of exports by the total dollars of exports (the rate of exchange used in converting pesos to dollars was 2.75 pesos to \$1 : International Monetary Fund, 1962) an average figure for hours exported per dollar is obtained:

(23) $$[UE] = \frac{\sum_i E_i}{\sum_i e_i} \qquad i = 1,\ldots,n$$

where [UE] = average hours per dollar exported

4.2 Rate of surplus value

The rate of surplus value is the ratio between surplus value

and the value of labour power, s/v, the same here as the rate of exploitation.

The number of hours represented by a dollar (peso) of wages has already been estimated as ω. By dividing the total wage bill in the economy (excluding the wages paid to labour on unproductive sectors) by ω the total hours of productive labour in the economy can be estimated:

(24) $$Q = \frac{\sum_j w_j}{\omega} \qquad j = 1,\ldots,n$$

Where Q = Total hours of productive labour in the economy.

Q is the same as s + v, the value of labour power plus surplus value. Therefore:

(25) $$Q = s + v$$

The value of labour power can be calculated by multiplying the total wage bill, $\sum_j w_j$, by the value per dollar (pesos) of total household consumption. This makes the assumption that all money listed as wages and salaries and supplementary labour income in the original primary input matrix is paid to members of the working class who add value in the production process, or are unproductive workers paid for out of surplus value, and also that money is spent and not saved. The total sales of finished goods that appear in column "d" of the final demand matrix (Figure 5.1) amount to a greater amount than the total wage bill. The remaining consumption can be attributed to capitalists out of income from unincorporated business and other operating surplus sectors in the primary input matrix.

The distribution of wage and salary expenditure across different commodity sectors is assumed to be the same as the distribution of consumption in column "d". Therefore, the wage and salary consumption in each sector is calculated thus:

$$(26) \qquad d_i' = \frac{\sum_j w_j}{\sum_i d_i} d_i \qquad i = 1,\ldots,n$$

Where d_i' = price of consumption by wage and salaried labour

It is now a simple matter to calculate the value of labour power by multiplying the value per dollar (peso) of each commodity (sector) by the amount consumed by wage and salaried labour:

$$(27) \qquad v = \sum_i d_i' \lambda_i^*$$

We now know Q and v from equation (25), and thus also s, so that the rate of surplus value s/v, can be calculated.

4.3 Sector organic compositions of capital

The organic composition of capital, the ratio of constant capital to the value of labour power and surplus value, c/v+s, can be calculated for each sector of the economy:

$$(28) \qquad O_j = \frac{\sum_i c_{ij}}{v_j + s_j} \qquad i = 1,\ldots,n$$

Where c_{ij} = total value of inputs of commodity i to commodity j.

So

$$c_{ij} = P_{ij}\lambda_i^* \tag{29}$$

and

$$\sum_i c_{ij} = \sum_i P_{ij}\lambda_i^* \qquad i = 1,\ldots,n \tag{30}$$

Now from (24) and (25)

$$v_j + s_j = \frac{w_j}{\omega} \tag{31}$$

So from (28), (30) and (31), the organic composition of capital can be calculated:

$$O_j = \frac{\sum_i P_{ij}\lambda_i^*\omega}{w_j} \qquad i = 1,\ldots,n \tag{32}$$

for all sectors j.

4.4 Sector value rates of profit

The rate of profit is the ratio of surplus value to constant and variable capital inputs:

$$U_j = \frac{s_j}{\sum_i c_{ij} + v_j} \qquad i = 1,\ldots,n \tag{33}$$

The value of labour power in each sector j is found by multiplying the total wage bill in sector j by the value of goods that that wage will

buy. Now the total value of goods consumed by wage (and salary) workers is equal to v in equation (27). Thus the total value consumed by wage and salaried workers in sector j is the total value consumed, v, multiplied by the ratio of the wage bill in sector j with the total wage bill:

$$(34) \qquad v_j = \frac{w_j}{\sum_j w_j} \sum_i d_i \lambda_i^* \qquad i,j = 1,\ldots,n$$

Now from (31) we have:

$$(35) \qquad s_j = \frac{w_j}{\omega} - v_j$$

With equation (34), this result enables (33) to be calculated.

5. Discussion of Results

The results obtained for sector values per dollar (equations (13) and (21)), average export value per dollar (equation (23)), the rate of surplus value (equations (24) and (27)) the sector organic compositions of capital (equation (32)) and the sector value rates of profit (equation (33)) are listed in Figure 5.2 for Canada, and Figure 5.3 for the Philippines.

The most significant result is the amount of unequal exchange. The calculations reveal that an average 0.24 hours of labour are contained in every dollar of good exported by Canada. However, 1.12 hours of labour are contained within each dollar of good exported from the Philippines. In other words if the exports of the Philippines in 1961 had been sold at prices equal to those that Canadian exports fetched, the total income would

Figure 5.2 Results for Canada

Sector		Value rate of profit	OCC($\frac{c}{v+s}$)	Value in Hrs. per dollar	Millions of Dollars exptd.	Hrs. exported in millions.
1	Agriculture	31%	225%	.1377	783.3	107.9
2	Forestry	86%	67%	.2959	42.6	12.6
3	Fisheries	38%	177%	.2991	31.6	9.45
4	Metal mining	111%	47%	.2085	524.2	109.3
5	Oil, Coal & Gas	92%	62%	.1246	213.3	26.58
6	Non-metal mining	99%	55%	.2138	157.9	33.76
7	Food manufactures	43%	156%	.2049	450.3	92.27
8	Textiles & Leather	62%	103%	.3080	67.1	20.67
9	Lumber	56%	115%	.3128	319.3	99.88
10	Wood products	55%	119%	.2707	1197.7	324.24
11	Publishing	105%	51%	.3142	6.9	2.17
12	Metal, Machinery	43%	155%	.3142	1165.4	366.2
13	Transport equip.	32%	220%	.4387	160.3	70.32
14	Electrical equip.	53%	122%	.3728	76.7	28.59
15	Non-metallic prods.	72%	85%	.2687	40.4	10.86
16	Petroleum & Coal	16%	469%	.1875	14.0	2.62
17	Chemicals	59%	108%	.2331	211.6	49.32
18	Miscellaneous	76%	79%	.2836	48.8	13.84
19	Construction	61%	104%	.3151		
20	Transport & Storage	74%	68%	.3443	294.8	101.5
21	Communication	115%	45%	.3407	20.7	7.05
22	Utilities	67%	93%	.2099	14.8	3.11
23	Education & Health	95%	59%	.1384		
24	Recreation Services	91%	62%	.1883		
25	Accommodation Servs.	97%	57%	.2326		
26	Transport margins			.3443	331.8	114.24
27	Unallocated			.2232		
28	Mining Services	100%	58%	.2892		

Rate of Surplus Value ($\frac{s}{v}$) = 300%

Totals: 6173.5 1506.47

1 dollar = 0.24 hrs.

Figure 5.3 Results for the Philippines

Sector	Value rate of profit	OCC($\frac{c}{v+s}$)	Value in Hrs. per dollar	Value in Hrs. per Peso	Thous. of Pesos exported	Hrs. exported in thous.
1 Agriculture	165%	20%	1.4710	.5349	345920	185022.92
2 Fisheries	166%	20%	1.4380	.5229	246	128.65
3 Forestry	182%	16%	1.1767	.4279	145155	62105.58
4 Metal mining	95%	60%	1.1069	.4025	186142	74918.99
5 Non-metal mining	193%	13%	1.2169	.4425		
6 Food manufactures	43%	148%	.7840	.2858	347621	99110.92
7 Textiles & Leather	55%	115%	1.0387	.3777	6250	2360.35
8 Wood & Paper prods.	66%	91%	1.0134	.3685	35036	12910.35
9 Publishing	95%	55%	1.2878	.4683	53	24.82
10 Chemicals	68%	87%	1.0684	.3885	37257	14472.82
11 Petroleum & Coal	12%	662%	.3523	.1281	12	1.54
12 Non-metallic prods.	93%	60%	.8025	.2918	26	7.59
13 Metal, Machinery	60%	132%	1.0609	.3858	381	108.90
14 Electrical equip.	51%	157%	.7477	.2719		
15 Transport equip.	45%	206%	.7761	.2822	2	.56
16 Miscellaneous	63%	99%	1.1976	.4355	1549	674.65
17 Construction	78%	83%	1.0629	.3865		
18 Elec., Gas & Water	111%	43%	1.1327	.4119		
19 Transport & Storage	118%	44%	1.1610	.4222	23490	9916.35
20 Communication	167%	21%	1.7922	.6517		
21 Private services	152%	37%	1.6349	.5945		
22 Unallocated			.2799	.1018		
23 Transport margins			1.1611	.4222		
				Totals:	1129140	461765.06

Rate of Surplus Value ($\frac{s}{v}$) = 285%

Rate of exchange 2.75 Pesos = $1

1 Peso = 0.41 hrs.
1 dollar = 1.12 hrs.

have been 5,269 m pesos instead of the actual 1,129 m pesos. These results suggest that the prices paid by most sectors in Third World countries for constant capital inputs imported from developed nations (in the case of the Philippines this represents 90% of imports) are significantly above the value of these goods. Similarly sectors in developed nations which import from Third World sectors buy these goods predominantly at significantly reduced prices. Unequal exchange thus acts in reality as a very powerful counteracting influence to the tendency for the rate of profit to fall in developed sectors. Therefore foreign trade is an important factor in the avoidance and management of crises in developed countries.

