THE RATE OF PROFIT IN THE POSTWAR MEXICAN ECONOMY, 1950-1993

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According to Marxian theory, the performance of capitalist economies depends above all else on the rate of profit. When the rate of profit is high, capitalism is relatively prosperous: business investment is high, unemployment is relatively low, and the living standards of workers generally rises. However, when the rate of profit is low, prosperity turns into stagnation and depression: investment is low or nonexistent, unemployment is high, and living standards decline. Marx of course argued that there is an inherent tendency for the rate of profit to eventually decline during periods of prosperity and expansion, thus turning periods of prosperity into periods of depression. In other words, recurring crises and depressions are inevitable in capitalist economies.

Moseley (1992, 1997) has argued that the main cause of the stagflation of the U.S. economy over the last two decades was a very significant decline in the rate of profit. The rate of profit in the US declined about 50% from the mid-1940s to the mid-1970s. It is argued that this decline of the rate of profit was the main cause of both of the "twin evils" of unemployment and inflation, and hence also of the declining living standards of recent decades. It is argued further that the main causes of the decline of the rate of profit were: (1) a very significant increase in the ratio of unproductive labor to productive labor (which accounted for about 2/3 of the total decline) and (2) an increase in the composition of capital (which accounted for the remaining 1/3). Furthermore, according to Moseley's estimates, since the late 1970s the rate of profit has recovered only about 1/3 of the previous decline, as the ratio of unproductive labor to productive labor has continued to increase and has offset the positive effect on the rate of profit of the decline of real wages that has occurred during this period. It is argued that this lack of a significant increase in the rate of profit is the main reason why economic stagnation has persisted in recent decades.

The purpose of this paper is to derive estimates of the rate of profit and its Marxian determinants in the Mexican economy during the post World War II period in order to determine the trends in these key variables, and the extent to which these trends were similar to those in the US economy during this period. The specific questions addressed are: Was there a significant decline in the rate of profit during the period of expansion and prosperity from the 1950s to the 1970s? Has there been a significant increase in the rate of profit since the 1970s? What has been the main causes of these trends, according to Marxian theory? What are the likely future trends of the rate of profit and its Marxian determinants in the years ahead? The answer to this last question will determine to a large extent the possibility of a full and lasting recovery from the deep current economic crisis. The comparison between the US and Mexico should also provide insights into the similarities and the differences in the absolute levels and the trends in these variables between advanced and (large, important) developing countries.

There have been a number of prior studies of the rate of profit in the Mexican economy, which include Castaingts (1984), Davila, et al. (1986-87), Garcia and Castaingts (1979), Perzabal and Ramirez (1989), Rivera and Gomez (1983), Rojas (1980) and Valle (1989). However, these prior studies of the rate of profit in the Mexican economy all suffer from one or more of the following important defects: (1) failure to distinguish between productive labor and unproductive labor; (2) failure to distinguish between the income of capitalist enterprises and

the income of “self-employed” producers; (3) inadequate estimates of the stock of capital; and (4) lack of estimates of the Marxian determinants of the rate of profit which makes an analysis of the causes of the trends of the rate of profit impossible. Furthermore, none of these studies present estimates of the rate of profit since 1980. At the present time, we can only guess what has happened to the rate of profit since 1980, which in our view is the key question in analyzing the prospects for a sustained economic recovery in Mexico. In addition, there have been two studies which provide estimates of the rate of surplus-value in the Mexican economy, but not of the rate of profit: Delgado (1989) and Martinez (1995 and 1996).

Section 1 of this paper will briefly review the conceptual issues involved in the estimation of the Marxian variables. Section 2 will then present the general analytical framework to be used in analyzing the rate of profit. Section 3 will examine the practical data problems encountered in estimating the Marxian variables in Mexico, and our (partial) solutions to these problems. Section 4 will then analyze the empirical results - the estimates of the rate of profit and its Marxian determinants for the postwar Mexico economy. A later draft of this paper will include a detailed comparison of our results with the results of the prior studies mentioned above.

1. CONCEPTUAL ISSUES IN THE ESTIMATION OF THE MARXIAN VARIABLES[ii]

There are five key conceptual issues involved in the precise definition of constant capital, variable capital and surplus-value, and thus in the estimation of these Marxian variables. These five key issues may be briefly stated as follows:

(1) Do the concepts of constant capital, variable capital, and surplus-value refer to observable quantities of money (or prices) or to observable quantities of labor?

(2) Do the concepts of constant capital and variable capital refer only to capitalist production, or also to various forms of non-capitalist production (mainly government production, but also household production and "simple commodity production")?

(3) Do the concepts of constant capital and variable capital refer only to the capital invested in production activities in capitalist enterprises or also to the capital invested in non-production activities?

(4) Are the taxes paid by workers out of their wages a part of variable capital or surplus-value and are the government expenditures to provide services for workers part of variable capital?

(5) Should constant capital be evaluated in terms of current replacement costs or in terms of historical acquisition cost?

Our interpretation of these five conceptual issues is essentially that presented in Moseley (1992) and will be only briefly summarized here.

1.1. Money vs. Labor-time

We argue that the observable reality to which Marx's concepts of constant capital, variable capital, and surplus-value refer are quantities of money-capital. These concepts are component parts of the more general concept of capital. The concept of capital is of course the central concept in Marx's theory, as the title of the book suggests. Therefore, the observable reality to which the concepts of constant capital, variable capital, and surplus-value refer is the observable reality to which the general concept of capital refers.

Marx introduced his concept of capital in Part 2 of Volume 1 of Capital, which is entitled "The Transformation of Money into Capital." As this title suggests, Marx's concept of capital is defined in terms of money, as money that performs specific functions that transform it into capital. In Chapter 4 ("The General Formula for Capital"), Marx defines capital as money which passes through its own characteristic form of circulation, which distinguishes money as capital from money as a mere means of exchange.

The first distinguishing characteristic of money which functions as capital is that the commodities purchased with this money are later resold (in one form or another) in order to recover the original money expended. In Marx's words, the money originally "thrown into circulation" is later "withdrawn from circulation" through the sale of commodities. By contrast, money which functions as a mere means of exchange is used to purchase commodities which are consumed by the buyer; therefore this money is not later recovered through the sale of commodities. The process undergone by money which functions as capital was described by Marx as "buying in order to sell" and was expressed symbolically as M - C - M.

The second distinguishing characteristic of money which functions as capital is that the sum of money recovered through the sale of commodities is greater than the original sum of money expended. More money is withdrawn from circulation than was thrown into it in the beginning. Marx described the process through which money is transformed into capital more

completely as "buying in order to sell dearer" and expressed this process symbolically as M - C - M', where M' = M + M.

Thus we see that Marx's concept of capital is defined in terms of money, as money expended in order to make more money. The concepts of constant capital, variable capital, and surplus-value are defined as the theoretically significant components of the total sum of money which functions as capital. In Chapter 4, Marx defined the concept of surplus-value as the increment of money (M) withdrawn from circulation over and above the initial sum of money thrown into circulation. Similarly, in Chapter 8, Marx defined the concepts of constant capital and variable capital as the two components of the initial sum of money which is invested as capital (M = C + V). Constant capital is defined as the sum of money which is used to purchase the means of production (buildings, equipment, raw and auxiliary materials) and variable capital is defined as the sum of money which is used to purchase labor-power.[iii] [iv]

Therefore, we conclude that the observable reality to which Marx's concepts of constant capital, variable capital, and surplus-value refer are quantities of money which function and circulate as capital. In principle, these concepts correspond to entries in the income statements and balance sheets of capitalist firms. Foley (1986) also emphasizes the correspondence between Marx's concepts of capital and its components and the money magnitudes in the financial accounts of capitalist firms.

We recognize, of course, that quantities of labor play an important role in Marx's theory. Indeed, Marx's theory of value and surplus value is based on the fundamental assumption that the quantities of money which circulate as capital are determined fundamentally by the quantities of labor contained in commodities (C.I. Chapter 1). However, these quantities of labor which are assumed to determine quantities of money or prices are defined by Marx in units of homogeneous abstract labor, which is not directly observable as such. Abstract labor is defined by Marx to be labor without special skills and of average intensity (C.I. Chapter 1). By contrast, the actual concrete labor which can be observed and counted within capitalist enterprises consists of many different levels of skills and of varying degrees of intensity. Therefore the

quantities of actual labor required to produce commodities will in general not be equal to the quantity of abstract labor contained in commodities, and may not even be a good approximation of the latter.

1.2 Non-capitalist production

The second issue involved in the estimation of the Marxian variables is whether the concepts of constant capital and variable capital refer only to capitalist production or instead also include the sums of money expended in non-capitalist forms of production to purchase means of production and labor-power. There are two main sub-types of non-capitalist production: non-capitalist production that does not produce commodities for sale on the market and non-capitalist production that does produce market commodities. The latter is especially important in Mexico (and other developing countries) due to the continued significant presence of “self-employed producers” (which has been called the “structural heterogeneity” of developing countries).

1.2.1 Non-market non-capitalist production

The main form of non-capitalist production that does not produce market commodities in Marx's time was household production, i.e. the production of household services by domestic servants. Today, of course, the main form of non-commodity non-capitalist production is government production, i.e. the production of public services by government employees.[v]

It follows directly from Marx's definition of capital presented in the preceding section that the sums of money used to purchase means of production and labor-power in non-commodity non-capitalist forms of production are not capital, because both distinguishing features of capital discussed above are missing in the case of non-capitalist production. In the first place, these sums of money are not recovered through the sale of commodities because the products produced are not sold on the market (i.e. are not "commodities" in Marx's sense). More importantly, no increment of money or profit is recovered in these non-capitalist forms of production. In other words, these sums of money do not undergo the unique process of

circulation (M-C-M') which is characteristic of capital. In order to distinguish these forms of money expended in these non-commodity non-capitalist forms of production from capital, Marx referred to these sums of money as "revenue" (C.I. 1038-49; TSV.I. 389-414). Since these sums of money are not capital, they cannot be constant capital or variable capital.

1.2.2 Market non-capitalist production

The other type of non-capitalist production, which does produce commodities for sale on the market, is the so-called "simple commodity production," in which independent self-employed producers produce commodities for sale on the market (e.g. farmers, carpenters, doctors, etc.). The sale of their commodities generates income for these self-employed producers, but this income is neither variable capital or surplus-value, because this income is not a component of capital, since simple commodity production is not capitalist production. Variable capital is the wages of productive wage-labor; the labor of these independent producers is not wage-labor and is not purchased by capital. Hence the income of these independent producers cannot be variable capital. Surplus-value is an excess value produced by other people's labor, not by one's own labor. The income of these self-employed producers is the result of their own labor and hence cannot be surplus-value (Marx made this point in Chapter 5 of Volume 1 of Capital, p. 268).[vi]

The same conclusion also applies to the value produced by self-employed producers who also hire wage-laborers to work within small capitalist enterprises. These self-employed producers who hire wage-laborers are not themselves wage-laborers; hence their income is not wages and cannot be variable capital. A portion of their income is the result of the wage-laborers hired by them and hence is surplus-value, but this is not true of the value that they themselves produce. This conclusion is based on the assumption that these self-employed producers are themselves engaged in production, and thus produce value which is the source of at least part of their income. If, on the other hand, they perform the unproductive functions of supervision and/or circulation, then they do not produce value which is the source of their income. Instead, the source of their income is the surplus-value produced by productive

wage-laborers. Marx seemed to have assumed that in most cases the labor of these self-employed producers within capitalist enterprises is mostly unproductive labor.[vii]

1.3 Non-production capital (Productive labor and unproductive labor)

The third issue involved in the estimation of the Marxian variables is whether the concepts of constant capital and variable capital refer to all the capital invested in capitalist enterprises or instead refer only to the capital invested in production activities. We argue that Marx's concepts of constant capital and variable capital refer only to the capital invested in production activities, where "production" is defined fairly broadly to include such activities as transportation and storage. However, the definition of "production" specifically does not include the following two types of activities within capitalist enterprises:

1. Circulation activities related to the exchange of commodities and money, including such functions as sales, purchasing, accounting, check processing, advertising, debt/credit relations, insurance, warranties, legal counsel, securities exchange, etc.

2. Supervisory activities related to the control and surveillance of the labor of production workers, including such functions as the transmission of orders, the direct supervision of production workers, the supervision of supervisors, etc. up to top management, the creation and processing of production and payroll records for individuals and groups of employees, etc.

This distinction between production and non-production activities within capitalist enterprises is based on Marx's theory of value and surplus-value. Marx assumed that the value of commodities is determined by the quantity of past and current abstract labor which is required to produce these commodities, not including the labor and materials required to perform the functions of circulation and supervision (C.I. Chapter 1). From this fundamental assumption, it follows that the past labor contained in the means of production consumed in the production process adds to the value of the commodities produced and the current labor employed in production both adds to the value of the commodities and produces surplus-value (C.I. Chapter 7). Since, according to this theory, the capital invested in the material and labor inputs to

capitalist production results in the production of value and surplus-value, Marx referred to this capital as "productive capital."

However, according to Marx's theory, the (past and current) labor required to perform the non-production functions of circulation and supervision, although entirely necessary within the capitalist mode of production, nonetheless do not add to the value of commodities and hence do not result in the production of surplus-value. According to Marx, circulation labor does not add to the value of commodities because commodities enter the process of circulation with their values already determined (by the labor required to produce them). The function of circulation labor is to transform the physical state of existence of this predetermined amount of value, from the price of commodities to money, or vice versa. No additional value is produced in this transformation of a given amount of value (C.I. Chapters 3 and 5; C.II. Chapter 6; C.III. Chapter 17).

Also, according to Marx's theory, supervisory labor does not add to the value of commodities because this labor is not technically necessary for production, but instead is made necessary because of the antagonistic relation between capitalists and workers over the intensity of the labor of workers (C.I. 448-51; C.III. 382-90; TSV.III. 353-61 and 495-506). Marx referred to supervisory labor, which is necessary to ensure that production workers maintain an acceptable level of intensity of labor, as the "labor of exploiting," as opposed to "exploited labor." In Marx's discussion of Smith's theory of value, he remarked that Smith had already refuted the idea that the labor of supervision adds to the value of commodities (TSV.I. 81).[viii]

Capital must of course be invested in both material and labor to carry out the unproductive functions of circulation and supervision, but this capital nonetheless does not result in the production of value and surplus-value. For this reason, Marx referred to the capital invested in these unproductive functions and "unproductive capital" (C.II. Part 1; TSV.I. Addendum 12). Since this unproductive capital produces no value, it cannot be recovered out of value which it produces. Instead, according to Marx's theory, this unproductive capital is recovered, together with a profit, out of the surplus-value produced by productive labor employed in capitalist production (C.III. Chapter 17).