The results for the general rate of surplus value in each country are almost identical; 300% in Canada and 285% in the Philippines. This lends some support to Mandel's assumption that the rate of surplus value is higher in developed nations, and is certainly very different from Emmanuel's estimation of surplus value rates based on money wage differences. Figures on the sector value rates of profit and organic compositions of capital are less conclusive. Profit rates are generally higher in the Philippines and organic compositions of capital predominantly higher in Canada. The average organic composition of capital in the production of goods exported from Canada in 1961 was significantly higher at 132% than for goods exported from the Philippines at 71%. However, there are numerous sector variations and overlaps between the two countries in the categories of value rate of profit and organic composition of capital.

While the value calculations leave no doubt about the direction of flow of unequal exchange or that its magnitude is significant, the assumptions made in the process of obtaining them from the input-output

accounts limit the significance of other results. This is particularly true when it comes to comparing the value rates of profit, organic compositions of capital and commodity values in an attempt to provide support for the theoretical explanation of unequal exchange put forward in chapter 3. An examination of the results and limitations of the analysis is carried out in the following sections. It is suggested that while a significant amount of unequal exchange has been shown, much of the value of the empirical analysis is as a first attempt at the practical application of Morishima's method of value calculation to the measurement of international unequal exchange. The application in its present form has many limitations and requires extensive refinement.

5.1 Unequal exchange in reality

A detailed discussion of the results follows. Firstly the initial result for total unequal exchange is discussed, and this result is emphasised by a comparison of sector values per dollar in each country. Secondly a test of error using different average wage rates in the calculation of per dollar values is considered. Finally, the evidence provided by the empirical analysis on the possible cause of unequal exchange is examined. While it must be emphasised that this analysis has no explanatory power, it is possible through an examination of the results for the rates of surplus value, rates of profit and organic composition of capital, to draw certain conclusions regarding the theoretical analysis in chapters 2 and 3. In other words the empirical analysis is not able to validate either Emmanuel's thesis or the one that suggests organic composition of capital as the determinant factor. Evidence is supplied however which shows that while it is possible to use organic composition of capital differences in

explaining value per dollar variations within countries, they fail to explain more than a part of the value per dollar variations between countries.

The empirical study provides figures that strongly support the theoretical hypothesis that unequal exchange results in a transfer of value from less developed countries to more developed countries as a result of foreign trade. For every dollars' worth of goods exported from the Philippines in 1961, approximately five times as many hours of labour had to be invested as in a dollars' worth of goods exported from Canada. If an hour of labour in the Philippines had been sold abroad at the same price as an hour of labour in Canada, the revenue on Philippine exports would have amounted to 5.269 billion pesos instead of the actual 1.129 billion pesos (this refers to value producing sectors only), or a difference of 4.14 billion pesos,($1.505 billion). Since 90% of Philippines imports are from developed countries, and thus at prices that are probably similar to those at which Canadian exports sell, this deficit of $1.505 billion on the year can be viewed as a direct transfer of value, to those who purchase the goods, out of the Philippines. This figure, though it includes the value flow due to transfer pricing, compares with total, net direct profit expropriation by U.S. companies (who were responsible for 91.62% of profits on foreign owned capital) between 1956 and 1965 of only $306.8 million (Escultura, 1974, p.68)

This conclusion is the most clearly defined that can be drawn from the analysis. Presented as national figures however, such totals might hide a wide variation of values per dollar within the two countries, some sectors in the Philippines trading at an advantage with sectors in Canada.

An examination of the results for the different sectors in both countries however, shows that this is not the case. All but two sectors in the Philippine economy have higher values per dollar than the highest valued sector in the Canadian economy. The two sectors in the Philippine economy that do have relatively low values per dollar, products of petroleum and coal and one of the dummy sectors (see Appendix B for explanation of this term), are responsible for only 0.0004% of the total value exported. Thus virtually all commodities exported from the Philippines fetch a significantly lower price per hour of labour than commodities exported from Canada.

Sector 1, the production of agricultural goods, is particularly significant for it represents 40% of the value exported from the Philippines. If the value of sector 1 commodities was to be exported at a price equal to the average price that a similar value could fetch exported from Canada, the revenue would be over 2 billion pesos instead of the 345 million that it actually fetched in 1961.

The accuracy of these results is suspect because of the changes that had to be made to the data in order to render them manageable. One measure of error was examined. The average wage rates for each country, defined in section 3.3.2 were changed and the values per dollar re-calculated. $2 per hour in Canada was found to be a reasonable estimate of the average wage as the result of a calculation using the size of the labour-force, hours worked per worker per year and the total wage bill in the economy. In order to gain a measure of error therefore, values per dollar for Canada were re-calculated using wage rates of $1.50 and $2.50 per hour. The results appear in Figure 5.4. An average wage rate of 0.81 pesos per hour in the Philippines was regarded as an over-estimate. A

calculation using labour-force size, hours per worker per year and the total national wage bill gave a result of only 0.25 pesos per hour. The labour-force size included a large number of unemployed and part time workers however, so that the wage rate probably falls between 0.81 pesos and 0.25 pesos per hour. Commodity values per dollar were re-calculated assuming wage rates of 0.66 pesos and 0.5 pesos per hour. The results appear in Figure 5.5.

Taking the lowest possible value of commodities in the Philippines therefore and the highest possible value of commodities in Canada, the amount of unequal exchange is now less than before. In the original calculation it was shown that Philippine commodities that were exported for 1.129 billion pesos should have sold for 5.269 billion pesos (if they had fetched the same price per hour as commodities exported from Canada). The new estimate however gives a figure of 3.607 billion pesos, a significantly lower figure than 5.269 billion pesos. However, it should be emphasised that this lower figure (the result of wage rates of 0.81 pesos in the Philippines and $1.5 in Canada) is the smallest amount of unequal exchange that might have taken place. It is probable that the wage rate in Canada was above $1.5 and below 0.81 pesos in the Philippines. It can be said therefore that commodities exported from the Philippines in 1961 were underpriced by at least 2.478 billion pesos on the basis of a comparison with the value per dollar of commodities exported from Canada. This represents a significant cheapening of the elements of constant capital input to sectors in developed countries.

The input-output analysis supplies information which indicates the existence of international unequal exchange, and the direction of

Figure 5.4 Values from different wage rates : Canada

Sector	Value in Hrs. ω=1.5	ω=2.0	ω=2.5	Millions $'s exptd	Millions of hours exported ω=1.5	ω=2.0	ω=2.5
1 Agriculture	.1837	.1377	.1102	783.3	143.89	107.86	86.32
2 Forestry	.3945	.2959	.2367	42.6	16.81	12.60	10.08
3 Fisheries	.3988	.2991	.2393	31.6	12.60	9.45	7.56
4 Metal mining	.2779	.2085	.1668	524.2	145.72	109.30	87.44
5 Oil, Coal & Gas	.1661	.1246	.0997	213.3	35.43	26.58	21.27
6 Non-metal mining	.2850	.2138	.1710	157.9	45.00	33.76	27.00
7 Food manufactures	.2732	.2049	.1639	450.3	123.02	92.27	73.80
8 Textiles & Leather	.4107	.3080	.2464	67.1	27.56	20.67	16.53
9 Lumber	.4171	.3128	.2502	319.3	133.18	99.88	79.92
10 Wood products	.3609	.2707	.2166	1197.7	432.25	324.27	259.42
11 Publishing	.4191	.3142	.2514	6.9	2.89	2.17	1.74
12 Metal, Machinery	.4190	.3142	.2514	1165.4	488.19	366.17	292.98
13 Transport equip.	.5849	.4387	.3509	160.3	93.76	70.32	56.35
14 Electrical equip.	.4971	.3728	.2982	76.7	38.12	28.59	22.87
15 Non-metallic prods	.3583	.2687	.2150	40.4	14.47	10.86	8.69
16 Petroleum & Coal	.2500	.1875	.1500	14.0	3.5	2.62	2.10
17 Chemicals	.3107	.2331	.1864	211.6	65.74	49.32	39.44
18 Miscellaneous	.3782	.2836	.2269	48.8	18.46	13.84	11.07
19 Construction	.4201	.3151	.2521				
20 Transport & Storage	.4591	.3443	.2754	294.8	135.34	101.50	81.19
21 Communication	.4542	.3407	.2725	20.7	9.40	7.05	5.64
22 Utilities	.2799	.2099	.1680	14.8	4.14	3.11	2.49
23 Education & Health	.1845	.1384	.1107				
24 Recreation services	.2510	.1883	.1506				
25 Accommodation servs.	.3097	.2326	.1858				
26 Transport margins	.4591	.3443	.2754	331.8	152.33	114.24	91.38
27 Unallocated	.2977	.2232	.1786				
28 Mining services	.3856	.2892	.2313				
ω = wage rate in dollars per hour			Totals:	6173.5	2138.81	1506.47	1285.15
				$1 =	.35	.24	.21 hrs.