Marx's concepts of productive capital and unproductive capital are parallel to his more widely discussed concepts of productive labor and unproductive labor. Productive labor is labor employed in capitalist production which produces value and surplus-value. Unproductive labor is labor employed in the unproductive functions of circulation and supervision within capitalist enterprises.[ix]

It follows from the above definitions of productive capital and unproductive capital that the concepts of constant capital and variable capital refer only to productive capital. The distinction between constant capital and variable capital is derived from the different roles performed by the means of production and the labor-power utilized in capitalist production in the creation of value and surplus-value. The means of production transfer their value to the value of the products; hence the capital used to purchase these means of production is called constant capital. On the other hand, the labor utilized in capitalist production creates additional value which is the source of surplus-value; hence the capital used to purchase labor-power is called variable capital.

This distinction obviously does not apply to the capital which is not exchanged for the inputs to production. The value of the means of circulation and the means of supervision is not transferred to the value of the product; hence the capital used to purchase these materials does not function as constant capital. Similarly, the labor utilized in circulation and supervision does not produce value or surplus-value; hence the capital used to purchase this labor-power does not function as variable capital. Of course, the unproductive capital invested in circulation and supervision may be divided, for some purposes, into the capital exchanged for materials and the capital exchanged for labor-power. But this distinction is irrelevant to the production of value and surplus-value and thus to the distinction between constant capital and variable capital.

1.4 Taxes on wages

The fourth issue involved in the estimation of the Marxian variables is whether the taxes on the wages of (productive) workers should be considered a part of variable capital or

surplus-value and whether the government services provided to (productive) workers is part of variable capital. This issue was not discussed by Marx himself. The analysis in Capital abstracts altogether from the effects of government policies on capitalist production. Thus in an empirical application of Marx's theory, this issue should be decided in a way most consistent with the overall analytical framework of Marx's theory.

We have argued above that the analytical framework of Marx's theory is the circulation of capital, the expenditure of money as a means of making more money (M - C - M'). From this point of view, variable capital should be defined as the total amount of money expended to purchase productive labor-power, including the portion of this money which is taxed by the government. The total amount of this money is expended as capital and must be recovered out of the value produced by productive labor before any surplus-value can be appropriated. The fact that a portion of the money expended as capital to purchase productive labor-power does not actually provide income to workers is irrelevant to the function of this money as capital and hence as variable capital. The collection of taxes by the government is a secondary operation which falls outside of the circulation of capital. No matter how the total sum of money expended to purchase productive labor-power is subsequently divided between income for workers and revenue for the government, the entire sum must be recovered before any surplus-value is appropriated, not just the portion of it which remains after taxes as the disposable income of workers. Thus this entire sum of money functions as variable capital.

Similarly from this perspective, the government expenditures to provide services for productive labor are clearly not capital, since these expenditures are not recovered together with a surplus-value through the sale of commodities. Hence, these expenditures cannot be not variable capital, even though they provide income to workers. We reached a similar conclusion above with respect to the government expenditures used to purchase the labor power of government employees.

Shaikh and Tonak (1994) argue that taxes on wages should be considered a part of surplus-value, and also that the government services provided to productive workers (in money

or in kind) should be considered a part of variable capital. The implicit justification for this interpretation is that variable capital should be defined from the point of view of the disposable income of workers. Since the taxed portion of wages does not provide income for workers, it should not be counted as variable capital. Similarly, since these government services do provide income for workers (mostly income in kind), they should be counted as variable capital.

We argue, to the contrary, that variable capital is a component of capital and therefore should be defined from the point of view of the circulation of capital, not from the perspective of the income of workers. From the perspective of the circulation of capital, the total amount of capital expended to purchase productive wage-labor is variable capital, not just the after-tax income of workers, and the government services provided to productive workers are not capital, and hence cannot be variable capital.

1.5 Current cost vs. historical cost valuation of constant capital

The final issue to be discussed is whether constant capital should be valued in terms of current replacement costs or in terms of the actual historical acquisition cost. We argue that both the stock and the flow of constant capital is evaluated in Marx's theory in terms of the current replacement cost of the means of production, not in terms of the actual historical cost of these means of production. In other words, constant capital is evaluated in terms of the amount of money that would have to be invested in the current period to purchase the existing means of production, not the actual amount of money spent to purchase these means of production in past periods. If the average productivity of labor in the production of the means of production increases or decreases, or if the value of money increases or decreases, then the replacement cost of the means of production will decrease or increase correspondingly, and therefore so will also the current value of the stock and flow of constant capital (C.I. 317-19; C.III. 139-41; TSV.II. 200-03 and 427-28).

Every empirical study that we have seen measures constant capital in terms of current replacement costs - both the flow of constant capital (or depreciation) and the stock of constant

capital. However, to our knowledge, this issue has never been seriously discussed in the empirical literature on the estimation of the Marxian variables. It simply seems to be generally accepted

and taken for granted that the current cost measure is the appropriate measure of constant capital (e.g. Shaikh and Tonak, p. 122; Dumenil and Levy, p. 21).

This issue has of course been extensively discussed in recent years in the theoretical literature and on various email discussion groups. The so-called "temporal single system" (TSS) interpretation of Marx's theory, advanced in recent years by John Ernst, Alan Freeman, Andrew Kliman, and others, argues that, in the case of technological change, the stock of constant capital should not be revalued, but should instead be valued in terms of its actual historical acquisition costs.[x]

However, Freeman has argued that the valuation of the stock of constant capital in terms of historical costs applies only to the case of technological change. It does not apply, according to his interpretation, to the case of a declining value of money.[xi] In this latter case, the stock of constant capital should not be valued in terms of its actual historical costs, but should instead be valued in terms of current replacement costs. But, this interpretation is clearly contradictory. There are two reasons why current costs may differ from historical costs - technological change and a change in the value of money. The stock of constant capital should be consistently valued either in terms of historical costs or in terms of current costs, not inconsistently valued in historical costs in the case of technological change and in current costs in the case of a change in the value of money.

Aside from being logically contradictory, Freeman's interpretation of the stock of constant capital appears to be very difficult (and perhaps impossible) to estimate. According to this interpretation, the stock of constant capital should be adjusted to current costs to take into account a declining value of money, but should not be adjusted to current costs to take into account technological change and increasing productivity. However, it is very difficult to separate out the opposing effects of technological change and a declining value of money on the prices of the means of production. In the case of the postwar Mexican economy, the prices of the means of production have changed many thousand times more due to a declining value of money than due to technological change, especially in the 1980s, in which rates of inflation

averaged in the high double digits and were triple digits for some years. Therefore, estimates of Freeman's contradictory valuation of constant capital, if they could somehow be made, would be much closer to the current cost measure than to the historical cost measure.

1.5. Summary

The definitions of the basic Marxian variables adopted in this study may be briefly summarized as follows:

Constant capital (C) is the accumulated stock of money invested in the means of production utilized in capitalist production (evaluated in current prices). Constant capital does not include the money expended to purchase the means of production utilized in non-capitalist forms of production, nor does it include the money expended to purchase the means of circulation and the means of supervision utilized within capitalist enterprises.

Variable capital (V) is the annual flow of money invested in the labor-power utilized within capitalist production. Variable capital does not include the wages of non-capitalist employees; nor does it include the wages of employees in capitalist enterprises utilized in the unproductive functions of circulation and supervision; not does it include a part of the income of self-employed producers. It is the before-tax wages of productive workers, and it does not include the government services provided to productive workers.

Surplus-value (S) is the difference between the annual flow of value added produced by productive labor (VA) and the annual flow of variable capital ($S = VA - V$). Surplus-value includes not only the various types of property income (profit, interest, and rent) (P), but also the wages and material costs of unproductive functions (Uf) ($S = P + U_f$). It does not include a part of the income of self-employed producers

The flow of unproductive capital (U_f) is the sum of the wages of unproductive labor (U_w) and the material costs of the unproductive functions of circulation and supervision (U_m) ($U_f = U_w + U_m$).

3. ANALYTICAL FRAMEWORK[xii]

The rate of profit being analyzed here is the so-called "conventional rate of profit", which is the ratio of the amount of profit (P) to the total stock of capital invested (K).[xiii] According to Marx's theory, profit (the numerator in the conventional rate of profit) is equal to the difference between the annual flow of surplus-value (S) and the annual flow of unproductive costs (U_f) (which consists of the wages of unproductive labor (U_w) and the costs of unproductive materials (U_m)):

(1) $$P = S - U_f$$

Similarly, according to Marx's theory, the stock of capital, the denominator in the rate of profit, is divided into two components: constant capital (C) (the capital invested in the means of production) and the stock of capital invested in unproductive functions (U_s):[xiv]

(2) $$K = C + U_s$$

However, in our estimates we have not yet been able to distinguish between constant capital and the stock of unproductive capital, so this decomposition is not made thus far in our analysis.

We may then obtain the Marxian equation for the conventional rate of profit:

(3) $$RP = \frac{P}{K} = \frac{S - U_f}{K}$$

Finally, we divide all terms on the right-hand side of equation (3) by the annual flow of variable capital (V), following Marx's procedure of relating all variables to variable capital, the "source" of surplus-value, and we obtain:

(4) $$RP = \frac{S/V - U_f/V}{K/V} = \frac{RS - UV}{CC}$$

From equation (4), we can see that, according to Marx's theory, the conventional rate of profit varies directly with the rate of surplus-value (RS) and varies inversely with the composition of capital (CC) and the ratio of the flow of unproductive capital to variable capital (UV). (It should be noted that, rigorously speaking, the composition of capital is the ratio of constant capital only to variable capital and not the ratio of the total stock of capital to variable capital. However, since we are not yet able to distinguish between constant capital and the stock of unproductive capital, we will use the ratio K/V as a rough approximation of the composition of capital).

3. SOURCES AND METHOD OF ESTIMATION

We have seen above that there are four fundamental variables in our estimation of the Marxian variables: value added, variable capital, unproductive capital (??) and constant capital. The first three variables are flow variables and the fourth variable is a stock variable. This section briefly describes the sources and methods used to derive estimates of these variables in the postwar Mexican economy. It is well known that it is very difficult to do empirical work based on Marxian theory, both because the economic data that exists generally corresponds to the concepts of mainstream economic theory, not to Marxian theory, and also because the data themselves are sometimes incomplete and unreliable. Special emphasis will be given in this section to the difficult conceptual and practical problems involved in the estimation of the Marxian variables for the Mexican economy and to our (partial) resolution to these problems. Special emphasis is also given to the estimation of constant capital, which is the most difficult task and also has produced the most surprising results. We consider this to be very much a "work in progress" (we hope) and we intend to continue to try to improve our estimates in the months (and years?) ahead. We would very much appreciate any and all comments, criticisms, suggestions, etc. that readers might wish to make.

3.1 Value added (flow)

We have seen above that the Marxian concept of value added is defined in terms of money and is equal to the difference between the gross price of commodities produced within capitalist enterprises and the constant capital consumed in the production of these commodities (except the value added by self-employed producers within capitalist enterprises). The main differences between the Marxian concept of value added and the concept of value added in the Mexican national income accounts are the following:

(1) The Marxian concept of value added does not include "value added" in "non-capitalist production" - mainly government agencies, and also household production (domestic services) and simple commodity production.

(2) The Marxian concept of value added does not include the value produced by self-employed producers within capitalist enterprises.

(3) The Marxian concept of value added does not include the two "imputations" that are made in the national accounts for the "rent" of owner-occupied homes and for the "interest" paid out by banks and other financial intermediaries.

(4) The Marxian concept of value added does not include the rent of residential housing, because this income is not derived from the value added by current capitalist production.

(5) The Marxian concept of value added does include the costs of materials (depreciation and intermediate costs) in the unproductive functions of circulation and supervision within capitalist enterprises, but these are considered "intermediate goods" in the national income accounts and thus are not included in value added.

The general method used to estimate the Marxian concept of value added is to begin with the national income concept of value added and then make the following adjustments for each of the above differences:

1. The Communal, Social and Personal Service sector of the Mexican national income accounts consists mainly of non-capitalist production - government services, domestic services, and

simple commodity production (independent professional services, repair services, laundries, etc.). Since it is not possible to separate capitalist services from non-capitalist services, especially for the years prior to 1980, we subtract the entire value added in this sector in our estimation of the Marxian concept of value added.

2. We attempt to estimate the value produced by self-employed producers within various other sectors of the economy (mainly Agriculture, and also Manufacturing, Construction, and Transportation), and we subtract this value produced by self-employed producers in our estimation of the Marxian concept of value added.

3. We subtract the imputation made in the Mexican accounts for the fictitious "interest" paid out by banks and other financial intermediaries.

4. We subtract the rent of residential housing, which includes the imputation for the fictitious "rent" of owner-occupied homes

5. We add the cost of unproductive materials (depreciation and intermediate costs) in the unproductive sectors of Commerce and Financial Services.

The most difficult step by far in this method is the second step - the subtraction of the value added by self-employed producers from the total value added in the Mexican national income accounts. This is an important adjustment, especially in agriculture, where self-employed producers are still a very significant percentage of the total labor force (52% in 1990, according to the Census of Population). Unfortunately, there are no data in the national accounts that make the distinction between value added by self-employed producers and value added by capitalist wage-laborers. However, there are at least partial data in the various Economic Censuses which can serve as rough proxies for the percentage (Y_i) of the total value added which is due to self- employed producers in each industry. In agriculture, this percentage is estimated by the percentage of value added produced by agricultural units with a total value of annual production equal to or less than $25,000 (pesos) in 1960 prices. In non-agricultural industries, this percentage is estimated by the percentage of value produced by firms with five or fewer workers.

This percentage for each industry can then be multiplied by the total value added in the given industry (VA_i) in the national income accounts to obtain an estimate of the value added by self-employed producers in that industry (SVA_i); i.e. $SVA_i = Y_i * VA_i$. This value added by self-employed producers is then subtracted from the total value in each sector to obtain the value-added by capitalist wage-laborers (WVA_i); i.e. $WVA_i = VA_i - SVA_i$.

The last step in the estimation of value added outlined above - the addition of depreciation costs and intermediate costs in the unproductive sectors - also poses minor problems. One problem is that data on depreciation by industry for the two unproductive industries Commerce and Financial Services do not exist after 1970. Therefore, for the years period after 1970 we extrapolate forward on the basis of the percentages of depreciation in the total gross value in these two industries before 1970. Since these percentages are fairly steady prior to 1970, these extrapolations do not appear to be a significant source of bias in our estimates.

3.2 Variable capital (flow)

We have seen above that the Marxian concept of variable capital is defined in terms of money and is equal to the wages of productive wage-laborers within capitalist enterprises. The main problem in the estimation of the Marxian variable of variable capital is to distinguish between productive labor and unproductive labor. As we have seen, variable capital refers only to the wage of productive labor. The data for employee compensation ("remuneraciones de asalariados") in the Mexican national income accounts are for all employees; our task is to distinguish between the compensation of productive employees (variable capital) and the compensation of unproductive employees.