Figure 5.5 Values from different wage rates : Philippines

Sector	Value in Hrs. ω=0.5	ω=.66	ω=.81	Thousands Pesos xpt.	Thousands of hours exported ω=0.5	ω=.66	ω=.81
1 Agriculture	.8615	.6486	.5349	345920	297235	223780	185022
2 Fisheries	.8383	.6328	.5229	246	206	156	129
3 Forestry	.6857	.5176	.4279	145155	99533	75132	62106
4 Metal mining	.6286	.4812	.4025	186142	117009	89572	74919
5 Non-metal mining	.7117	.5363	.4425				
6 Food manufactures	.4561	.3447	.2858	347621	158550	119825	99110
7 Textiles & Leather	.5972	.4541	.3777	6250	3733	2838	2360
8 Wood & Paper prods.	.5855	.4441	.3685	35036	20514	15559	12910
9 Publishing	.7452	.5648	.4683	53	39	30	25
10 Chemicals	.6173	.4682	.3885	37257	22999	17444	14473
11 Petroleum and coal	.1943	.1511	.1281	12	2	2	2
12 Non-metallic prods.	.4605	.3505	.2918	26	12	9	8
13 Metal, Machinery	.4231	.3337	.3858	381	161	127	109
14 Electrical equip.	.4012	.3169	.2719				
15 Transport equip.	.4017	.3238	.2822	2	1	1	1
16 Miscellaneous	.6869	.5231	.4355	1549	1064	810	675
17 Construction	.5966	.4597	.3865				
18 Elec., Gas & Water	.6545	.4964	.4119				
19 Transport & Storage	.6615	.5056	.4222	23490	15539	11877	9916
20 Communication	1.0405	.7872	.6517				
21 Private services	.9206	.7081	.5945				
22 Unallocated	.1537	.1199	.1018				
23 Transport margins	.6615	.5056	.4222				
ω = wage rate in pesos per hour			Totals:	1129140	736597	557164	461765
				1 Peso =	0.56	0.49	0.41 hrs.
				$1 =	1.79	1.36	1.12 hrs.

flow that was expected. However, its explanitory power is limited. For example, even if high correlations can be shown to exist between the values per dollar of commodities and wage levels in different countries, and between the values per dollar of commodities and levels of organic composition of capital, it is impossible to say from the empirical analysis alone which of wages or organic composition of capital differences is the major cause of the price-value deviation.

Since, on the basis of a theoretical argument, wages can be rejected as a cause of unequal exchange, it is the hypothesis that it is organic composition of capital difference that results in unequal exchange that we wish to examine here. A correlation analysis between the logarithms of the commodity values per dollar and the organic compositions of capital gave an R-squared of 67%,for the Philippines, though for Canada the R-squared was only 0.2%. While a good relationship can be shown between the value per dollar of commodities and the organic composition of capital used in their production in the Philippines therefore, this is not the case for Canada.

The price-value deviations between sectors <u>within</u> Canada cannot be explained by differences in organic composition of capital alone, though this analysis does not eliminate the possibility that different organic compositions of capital are at least contributory to such a deviation. Neither can different rates of profit or surplus value be used in the explanation of price- value deviations within Canada. (The correlation between the sector rates of profit and the organic compositions of capital gives an R-squared of 95%.) It seems likely therefore that skill variations between sectors (on which we have no information)

and other, institutional factors such as price controls, may explain observed commodity values per dollar in Canada. For example sector 1, the agricultural sector, and sector 13, transport equipment, both have similar organic compositions of capital and rates of profit, but widely different values per dollar. Artificially set high prices in the agricultural sector may explain this difference.

The relationship between the organic composition of capital and the value per dollar of commodities in the Philippines is a good one however. This suggests that the different levels of organic capital composition in the Philippines can be used to explain price-value deviations.

However, while this explanation may be used for price-value deviations within the Philippines, it cannot be used when comparing commodity values per dollar variations between countries. The organic composition of capital, although generally lower in production sectors in the Philippines, is not comprehensively so. The organic composition of capital is lower than the lowest organic composition sector in Canada in only eight sectors of the Philippine economy. (The organic compositions of capital in sectors 1, 2, 3, 5, 18, 19, 20 and 21 in the Philippines are all lower than the lowest sector organic composition of capital in Canada.) The values per dollar of these commodities are, as excpected, exceptionally high, and they account for 45.6% of money exports and 55.7% of value exports from the Philippines. The organic composition of capital in sector 11 in the Philippines is, on the other hand, exceptionally high, higher even than in any Canadian sector. The corresponding value per dollar is, as expected, the lowest in the Philippines, but this value is still higher than in all but two of the Canadian production

sectors. This difference in value is far greater than the differences that exist within Canada.

The international comparison of values per dollar can be clarified further. Using the regression equation for the logarithms of commodity values and organic compositions of capital in the Philippines, the commodity values in Canada were predicted on the basis of the sector organic compositions of capital there. The results appear in Figure 5.6. The predicted values per dollar are strikingly and, almost without exception higher than the actual values observed. On the basis of the predicted values obtained, the amount of unequal exchange is significantly reduced. Whereas previously Philippine commodities exported should have fetched 5.269 billion pesos instead of the actual 1.129 billion pesos, now it can only be said that the price received should have been 1.693 billion pesos. Whereas the difference between the value equated price and actual price ws was 4.14 billion pesos, it is only 0.5667 billion pesos on the basis of the predicted values. This suggests that differences in organic composition of capital only explain 13.7% (0.5667/4.14) of observed international unequal exchange.

There must therefore, be a broad explanation of a specifically international character other than differences in organic composition of capital to explain the generally wide variation that exists between commodity values per dollar in the two countries. Different national rates of surplus value would fit this requirement. If the general rate of surplus value in the Philippines was very much higher in the Philippines than the general rate of surplus value in Canada, then higher values per dollar for commodities from all sectors in the Philippines would be expected. However, the rates of surplus value in the two countries are

Figure 5.6 Predicted results for Canada

Sector		OCC	Value in Hrs. per dollar	Predicted values	Millions Hrs. exp	Predicted Hrs. export in mlns.
1	Agriculture	225%	.1377	.4881	107,9	379.6
2	Forestry	67%	.2959	1.1021	12.6	47.4
3	Fisheries	177%	.2991	.5735	9.5	18.3
4	Metal mining	47%	.2085	1.3988	109.3	733.1
5	Oil, Coal & Gas	62%	.1246	1.1611	26.6	247.3
6	Non-metal mining	55%	.2138	1.2585	33.8	198.6
7	Food Manufactures	156%	.2049	.6244	92.3	281.2
8	Textiles & Leather	103%	.3080	.8254	20.7	55.3
9	Lumber	115%	.3128	.7664	99.9	244.6
10	Wood products	119%	.2707	.7490	324.2	897.1
11	Publishing	51%	.3142	1.3241	2.2	9.1
12	Metal, Machinery	155%	.3142	.6271	366.2	730.6
13	Transport equip.	220%	.4387	.4955	70.3	79.3
14	Electrical equip.	122%	.3728	.7366	28.6	56.5
15	Non-metallic prods	85%	.2687	.9392	10.9	37.6
16	Petroleum & Coal	469%	.1875	.2979	2.6	4.2
17	Chemicals	108%	.2331	.7995	49.3	168.7
18	Miscellaneous	79%	.2836	.9865	13.8	48.1
19	Construction	104%	.3151	.8201		
20	Transport & Storage	68%	.3443	1.0912	101.5	321.7
21	Communication	45%	.3407	1.4403	7.1	29.8
22	Utilities	93%	.2099	.8841	3.1	13.1
23	Education & Health	59%	.1384	1.2005		
24	Recreation servs.	62%	.1883	1.1611		
25	Accommodation servs.	57%	.2326	1.2286		
26	Transport margins		.3443		114.2	
27	Unallocated		.2232			
28	Mining services	58%	.2892	1.2144		
				Totals :	1506.5	4601.1
				1 dollar =	0.24 hrs.	0.75 hrs.

not widely different, that in the Philippines being slightly lower than that in Canada.* The figures suggest therefore that different rates of surplus value make a negligible negative contribution to unequal exchange, at least between Canada and the Philippines.

An examination of the value rates of profit tells little. (The almost perfect inverse relationship between the logarithms of the rates of profit and organic composition of capital are not surprising. They are both ratios of the variables c, v and s.) Thus sectors 7 in the Philippines and 9 in Canada have not only the same organic composition of capital, but also almost identical value rates of profit. Nor can a different rate of profit be used therefore, to explain the wide difference in value per dollar of commodities in these two sectors.

The results here do not eliminate organic composition of capital differences as an explanation of price-value deviation. There is significant evidence that this may be a cause, at least in the figures for the Philippines. But only part of the unequal exchange internationally can be explained in this way.

The only relationship that has not been examined to this point is that between prices of production and real prices. In theory differences in organic composition of capital and profit equalisation result in deviations of prices of production (equilibrium prices) from values. But the present analysis focuses on observed prices, and these include

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*This provides strong empirical support for the argument in section 3 of chapter 3, the international variation in the rate of surplus value being many times smaller than the difference in money wages, two categories that Emmanuel treats as the same.

fluctuations away from equilibrium prices, partially resulting from various institutional factors. It is likely therefore that a large part of observed unequal exchange results from state pricing policies, exchange controls, tariff barriers and, at least in the short term, monopoly prices and transfer pricing. This explanation is consistent with the view of Prebisch and Amin (1974), the development of monopoly capital after 1880 contributing significantly to the growth of unequal exchange.

While empirical evidence of the extent and direction of unequal exchange is fairly conclusive, the input-output method of analysis is unable to provide a verification of the theory as outlined in chapter 3. Although correlations between the values of commodities and the organic composition of capital and rate of profit in each sector in the Philippines and the near equality of rates of surplus value suggest general support for the theory, they do not confirm its validity. What the results are able to show is that differences in organic composition of capital alone cannot explain the magnitude of observed international unequal exchange. More work is required in this area to clarify the relationships that exist in reality, and to strengthen the accuracy of the empirical analysis.

5.2 The empirical and the concrete

The provision of empirical support for a theoretical abstraction is not to be confused with reality itself. By its very nature an empirical measurement uses certain categories, and is itself therefore an abstraction from the concrete. It is no more than a picture of reality. Its strength lies in the precision of data collection, its relevance to the theory against which it is to be tested, and the time scale to which it applies. The present study is suspect in all three areas, and can only

be regarded as a sketch of reality. The sketch lends much support to the theory however, sufficient at least to warrant further improvements and refinements to the method in the future.

The first problem is data precision. It is likely that the Canadian accounts are reasonably accurate, but all census data from Third World countries are usually regarded as questionable. There are no estimates of accuracy in the original publications for either Canada or the Philippines. Little can be said or done about this problem. It can only be assumed that any inaccuracies in the original accounts for the Philippines are of a magnitude that will not affect the results significantly.

The accuracy of the hourly wage rate data has already been examined in section 3.3.3. It is known to be suspect, largely due to a lack of sources. The results presented in Figures 5.4 and 5.5 provide an estimate of the error margin that can be expected in this case.

The value of the product of particular sectors may be affected by the assumption of equal wages throughout the economy. The application of the average wage per hour to the agricultural industry overlooks the traditionally low wage and long hours in that sector. This may be partly responsible for the surprisingly low value per dollar and high organic composition of capital in sector 1 in Canada (Figure 5.2).

The second problem is the relevance of the empirical analysis to the theory which it is meant to support. It is largely a question of the relationship between empirical and theoretical categories in this analysis. The categories of sector and socially necessary productive labour time in the theoretical analysis are only represented by, not identical to, the categories of sector and hours of labour in the empirical analysis. While

the use of sectors in the empirical analysis that include the production of many different commodities may reduce the detail of the results, this will not affect their final accuracy. Nothing has been included or excluded as a result of this generalisation. The use of the wages row in the input-output accounts to represent inputs of socially necessary productive labour is a greater problem. The final value calculations in the Morishima system are a measure of the level of labour inputs. Further improvements in method should therefore concentrate on providing better estimates of skill distributions and the general wage rate, the extent to which value producing labour can be identified with the wages row in the input-output accounts and the clarification of distinctions between productive and unproductive sectors.

The third and final problem in the context of relating the empirical to concrete reality, the problem of time, is a very real one in this analysis. The identification of unequal exchange itself during 1961 is clear and cannot be denied. But, at least in theory, its direction and magnitude are determined by the rate of profit, the rate of surplus value and the level of organic composition of capital. All three factors change as tendencies with time. Their measurement during a static one year period fails to capture the quality of change that is the major characteristic of their existence. The fact that unequal exchange took place in respect of exports from Canada and the Philippines in 1961 tells us nothing about unequal exchange in preceding and later years. It has been shown in theory how fluctuations in its magnitude respond to changes in capital mobility, yet there is no way of telling from this analysis whether 1961 was an extreme year or not for unequal exchange. We cannot even be

certain from this analysis that its direction does not change with time. The only way to provide more information in this respect is to repeat the study for as many years as possible. This is heavily dependent upon data availability, and eliminates immediately the possibility of using this method to provide empirical evidence of unequal exchange prior to 1960 and its alleged growth throughout the twentieth century. Few input-output accounts were compiled prior to 1960, though an increasing number of less developed countries are now adopting this method (United Nations, 1973, pp.160-162).

6. Conclusions

Although limited by numerous assumptions, the use of Morishima's method of value calculation provides some empirical evidence in support of the theory of unequal exchange examined in chapters 2 and 3. The method obtains a result from original data rather than from a series of assumed relationships. It thus provides an excellent alternative to Amins' effort to estimate the magnitude and direction of unequal exchange (1974, Vol.I, pp.58-59).

The temptation is to interpret unequal exchange as a purely economic phenomenon, particularly when measured empirically, expressed in terms of a transfer of dollars and compared with the direct appropriation of profits by foreign owners of capital as in section 5.1. But this can be misleading for the balance of trade for the Philippines does not indicate a massive outflow of financial wealth from the country, while the profit rates in many Philippine production sectors are higher than in Canada, indicating a potentially higher rate of accumulation there. The important

conclusions to take from this analysis are twofold: one economic and the other social. Firstly the transfer of value through foreign trade, represented by a cheapening of Philippine exports from 5,269 million pesos to 1,129 million pesos, suggests that the cheapening of the elements of constant capital for the developed sectors of developed nations through foreign trade is a very significant counteracting influence to the tendency for the rate of profit to fall. In this respect the continuation of trade with less developed sectors that predominate in less developed countries becomes a necessary part of crises avoidance in the developed economies. Secondly the transfer of value expresses a social relation between labour and capital. The value that labour produces in different branches of industry fetches different prices in the market place. In this way a labourer is not only working for the capitalist who owns the means of production with which work is performed, but also for the capitalist who purchases the commodity. The class struggle is now extended economically, as well as politically and ideologically, to a struggle between all labourers and all capitalists everywhere.

CHAPTER 6

SUMMARY AND CONCLUSIONS

There were three research aims in this thesis. First, via a critique of Emmanuel's thesis,to clarify the theory of unequal exchange as a Marxian theory of international trade. Second to assess the importance of unequal exchange as an explanatory factor in theories of uneven development. Third to calculate the direction and magnitude of unequal exchange in reality for two countries in an attempt to provide a link between the abstract and the concrete, and to give international unequal exchange a measure of significance.

The major conclusions that can be drawn from the analysis are as follows.