As discussed above, the Communal, Social and Personal Service sector consists almost entirely of non-capitalist production. So the first step in the estimation of variable capital is to subtract from total compensation the compensation of this Service sector.

The second step is to divide the major sectors in the economy into productive sectors and unproductive sectors. The unproductive sectors are assumed to be Commerce and Finance, Insurance, and Real Estate. In these non-productive sectors, all the labor is assumed to be unproductive labor, and thus all the compensation of employees is assumed to be the wages of unproductive labor, not variable capital.

The third step is to distinguish between productive and unproductive labor within the productive sectors: Manufacturing, Mining, Construction, Electricity-Gas-Water, Hotels and Restaurants, Transportations, and Communications. No additional data exists for Agriculture which would enable us to distinguish between productive labor and unproductive labor; hence we assume that all labor in Agriculture is productive labor.

Additional data from the various economic censuses are used to estimate the percentage (Xi) of the compensation of employees that is paid to productive workers in each industry. These data distinguish between the compensation of production workers ("salarios de obreros") and the compensation of non-production workers ("sueldos de empleados") which is very close to Marx's distinction between productive labor and unproductive labor. These data are available for all census years in all the industries. For non-census years, the percentage of value added due to self-employed producers is interpolated between the census years, using a straight-line method of interpolation. This percentage of total compensation paid to production workers (X_i) is then multiplied by the total compensation in each industry (EC_i) in the national income accounts to c

calculate variable capital in each industry: $V_i = X_i (EC_i)$.

3.3 Unproductive capital (flow)

The flow of unproductive capital (U_f) consists of two parts: the wages of unproductive labor (U_w) and the cost of buildings, equipment, and materials used in unproductive functions (U_m). The estimates of the wages of unproductive labor are derived by a simple subtraction of variable capital (the wages of unproductive labor) from the total wages of all capitalist

employees (W); (i.e. $U_W = W - V$). The estimation of the costs of unproductive materials has already been discussed above in the last paragraph of Section 3.1 on the estimation of value added.

3.4 Constant capital (stock)

It is surprising and unfortunate that there are no official estimates of the stock of capital for the Mexican economy as a whole, except for the period 1950-1967 (Banco de Mexico 1969), and this series is methodologically flawed.[xv] The only estimates of the capital stock after 1967 are based on a survey conducted by the Bank of Mexico (1969), but this survey is incomplete and its coverage varies from year to year (Villalpando/Fernandez 1986). Hence, it is regarded by almost everyone to be almost useless. This is one of the main reasons for the almost complete lack of estimates of the rate of profit in the Mexican economy since the 1970s and for the lack of reliability of the few existing estimates. Therefore, we have been forced to construct our own estimates of the net capital stock in current prices, using a variation of the perpetual inventory method. There are two main sources of our estimates: (1) a series of the net capital stock in constant prices developed by CEPAL (Hofman/ECLAC 1992) and (2) series for gross investment and depreciation, both in current and constant prices, published by the Bank of Mexico (1978) and by SPP/INEGI (1981, 1983, 1986, 1996a). (CEPAL has been the most important economic research institute in Latin America since the 1960s; it is centered in Santiago, Chile and has offices in most Latin American countries, including Mexico. Its name in English is UN Economic Commission for Latin America and the Caribbean (ECLAC). INEGI is the main government economics statistics agency in Mexico- the Mexican equivalent of the US Bureau of Economic Analysis). The specific procedures varied somewhat in different time periods, due to different data availability and problems. Our description here will be brief and general. A more detailed description will be presented in a subsequent draft.

3.4.1 1980-93

The estimates of the net capital stock for this later period are the most reliable. The CEPAL series for the net capital stock in constant prices is consistent with the INEGI series for gross investment and depreciation in constant prices. Our method for this period was to simply to revalue CEPAL's series for the net capital stock from constant prices (K_n^K) to current prices (K_n^C), using an implicit price deflator (KPI) for gross investment derived from the INEGI data for gross investment in current (I_g^C) and constant prices (I_g^K); i.e., for each year: KPI = I_g^C / I_g^K and $K_n^C = K_n^K$ KPI. [xvi]

3.4.2 1950-80

The simple method of the revaluation of CEPAL's estimates just described cannot be used for earlier years for two reasons: (1) The Banco de Mexico/ INEGI estimates of depreciation are unreliable because (for some reason) they are calculated as a percentage of the net capital stock of the previous year, rather of the gross capital stock of the current year, and therefore these estimates of depreciation cannot be used to reliably calculate net investment. To overcome this problem, we have calculated our own estimates of depreciation, based on CEPAL's estimates of gross investment and net investment in constant prices and then revaluing these estimates in current prices, using the same implicit price deflator (KPI) described above.

(2) CEPAL's estimates of gross investment are systematically higher than the Banco de Mexico/ INEGI estimates of gross investment - by 13.4 % each year for the period 1950-67 and by 6.7% each year for the period 1970-80. CEPAL evidently concluded for some reason that Banco de Mexico/ INEGI had systematically underestimated gross investment during this period. (We have not yet been able to discuss these estimates with representatives from CEPAL, but we hope to in the near future, in order to understand why they made this adjustment). This difference in gross investment means that estimates of the net capital stock based on CEPAL's estimates of gross investment increase faster than estimates based on Banco de Mexico/ INEGI's estimates of gross investment, and we are forced to make a choice between the two. Our preliminary estimates of the net capital stock for this earlier period are based on Banco de Mexico/ INEGI's estimates of gross investment, in order to be consistent with our estimates of

the other flow variables of value added, variable capital, etc., which are based on Banco de Mexico/ INEGI's estimates. However, we intend to conduct a full comparative analysis of these two different series in the near future. It should be noted that our choice (at this time) of Banco de Mexico/ INEGI's estimates means that our series of the net capital stock for the years before 1980 increases slower than if we used CEPAL's estimates, and therefore our series for the rate of profit decreases less than if we used CEPAL's estimates.

Our method for deriving the net capital stock from Banco de Mexico/ INEGI's estimates may be briefly summarized as follows: (1) Calculate the implicit price index for gross investment (KPI) as above. (2) Estimate depreciation in constant costs (d^K) based on CEPAL's estimates (rather than. Banco de Mexico/ INEGI's erroneous estimates), but reducing these estimates by 13.4% and 6.67% for the two subperiods in order to make the level of depreciation consistent with the level of Banco de Mexico/ INEGI's estimates of gross investment. (3) Derive net investment in constant costs as the difference between gross investment in constant costs and depreciation in constant costs ($I_n^K = I_g^K - d^K$). (4) Derive the net capital stock in constant costs (K_n^K) by starting from CEPAL's estimates for 1980 and for each previous year subtracting net investment in constant costs for that year, ($K_n^K (t-1) = K_n^K (t) - I_n^K (t-1)$). (5) Finally, these estimates of the net capital stock in constant costs are revalued to current costs, using the same method as above ($K_n^C = K_n^K$ KPI).

We have also estimated residential capital and subtracted this from the total capital stock to obtain estimates of the non-residential capital stock, which is the appropriate measure for our purposes.

3.5 Different data series

Finally, there is a general problem confronting anyone (not just Marxist economists) who attempts to use national income data for the Mexican economy for the post World War II

period: there does not exist a single, consistent set of estimates for the entire period. Instead, there are three different data series, for the following periods:[xvii]

(1) 1950-67, prepared by the Bank of Mexico;

(2) 1970-84, prepared by INEGI.

(3) 1980-present, also prepared by INEGI.

Unfortunately, neither INEGI nor anyone else has published a reconciliation of these different series (in contrast to the US, where the Bureau of Economic Analysis generally makes a full reconciliation with prior estimates whenever it revises its estimation procedures). The most important difference appears to be between series (1) and series (2). There is a significant increase (42%) in the estimates of variable capital between 1967 and 1970, which results in a 6% decline in the estimates of the rate of surplus-value between these years. There is an even bigger (68%) increase in the estimates of the wages of unproductive labor between these two years. The combined effects of these significant increases in the two categories of wages are a 16% decline in

the ratio of profit to wages and a 12% decline in the rate of profit over this three year span. The significant increase of wages, and hence these other declines, may be due, at least in part, to a change in the method of estimation of wages: the second series appears to have a broader coverage of employee "benefits" than the first series. Also, as discussed in the subsection above on constant capital, there was a change in the method of estimation of depreciation between series (2) and series (3), and this may have also affected the trends of value added, surplus-value, profit, etc. We have not yet done a thorough analysis of the differences between these two series, but we intend to in the near future.

4. PRELIMINARY ANALYSIS OF ESTIMATES

4.1 Rate of surplus-value

Estimates of the rate of surplus-value and its component parts are presented in Table 1 and graphically in Figure 1 (see end of paper). These estimates of the rate of surplus-value break down sharply into two distinct periods: (1) the first 25 years until 1976 and (2) the remainder of the period of study until 1993. In the first period, the rate of surplus-value declined 28% overall, at an average annual rate of 0.6%. As discussed above, this decline in probably overstated somewhat, due to changes in the method of estimation of variable capital between series 1 (1950-67) and series 2 (1970-84). If this is a problem and were somehow corrected, it is probably safe to say that the estimates of the rate of surplus-value would still decline at least 20% over this initial period.

This declining trend is in contrast to a rising rate of surplus-value in the US economy (and in most other advanced countries) during this same period. It is also in contrast to the general conclusion of Marx's theory of a rising rate of surplus-value. According to Marx's theory, the rate of surplus-value should rise mainly as a result of technological change which increases the productivity of labor faster than the real wage of workers, which in turn reduces necessary labor time and increases surplus labor time (i.e. the process of relative surplus-value). It appears that this process of relative surplus-value was not operating very strongly during the

early postwar period in the Mexican economy, and appears to have slowed down in the 1960s and early 1970s. This may have been due to a combination of: (1) rapid increase of real wages (Bortz/Velasco 1987, and Gonzalez-Marina 1995); and (2) slower productivity growth in the wage-goods sector, especially in agriculture (Huerta 1971, p. 215).

In the second period after 1976, the rate of surplus-value first increased slowly from 1976 to 1982 and thereafter increased very rapidly (average annual rate of 1.6%), so that from 1976 to 1993 the rate of surplus-value more than doubled and in 1993 was approximately 50% higher than in 1950. This rapidly rising rate of surplus-value was primarily the result of a drastic reduction of real wages during this period (at least 50%). Productivity growth was even slower in the second period than in the first period, but, given the decline of real wages, whatever productivity growth that occurred also contributed to the increasing rate of surplus-value.

Another striking feature of these estimates of the rate of surplus-value is their very high absolute level. In comparison to the U.S., the rate of surplus-value in Mexico is two to three times higher. This result also seems to be contrary to Marx's general expectation that the rate of surplus-value would be higher in more developed countries (because capitalist development would result in a rising rate of surplus-value) (C.I. Chapter 22). This contrary result also seems to be true of other developing countries for which we have estimates (e.g. see Jeong 1998, for the case of South Korea)

The explanation of this contrary result might be that Marx's analysis in Capital is at a very high level of abstraction and does not take into account many concrete factors, including interactions between different national economies in the global economy. One such concrete feature of this interaction appears to be that advanced technology is imported into developing countries which reduces the productivity gap between advanced and developing countries. However, the gap in real wages remains more or less the same, because of a very large relative surplus population in these developing countries that are still going through the process of "primitive accumulation" (i.e. the expropriation of peasants from the land). The result of this combination is that the rate of surplus-value is higher in developing countries.

The effect of subtracting the value added by self-employed producers from our estimates of value added in capitalist enterprises was obviously to reduce the level of the rate of surplus-value (by about 10%), and also to reduce the downward trend. Without this deduction, the "rate of surplus-value" would have declined about 35%, rather than the 28% in our estimates. This deduction of the value added by self-employed producers has a roughly similar effect on the level and the trend of the rate of profit. This effect is somewhat smaller than we anticipated. The reason for this small effect is that the value added by self-employed producers which is included in the national income accounts is very small.[xviii] According to our best estimates so far, the percentage of value added produced in non-agricultural industries is very small (<5%) and even though this percentage is much higher in agriculture (40-60%), the significance of agriculture in overall value added was small and declined over the postwar period (from 14% to 5%).

The effect on the rate of surplus-value of distinguishing between productive labor and unproductive labor can be seen by comparing our estimates of the rate of surplus-value with estimates of the profit to wages ratio, which does not distinguish between productive and unproductive labor. The profit to wages ratio declined more than our estimates of the rate of surplus-value in the first period (51%, compared to 28%) and increased less than our estimates of the rate of surplus-value in the second period (82%, compared to 112%), so that the profit to wages ratio in 1993 was still 10% lower than in 1950, whereas the rate of surplus-value in 1993 was 50% higher than in 1950. We can also see that the difference in the two trends was greater in the second period. The reason for this greater difference in the second period is that the ratio of unproductive capital to variable capital (the ratio UV) increased much more rapidly in the second period (see the next subsection for further discussion of this ratio).

4.2 The ratio of unproductive capital to variable capital

Our estimates of the ratio UV (the flow of unproductive capital to variable capital) are also shown in Table 1 and graphically in Figure 2. We can see that these estimates also showed

different trends in the two periods before and after 1976, although not as different as the rate of surplus-value. In the initial period, this ratio increased slowly (average annual rate: 0.3%) and approximately 18% overall. In the second period, this ratio increased much more rapidly (average annual rate: 1.7%) and 86% overall. According to Marxian theory, this increase in the ratio UV had a negative effect on the rate of profit and at least partially offset the positive effect of the increase in the rate of surplus-value on the rate of profit.

The slow rate of increase of the ratio UV in the first period is something of a surprise, because this ratio increased much more rapidly in the US during this period and also because the underlying ratio of unproductive labor to productive labor increased more rapidly (approximately 70% over this period). A breakdown of the estimates of unproductive capital into its two components - unproductive wages costs (U_w) unproductive materials costs (U_m) - reveals that the explanation of the slow rate of increase of the ratio UV in the first period was that the cost of unproductive materials increased much slower than the unproductive wages costs during this period). However, we are not entirely confident of our estimates of the unproductive material costs, and we plan to study these estimates more carefully in the near future in order to evaluate their reliability. If the flow of unproductive capital were estimated solely as unproductive wages cost, then the ratio UV would increase more rapidly in the first period (84% compared to 18%), similar to the US during this period.

There is also a significant gap (about 20%) between our estimates of the ratio UV in the second series (1970-84) and the third series (1980-93), which exaggerates somewhat the overall increase in this ratio in the second subperiod. This difference between the two series is due to a significant increase in the estimates of unproductive costs, both wages and material costs.

4.3 Composition of capital

As discussed above, our estimates of the composition of capital are not rigorously correct because the stock of capital in the denominator is the total stock of capital, including the stock of unproductive capital, and not just the stock of constant capital. Nonetheless, our estimates of

the “composition of capital” are very interesting and we think a decent first approximation of the true composition of capital. We hope to eventually be able to distinguish between the stocks of productive and unproductive capital and to refine our analysis accordingly.