Firstly, Emmanuel's theory of unequal exchange, while successful as a stimulus to discussion regarding a Marxist theory of international exchange, is noteable for its misuse of certain Marxist categories. In particular Emmanuel's misunderstanding of the purpose of Marx's reproduction formulae and his use of money wages as the independent variable betray a lack of dialectical thinking in his theory (Amin, 1977). The extension of the theory of unequal exchange to the international scale does require an assumption of different rates of surplus value in different countries, and in this Emmanuel is correct. However, the relative rate of surplus value is a function of the value of labour power, not of money wages. Whereas the international differences in money wages are empirically significant and far lower in less developed countries, the

value of labour power is not necessarily higher or lower in one country than the other, at least theoretically. Empirical evidence in chapter 5 suggests a negligible difference in the rate of surplus value in Canada and the Philippines.

Whilst Emmanuel emphasises wages as the determinant factor in unequal exchange therefore, it is argued in this thesis that there are three major factors that are responsible for a given magnitude and direction of flow of unequal exchange. These are the different national rates of surplus value, the different sector levels of organic composition of capital, and the degree of international inter-sector profit equalisation. These three "factors" develop as a result of the contradictions within the capitalist mode of production, and their combined effect may therefore vary according to different historical periods. The magnitude, and even the direction, of unequal exchange between industrial sectors will similarly change with time, responding to general tendencies and to cycles of crisis and growth in capitalism.

Secondly Emmanuel's monocausal theory of uneven development, derived from a dependency-like interpretation of the geographical transfer of value, is an oversimplified view. By emphasising the role of exchange relations over developments in the sphere of production, the impact of the mobility of productive capital on patterns of uneven development is overlooked. Instead the effect of unequal exchange on the rate of accumulation in advanced sectors is highlighted, the rate of accumulation in those sectors that benefit from trade being enhanced at the expense of those that lose through trade. Not only is this effect emphasised, but also the exact manner in which it takes place has not been satisfactorily

theorised. It is not the transfer of value that initially alters the rate of accumulation, but the mobility of capital through its impact on the rate of profit. The impact of a price-value deviation is to cheapen the elements of constant capital, an effect that can be interpreted as a counteracting influence on the tendency for the rate of profit to fall. It is in this sense that the rate of accumulation is enhanced in certain sectors by unequal exchange. But since the cheapening of the elements is only one of the counteracting influences, and one that is at least initially subsequent to capital mobility, it cannot be regarded as a monocausal explanation of uneven development. Nor can unequal exchange ever cause uneven development, for uneveness, in so far as it results in different levels of technological development, is a pre-condition to unequal exchange. Unequal exchange can only enhance an already given pattern of uneven development.

But it is wrong to suggest that this process alone is capable of blocking development in certain areas, for other forces may act to cause growth in previously less developed regions and decline in those that were developed. Such a conclusion derives from a linear view of history, - an extension of the direct value transfers of the colonial period into the present, though now in the form of unequal exchange, ignoring the historical development of productive capital mobility.

Unequal exchange does not express an exchange between places so much as an exchange between people. While the area specialisation of particular types of industry may give the transfer of value a particular geographic expression, this is subsequent to the transfer between capital and labour that it represents. A cheapening of a particular commodity

so that it sells below its value represents a transfer of surplus value to the capitalist who purchases that commodity. Not only is labour exploited by the capitalist who owns the means of production, but also, in a sense, by the capitalist who purchases the product of labour. This emphasises the general nature of class struggle between all labourers and all capitalists, and on a world scale. This conclusion has significant implications for "developing a viable socialist politics" (Wright, 1979, pp.30-31).

Finally the direction and magnitude of unequal exchange was measured empirically. This provides some significant support for the theory of unequal exchange outlined in the chapters before. In terms of a cheapening of the elements of constant capital inputs to economies that specialise in technologically developed sectors of industry, unequal exchange provides a significant counteracting influence to the falling rate of profit. For the Philippines as an example this means that the total export revenue is only 1.129 billion pesos, whereas if the same price per hour of labour had been received as on Canadian exports, the total revenue would have been 5.269 billion pesos. If this ratio of 0.214 is extended to all underdeveloped countries (IMF, 1968) then the total deficit on their exports for 1961 is a sizeable $100 billion. (Total exports from less developed nations were reported as $27.1 billion in 1961 - IMF, 1968.) This compares with Amin's estimate (1974, Vol.I, p.58) of $22 billion a year in the mid-1960's for the colonial and semi-colonial nations. Of course, this extrapolation from figures for Canada and the Philippines is an extremely tenuous one. It suggests a fetishisation of space and ignores the possibility of large, highly technical export sectors in Third World

nations such as Saudi Arabia. A large degree of error can be expected therefore, but it seems reasonable to postulate that in 1961 unequal exchange was responsible for a relative cheapening of the Third World exports within a range from say $150 billion to $50 billion. Even if the lower figure is the more accurate, this still means that unequal exchange is a far more significant factor than Amin's estimate suggests.

In this study the calculation of rates of surplus value, rates of profit and organic compositions of capital is limited in use to providing some support to a theory of unequal exchange based upon the organic composition of capital and the equalisation of the rate of profit. Any historical analysis is impossible however, since the data only refer to a one year period. Nothing can be said about the empirical existence of a falling rate of profit or a rising level of organic capital composition, nor about the historical fluctuations in the magnitude of unequal exchange. Nevertheless this type of analysis does have potential for extension to these fields. The calculation of figures from data for a succession of years may provide evidence at the empirical level of tendencies and fluctuations. Wolff (1979) has used input-output accounts in this way to estimate the value rate of profit in the United States over a number of years, in an attempt to identify a tendency for the rate of profit to fall.

A mediation between the theoretical and empirical parts of this thesis is an important part of the analysis. Theory must be transformed or developed in accordance with the historical developments in reality. In this case it is not so much a transformation of theory that is possible, or desirable, but rather a support of theory and a development of theory

in accordance with change.

Though no original analysis on international capital mobility was conducted in this thesis, nevertheless its historical development as recounted by Palloix (1977), Hymer (1979) and Cohen (1981), to name examples, is a significant contribution to the development of Marxist theory. Such a development viewed in reality requires the formulation of new branches of theory regarding exchange and development on an international scale. It is the awareness of such a change in reality throughout the twentieth century that enables, and requires, the development of a theory of international unequal exchange because capital mobility results in an equalisation of profits internationally. At the same time such developments are central to the correct formulation of theories of uneven development and the dynamics of the spatial character of accumulation.

The original empirical work in this thesis provides support at the concrete level for a theory developed in abstraction. It shows that unequal exchange takes place, not just in theory, but is a real process. Beyond this however it gives that process a measure of magnitude and therefore some power as a tool for explaining uneven development, something that theory cannot do on its own. While the cheapening of the elements of constant capital through unequal exchange has been identified as a counteracting influence to the rate of profit to fall, the empirical study gives this influence some magnitude. Through a mediation between theory and practise therefore, a result is obtained that provides not only a contributory explanation of uneven development, but also the power of that explanation and therefore an estimate of its likely impact.

The implications of this joint theoretical and empirical analysis are of particular importance in a formulation of policy. The most likely method of eliminating the exploitation of labour in one country by capital in another, assuming a specialisation of high technology in the latter, is to cut off foreign trade and implement a form of import substitution in its place. The present study emphasises through its empirical contribution what impact such a policy might have. If unequal exchange is as significant as this study suggests it is, then foreign trade is certainly one area that requires attention if underdevelopment is not to continue in the less developed countries. Policy formulation is not as simple as this for unequal exchange is only one factor in a multicausal theory of uneven development. In addition there are numerous problems to be encountered through a policy of import substitution, including the treatment of foreign capital and methods of introducing high technology to production for a small market.

Conventional policies suggest a solution to Third World poverty and backwardness through increased trade between developed and less developed countries. This thesis shows that such a policy will only lead to further problems for the disadvantaged while providing a significant factor in crisis avoidance to the advantaged. While the avoidance of international trade will not solve the problem, its expansion in a capitalist system can only deepen existing social and economic disparities.