Our estimates of the “composition of capital” are also presented in Table 1 and graphically in Figure 3. These estimates also have very different trends in the two periods discussed above. In the first period up until 1976, the composition of capital declined slightly (9% overall). By contrast, in the second period, the composition of capital increased very rapidly (average annual rate of 3%) and roughly 150% overall.

These trends also appear to contradict Marx’s expectations that the composition of capital would increase during periods of expansion (such as our first period) and decrease during periods of crisis (such as our second period), due to bankruptcies and the devaluation of capital. These contradictory trends in the postwar Mexican economy appear to be due in large part to trends in the exchange rate of the peso. During the first period, a fixed exchange rate was maintained by the Mexican government, which, due to the higher Mexican rates of inflation, resulted in an overvalued peso and a decline in the relative price of imported goods. During this period, Mexico imported almost all of its machinery and equipment (and still does so today). Therefore, the overvalued peso significantly reduced the constant capital invested in these means of production. We can get some idea of the extent of this reduction of constant capital due to the overvalued peso from the first devaluation of the peso that occurred in 1976. This first devaluation of the peso was about 50%. This suggests that in the mid-1970s the prices of the imported means of production in Mexico had been only about half of their real world market levels. If constant capital were somehow calculated instead at the world market prices of these means of production, then the composition of capital would surely have increased significantly during this period, more consistent with Marx’s theory.

Furthermore, it was noted above that our estimates of constant capital may significantly underestimate the increase of the stock of constant capital during this period, because we use INEGI’s (rather than CEPAL’s) estimates of net investment, which appear to be underestimated.

If there is such a downward bias in our estimates of constant capital, then there would be a similar downward bias in the trend of our estimates of the composition of capital, such that corrected estimates would not decrease and would even increase significantly during this period, more consistent with Marx's theory. Preliminary estimates show that the composition of capital estimated on the basis of CEPAL's estimates would increase approximately 35%, rather than the 9% decline in our estimates. Therefore, a very important future task is to investigate further this discrepancy between Banco de Mexico/ INEGI's and CEPAL's estimates of net investment.

After the beginning of the crisis in 1976, and especially after 1982, the peso was devalued tremendously (over 10,000%!). This extreme devaluation greatly increased the price of imported machinery and equipment, and Mexico continued to import almost all of these capital goods. This combination of dependence on foreign capital goods and extreme devaluation greatly increased the price of capital goods and hence the constant capital necessary to maintain and expand production in the Mexican economy. The very rapid increase in the price of capital goods in Mexico, especially for the 1980s, which was due mainly to the devaluation of the peso is shown in Table 2. The further implications of this extremely rapid increase in the composition of capital since 1980 will be examined in the next subsection.

4.4 Rate of profit

Finally, our estimates of the rate of profit and its determinants are also presented in Table 1 and in Figure 4. In the first of our two periods, the rate of profit declined approximately 30% overall. This significant decline in the rate of profit would appear to be one of the important causes of the severe crisis in the Mexican economy of the last two decades, as emphasized by previous authors.

This decline in the rate of profit itself appears to have been due almost entirely to a roughly proportional reduction in the rate of surplus-value. During this period, the small negative effect of the slight increase in the ratio UF was offset by a roughly equal positive effect of the small decrease in the composition of capital. Therefore, it appears from these estimates

that the rate of profit in the postwar Mexican economy declined, but not because of an increase in the composition of capital, as emphasized by Marx, but rather due to a decline in the rate of surplus-value, as emphasized by the "profit squeeze" interpretation of Marx's theory.

However, we have discussed two reasons why the increase of the stock of capital was probably underestimated during this first period. Firstly, the overvaluation of the peso reduced artificially and temporarily the prices of the means of production. Secondly, our estimates of the stock of capital are based on Banco de Mexico/ INEGI's estimates of net investment, which appear to be underestimated. If our estimates of the capital stock were based on CEPAL's estimates of net investment, then the estimates of the rate of profit would decrease almost twice as much our estimates during this first period (54% compared to 30%), and this greater decline in the rate of profit would be due in part to a 60% increase in the composition of capital, which is more consistent with Marx's theory.

In the second period (the period of crisis), it is very striking that the rate of profit has not increased. To the contrary, the rate of profit has continued to decline, although at a slower rate (12% overall). This is perhaps the most important finding of our study. It is a very surprising finding, given the fact that real wages have been cut in half and the rate of surplus-value has more than doubled during this second period of crisis. It appears that the strong positive effect on the rate of profit of this very significant increase in the rate of surplus-value has been more that offset by the significant increase in the ratio UV and the even more so by the even more significant increase in the composition of capital. The overvalued peso in the first period kept constant capital artificially low, but when the correction occurred in the second period, constant capital adjusted quickly to world market levels and increased very rapidly.

This continued decline in the rate of profit in the Mexican economy over the last two decades appears to be at least part of the explanation of why the Mexican economy has not yet recovered from its current crisis. A recovery from capitalist crises requires, above all else, a recovery of the rate of profit, and this recovery of the rate of profit has been has not yet occurred in the Mexican economy. In the US, the rate of profit in the last two decades has not fully

recovered, but it has at least increased and recovered about one-third of the prior decline. In Mexico, by contrast, the rate of profit has continued to decline.

Finally, it should be emphasized that our estimates of the composition of capital and the rate of profit assume that constant capital is valued in current replacement costs, and not at actual historical costs. If the constant capital were valued at historical costs (i.e. if it were not revalued in current costs), then the composition of capital would not increase rapidly in the 1980s and the rate of profit would increase significantly. However, from the perspective of the ability of the Mexican economy to reproduce itself and expand production, the current cost valuation of constant capital is the appropriate measure. The purchase of replacement and additional means of production must be done at the new higher prices. The importance of current costs is especially

true in the context of the general opening of the Mexican economy to international competition during this period, which has made the replacement of the existing less competitive industrial plant a matter of survival.

5. FURTHER TASKS

There is obviously still much work to be done. Our list of further tasks almost fills a notebook, and keeps getting longer and longer. We will highlight here in outline form only a "short list" of the most important of these further tasks, starting from the most immediate to the longer-run.

1. Investigate the reliability of the estimates of the stock of capital (since the trends in the rate of

profit in the postwar Mexican economy depend above all else on these estimates).

   a. 1950-76: examine the discrepancy between Banco de Mexico/ INEGI's and CEPAL's estimates of net investment.

   b. 1976-93: evaluate the reliability of our implicit price index for capital goods (see Table 5).

2. Develop further the estimates of the stock of capital.

   a. Add inventories.

   b. Break down into productive capital and unproductive capital.

3. Refine further of the estimates of the value added by self-employed producers.

4. Compare our estimates with prior estimates to understand more clearly the effects of different interpretations of the conceptual issues and of different estimation procedures on the trends of the estimates.

5. Analyze further the underlying causes of the key trends:

   a. Decline in the rate of surplus-value, 1950-76.

   b. Decline of the composition of capital, 1950-76.

   c. Slow increase of the ratio UV, 1950-76.

d. Very rapid increase of the composition of capital, 1976-93.

e. Very rapid increase of the ratio UV 1980-93.

6. Derive of estimates of the rates of profit for different sectors of the Mexican economy in order to determine the extent and trends of the divergence of rates of profit across sectors. It is our hypothesis that there has been an increasing divergence (of "polarization") of sectoral rates of profit in the Mexican economy, especially in the last two decades. It may be that the overall decline of the rate of profit for the total economy that we our estimates show may have affected some sectors more than others, and that the latter sectors may not have been affected much at all.