APPENDIX A

APPENDIX A

i) Matrix $\underset{\sim}{A}$ for Canada : Industry (a_{ij}^*)'s

		1	2	3	4	5	6	7	8
1	Agriculture	.0490	.0034	-	-	.0002	.0014	.0905	.0051
2	Forestry	.0019	.1114	-	-	.0001	-	.0074	.0024
3	Fisheries	-	-	.0227	-	-	.0097	-	.0340
4	Metal mining	-	-	-	-	.0015	.0038	-	.0005
5	Oil, Coal & Gas	-	-	-	-	.0007	.0001	.0003	-
6	Non-metal mining	-	-	-	-	.0040	.0051	-	.0062
7	Food manufacture	.3073	-	.0149	-	.0013	.0007	.1611	.0027
8	Textiles & Lthr.	.0070	-	.0062	-	.0014	.0001	.0119	.3685
9	Lumber	.0001	.2858	-	-	.0004	-	.0001	.0009
10	Wood products	.0001	.1269	-	-	.0082	.0055	.0022	.0186
11	Publishing	-	-	-	-	.0003	-	-	.0043
12	Metal, Machinery	-	.0001	-	.1485	.0120	.0027	-	.0003
13	Transport equip.	-	-	-	-	.0016	.0002	-	.0146
14	Electric equip.	-	-	-	.0002	.0009	.0004	-	.0025
15	Non-metallic	-	.0003	-	.0095	.0131	.0555	.0006	.0036
16	Petroleum & Coal	-	-	-	.0002	.5855	.0007	-	-
17	Chemicals	.0004	.0001	-	.0005	.0071	.0162	.0206	.0038
18	Miscellaneous	.0001	-	-	.0087	.0018	.0012	.0002	.0504
19	Construction	.0010	.0022	-	-	-	.0081	-	.0025
20	Transport & Stg.	.0002	-	-	-	.0011	.0030	.0002	.0014
21	Communication	-	-	-	-	-	-	-	.0014
22	Utilities	-	-	-	-	.0079	-	-	-
23	Education & Hth.	-	-	-	.0006	.0007	-	-	.0052
24	Recreation vs.	.0004	-	-	-	-	-	.0004	.0027
25	Accommodation	.0268	-	.0041	-	.0001	.0002	.2310	.0106
26	Trans. margins	-	-	-	-	-	-	-	-
27	Unallocated	.0100	-	.0004	-	-	.0001	.0600	.0093
28	Mining services	-	-	-	-	-	.0054	-	-

APPENDIX A i) - Continued.

	9	10	11	12	13	14	15	16	17	18
1	.0001	.0022	-	.0171	.0005	-	-	.0526	.0327	.0028
2	-	.0004	-	.0139	.0028	-	.0001	.0231	.0012	-
3	.0107	-	-	.0186	.1060	.0364	.0016	.0388	.0024	.0121
4	-	-	-	.0320	.0015	-	.0020	.0075	.0272	-
5	.0009	-	-	.0073	.0023	-	.0001	.0039	.0047	-
6	-	.0264	-	.0117	-	-	.0004	.0315	.0234	-
7	-	.0389	.0012	.0222	-	-	.0064	.0055	.0116	.0013
8	.0001	.0227	-	.0026	-	.0002	.0006	.0023	.0258	.0275
9	.0915	.0449	-	.0104	-	-	.0039	.0097	.0136	.0012
10	.0057	.1592	.0024	.0258	-	.0011	.0048	.0108	.0335	.0128
11	-	.1969	.0681	.0057	-	-	-	.0029	.0152	.0018
12	.0007	.0049	.0003	.3771	.0014	.0142	.0060	.0098	.0078	.0028
13	.0014	.0078	-	.1381	.4586	.0312	.0152	.0032	.0066	.0329
14	.0003	.0211	-	.2243	.0007	.2500	.0086	.0020	.0224	.0231
15	.0003	.0268	.0001	.0212	-	.0029	.1138	.0181	.0207	.0065
16	-	.0014	-	.0105	-	-	-	.0085	.0350	.0036
17	-	.0325	.0001	.0287	-	.0001	.0102	.0373	.1969	.0136
18	.0061	.0307	.0003	.0833	.0006	.0080	.0085	.0030	.1226	.0554
19	.0171	.0575	-	.2188	.0022	.0564	.0661	.0160	.0089	.0140
20	-	.0008	.0007	.0035	.0323	.0028	.0004	.0424	.0010	.0079
21	-	.0002	.0082	.0001	-	.0363	-	.0021	.0001	.0005
22	-	-	.0004	-	-	-	-	.0052	-	-
23	-	.0001	.0024	-	-	.0003	.0001	.0052	.0177	.0273
24	-	.0008	.0019	.0038	-	-	-	.0038	-	.0341
25	-	.0101	-	.0001	-	-	.0022	.0038	.0005	.0016
26	-	-	-	-	-	-	-	-	-	-
27	.0003	.0519	.0800	.1882	.0746	.0668	.0054	.0016	.0636	.0858
28	-	-	-	.0701	-	.0168	-	.0310	.0114	-

APPENDIX A i) - Continued.

	19	20	21	22	23	24	25	26	27	28
1	.0666	.0073	.0037	.0085	-	-	-	.0165	.0472	-
2	.1064	.0366	.0031	.0019	-	-	-	.0025	.1120	-
3	.2516	.0210	.0016	-	-	-	-	.0105	.0024	-
4	.0543	.0061	.0015	.0205	-	-	-	.0069	.0555	.0285
5	.0674	.0035	.0032	.0190	-	-	-	.0012	.0257	.0294
6										
6	.0421	.0136	.0029	.0238	-	-	-	.0103	.0949	.0073
7	.0132	.0052	.0029	.0051	-	-	-	.0240	.0182	-
8	.0118	.0006	.0041	.0050	-	-	-	.0129	.0227	-
9	.0261	.0014	.0040	.0095	-	-	-	.0265	.0491	-
10	.0187	.0043	.0039	.0267	-	-	-	.0353	.0264	-
11	.0136	.0015	.0208	.0047	-	-	-	.0179	.0224	-
12	.0257	.0023	.0043	.0117	-	-	-	.0211	.0273	-
13	.0258	.0027	.0039	.0047	-	-	-	.0184	.0229	-
14	.0119	.0040	.0074	.0054	-	-	-	.0143	.0284	-
15	.0288	.0059	.0053	.0275	-	-	-	.0519	.0651	-
16	.1005	.0776	.0012	.0079	-	-	-	.0076	.0176	-
17	.0332	.0051	.0061	.0210	-	-	-	.0267	.0263	-
18	.0145	.0008	.0074	.0065	-	-	-	.0161	.0134	-
19	.0027	.0061	.0011	.0005	-	-	-	.0300	.0131	.0076
20	.2280	.0683	.0118	.0049	-	-	.0023	.0047	.0419	-
21	.1552	.0850	.0262	.0023	-	.0222	-	.0011	.0271	-
22	.2615	.0018	.0039	.0151	-	-	-	.0016	.0497	-
23	.0082	.0021	.0432	.0033	-	-	-	.0024	.0734	-
24	.0533	.0057	.0092	.0180	-	.1077	-	.0015	.0571	-
25	.0304	.0026	.0059	.0046	-	.0062	.0008	.0100	.0269	-
26	-	1.0000	-	-	-	-	-	-	-	-
27	-	-	-	-	-	-	-	.0279	-	-
28	.0391	.0402	.0076	.0114	-	-	-	.0076	.1543	.0016

APPENDIX A - Continued.

ii) Matrix $\underset{\sim}{L}$ for Canada : Labour (ℓ_j^*)'s

1	Agriculture	.0423
2	Forestry	.1766
3	Fisheries	.1076
4	Metal mining	.1413
5	Oil, Coal & Gas	.0768
6	Non-metal mining	.1372
7	Food manufacture	.0799
8	Textiles & Lthr.	.1517
9	Lumber	.1453
10	Wood products	.1235
11	Publishing	.2078
12	Metal, machinery	.1228
13	Transport equip.	.1368
14	Electric equip.	.1675
15	Non-metallic	.1451
16	Petroleum & Coal	.0329
17	Chemicals	.1120
18	Miscellaneous	.1576
19	Construction	.1543
20	Transport & Stg.	.2044
21	Communication	.2346
22	Utilities	.1087
23	Education & Hth.	.0869
24	Recreation svs.	.1157
25	Accommodation	.1478
26	Trans. margins	-
27	Unallocated	-
28	Mining services	.1826

APPENDIX A - Continued.