7. Compare our estimates with similar estimates of other Latin American countries, and attempt to stimulate further research along these lines in these other countries.

Again, we very much welcome readers' comments, criticisms, suggestions, etc.

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ENDNOTES

[i] This paper is based on a research project in which the authors participated, along with Jaime Gonzales, Vicente Lima, and Luis Kato, during Moseley's sabbatical year in Mexico, 1996-97. Lima did most of the calculations of the estimates of value added and variable capital, for which we are very grateful.

[ii] For a further discussion of these conceptual issues, see Moseley (1992, Chapter 2).

[iii] Both concepts of constant capital and variable capital may be considered either as a stock of advanced capital or as a flow of capital consumed during a given period of production. Each of these concepts is relevant to different aspects of Marx's theory. The flow of constant capital is relevant to the determination of the price of commodities, since this magnitude becomes one component of the price of commodities. The flow of variable capital is relevant to the determination of the amount of surplus value, since this latter amount is equal to the difference between the new-value component of the price of commodities and the variable capital consumed in the production of these commodities. Finally, the stocks of constant capital and variable capital are relevant to the determination of the rate of profit, since the sum of these amounts is the denominator in the rate of profit. In actuality, the stock of variable capital is negligibly small.

[iv] It should also be noted that both the stock and the flow of constant capital is evaluated in Marx's theory in terms of the current replacement cost of the means of production, not in terms of the actual historical cost of these means of production. In other words, constant capital is evaluated in terms of the amount of money that would have to be invested during the current period to purchase the existing means of production, not the actual amount of money spent to purchase these means of production in past periods. If the average productivity of labor in the production of the means of production increases or decreases, or if the value of money increases of decreases, then the replacement cost of the means of production will decrease or increase correspondingly, and so will the current value of the stock and flow of constant capital (C.I. 317-19; C.III. 139-41; TSV.II. 200-03 and 427-28).

[v] "Government production" here refers to government agencies which provide services without specific charges to the public. Government enterprises which produce commodities for sale are treated essentially the same as capitalist enterprises, as they are in the US National Income and Product Accounts and in the Mexican Cuentas Nacionales.

[vi] It is argued according to the "historical-logical" interpretation of Marx's method (Engels, Meek, Sweezy, etc.) that Part 1 of Volume 1 of Capital is about simple commodity production, but from Chapter 2 on, Capital is about capitalism. I (and a growing number of other authors) argue that Capital is about capitalism from the very first page (e.g. see Moseley (1993)). According to this interpretation, not even Part 1 is about simple commodity production. But at least everyone seems to agree that from Part 2 on, Marx's theory is about capitalism, and the concepts of capital, constant capital, variable capital, and surplus-value apply only the capitalist economy, and do not apply to simple commodity production.

[vii] Shaikh and Tonak (1994) argue that the income of self-employed producers should be divided into variable capital and surplus-value. They do not make the distinction between self-employed producers in simple commodity production and in capitalism and seem to implicitly assume that all these self-employed producers work within capitalist enterprises. But

implicitly their estimates of variable capital and surplus-value include the income of self-employed producers with simple commodity production, which is clearly incorrect. I also argue that the inclusion of the income of self-employed producers within capitalist enterprises is also incorrect, for the reasons given in the text.

The relative significance of self-employed producers in simple commodity production and in capitalist production is an empirical question. It is likely to vary from period to period and from country to country. In general, simple commodity production is more likely in agriculture, and thus in developing countries.

[viii] Marx acknowledged that some part of the labor of managers and supervisors is technically necessary for production to the extent that they perform the functions of planning and coordinating production activities. This part of the labor of managers and supervisors Marx considered to be productive labor which produces value and surplus-value. However, Marx argued that only a small percentage of the labor of managers and supervisors is devoted to these productive functions and that most of their labor is devoted instead to the unproductive function of controlling the labor of production workers. Marx pointed to the examples of cooperative factories in England, which had largely eliminated managers and supervisors, to demonstrate how little of their labor is actually necessary for production (C.I. 448-50; C.III. 383-88; TSV.III. 355-56 and 495-506).

[ix] The concept of unproductive labor was also used by Marx in the broader sense to include labor employed in non-capitalist production, or "labor employed by revenue" (TSV.I. Chapter 4 and Addendum; C.I. 1038-49). Adam Smith used the concept of unproductive labor to refer only to labor employed in non-capitalist production, not to labor employed in non-production activities within capitalist enterprises. In this book, the term unproductive labor refers only to the latter category of capitalist employees employed in non-production activities.

Criticisms of Marx's concepts of productive labor and unproductive labor are considered in Moseley (1992, Appendix to Chapter 2).

[x] Kliman has presented a contradictory interpretation that the flow of constant capital (depreciation and the cost of consumed raw materials) should be valued differently from the stock of constant capital. Kliman argues that the flow of constant capital should not be valued in terms of historical costs, but should instead be revalued in terms of the costs of the means of production at the beginning of the current period of production. Hence, this valuation is in between the historical cost valuation and the usual current cost valuation (where “current” refers to the end of the current period) and is closer to the latter. It is not clear to me how the other proponents of the TSS interpretation would value the flow of constant capital. We argue that both the flow and the stock of constant capital should be valued consistently in terms of current replacement costs.

[xi] It is still not clear to me how the other proponents of the TSS interpretation would value the stock of constant capital in the case of a declining value of money.

[xii] See Moseley (1992, Chapter 4) for a more complete presentation of our analytical framework.

[xiii] The “conventional” rate of profit, which is net of unproductive costs and is related to the total stock of capital invested, is different from the Marxian rate of profit, which is gross of unproductive costs and is related to the productive capital only (see Moseley, 1992, Chapters 3 and 4). Marx’s theory of the “falling rate of profit” is in terms of the Marxian rate of profit, but the conventional rate of profit as a more direct determinant of capital accumulation, at a lower level of abstraction. “Profit” is here defined to include all forms of property income, including

interest and rent. However, profit, as I define it here, does not include unproductive costs, which is different from Marx's own definition of profit.

[xiv] Here we make the simplifying assumption that the stocks of both variable capital and the wages of unproductive labor are equal to zero. Since capitalists pay workers only after they have worked, this assumption is not far from reality.

[xv] Although there is no description available of the methodology used by the Bank of Mexico to derive their estimates of the capital stock, it appears that this series was constructed by the perpetual inventory method from an initial estimate of the capital stock, but using an estimate of depreciation as a percentage of net, rather than gross, capital stock. This is a mistaken procedure which overestimates the annual increase of the capital stock.

[xvi] For control purposes, we also derived a series for the net capital stock in constant prices from INEGI's estimates of net investment in constant prices for 1980-89, starting from CEPAL's estimate of the net capital stock in 1980. The resulting series shows a strong correlation with CEPAL's series; differences range from -0.54% to 4.25%, with an average of 2.35% and a standard deviation of 1.63%.

[xvii] More recently, INEGI has presented yet another series for the period 1988-1995, which involves additional revisions and which poses new problems that Mexican scholars are just beginning to analyze.

[xviii] It should be noted here that we think that the actual value added by self-employed producers in the Mexican economy is greater than that which is captured by economic censuses and in the national income accounts (i.e. the government data underestimate the value added by self-employed producers). But our objective is not to estimate the "true" value added by self-employed producers, but rather to subtract out the value added by self-employed producers that is included in the national income accounts.