iii) Matrix $\underset{\sim}{A}$ for the Philippines : Industry (a_{ij}^*)'s

	1	2	3	4	5	6	7	8
1 Agriculture	.0858	.0004	.0008	-	-	.0185	.0080	.0007
2 Fisheries	.0054	.0211	.0125	-	.0003	.0151	.0157	.0156
3 Forestry	-	-	.0021	-	-	-	-	.0016
4 Metal mining	-	-	.0103	.0295	-	-	-	.0082
5 Non-metal mining	-	-	.0017	-	.0010	-	.0029	.0009
6 Food manufacture	.1883	.0005	.0001	-	.0001	.0582	.0002	.0185
7 Textiles & Lthr.	.1138	-	.0002	-	-	.0058	.1649	.0061
8 Wood & Paper Prds.	.0018	-	.1371	-	.0004	.0021	.0035	.1294
9 Publishing	-	-	.0001	-	-	.0007	.0011	.1810
10 Chemicals	.0721	-	.0028	.0001	.0018	.0360	.0003	.0242
11 Petrol. & Coal	-	-	-	-	.1235	-	-	.0009
12 Non-metallic	-	-	-	-	.0284	.0004	.0008	.0196
13 Metal, Machinery	-	-	.0026	.0078	.0005	.0045	.0028	.0060
14 Electric equip.	.0001	-	-	.0039	.0006	-	.0002	.0071
15 Transport equip.	-	-	-	-	.0001	-	.0029	.0014
16 Miscellaneous	.0731	.0046	.0009	.0085	.0008	.0002	.0381	.0160
17 Construction	-	-	.0037	-	.0059	-	-	.0410
18 Utilities	-	-	-	-	-	-	.0008	.0030
19 Transport & Stg.	.0002	-	-	-	-	.0004	.0004	.0027
20 Communication	-	-	-	-	-	-	-	.0057
21 Private services	.0065	.0012	-	-	-	.0138	.0003	.0048
22 Unallocated	.0127	.0003	-	.0116	.0101	.0026	.0063	.0063
23 Transport margins	-	-	-	-	-	-	-	-

APPENDIX A iii) - Continued

	9	10	11	12	13	14	15	16	17	18
1	-	.0113	.0015	.0026	.0018	-	-	-	.0475	.0008
2	.0014	.0021	.0353	.0001	.0103	.0015	.0178	.0023	.0456	.0035
3	.0006	.0079	.0478	.0004	.0235	.0021	.0012	.0107	.0460	.0011
4	-	.0483	.0390	-	.0922	.0108	.0070	.0125	.0425	.0081
5	-	.0126	.0769	-	.0027	.0003	.0039	.0011	.0498	.0003
6	.0007	.0128	.0037	.0022	.0021	.0004	.0004	.0049	.0473	.0026
7	.0002	.0208	.0035	-	.0031	.0002	.0014	.0313	.0469	.0136
8	.0008	.0140	.0173	.0018	.0161	.0010	.0011	.0132	.0464	.0107
9	.0005	.0293	.0018	.0001	.0103	.0012	.0030	.0159	.0464	.0074
10	.0008	.1493	.0138	.0093	.0080	-	.0005	.0166	.0470	.0091
11	.0001	.0070	.0191	.0087	.0017	-	.0017	.0048	.0474	.0002
12	.0018	.0150	.0533	.0390	.0236	-	.0011	.0125	.0461	.0211
13	.0001	.0050	.0156	.0027	.2114	.0377	.0024	.0106	.0337	.0089
14	.0001	.0139	.0040	.0067	.0667	.2100	.0026	.0240	.0303	.0036
15	.0001	.0022	.0114	.0034	.0357	.0871	.1904	.0375	.0262	.0018
16	.0004	.0941	.0058	.0044	.0258	.0106	.0021	.0867	.0641	.0187
17	.0008	.0147	.0188	.0614	.1419	.0005	.0005	.0030	.0433	.0013
18	.0027	.0132	.0906	.0237	.0243	.0165	.0017	.0022	.0451	.0938
19	.0012	.0015	.0798	.0002	.0029	.0030	.0803	.0175	.0431	.0028
20	.0370	.0025	.0015	-	.0016	.0951	.0024	.0005	.0435	.0086
21	.0668	.0038	.0031	.0020	.0018	.0009	.0002	.0037	.0475	.0062
22	-	.0032	.0015	-	.0312	-	-	.0877	.0456	.0040
23	-	-	-	-	-	-	-	-	-	-

APPENDIX A - Continued

iii) - Continued.

	19	20	21	22	23
1	.0061	-	-	-	.0024
2	.0126	.0034	.0011	.0001	.0024
3	.0061	.0029	.0066	.0198	.0014
4	.0150	.0007	.0332	.0002	.0061
5	.0042	.0002	.0094	.0010	.0008
6	.0111	.0003	.0103	.0001	.0068
7	.0101	.0007	.0111	.0005	.0060
8	.0105	.0014	.0113	.0021	.0070
9	.0090	-	.0632	.0001	.0069
10	.0157	.0016	.0070	.0008	.0094
11	.0050	.0003	.0138	.0003	.0022
12	.0067	.0006	.01r6	.0032	.0032
13	.0104	.0005	.0072	.0051	.0056
14	.0134	.0001	.0043	.0044	.0066
15	.0100	.0003	.0032	.0019	.0052
16	.0118	.0022	.0060	.0078	.0081
17	.0228	.0027	.0440	.0017	.0057
18	.0127	.0027	.0173	-	.0020
19	.0527	.0037	.0328	.0004	.0014
20	.0113	.0030	.0365	-	.0027
21	.0083	.0027	.0407	.0002	.0016
22	.0026	.0001	.0010	-	.0022
23	1.0000	-	-	-	-

iv) Matrix $\underset{\sim}{L}$ Philippines Labour (ℓ_j*)'s

.4461
.4354
.3687
.2511
.3915
.1150
.1757
.1930
.3025
.2078
.0168
.1826
.1231
.1056
.0923
.2186
.2112
.2882
.2938
.5400
.4350
-
-

v) Matrix $\underset{\sim}{M}$ Imports (m_{ij}*)'s

.0056
.0085
.0065
.0227
.0039
.0030
.0136
.0091
.0103
.0105
.0156
.0115
.0444
.0417
.0614
.0169
.0300
.0102
.0211
.0140
.0623
.0097
-

Appendix A : Elaborations on data from:

1 Statistics Canada : Input-Output Division, The Input-Output Structure of the Canadian Economy, 1961-1974, Ottawa, 1979.

2 Office of Statistics Coordination and Standards, The 1961 Interindustry (Input-Output) Accounts for the Philippines, Manila, 1969.

APPENDIX B

APPENDIX B

i) Aggregation of 100 input commodities for Canada into 28 input sectors.

Original commodity type. (Stats.Can. Medium aggregation)	28 sector matrix
1 Grains	1 Agriculture
2 Live animals	1 Agriculture
3 Other agriculture	1 Agriculture
4 Fish landings	2 Fisheries
5 Hunting & Trapping	2 Fisheries
6 Forestry products	3 Forestry
7 Iron ores	4 Metal mining
8 Other metal ores	4 Metal mining
9 Coal	5 Oil, Coal & Gas
10 Crude mineral oils	5 Oil, Coal & Gas
11 Natural gas	5 Oil, Coal & Gas
12 Non-metallic minerals	6 Non-met.mins.
13 Services to mining	28 Services mining
14 Meat products	7 Food manufact.
15 Fish products	7 Food manufact.
16 Dairy products	7 Food manufact.
17 Fruits & vegetables	7 Food manufact.
18 Feeds	7 Food manufact.
19 Cereals	7 Food manufact.
20 Breakfast C. & Bakery	7 Food manufact.
21 Sugar	7 Food manufact.
22 Misc.food products	7 Food manufact.
23 Soft drinks	7 Food manufact.
24 Alcoholic beverages	7 Food manufact.
25 Processed tobacco	7 Food manufact.
26 Cigarettes	7 Food manufact.
27 Tires & Tubes	18 Miscellaneous
28 Other Rubber prods.	18 Miscellaneous
29 Leather prods.	8 Textiles & Le.
30 Plastic fabricated	18 Miscellaneous
31 Yarns and fibres	8 Textiles & Le.
32 Fabrics	8 Textiles & Le.
33 Other textile prods.	8 Textiles & Le.
34 Hosery, sleepwear	8 Textiles & Le.
35 Clothing	8 Textiles & Le.
36 Lumber & Timber	9 Lumber
37 Veneer & Plywood	10 Wood prods.
38 Other wood prods.	10 Wood prods.
39 Furniture & Fixtures	10 Wood prods.
40 Pulp	10 Wood prods.
41 Newsprint	10 Wood prods.
42 Paper products	10 Wood prods.
43 Printing & Publishing	11 Publishing
44 Advertising print	11 Publishing
45 Iron & Steel prods.	12 Metal, Machinery
46 Aluminum products	12 Metal, Machinery
47 Copper & Cop.Alloy	12 Metal, Machinery
48 Nickel products	12 Metal, Machinery
49 Non-ferrous metal	12 Metal, Machinery
50 Boilers, Tanks.	12 Metal, Machinery
51 Fab'd Structural Me'l	12 Metal, Machinery
52 Other metal fabricated	12 Metal, Machinery
53 Agricultural machinery	12 Metal, Machinery
54 Other Ind' machinery	12 Metal, Machinery
55 Motor vehicles	13 Transport equip.
56 Motor vehicle parts	13 Transport equip.
57 Other Transport equip.	13 Transport equip.
58 Household appliances	14 Electric equip.
59 Other electrical	14 Electric equip.
60 Cement & Concrete	15 Non-metallic
61 Other mineral prods.	15 Non-metallic
62 Gasoline & fuel oil	16 Petrol' & Coal
63 Other petrol' & coal	16 Petrol' & Coal
64 Industrial Chemicals	17 Chemicals
65 Fertilizers	17 Chemicals
66 Pharmaceuticals	17 Chemicals
67 Other chemicals	17 Chemicals
68 Scientific equipment	18 Miscellaneous
69 Other manufactures	18 Miscellaneous
70 Residential construct	19 Construction
71 Non-resid' construct	19 Construction
72 Repair construction	19 Construction
73 Pipeline transport	20 Transport
74 Transport & Storage	20 Transport
75 Radio & Television	21 Communication
76 Telephone & Telex	21 Communication
77 Postal Services	21 Communication
78 Electric power	22 Utilities
79 Other utilities	22 Utilities
80 Wholesale Margins	UNPRODUCTIVE
81 Retail Margins	UNPRODUCTIVE
82 Transport Margins	26 Trans. margins
83 Rent, Owner ocpd.	UNPRODUCTIVE
84 Finance, Real est.	UNPRODUCTIVE
85 Business services	UNPRODUCTIVE
86 Education services	23 Educt. & Health
87 Health services	23 Educt. & Health
88 Amusement & Rec.	24 Recreation
89 Accommodation servs.	25 Accommodation
90 Other services.	UNPRODUCTIVE
91 Dummy industry	27 Unallocated
92 Travel, advertising	UNPRODUCTIVE
93 Non-competing impts.	Omitted.*
94 Unallocated im-expts.	SURPLUS
95 Indirect taxes	SURPLUS
96 Subsidies	SURPLUS
97 Wages & Salaries	Wages
98 Supp' Labour income	Wages
99 Net inc. Uninc. Bus.	SURPLUS
100 Other surplus	SURPLUS

* Non-competing imports are commodity types imported that are not represented in this table i.e. not made in Canada. Values for them cannot be calculated. They represent 0.3 of total inputs to the Canadian economy and have therefore been omitted.

APPENDIX B - Continued

ii) Aggregation of 43 output industries for Canada into 28 output sectors.

Canada Stats. Medium aggregation output category.		28 Sector matrix	International Standard Industry Classification numbers
1	Agriculture	1	001-021
2	Forestry	2	031-039
3	Fishing, Hunting, Trapping	3	041-047
4	Metal mines	4	051-059
5	Mineral fuels	5	061/4
6	Non-metal mines + quarrying	6	071/3/7/9,083/7
7	Services incidental to mining	28	092/9
8	Food and beverage industries	7	101/3/5/7/11/12,123-5/8/9,131/3/5/9,
9	Tobacco production	7	151/3 / 143/5/7/9
10	Rubber and plastic	18	161/3/9,385
11	Leather	8	172/4/5/9
12	Textiles	8	
13	Knitting	8	231/9
14	Clothing industries	8	242-249
15	Wood	9	251/2/4/6/8/9
16	Furniture & Fixtures	9	261/4/6/8
17	Paper & allied industries	10	219,271-274
18	Printing & Publishing	11	286-289
19	Primary metal	12	291/2/4-8
20	Metal fabricating industries	12	301-309
21	Machinery industries	12	311/5/6/8
22	Transport equipment industry	13	321,323-329
23	Electrical products	14	331/2/4-9
24	Non-metal mineral products	15	341/3/5/7/8,351-357/9
25	Petroleum and coal industry	16	365/9
26	Chemicals & Chemical prods.	17	371-379
27	Miscellaneous Manufacturing	18	381-384,393-399
28	Construction industries	19	404-421
29	Transport and Storage	20	501/2,504-509/12,515-517/19,524-527
30	Communications	21	543-545,548
31	Utilities	22	572/4,576-579
32	Wholesale trade	Unproductive	602-629
33	Retail trade	Unproductive	631699
34	Owner occupied dwellings	Unproductive	702-737
35	Finance, insurance, real est.	Unproductive	702-737
36	Education and Health	23	801-809,821,823-827
37	Ammusement & Recreation	24	851,853-859
38	Services to business	Unproductive	861/2/4/6/9,891/9
39	Accommodation & Food services	25	875/6
40	Personal, misc.services	Unproductive	871/2/4/877-879,893-897
41	Transport margins	26	Dummy industry*
42	Operating, Office, Lab. Food	27	Dummy industry*
43	Travel, Advertising, Prom.	Unproductive	Dummy industry*

* Dummy industries include incidental industries contained within every branch, e.g. office supplies and within firm transport services. Figures used to balance the accounts are also included in these sectors.

APPENDIX B - Continued

iii) Aggregation of 50 industries for the Philippines into 23 industries.

Philippines industry categories		23 sector matrix categories	
1	Palay	1	Agriculture
2	Corn		
3	Fruits and nuts		
4	Tubers and root crops		
5	Vegetables		
6	Coffee and cocao		
7	Coconut, including copra		
8	Sugar cane		
9	Fiber crops		
10	Tobacco		
11	Other crops		
12	Livestock and poultry		
13	Other agricultural activities		
14	Fisheries	2	Fisheries
15	Forestry and logging	3	Forestry
16	Gold mining	4	Metal mining
17	Other metal mining		
18	Non-metal mining and quarrying	5	Non-metal mining
19	Food manufactures	6	Food manufactures
20	Beverages		
21	Tobacco manufactures		
22	Textile manufactures	7	Textiles & Leather
23	Made-up textile goods		
24	Wood and cane products	8	Wood & Paper products
25	Furniture and fixtures		
26	Paper and paper products		
27	Printing and publishing	9	Publishing
28	Leather products	7	Textiles & Leather
29	Rubber products	16	Miscellaneous
30	Chemicals and chemical prods.	10	Chemicals
31	Products of petroleum and coal	11	Petroleum and coal
32	Non-metallic mineral products	12	Non-metallic products
33	Basic metals	13	Metal and machinery
34	Metal products		
35	Non-electrical machinery		
36	Electrical machinery	14	Electrical equipment
37	Transport equipment	15	Transport equipment
38	Miscellaneous manufactures	16	Miscellaneous
39	Construction	17	Construction
40	Utilities	18	Utilities
41	Trade		UNPRODUCTIVE
42	Banking and finance		UNPRODUCTIVE
43	Insurance		UNPRODUCTIVE
44	Real estate		UNPRODUCTIVE
45	Transportation	19	Transport & Storage
46	Storage and warehousing		
47	Communication	20	Communication
48	Government services		UNPRODUCTIVE
49	Private services	21	Private services
50	Unallocated	22	Unallocated (dummy)
Transport margins*		23	Transport margins

* Transport margins in the Philippine economy appear in a separate input-output matrix.

APPENDIX B - Continued

iv) Aggregations for Canada (28) and the Philippines (23) compared. This comparison was used in the calculation of import values for the Philippines.

28 Canada industries		23 Philippines industries	
1	Agriculture	1	Agriculture
2	Forestry	3	Forestry
3	Fisheries	2	Fisheries
4	Metal mining	4	Metal mining
5	Oil, coal & gas	5	Non-metal mining
6	Non-metal mining		
7	Food manufactures	6	Food manufactures
8	Textiles & Leather	7	Textiles & Leather
9	Lumber	8	Wood & paper products
10	Wood products		
11	Publishing	9	Publishing
12	Metal, Machinery	13	Metal and machinery
13	Transport equipment	15	Transport equipment
14	Electrical equipment	14	Electrical equipment
15	Non-metallic products	12	Non-metallic products
16	Petroeum & coal	11	Petroleum & coal
17	Chemicals	10	Chemicals
18	Miscellaneous	16	Miscellaneous
19	Construction	17	Construction
20	Transport & Storage	19	Transport & Storage
21	Communication	20	Communication
22	Utilities	18	Utilities
23	Education & Health	21	Private services
24	Recreation services		
25	Accommodation services		
26	Transport margins	23	Transport margins
27	Unallocated	22	Unallocated
28	Mining services	21	Private services

Sources to Appendix B:

1 Dominion Bureau of Statistics, Standard Industrial Classification Manual, Ottawa, 1960.

2 Statistics Canada : Input-Output Division, The Input-Output Structure of the Canadian Economy, 1961-1974, Ottawa, 1979.

3 Office of Statistical Coordination and Standards, The 1961 Interindustry (Input-Output) Accounts for the Philippines, Manila, 1969.

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